THE RELATIONSHIP OF PSYCHOLOGICAL AND SOCIAL RISK FACTORS TO OFFENDING AND DESISTANCE IN A SAMPLE OF MALE GANG AND GROUP OFFENDERS

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Copyright Statement

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ABSTRACT

Using data from the Pathways to Desistance Study the present thesis investigated the relationship of gang membership and offending style to offending frequency, and to psychological and social risk factors; testing a model to predict desistance. A sample of 1047 adjudicated males with a mean age of 16.07 (*SD* = 1.16) at the baseline interview, were investigated over ten subsequent waves of data, covering a seven-year period. For inclusion in the present research, participants had to either report gang membership or co-offending at the baseline interview. One way between groups analysis of variance were conducted. Analysis of the offending frequencies of current, prior and never gang members indicated that the only pattern of significant variance found was over the first five waves of aggressive offending between current gang members and those who had never been in a gang. There was a lack of offending frequency homogeneity for all groups and the findings were inconclusive for prior gang members. Current gang members reported using significantly more illegal substances than both other groups after the baseline. The research also found that current gang members scored significantly higher than both prior or never gang members for negative psychological and social traits and lower for protective risk factors. Prior gang members demonstrated significantly fewer criminogenic risks than current gang members; however, no strong patterns of significant variance were found between prior and never gang members. Analysis of offending styles indicated that the majority of gang members offended both alone and with others, whereas non-gang members followed a trajectory of co-offending to solo. A pattern of significant variance was found for higher total offending and illegal drug use for mixed style offenders when compared to solo and co-offenders, suggesting that mixed-style offending is a criminogenic risk. The research also found that mixed-style offenders have different psychological profiles compared to their single offending style counterparts. Although similar to the patterns of variance for current gang members, a key difference was that whereas gang members had significantly lower resistance to peer influence, mixed style offenders did not. A direct binary logistic regression was preformed from months 6 to 84 and indicated that when controlling for other variables, less exposure to violence, less illegal substance use, and lower levels of peer antisocial behaviour consistently contributed to a model of desistance. Higher levels of temperance contributed to the model for the first six waves, suggesting an age-dependent risk.

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INTRODUCTION TO THE STUDIES

Introduction

Background

Delinquent groups, whether established or temporary, are salient to the orchestration of criminal acts because they enable both followers and instigators to perform, practice, and develop their offending roles. Youth gangs are one type of delinquent adolescent group. What differentiates gangs from temporary groups of co-offenders is the presumed hierarchy and permanence that the former are assumed to have (Reiss & Farrington, 1991). However, neither homogeneity or hierarchy have been found to be consistent among gangs (Curry, Decker, & Pyrooz, 2014; Klein & Maxson, 2006), resulting in neither policy makers or researchers finding a globally accepted definition of what a gang is and how it differs from other delinquent youth networks (Esbensen, Winfree, He, & Taylor, 2001; Goldman, Giles, & Hogg, 2014; Wood & Alleyne, 2010). Additionally, research into co-offending groups has indicated that individuals fulfil different roles of instigators, who are often from family or peer groups (Reiss, 1988; Van Mastrigt & Farrington, 2011) and followers. Thus, suggesting an albeit temporary hierarchy and recruitment system, both of which are typically associated with joining a gang.

As Sullivan (2005) noted, there has been a tendancy to automatically associate violence amongst groups of youths with gang activity. Whereas gang membership has received considerable academic attention, there have been comparatively fewer studies on non-gang affiliated youth who co-offend. This is in spite of research concluding that, like gang members, those who engage in delinquent or criminal behaviour in the company of others typically commit more offences than those who act alone (Andresen & Felson, 2010; Reiss, 1988; Reiss

& Farrington, 1991; Sarnecki, 2001; Van Mastrigt & Farrington, 2011), including higher levels of violent crimes (Conway & McCord, 2002; McCord & Conway, 2002). Additionally, although gang studies increasingly distinguish between types of offence, little attention has been given to the offending styles of members and whether these adapt or develop over time, emulating the more general trajectories of non-gang affiliated co-offenders who are traditionally seen to progress to solo offending (Reiss & Farrington, 1991; Zimring, 1981).

There is often an assumption amongst policy makers that leaving a gang reverses the socially embedded controls that make delinquent behaviour and criminal involvement acceptable to individuals; this is not the case (Melde & Esbensen, 2011 and 2012). These findings are perhaps of little surprise when considering the practicalities of cutting off social and environmental ties, including family members who may be involved in either gangs or non-gang delinquent and criminal behaviour (Decker & Lauritsen, 2002; Pyrooz, Decker, & Webb, 2014). They are also consistent with the more general literature on desistance, which has identified a gradual process of disengagement (Bushway, Thornberry, & Krohn, 2003). The same risk factors and processes of desistance are associated with non-gang affiliated group offenders. Even though they rarely offend with the same people (Weerman, 2003) non-gang affiliated co-offenders have also been found to gravitate towards others who share their ethnic identity, neighbourhood, gender, and in the case of young co-offenders age (Schaefer, Rodriguez, & Decker, 2014; Weerman, 2003; Zimring, 1981). Studies have also shown that their accomplices were typically drawn from local convergence settings such as schools, bars, or parks that they frequent (Felson, 2006).

Attitude to society and environmental factors and opportunities lie at the core of the dominant sociological theoretical frameworks (Agnew, 1992; Cloward

& Ohlin, 1960; Cohen, 1955; Gottfredson & Hirschi, 1990; Merton, 1938; Shaw & McKay, 1931; Sutherland, 1937; Sutherland & Cressey, 1960 and 1974; Thrasher, 1927; Wood & Alleyne, 2010). Although some research has adopted a life course approach to studying offending and desistance (Laub & Sampson, 2001; Reiss & Farrington, 1991; Zimring, 1981), none of these theoretical approaches explain why some people who share similar neighbourhood conditions or lack of conventional opportunities do not join gangs and offend (Webster, MacDonald, & Simpson, 2006). Nor do the frameworks explain why, some individuals join a gang and offend, whereas others remain autonomous, or offend in temporary groups. The relationship between environmental conditions, which remain static for many youths who offend, and desistance from crime is not as straight forward as offending commencement. In the same environment and with the same experiences some individuals desist, and others continue to offend.

In both the co-offending and gang literature, there has been little attention to the role of individual agency, or to the possible explanations that are offered by psychological theories and frameworks (Wood & Alleyne, 2010; Wood & Giles, 2014). Where psychological research has been undertaken, on gangs, the emphasis has been on social psychological theories (Wood & Alleyne, 2010), rather than forensic or investigative psychology. This has partly been due to the available data and the comparatively small number of longitudinal studies of serious juvenile offenders who self-identify as gang affiliated. Studies that draw their samples from North America have a stronger track record for assessing the trajectories of adjudicated youth who are gang affiliated, and also for investigating psychological constructs in addition to the more typical attitudinal and environmental factors that are associated with an individual's desistance from crime (Curry et al., 2014).

Studies have demonstrated that offenders are often coerced or encouraged by either persistent offenders or an older person for their first offence (Morselli, Tremblay & McCarthy, 2000; Shaw & McKay, 1931; Reiss, 1988; Van Mastrigt & Farrington, 2011). Research into the psychological profiles of individuals who offend contemporaneously both alone and with others is sparse, but has demonstrated that even during adolescence, offenders follow different offending style trajectories, and there are differences in both their psychological and psychosocial development (Goldweber, Dmetrieva, Cauffman, Piquero, & Steinberg, 2011; Moffitt, 1993). It is possible that the minority mixed-style offenders may be associated with recruiters/instigators; however, further research is required to establish whether mixed style offenders are closer to solo or co-offenders in their profiles and the relationship between style and offending frequencies.

Research into the motivations for joining a delinquent group identified two types of individual: those who wished to join to enhance their status amongst their peers, and those who joined in order to belong to a group that reflected their own delinquent behaviour (Lachman, Roman, & Cahill, 2013). As the resarchers note, these findings have the potential to inform interventions for youths who join delinquent groups and gangs; however, they do not investigate the individual profiles of these two distinct categories. Youth offending intervention programmes are based on the premise that group offenders whether gang affiliated or not, are facilitated by their networks (Cottrell-Boyce, 2013; Melde & Esbensen, 2014; Melde, Gavazzi, McGarrell, & Bynum, 2011; Taylor, 2013). This concept is one of three models that were proposed for Interactional Theory to explain the relationship between the individual and the gang (Thornberry, Krohn, Lizotte, & Chard-Wierschem, 1993). It proposes that a gang facilitates offending

opportunities and normalises delinquent behaviour as part of the group identity (Thornberry, Krohn, Lizotte, Smith, & Tobin, 2003). According to this framework gang leavers are less delinquent and commit fewer crimes before they join and after they leave the gang. There is empirical support for this theory for some types of crime. Studies have found strongest support for the facilitation model in relation to violent crimes (Bjerk, 2009; Lacourse, Nagin, Tremblay, Vitaro, & Claes, 2003; Thornberry et al., 2003), general delinquency and drug use (Thornberry, et al., 1993). Although relevant for co-offending networks, gang membership has been found to contribute to delinquency above and beyond peer association (Battin, Hill, Abbott, Catalano, & Hawkins, 1998).

The second framework advocates that delinquent youth are attracted to gangs and that membership has no causal impact on their criminal behaviour. What the selection framework ignores is the potentially heightened opportunities that delinquent networks provide for an individual (Bjerregaard, 2010; Klein & Maxson, 2006; Thornberry et al., 2003; Zhang, Welte, & Wieczorek, 1999). Some studies have demonstrated that gang members continued to be delinquent after they left the gang (Bendixen, Endresen, & Olweus, 2006). In the co-offending literature this model is closest to Group Selection Theory, which suggests that delinquent youth are drawn towards friends who are similarly disposed (Reiss & Farrington, 1991).

Finally, the enhancement model is the most empirically supported (Curry et al., 2014; Pyrooz et al., 2014; Tita & Ridgeway, 2007). The enhancement model theorises that youth who are already delinquent are more likely to join a gang and then, once a member, their involvement enhances their anti-social behaviour. Although none of these models have been tested by researchers of non-gang youth, the proposed frameworks are also relevant for any group offender,

because they consider the relationship of belonging to a group on offending behaviours.

In an attempt to advance Interactional Theory, Pyrooz and Decker (2013) proposed the invariance hypothesis of gang membership, which posits that although gang membership per se is not inherently criminal or criminalising, the onset of gang membership corresponds to an increase in delinquency. However, a number of questions relating to desistance from crime rather than gang membership remain. For example, there are transient gang members, who may find legitimate employment, but who are still involved in illegal and/or gang-related activities (Hagedorn, 1994). Studies have demonstrated that members with low levels of embeddedness leave the gang quickly, whereas high levels of embeddedness (the level of involvement and importance that an individual places upon the gang) increased membership by around two years (Pyrooz, Sweeten, & Piquero, 2013). Researchers have found that disengagement from the gang could be associated with a decrease in offending but did not predict future offending patterns; a finding that has serious consequences for the design of youth gang interventions, where the focus is often on leaving the gang (Braga, Hureau, & Papachristos, 2014; Esbensen, Petersen, Taylor, & Osgood, 2012 and 2014; Howell, 2010; Spergel, Wa, & Sosa, 2014).

The Present Thesis

The present thesis investigated whether there are risk factors that distinguish youth gang members from other youth who co-offend; if these risk factors change over time and age; and what relationship they have to desistance from crime and delinquent behaviour. The research has been designed with its application to policy and practise in mind. The findings have the potential to

influence the focus of anti-gang and non-gang youth intervention programmes that seek to encourage individuals to desist. The thesis also directly responded to a recent call to prioritise research that investigates the features that make a gang similar or different to other social collectives (Pyrooz, Decker, & Webb, 2014).

The focus of the research was on individual characteristics rather than the shared and static environments, which many young people who belong to street gangs inhabit (Curry et al., 2014). The study used an existing longitudinal dataset consisting of male juveniles who had committed at least one felony offence rather than sampling from a general juvenile population and who, at the start of the research reported being either gang affiliated or offending with others. The sample was selected in order to investigate which risk factors had a relationship to recidivism and desistance. Furthermore, the research sought to investigate whether the risk factors and characteristics associated with acquisitive and violent offending were the same and so distinguished between offending categories. The present thesis consists of five individual, but related studies to investigate the relationship of gang membership and offending style to offending frequencies and to psychological and social risk factors that have been associated to desistance from crime.

Study 1

Gang membership for each wave of data collection was investigated with three categories of status: current gang member, never belonged to a gang, and prior gang member. A one-way between groups analysis of variance was conducted for all three categories to explore the relationship to offending frequency for each wave of data. The following crime groups were investigated: Total offending with and without drugs; income offending with and without

drugs; aggressive offending; substance use; marijuana sales; and other drug sales. This study sought to directly test Interactional Theory, adding to a growing number of studies (Curry et al., 2014). The present study differed from many earlier pieces of research in that it included the category of prior gang member, in addition to current and never gang affiliated youth. In recognition of a number of previous studies suggesting that violence and drugs were directly associated with gang involvement, Study 1 also distinguished between categories of offending and the sale of drugs.

Study 2

Gang membership for each wave of data collection was investigated with three categories of status: current gang member, never belonged to a gang, and prior gang member. A one-way between groups analysis of variance was conducted for all three categories to explore the relationship to psychological and social risk factors. A one-way between groups analysis of variance was conducted for all three categories to investigate: Future orientation; socio-emotional adjustment; psychosocial development; resistance to peer influence; psychopathy; peer antisocial behaviour and influence; and exposure to violence. The inclusion of prior gang members in the study and the time specific investigation enabled the exploration of developmental and social risk factors in relation to gang membership.

Study 3

The offending styles for total with drugs, aggressive and income offences with drugs were investigated for the entire sample and a new variable for offending style for each category of offending was created. Participants who

reported no crimes were removed from the respective wave of data, and the entire cohort was then divided into three groups according to offending style of solo, co or mixed style for aggressive offending, income offending, and substance use (according to total offending style). A one-way between groups analysis of variance was conducted for all three categories to explore the relationship between offending style for each wave of data on offending frequencies. This study varies from previous research because it investigated a category of offenders who offended both alone and with others during the recall periods. Most prior research into offending style considers the category of mixed-style offender over time, with the traditional trajectory moving from co to solo offender. The study also investigated the preferred style of offending for current gang members; which is typically assumed to be offending in the presence of others.

Study 4

The sample was divided into solo, co and mixed style offenders using the total offending report for individual waves of data. The first objective of the study was to investigate variance of psychological development, psychopathy, peer delinquency and exposure to violence between the styles of offenders. The second objective was to explore whether there were patterns of variance for each variable for the eleven waves of data. A one-way between groups analysis of variance was conducted for all three categories to explore: Future orientation; socio-emotional adjustment; psychosocial development; resistance to peer influence; psychopathy; peer antisocial behaviour and influence; and exposure to violence. The present study focused on variance between style of offender rather than individual trajectories (Goldweber, Dmitrieva, Cauffman, Piquero, & Steinberg, 2011) and

investigates the outcome for each group for all waves of data rather than predicting membership across time.

Study 5

The aim of the study was to investigate the impact of social and psychological risk factors that had been identified in the previous studies on reported desistance from crime. The sample was divided into those who reported offending and those did not for the individual waves of data. Each wave of data was considered separately in order to investigate the impact of risks for a single period of time and to explore whether the risk factors changed as the sample aged. Direct binary logistic regression was performed from months 6 to 84 in order to investigate the relationship between risk psychological and social risk factors to reported desistance from offending. The sample was divided into two categories: those who reported an offence during the interview period and those who had no offending. The impact of gang membership status, peer delinquent behaviour and influence, resistance to peer influence, temperance, psychosocial maturity, the three psychopathic dimensions (grandiose manipulative; callous unemotional, and impulsive irresponsible), exposure to violence, and substance abuse on the likelihood of reporting desistance from offending were investigated. The inclusion of the category of prior gang member as a predictor refers back to Interactional Theory and enables further the investigation of the three models that explain the relationship between gang membership on offending.

Method

Participants

The Pathways to Desistance study (PTDS) was initiated between November 2000 and January 2003 with the aim of investigating the transition from adolescence to adulthood for young offenders who were drawn from courts in Maricopa County, Arizona or Philadelphia County, Pennsylvania (Mulvey, 2004; Mulvey & Schubert, 2012). Criteria for involvement in the study stipulated that participants should be between 14 and 17 years old at the time of their first offence, and that they must have been found guilty of a serious offence. The sample consisted of 46% who had been adjudicated for violent crimes, including murder, rape, robbery and assault; 27% had been adjudicated for property offences, including arson, burglary and dealing with stolen goods; 10% of the sample had charges for carrying or using weapons; 13% for drug related crimes; and 4% for crimes such as conspiracy or intimidating witnesses (Dmitrieva, Gibson, Steinberg, Piquero, & Fagan, 2014). The proportion of young men who were included in the study was capped at 15% for drug offences to avoid over-representation of this group (Schubert, Mulvey, Steinberg, Cauffman, Losoya, Hecker … Knight, 2004).

The original dataset consisted of 1,354 young people aged between 14 to 17 years (M = 16.5) who were on average 14.9 years of age at the time of their first petition. The study sample consisted of 86.4% male participants, with an ethnic breakdown of 41.4% African American youth; 33.5% Hispanic youth; 20.2% White youth; and 4.8% who identified as being from another ethnic group.

For the purposes of the present study all female participants were removed, leaving a dataset of 1170 males. A decision to remove female participants was made for two reasons. Firstly, because the present study

concentrated on group offending, including gang membership and a study using the same dataset demonstrated that females desist from gangs and offending earlier than their male counterparts (Pyrooz, Sweeten, & Piquero, 2012). Secondly, because studies have indicated that although women desist from gangs and offending for reasons similar to their male counterparts, pregnancy has been shown to be key desistance factor (Curry, Decker, & Pyrooz, 2014). This finding could not have been accounted for when considering the predictor variables for a model of desistance for the final study in the present thesis. Furthermore, An analysis of multisite data from the G.R.E.A.T programme found notable differences between genders in regard to self-concept and that predictor models for gang membership were a poor fit for females in their sample (Esbensen, & Deschenes, 1998).

The present thesis was concerned with the relationship between the individual and a delinquent group. For this reason, a new dataset containing only participants who indicated that they had offended in the presence of others, or who had been a member of a gang 6 months prior to the baseline interview were selected. This resulted in a final sample of 1047 male participants.

Sample demographics

The sample of 1,047 was male, with 50.4% (*n* = 528) interviewed in Phoenix Arizona and 49.6% (*n* = 519) in Philadelphia (Table 1). The largest ethnic/racialised group was 'Black' (40.7%, *n* = 426), followed by Hispanic (35%, *n* = 366), and White (20.1%, *n* = 20.1). The smallest group was classified as 'Other' (4.3%, *n* = 45). Of the sample 94.2% (*n* = 986) were born in the USA and 5.8% (*n* = 61) listed another country as their birthplace.

Table 1

Baseline Demographics For the Sample

Variable	N	%
Ethnicity		
African American	426	40.7
Hispanic	366	35.0
White	210	20.1
Other	45	4.3
Country of birth		
USA	986	94.2
Other	61	5.8
Location		
Phoenix Arizona	528	50.4
Philadelphia	519	49.6

As Table 2 shows the mean age of the sample at the baseline was 16.07 (*SD* = 1.16, range between 14 and 19 years) and 23.06 (*SD* = 1.17, range between 20 and 26 years) at the final interview of 84 months. Although the standard deviations were all between 1.14 and 1.17 years for each wave the age ranges were considerable in terms of stages of development from adolescence to adulthood.

Table 2
Truncated Age at the Time of the Interview

Wave	N	Mean	SD	Min	Max
Baseline	1047	16.07	1.16	14	19
6 months	981	16.59	1.15	14	20
12 months	976	17.08	1.17	15	20
18 months	952	17.55	1.14	15	21
24 months	952	18.05	1.16	16	21
30 months	955	18.52	1.16	16	22
36 months	950	19.04	1.16	17	22
48 months	935	20.06	1.16	18	23
60 months	925	21.05	1.16	18	24
72 months	905	22.06	1.17	20	25
84 months	868	23.06	1.17	20	26

At the time of the baseline interview just under half of the sample (45.8%, *n* = 480) were in the community (Table 3). The other participants were in a secure setting (15.7 %, *n* = 164); jail or prison (15.5%, *n* = 162); a residential treatment centre (12.7%, *n* = 133); detention (9.7% *n* = 102); or 'other' location (0.6%, *n* = 6).

Table 3
Interview Location Facility Type at Baseline

Facility type	Frequencies	Percentage
Community	480	45.8
Secure	164	15.7
Jail/Prison	162	15.5
Residential treatment centre (institutional setting)	133	12.7
Detention	102	9.7
Other	6	0.6

Procedure

The procedure for the study is described by Mulvey and Shubert (2012) and Schubert et al., (2004). Having identified suitable participants, researchers from the PTDS obtained consent forms. Participants were initially interviewed 75 days after adjudication in the juvenile justice system or 90 days following their hearing if processed in the adult justice system. Interviews then took place in the homes, public places such as libraries, or in the facilities where participants were held. Participants were paid for taking part in the interviews, unless this was prohibited by their location. Where possible, all participants were interviewed at the baseline and then subsequently at 6, 12, 18, 24, 30, 36, 48, 60, 72 and 84 month intervals. Trained interviewers read the questions aloud and participants entered their responses on a computer, or if this was not possible due to the interview location, then they answered orally. To ensure privacy interviews were undertaken away from other people. Participants were reassured that US Department of Justice laws protected their confidentiality. Where possible, official records and interviews with collateral reporters validated the self-reported information. Information that had the potential to breach confidentiality or might enable a participant to be identified was later removed from the databases.

Further information regarding the study can be found at: Mulvey, Edward P. Research on Pathways to Desistance [Maricopa County, AZ and Philadelphia County, PA]: Subject Measures, 2000-2010. ICPSR29961-v1. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], 2012-08-20.doi:10.3886/ICPSR29961.v1. For the purposes of the present study ethical clearance was obtained from the School Research Ethics Panel at the University of Huddersfield (Appendix A).

Measures

Self-reported offending

The *Self Reported Offending* measure was adapted from an existing measure (SRO; Huizinga, Esbensen, & Weihar, 1991) by PTD researchers to record antisocial and criminal behaviour. The SRO consists of a 24-item questionnaire for offending behaviour. Two items were masked for confidentiality by the original researchers: killed someone and forced someone to have sex. For the purposes of the present study two additional items of joyriding and broke into a car to steal were excluded from the total count of offences at the baseline and the 6 month interview, because of missing data. For the same reason both offence categories were discounted when selecting the sample for the present study, and in determining offending styles at 6 months. Participants were asked for number of offences one year before the baseline interview; any subsequent reporting was for the period between interviews.

A frequency score (total number of criminal acts) was equated for total offending, with and without drugs; income offending, with and without drugs; and aggressive offending. Income offending included the following offences: broke into a car to steal; bought or received stolen property; used a check/credit card illegally; shoplifted; stole a car or motorcycle; sold marijuana; sold other drugs; been paid for sex; took by force with a weapon and took by force without a weapon. Aggressive offending included the following categories: destroyed or damaged property; set fire to a building or vacant lot; shot someone and hit; shot at someone, no hit; beat someone causing serious injury; in a fight; beat someone up as part of a gang; carried a gun; took by force with a weapon; and took by force without a weapon. The drug free versions for income offending excluded: sold marijuana and sold other drugs; with the addition of drove while drunk or

high for the drug free total offend. It should be noted that two items overlap income and aggressive offending: took by force with and without a weapon. In the original study participants were asked if there was anyone with them the last time they committed each offence. For the purposes of the present study a new variable of offending style was created for each offence with the categories of: solo, co, and no offence reported. A further variable was then created for overall offending style of solo, co, mixed, or no offence reported for each wave of data for total offending with drugs; income offending with drugs, and aggressive offending. Although the original researchers checked official records to corroborate self-reported offending the frequencies depended on self-reporting. There is a further issue with the reported offending style: participants were asked if they were with someone else the last time they offended rather than on every occasion for that category of offence.

Substance use

The *Substance Abuse* measure was based on an existing measure (Chassin, Rogosch, & Barrera, 1991). It recorded the frequency of use of 10 different illegal drug categories 6 months before the baseline interview and then in the periods prior to each wave of data and provided a count of illegal items. Illegal substance included in the measure were: marijuana; sedatives (sleeping pills, barbiturates, valium, Librium etc.); stimulants (diet pills, benzadrine, methamphetamine); cocaine (including powder, crack, free base, coca leaves, paste); opiates (heroin, codeine, demoral, morphine, pecodan, methadone, darvon, opium, dilaudid, talwin); ecstasy; hallucinogens; inhalants (glue, cleaning fluids, petrol, toluene, paint); amyl nitrate, (odorizers, rush); and other substances to get high. Participants were asked for a frequency score for the number of many substances

were used during the period before the interview. It should be noted that there was no way for the original researchers to test the level of accuracy in the reporting of drug use. As the study progressed it would be difficult for the participants to accurately report the frequency of drugs that had been consumed.

Gang involvement

This measure includes a series of questions that assess gang involvement currently and in the past. The questions are taken mainly from Thornberry, Lizotte, Krohn, Farnworth, and Jang, (1994) and Elliott (1990). If gang involvement is endorsed, additional items explore the youth's subjective experience of the gang (i.e. youth's position in the gang, the importance of the gang to the youth) and the cohesiveness of the gang (i.e. presence of identifying colors, rules of socialization). This measure was self-reported and also relied on participants to define what constituted a gang. It is also possible that as the sample aged, they could have been less willing to identify as a current gang member. Gang names were also masked by the original researchers; it is therefore not possible to determine the extent to which the sample belonged to the same groups.

Exposure to violence

The *Exposure to Violence Inventory* was modified by the PTD researchers from an existing measure (ETV; Selner-O'Hagan, Kindlon, Buka, Raudenbush & Earls, 1998) to record types of violence the adolescent has both experienced as a victim (6 items) and observed/witnessed (7 items). The scales were available separately and as a combined score. Participants listed the number of counts that they had been exposed to possible violence (for example: “Have you ever been chased where you thought you might be seriously hurt?”); and the number of

times that they witnessed violence (for example: “Have you ever seen someone else being raped, an attempt made to rape someone or any other type of sexual attack?”). Higher scores indicate greater levels of exposure to violence. The ETV was found to have adequate internal consistency at the baseline time-point (alphas: Total = .67; Victim =.62; Witnessed = .78). A multidimensional two-factor CFA model where certain measurement errors were allowed to covary was fit to the Pathways baseline data. For this model, NFI and NNFI are .927 and .927 respectively; the value of CFI = .944 and RMSEA = .047 (6/8/04). These scales were also found to have adequate internal consistency at the follow-up time points (6 month alphas: Total = .75; Victim =.56; Witnessed = .71; 12 month alphas: Total = .74; Victim =.53; Witnessed = .78; 18 month alphas: Total = .75; Victim =.54; Witnessed = .72; 24 month alphas: Total = .75; Victim =.51; Witnessed = .73). Confirmatory factor analyses were also conducted for each of the subscales (victim and witnesses). For the witness subscale, the following values were obtained: NFI: .95; NNFI: .935; CFI: .957; RMSEA: .069. For the victimization subscale, a confirmatory factor analysis revealed that a standardized solution containing all the items for this subscale that allowed the measurement error between items expv10 ("have you ever been shot at") and expv12 ("have you ever been shot") to covary showed acceptable fit (NFI=0.964, NNFI=0.957, CFI=0.977, RMSEA=0.035).

Peer delinquency

Peer delinquency items were a subset of those used by the Rochester Youth Study (Thornberry, Lizotte, Krohn, Farnworth & Jang, 1994). The measure includes 2 scores: *peer-delinquency antisocial behaviour*, and *peer-delinquency antisocial influence*. Antisocial behaviour assessed the degree of

antisocial activity among the participants' peers with 12 items (for example: "How many of your friends have sold drugs?"). The antisocial influence scale measured the degree to which the participant's peers had tried to influence him to engage in delinquent behaviour (for example: "How many of your friends suggested that you should sell drugs?"). Items were scored on a Likert scale of 1 to 5: 1 = none of them; 2 = very few of them; 3 = some of them; 4 = most of them; 5 = all of them. For the mean scores to have been computed, study participants had to have responded to 9 out 12 items for the antisocial behaviour scale and 5 out of 7 items for antisocial influence. A one-factor CFA model was fit to the Pathways baseline data for each of these two subscales. In each case the fit of the model was acceptable. The following values were produced: Peer Delinquency-Antisocial behaviour (alpha: .92; NFI: .93; NNFI: .92; CFI: .94; RMSEA: .09). Peer Delinquency-Antisocial influence (alpha: .89; NFI: .95; NNFI: .93; CFI: .96; RMSEA: .07). There was also found to be adequate internal consistency at the follow-up time points. The alphas for these scales for 6 through 84 months are as follows: Peer Delinquency-Antisocial behaviour: Cronbach's alpha follow-up: 6-months: .89, 12- months: .89, 18- months: .89, 24-months: .91, 30-months: .90, 36-months: .88, 48-months: .88, 60-months: .89, 72-months: .88, 84-months: .87). Peer Delinquency-Antisocial influence (Cronbach's alpha follow-up: 6-months: .93, 12- months: .94, 18-months: .94, 24 –months: .94, 30-months: .93, 36-months: .93, 48-months: .94, 60-months: .94, 72-months: .94, 84-months: .93).

Future outlook

The *Future Outlook Inventory* is a 15-item measure that was developed for the PTDS by Cauffman and Woolard (1999), using items from the Life

Orientation Task (Scheier & Carver, 1985), the Zimbardo Time Perspective Scale (Zimbardo, 1980), and the Consideration of Future Consequences Scale (Strathman, Gleicher, Boniger, & Edwards, 1994). The Future Outlook Inventory asks participants to rank the degree to which each statement reflects how they usually are (for example: "I will keep working at difficult, boring tasks if I know they will help me get ahead later"). The measure uses a Likert scale of 1 to 4: 1 = never true; 2 = rarely true; 3 = often true; 5 = always true. Higher scores indicated a greater degree of future consideration and planning. Using the Pathways baseline sample, a one-factor CFA model was fit to the data, allowing measurement error for two items to correlate. The values from this analysis are as follows: alpha: .68; NFI: .96; NNFI: .96; CFI: .97; RMSEA: .03. This scale was also found to have good internal consistency at the follow-up time points (6 month alpha = .73; 12 month alpha = .70; 18 month alpha = .72; 24 month alpha = .69).

Psychosocial maturity

The *Psychosocial Maturity Inventory* (PSMI Form D; Greenberger, Josselson, Knerr & Knerr, 1974) contains 30 items to measure: self-reliance (for example: "Luck decides most things that happen to me"); identity (for example: I change the way I feel and act so often that I sometimes wonder who the real me is"); and work orientation (for example: "I hate to admit it but I give up when things go wrong"). Participants respond on a 4-point Likert scale: 1 = strongly agree; 2 = slightly agree; 3 = slightly disagree; 4 = strongly disagree. A higher score indicates more responsible behaviour. Confirmatory factor analyses indicate that the overall score has marginal fit to the baseline data. The following values were obtained for a single factor model for this scale: alpha = .89; NFI=0.823,

NNFI=0.856, CFI=0.866, and RMSEA=0.044. The three-factor model using the individual sub scores did not fit well and so the total score was used for the present study.

Resistance to peer influence

The *Resistance to Peer Influence* measure (PEI; Steinberg, 2000) was developed for the PTD study to assess the degree to which adolescents act autonomously when interacting with their peer group. Participants were presented with 10 sequences, each exploring a different dimension of potential influence: go along with friends, fitting in with friends, changing their mind, knowingly do something wrong, hiding true opinion, breaking the law, changing the way you usually act, taking risks, saying things don't really believe, going against the crowd. To create an overall resistance score, each dimension was assigned a score from 1 to 4 reflecting the particular combination of answers provided by the subject: 1 = It's true I'm influenced by my peers; 2 = It's sort of true I'm influenced by my peers; 3 = It's sort of true I prefer to be an individual; 4 = It's really true I prefer to be an individual. A one-factor CFA model was fit to the baseline data and proved to be acceptable. Alpha: .73; NFI: 92; NNFI: .92; CFI: .94; RMSEA: 04. There was also found to be adequate internal consistency at the follow-up time points (6 month alpha = .75; 12 month alpha = .77; 18 month alpha = .76; 24 month alpha = .78).

Socio-emotional development

The *Weinberger Adjustment Inventory* (WAI; Weinberger & Schwartz, 1990) is an assessment of an individual's social-emotional adjustment within the context of external constraints. There are 4 subscales: Impulse control (for

example: “I say the first thing that comes into my mind without thinking enough about it”); suppression of aggression (for example: “People who get me angry better watch out”); consideration of others (for example: “Doing things to help other people is more important to me than almost anything else”); and temperance, which combines the scores for impulse control and suppression of aggression. Participants were asked to rank their behaviour in the period between interviews matched a series of statements. Participants respond on a Likert scale of 1 to 5: 1 = False; 2 = Somewhat false; 3 = Not sure; 4 = Somewhat true; 5 = True. Higher scores indicate more positive behaviour (more impulse control, greater temperance and greater consideration for others). Higher scores indicate more positive behaviour. Confirmatory factor analysis produces the following values for the three subscales: Consideration of others alpha: .73; NFI: .98; NNFI: .98; CFI: .99; RMSEA: .04. The temperance dimension was fit using a second-order CFA model, where temperance was the second-order factor and impulse control and suppression of aggression were the first-order factors. The model showed acceptable fit (alpha at baseline: .843; NFI .91; NNFI: .91; CFI: .93; RMSEA: .06) even though the CFI is a bit short of the recommended .95 cut-off. The four subscales were also found to have good internal consistency at the follow-up time points. The alphas for the four subscales for 6 through 24 month are as follows: Consideration of others: 6 month - .76; 12 month - .72; 18 month - .77; 24 month - .73. Temperance dimension: 6 month - .85; 12 month - .85; 18 month - .86; 24 month - .86.

Psychopathy

The *Psychopathy Checklist Youth Version* (PCL-YV; Forth, Kosson & Hare, 2003) assesses psychopathic characteristics among youth. The PTDS was

unable to accommodate an interview of the recommended 60 to 90 minutes. Instead, researchers incorporated all questions from the PCL-YV interview guide were into the baseline interview, from which a report was generated. Further scoring was obtained from court records and the parent collateral interview. The following domains were assessed: Impression management; grandiose sense of self worth; stimulation seeking; pathological lying; manipulation for personal gain; ; lack of remorse/guilt; shallow affect; callous/lack of empathy; parasitic orientation; poor anger control; interpersonal sexual behaviour; early problem behaviour; lacks goals; impulsivity; irresponsibility; failure to accept responsibility; unstable interpersonal relationships; serious criminal behaviour; serious violation of conditional release; and criminal versatility. The inter-rater reliabilities for the separate ratings are not all acceptable. Only the factor scores and total scores were reliable. These scores were found to have good internal consistency (alpha: Total Score = .87; Factor 1-Interpersonal/Affective = .76; Factor 2-Socially Deviant Lifestyle = .78). Intraclass Correlation Coefficients (ICC) for the factor scores and the total score were acceptable as well: ICC Total Score = .92; ICC Factor 1= .79; ICC Factor 2 = .93. Inter-rater reliability was found to be low for this measure and the PCL-YV was only used at the baseline interview.

The *Youth Psychopathic Traits Inventory* (YPI; Andershed, Kerr, Stattin & Levander, 2002) is a self-report measure that assesses psychopathy among youth. The YPI was used for the interviews at months 6 to 84. Items from the measure make up the following three dimensions with a total of ten subscales: grandiose manipulative dimension (dishonest charm, grandiosity, lying, and manipulation); callous unemotional dimension (remorselessness, unemotionality and callousness); and impulsive irresponsible dimension (thrill seeking, impulsiveness, and irresponsibility). The scale contains 50 items to which participants respond on a 4-point Likert scale: 1 = Does not apply at all; 2 = Does

not apply well; 3 = Applies fairly well; 4 = Applies very well. Higher scores indicated more psychopathic characteristics. The ten subscales and four summary scores generally were found to have adequate internal consistency in the 6- to 84-month data. Cronbach's alphas: Grandiose-Manipulative Dimension. 6-months: .91, 12- months: .91, 18-months: .92, 24 –months: .92, 30-months: .91, 36-months: .91, 48-months: .91, 60-months: .92, 72-months: .91, 84-months: .92. Callous-Unemotional Dimension. 6-months: .74, 12- months: .73, 18-months: .76, 24 –months: .77, 30-months: .77, 36-months: .76, 48-months: .77, 60-months: .79, 72-months: .79, 84-months: .78. Impulsive-Irresponsible Dimension. 6-months: .82, 12- months: .83, 18-months: .85, 24 –months: .85, 30-months: .85, 36-months: .84, 48-months: .85, 60-months: .86, 72-months: .86, 84-months: .87. YPI Total score. 6-months: .93, 12- months: .93, 18-months: .94, 24 –months: .94, 30-months: .94, 36-months: . 94, 48-months: . 94, 60-months: . 94, 72-months: . 94, 84-months: . 94. A three factor CFA model: chi-square = 279.025 (32), *p* less than .05; SRMR = .0458; CFI = .950; TLI = .930; CAIC = 461.426; RMSEA (CI) = .087 (.078-.096).

STUDY 1

AN ANALYSIS OF OFFENDING FREQUENCIES OF CURRENT, PRIOR, AND NEVER GANG MEMBERS

Introduction and Aims of Study

Youth gangs and offending

Research on youth offending styles has demonstrated that most young people who are involved in criminal behaviour are accompanied by others (Goldweber, Dmitrieva, Cauffman, Piquero, & Steinberg, 2011; Piquero, Brame, Mazerole & Haapanen, 2002). However, studies on youth who are gang affiliated have consistently reported an increase in criminal and delinquent behaviours by members (Curry, Decker, & Pyrooz, 2014). Research that compared the behaviours of gang members and youth offenders who associate with delinquent peers has concluded that membership contributed to increased criminal involvement (Battin, Hill, Abbott, Catalano, & Hawkins, 1998). A meta-analysis of empirical research on the relationship between current gang involvement and offending behaviour found a strong relationship between the two (Pyrooz, Turanovic, Decker, & Wu, 2016). However, prior research has noted that gang involvement and contact is not always straightforward, and that even non-gang affiliated youth can report contact with a gang (Curry, Decker, & Egley, 2002).

Three frameworks have been proposed to explain the relationship between gang membership and offending (Thornberry, Krohn, Lizotte, & Chard-Wierschem, 1993). The facilitation model draws on life course, social learning, and opportunity theories to posit that gang membership offers wider offending networks, greater opportunities, and the normalisation of delinquent behaviour as part of a group (Hall, Thornberry, & Lizotte, 2006; Thornberry, Krohn, Lizotte, Smith, & Tobin, 2003). Out of three models this has been the most influential in terms of policy writing and gang interventions (Howell, 2010; Spergel, Wa, & Sosa, 2014), and would present the easiest route to offending desistance for gang-

involved youth. Until recently, few studies had found unequivocal support for this model. Data from the Rochester Youth Project found the strongest support for the facilitation model in relation to violent crimes, general delinquency and drug use (Thornberry, et al., 1993). However, researchers found differences between transient and stable members; those who were stable continued to present delinquent behaviour when not associated with the gang, but at reduced levels. A meta-analysis of research on the relationship between gang membership and offending found the most support for the facilitation model (Pyrooz et al., 2016). The authors of this particular study stressed the limitations of their methods and the importance of individual studies in determining a model to explain the relationship between gang membership and offending.

In contrast the selection model hypothesises that delinquent youth are drawn to a gang and that membership has no causal impact on their behaviour. A key criticism of this framework is that it does not take account of the enhanced opportunities or skills within the group, or the influence of a shared common goal and the associated benefits (Klein & Maxson, 2006). A study on a sample of self-identified gang members from the PTDS indicated that there were few significant differences in the offending frequencies of gang members and leavers (Ashton, Ioannou, & Hammond, 2018). Researchers found that in some cases those who left the gang committed significantly more offences than those who remained; however, the study did not include the category of prior gang members. Very few studies that have traced the trajectories of individuals have found unequivocal support for the selection model. Researchers have concluded that although delinquent behaviour continued beyond gang membership, it increased when an individual had contact with the group (Bendixen, Endresen, & Olweus, 2006). Difficulties in accessing accurate pre-gang data has impeded research that seeks to

investigate the selection model (Gibson, Miller, Jennings, Swatt, & Gover, 2009), and may therefore impact on the level of support that it has received in the literature.

The third model is positioned between the other two, in suggesting that already delinquent youth are drawn to gangs and that membership offers increased opportunities and shared values that ultimately lead to higher levels of involvement in crime and delinquency. Although, as mentioned, the facilitation model has the most influence on gang interventions, it is the enhancement model that has received the most empirical support. Longitudinal studies of youth gangs in the US (Battin et al., 1998; Esbensen & Huizinga, 1993; Gordon, Lahey, & Kawai, 2004) have supported the enhancement model with their findings (Krohn & Thornberry, 2014; Melde & Esbensen, 2012). Research using data from the Pittsburgh Youth Study revealed that youth who had a history of delinquency were more likely to join a gang and, after doing so, their involvement in drug selling, drug using, violent behaviour and vandalism temporarily increased for the duration of their membership (Gordon et al., 2004). A study investigating the relationship between drug selling, use and violent offending concluded that gang members were involved in a wider variety of delinquent behaviour when compared to non-gang youth (Esbensen, Peterson, Freng, & Taylor, 2002). Thus, the authors found support for the enhancement model of gang membership and offending. Esbensen and Huizinga (1993) found further support for pre-gang delinquency for individuals who demonstrated higher levels of antisocial behaviour than non-gang members before joining. However, they also found that when the offending rates of transient members were compared to those of non-gang members, they were not found to be significantly different. The researchers concluded that it is not an individual's characteristics alone that lead to increased

offending. Perhaps because of the dominance of sociological approaches (Wood & Alleyne, 2010), and the strong support for the enhancement and facilitation models, many studies start from the premise that the gang is the dominant and controlling factor in the lives of its members. This approach gives little attention to individual agency or difference (Alleyne & Wood, 2012); nor does it recognise the heterogenous nature of gangs (Klein & Maxson, 2006; Pyrooz, Sweeten, & Piquero, 2013).

It is also noteworthy that within the general youth offending literature, researchers have found that co-offenders either naturally desist or begin to offend alone (Reiss & Farrington, 1991; Zimring, 1981). It is unclear whether this is also the case for gang members. Researchers have established that gangs are not homogenous groups, and the characteristics of a gang, such as level of organisation can impact on the extent to which the group influences the individual (Bjerregaard, 2002; Bouchard & Spindler, 2010). The degree to which an individual is embedded within a gang has also been found to relate to the amount of time they remain with the group (Pyrooz, Sweeten, & Piquero, 2013). The question remains, therefore, of whether the offending frequencies and patterns of gang members also decrease over time.

Categories of Crime and Gang Membership

Gang structures and features vary considerably (Klein & Maxson, 2006; Pyrooz, Sweeten, & Piquero, 2013). The wearing of identifiable clothing or "colours" and the use of group-specific signs have been used in some gang definitions, for example the US National Institute of Justice Federal Definition and the US National Gang Center (Curry et al., 2014; Klein & Maxson, 2006). However, not all definitions, including the Eurogang Project include these

features (Matsuda, Esbensen, & Carson, 2012). Some researchers have found that gang members often have the same recreational and illegal activities as non-gang youth, but that the offending rates of gang members are much higher (Fagan, 1989; Huff, 1996). The Denver Youth Study data showed a significant difference between gang and non-gang offending youth in only one of eighteen offence variables (Esbensen, Huizinga, & Weiher, 1993).

As with other criminal youth, age and offending style may relate to the types of crimes that gang members are involved with, and the degree to which group membership impacts on an individual's offending. Gangs have been associated with three categories of crime, which are often interconnected: acquisitive, violent, and general delinquent behaviour (Curry et al., 2014). Not all offence categories show the same relationship.

The relationship between drugs, gang membership and violence is multifarious (Bjerregaard, 2010; Zhang, Welte, & Wieczorek, 1999). Violent offences can be a way of obtaining money, protecting oneself or showing status, rather than being violent for the sake of it (Decker & Van Winkle, 1996). For gang members, violence can also be associated with the control of areas, better known as 'turf wars' (Rosenfeld, Bray, & Egley, 1999). The relationship between these variables also changes with age; researchers found that drug dealing and peer gun use predicted an individual carrying an illegal weapon over gang membership post adolescence, whereas youth who were gang affiliated were more likely to carry a gun (Lizotte, Krohn, Howell, Tobin, & Howard, 2000). A study using data from multi-site general school populations reported an increase in violent incidents among gang members, which decreased to a rate similar to non-gang affiliated youth when they left the gang (Melde & Esbensen, 2013). However, it should be noted that this sample included non delinquent members; a

more useful comparison would be between gang and non-gang affiliated youth who offend (Ashton et al., 2018). Researchers using the Pittsburgh Youth Study data, found that members of the sample who were gang involved reported higher rates of drug selling and theft, and also violent crimes (Gordon, Rowe, Pardini, Loeber, White, & Farrington, 2014); indicating the presence of both acquisitive and violent offending. However, aggressive offending patterns are not necessarily the only predictors for extreme violence. Researchers who considered the types of crimes prior to a homicide arrest for gang and non-gang members found that although both groups were involved in drug related and violent crimes, current gang members were more likely to have a record for drug offences and non-gang members for violent and aggressive crimes (Adams and Pizarro, 2014). Researchers found the level or organisation within a gang had a positive relationship to both drug selling and violence, and that even lower levels of organisation influenced these two activities for both current and prior gang members (Decker, Katz, & Webb, 2008). It should be noted that there are conflicting findings on the use of firearms and weapons by gang members. One study found that as gang members aged, they were less likely to carry a firearm (Tigri, Reid, Turner, & Devinney, 2016). However, Watkins and Moule (2014) found that adult gang members reported owning more weopons than juveniles, and were thus more likely to commit a violent act.

When research has been undertaken on non-drug related acquisitive crimes, some studies have found increased offences against property among gang members (Gordon et al., 2004; Klein & Maxson, 2006; Tita & Ridgeway 2007). Other studies have found that this was not the case for their sample (Bjerk, 2009). This has led some researchers to suggest that it is violence specifically that distinguishes gangs from other youth groups who are involved in delinquent

behaviour (Peterson, Taylor, & Esbensen, 2004). A number of studies have found that violent delinquency increased during gang membership (Bendixen, Endresen, & Olweus, 2006; Bjerk, 2009; Lacourse, Nagin, Tremblay, Vitaro, & Claes, 2003; Tita & Ridgeway, 2007). This disparity includes homicide (Bjerregaard & Lizotte, 1995; Melde & Esbensen, 2011), and carrying a gun (Bjerregaard, 2010).

Research findings and reports generally conclude that drugs are a strong part of gang culture and that a high percentage of drug sales can be linked to gangs (Esbensen, Guyot, Westad, & Houmoller, 2002; Howell, Egley, Tita, & Griffiths, 2011). However, youth gang-related drug activities are often local and on a small scale (Esbensen et al., 2002; Klein, 1995). The sale and use of drugs, like any other aspect of gang offending, are not consistent. A study of youth gang members showed that drug sale profits were retained by individuals (Decker & Van Winkle, 1996). In contrast, other research has noted that some youth gangs exist primarily for the sale of drugs (Fagan, 1989). The degree to which an individual continues to sell drugs after they have left the gang can depend on several practical factors such as access to supply and loss, or increase, of relevant networks (Battin-Pearson, Thornberry, Hawkins, & Krohn, 1998). Some studies have indicated that drug selling for their sample remained consistently high even when an individual had exited the gang (Barnes, Beaver & Miller, 2010; Bjerregaard & Lizotte, 1995; Bolden, 2012; Carson, Peterson, & Esbensen, 2013; Gatti, Tremblay, Vitaro, & McDuff, 2005). This may be explained by the findings that embedded gang members often offend alone (Goldweber et al., 2011), and so leaving a gang may not impact directly on their lone criminal activities.

The use of drugs by gang members has received comparatively less attention than involvement in drug selling. Researchers who compared the presence of illegal substances following drug testing in a sample of arrestees from

eleven US cities found that although there were clusters within both gang and non-gang members who used drugs, there were differences between the types of drugs that were used by the two groups (Decker, 2000). The study found that gang members were more likely to test positive for marijuana and that non-gang members were more likely to test positive for cocaine. The authors also found that the relationship between drug dealing and selling for both gang and non-gang participants in the study differed when age was controlled for. The study revealed that juveniles who sold drugs were more likely to test positive for substance use than those who did not; this finding was irrespective of gang status. However, adults who sold drugs were less likely to take them. Qualitative findings from the same study indicated that gang members distinguished marijuana, which, along with alcohol they felt was acceptable, and harder drugs that were not permitted in the gang (Decker, 2000). Research has also found a number of confounding variables in the relationship between drug use and gang membership. A study that included participants' rapport with their parents found that behaviour control and parental warmth impacted upon the relationship between gang membership, substance use and delinquency (Walker-Barnes & Mason, 2004). Researchers also concluded that gang membership only influenced the use of individuals who had previously not abused substances rather than those who were already drug users (Zhang & Messner, 2000). Overall, the authors of this study found support for the facilitation model of gang membership, with little impact of gang membership on those who had a history of drug use and wider delinquency.

Aims of Study

The core aim of the present study was to investigate the relationship between gang status and offending frequencies by comparing the offending

categories of three groups: those who were currently in a gang, those who had previously been gang members, and those who had never been gang affiliated. Two additional objectives were also explored: First, whether there were significant differences between the three groups for income and aggressive offending. Second, the relationship of gang membership to drug selling and drug use. The demographics of gang members were also considered in order to determine whether membership was homogenous or heterogenous.

Method

Measures

Offending was measured using a *Self Reported Offending* (SRO) measure (Huizinga, Esbensen, & Weihar, 1991), which was adapted for the PTDS to record antisocial and criminal behaviour; two additional items were added after the initial baseline interview: "joyriding" and "broke into a car to steal". The SRO consists of 24-item questionnaire for offending behaviour. Two items were masked for confidentiality: "killed someone" and "forced someone to have sex".

Gang membership was investigated using the *gang involvement measure*, (Thornberry, Lizotte, Krohn, Farnworth, & Jang, 1994). For the purposes of the present study a variable for gang involvement during the recall period was created.

The illegal substance use measure was based on an existing *substance abuse measure* (Chassin, Rogosch, & Barrera, 1991). It recorded the frequency of use of 10 different drug categories 6 months before the baseline interview and then in the periods prior to each wave of data and provided a count of illegal items. For further details of all measures see the method section.

Study Design

A frequency score (total number of criminal acts) was obtained for total offending; this included the following offences: broke into a car to steal; bought or received stolen property; used a check/credit card illegally; shoplifted; stole a car or motorcycle; sold marijuana; sold other drugs; been paid for sex; took by force with a weapon and took by force without a weapon; shot someone and hit; shot at someone, no hit; beat someone causing serious injury; in a fight; beat someone up as part of a gang; carried a gun; destroyed or damaged property; set fire to a building or vacant lot. With the additional offences of joyriding and broke into a car to steal added for 12 to 84 months. In the original study participants were asked "was anyone with you the last time [offence]". Total offending without drugs excluded drug selling and also drove drunk or high.

Three separate categories of offending were also investigated. Income offending with drugs included the following offences: broke into a car to steal; bought or received stolen property; used a check/credit card illegally; shoplifted; stole a car or motorcycle; sold marijuana; sold other drugs; been paid for sex; took by force with a weapon and took by force without a weapon. Income offending without drugs excluded the two items of selling. Aggressive offending included the following offences: destroyed or damaged property; set fire to a building or vacant lot; shot someone and hit; shot at someone, no hit; beat someone causing serious injury; in a fight; beat someone up as part of a gang; carried a gun; took by force with a weapon; and took by force without a weapon. Substance use was also investigated. A previous study using the PTDS dataset found that self-reported offending was correlated to the official records (Brame, Fagan, Piquero, Schubert, Steinberg, 2004). Further details of all measures are given in the method section.

Data Analysis

Gang membership for each wave of data collection was investigated and a new variable was created with three levels: current gang member, never belonged to a gang and prior gang member. Changes to status were checked for each wave of data and where appropriate amended. The data was abnormally distributed, and it was decided to retain outliers in the analysis because they are typical of this type of data and in order to maintain the integrity of the study (Bakker & Wicherts, 2014). The number of individual offence counts were too low to investigate each offence in isolation.

A one-way between groups analysis of variance was conducted for all three categories to explore the relationship between gang membership status for each wave of data on offending frequencies. Based on Levene's test, where equal variance was assumed the Tukey HSD post-hoc comparison was selected; where equal variance was not assumed Welch's F was reported, and the Games-Howell test was selected for post-hoc comparisons, in recognition of unequal sample sizes and variance. ANOVA was selected for the analysis because it is a robust test for abnormally distributed data (Blanca, Alarcó, Arnau, Bono, & Bendayan, 2017).

Results

Gang Demographics

Table 1.1 demonstrates a decrease from 15.4% to 7.2% for gang affiliated members for the sample.

Table 1.1

Gang Involvement During Recall Period

Wave	Gang N	Gang %	Non-gang N	Non-gang %
Baseline	161	15.4	882	84.2
6 months	149	15.2	830	84.8
12 months	132	13.5	843	86.5
18 months	114	12.0	837	88.0
24 months	110	11.6	839	88.4
30 months	104	10.9	847	89.1
36 months	95	10.0	852	90.0
48 months	88	9.4	845	80.7
60 months	76	8.2	846	91.8
72 months	71	7.9	832	92.1
84 months	62	7.2	804	92.8

Table 1.2 shows the gang features for the subsample who identified as gang members at the baseline, and for any new gangs that participants from the entire sample subsequently joined. At the baseline 72.7% (n = 117) reported that their gang had colours, the remaining 27.3% (n = 44) did not. This pattern was consistent for subsequent waves of data, although at 84 months there was less of a majority with 57.1% (n = 8) of the gang affiliated participants reporting the presence of colours, and 42.9% (n = 6) not so. The presence of rules within the gang was more divided. At the baseline 51.6% (n = 83) of gang members reported rules within their group compared to 48.4% (n = 78) who did not. This pattern continued for subsequent waves, except for 18 months when the majority (61.1%, n = 11) reported no rules compared to the 38.9% (n = 7) who did not. As time

progressed the number of new gangs that participants joined that had rules increased. At 48 months 85.7% (*n* = 12) of new members reported the existence of rules compared to 14.3% (*n* = 2) who did not. At 84 months 78.6% (*n* = 11) of members reported rules compared to 21.4% (*n* = 3). A similar pattern emerged for rule breaking and the administration of punishments. At the baseline 52.2% (*n* = 84) of the sample reported that they would be punished compared to 47.8% (*n* = 77) who would not. For those who joined a gang after 30 months this increased with the highest percentages for punishments being reported at 72 months (91.7%, *n* = 11) compared to 8.3% (*n* = 1).

Gang members were also asked if their group shared money and drugs (Table 1.2). At the baseline 73.9% (*n* = 119) of the sample said that their gang shared money compared to 26.1% (*n* = 42) who did not. This pattern fluctuated but continued with the majority of those who joined a new gang during the interview period sharing money amongst members. A similar pattern was also found for the sharing of drugs. At the baseline 82% (*n* = 132) compared to 18% (*n* = 29) reported sharing drugs amongst the group. The highest percentages for drug selling were reported at 6 months with 87.8% (*n* = 36) of the sample compared to 12.2% (*n* = 5), and the lowest was found at 30 months when 57.1% (*n* = 8) of new gang members reported sharing drugs compared to 42.9% (*n* = 6).

Table 1.2

Gang Features at the Baseline and Subsequent New Gangs

Feature of gang	BL* N	%	6m N	%	12m N	%	18m N	%	24m N	%	30m N	%	36m N	%	48m N	%	60m N	%	72m N	%	84m N	%
Colors?																						
Yes	117	72.7	31	73.8	23	76.7	11	61.1	14	63.6	10	71.4	7	87.5	12	85.6	10	83.3	8	66.7	8	57.1
No	44	27.3	11	26.2	7	23.3	7	38.9	8	36.4	4	28.6	1	12.5	2	14.3	2	16.7	4	33.3	6	42.9
Rules?																						
Yes	83	51.6	22	52.4	15	50	7	38.9	12	54.5	9	64.3	6	75.0	12	85.7	9	75.0	7	58.3	11	78.6
No	78	48.4	20	47.6	15	50	11	61.1	10	45.5	5	35.7	2	25.0	2	14.3	3	25.0	5	41.7	3	21.4
Share money?																						
Yes	119	73.9	22	52.4	17	56.7	14	77.8	15	68.2	8	57.1	6	75.0	12	85.7	7	58.3	9	75.0	9	64.3
No	42	26.1	20	47.6	13	43.3	4	22.2	7	31.8	6	42.9	2	25.0	2	14.3	5	41.7	3	25.0	5	35.7
Share drugs?																						
Yes	132	82.0	36	87.8	22	73.3	15	83.3	18	18.2	8	57.1	6	75.0	11	78.6	10	83.3	10	83.3	10	71.4
No	29	18.0	5	12.2	8	26.7	3	16.7	4	81.8	6	42.9	2	25.0	3	21.4	2	16.7	2	16.7	4	28.6
Punish for rule breaking?																						
Yes	84	52.2	22	53.7	16	46.7	7	38.9	13	59.1	10	71.4	7	87.5	11	78.6	10	83.3	11	91.7	12	85.7
No	77	47.8	19	46.3	14	53.3	11	61.1	9	40.9	4	28.6	1	12.5	3	21.4	2	16.7	1	8.3	2	14.3

*6 months prior to the baseline interview. Valid percentages for those who responded are given

Table 1.3 shows the self-reported position in the gang for anyone who identified as a gang member for each of the waves of data. At the baseline interview 67.1% (*n* = 108) of the sample reported that they were just members of the gang, and this continued to be the largest group for subsequent waves of data. The largest percentage of members was found at 12 months when 79.5% (*n* = 112) identified themselves simply as members rather than part of the hierarchy. The next largest percentages were found for those who reported that they were not the leader, but one of the top people in their gang. At the baseline 24.8% (*n* = 40) identified themselves as such. The highest percentage score for this category was found at 84 months with 28.8% (*n* = 16, out of a total of 62) respondents identifying themselves towards the top of the gang hierarchy, but not leader. At the baseline interview 4.3% (*n* = 7) of gang members classified themselves as a leader. The highest percentage of leaders was found at 72 months when 8.5% (*n* = 6, out of total of 71) identified themselves as such. By 84 months, however, none of the remaining gang members reported that they were leaders. It is possible that those who were embedded in a gang became more cautious or suspicious of the authorities and, by association, the researchers as the study progressed. Leaders may not have wanted to identify themselves for this reason.

Table 1.3

Position Within the Gang

Variable	BL* N	%	6m N	%	12m N	%	18m N	%	24m N	%	30m N	%	36m N	%	48m N	%	60m N	%	72m N	%	84m N	%
Position																						
Lead	7	4.3	7	4.8	5	3.8	6	5.3	9	8.3	3	3.0	3	3.2	4	4.7	3	3.9	6	8.5	0	0
Top	40	24.8	26	17.7	21	15.9	16	14.2	15	13.9	19	18.8	20	21.1	17	19.8	13	17.1	11	15.5	16	25.8
Member	108	67.1	112	76.2	105	79.5	88	77.2	83	76.9	79	78.2	68	71.6	61	70.9	57	75.0	51	71.8	44	71.0
Something else (other)	6	3.7	2	1.4	1	0.8	3	2.6	1	0.9	0	0	4	4.2	4	4.7	3	3.9	3	4.2	2	3.2

*6 months prior to the baseline interview
Valid percentages for those who responded are given

Current gang members were also asked how many friends were not in their gang (Table 1.4). At the baseline 56.5% (*n* = 91) reported that 'a few' were not members, and this remained the consistently highest percentage for subsequent waves of data; decreasing to 38.7% (*n* = 24) at 84 months. The responses were consistently mixed for the baseline and subsequent waves of data, with similar percentages of the sample reporting that 'all of their friends' were members and 'half were members'. The percentage of the sample who reported that 'most of their friends' were not members of the gang increased from 8.1% (*n* = 13) at the baseline to a maximum of 16.01% (*n* = 12 out of 75) at 60 months. However, at 72 months this decreased to 5.6% (*n* = 4 out of a total of 71). Those who reported that 'none of their friends'' were members of the gang was low up to 36 months (7.4%, *n* = 7), but subsequently rose to the highest percentage of 15.5% (*n* = 11) at 72 months.

Table 1.4 also shows how gang members rated the importance of the gang and their frequency of contact with the group. When asked how important the gang was to them at the baseline, 26.1% (*n* = 42) of the sample reported that their gang was 'quite a bit' followed by 23% (*n* = 37) who said that it was 'extremely' important. The other half of the sample responded that the gang was 'not at all' [important] (17.4%, *n* = 28), 'a little bit' (18.6%, *n* = 30), and 'moderately' (14.9%, *n* = 24). This pattern changed from 6 months when equal percentages of participants (24.2%, *n* = 36) reported that the gang was either 'a little bit' [important] or 'quite a bit', and 22.8% (*n* = 34) stated that the gang was 'not at all' important. From 48 the highest percentage of members reported that the gang was 'not at all' important with a range of 32.4% (*n* = 23) at 72 months and 37.1% (*n* = 23) at 84 months. Frequency of contact with the gang was polarised for every wave of data with the highest percentage of members having daily contact with

the group. At the baseline this was 68.9% (*n* = 111), but from 6 months the percentage decreased substantially with 33.1% (*n* = 49) of the sample having daily contact. At 84 months this figure was 38.7% (*n* = 24). The only exception to daily contact being the most popular frequency was at 60 months, when 'less than monthly' contact had the highest percentage (32.9, *n* = 25); the percentage for 'daily contact' during this wave was 31.6% (*n* = 24). For all other waves of the study 'less than monthly' was the second highest percentage. This ranged from 12.4% (*n* = 20) at the baseline to 35.5% (*n* = 22) at 84 months.

Table 1.4

Importance, Friends, and Frequency of Contact with the Gang

Variable	BL* N	%	6m N	%	12m N	%	18m N	%	24m N	%	30m N	%	36m N	%	48m N	%	60m N	%	72m N	%	84m N	%
Importance																						
Not at all	28	17.4	34	22.8	30	22.7	27	23.7	20	18.3	25	24.0	20	21.1	29	33.3	27	35.5	23	32.4	23	37.1
A little bit	30	18.6	36	24.2	41	31.1	27	23.7	25	22.9	24	23.1	24	25.3	14	16.1	14	18.4	16	22.5	14	22.6
Moderately	24	14.9	19	12.8	20	15.2	23	20.2	22	20.2	19	18.3	16	16.8	19	21.8	10	13.2	12	16.9	11	17.7
Quite a bit	42	26.1	36	24.2	26	19.7	20	17.5	23	21.1	22	21.2	24	25.3	16	18.4	19	25.0	11	15.5	9	14.5
Extremely	37	23.0	24	16.1	15	11.4	17	14.9	19	17.4	14	13.5	11	11.6	9	10.3	6	7.9	9	12.7	5	8.1
Non gang friends																						
None	25	15.5	34	22.8	21	16.0	17	14.9	17	15.7	20	19.2	20	21.3	9	10.3	8	10.7	12	16.9	11	17.7
A few are not	91	56.5	72	48.3	67	51.1	60	52.6	54	50.0	44	42.3	38	40.4	37	42.5	31	41.3	31	43.7	24	38.7
Half are not	24	14.9	23	15.4	19	14.5	20	17.5	20	18.5	26	25.0	17	18.1	19	21.8	14	18.7	13	18.3	11	17.7
Most are not	13	8.1	15	10.1	19	14.5	12	10.5	14	13.0	10	9.6	12	12.8	11	12.6	12	16.01	4	5.6	9	14.5
All	8	5.0	5	3.4	5	3.8	5	4.4	3	2.8	4	3.8	7	7.4	11	12.6	10	13.3	11	15.5	7	11.3
Contact																						
Daily	111	68.9	49	33.1	56	42.4	44	38.9	32	30.5	35	35.0	34	36.6	28	33.3	24	31.6	23	32.9	24	38.7
3-6 times per week	14	8.7	17	11.5	5	3.8	10	8.8	8	7.6	6	6.0	7	7.5	9	10.7	4	5.3	7	10.0	3	4.8
Twice per week	8	5.0	9	6.1	8	6.1	5	4.4	12	11.4	5	5.0	5	5.4	5	6.0	6	7.9	7	10.0	2	3.2
Once per week	2	1.2	13	8.8	17	12.9	9	8.0	8	7.6	15	15.0	7	7.5	5	6.0	3	3.9	9	12.9	2	3.2
Week to monthly	5	3.1	5	3.4	6	4.5	6	5.3	5	4.8	5	5.0	2	2.2	4	4.8	3	3.9	1	1.4	4	6.5
Once per month	1	0.6	12	8.1	9	6.8	13	11.5	11	10.5	12	12.0	11	11.8	8	9.5	11	14.5	7	10.0	5	8.1
Less than monthly	20	12.4	43	29.1	31	23.5	23	23.0	29	27.6	22	22.0	27	29.0	25	29.8	25	32.9	16	22.9	22	35.5

*6 months prior to the baseline interview. Valid percentages for those who responded are given

Inferential Statistics

Total offending (including drugs)

Table 1.5

Mean Scores For Total Offending Frequency With Drugs

Wave and Status	Age Range	N	M	SD
Baseline	14-19			
Gang never		760	155.38	368.42
Gang current		161	277.88	478.41
Gang prior		120	184.81	449.24
6 months	14-20			
Gang never		695	24.83	120.98
Gang current		135	88.54	331.47
Gang prior		979	35.49	116.47
12 months	15-20			
Gang never		680	37.68	174.62
Gang current		132	46.29	103.12
Gang prior		163	47.91	212.33
18 months	15-21			
Gang never		652	46.77	210.48
Gang current		114	81.08	243.72
Gang prior		185	67.15	269.10
24 months	16-21			
Gang never		641	65.37	311.17
Gang current		110	81.19	197.61
Gang prior		198	66.95	273.01
30 months	16-22			
Gang never		642	52.41	263.06
Gang current		104	86.30	256.23
Gang prior		205	46.55	195.32
36 months	17-22			
Gang never		636	62.23	289.92
Gang current		95	142.66	407.64
Gang prior		215	42.73	230.71
48 months	18-23			
Gang never		609	68.34	239.09
Gang current		88	136.44	278.70
Gang prior		234	69.00	252.25
60 months	18-24			
Gang never		600	68.33	235.70
Gang current		76	135.80	298.95
Gang prior		242	65.84	215.86
72 months	20-25			
Gang never		581	58.61	225.40
Gang current		70	198.36	462.67
Gang prior		243	66.54	158.94
84 months	20-26			
Gang never		557	48.02	174.12
Gang current		62	123.00	302.76
Gang prior		241	48.11	155.68

Current gang members had higher mean scores for all waves with the exception of month 12, when prior members had a higher mean score (Table 1.5). Those who had never been in a gang had the lowest mean score except for months 30, 36 and 60, when prior gang members were the group with the lowest mean score.

A one way between groups analysis of variance was conducted to explore the relationship between gang membership and frequency for total offending including drugs. Participants were divided into three groups: never in a gang, currently in a gang and previously in a gang.

Table 1.6
Summary of ANOVA For Total Offending Frequency With Drugs

	Sum of Squares	df	Mean Square	F	*p*	Eta Sq.
Baseline						
Between groups	2000427.11	2	1000213.55	4.74a	.01*	.12**
Within groups	163654745.00	220.32	157663.53			
Total	165655172.00	222.32				
72 months						
Between groups	1228968.12	2	614484.06	3.14a	.05*	.02*
Within groups	50351780.70	170.11	56511.54			
Total	51580748.80	172.11				

a Equal variances not assumed. Significance: * p<.05 ** p<.01 *** p<.001.
Effect size: *Small, **Medium, ***Large

Significant variance was only found at the baseline and month 72, with medium and small effect sizes respectfully (Table 1.6). Post hoc comparisons indicated that the mean score for current gang members was significantly different from those who had never been in a gang (Table 1.7).

Table 1.7

Games-Howell Comparison For Total Offending Frequency With Drugs

Age Range	Gang Status A	Gang Status B	Mean difference (A-B)	Std. Error	95% Confidence Interval	
					Lower Bound	Upper Bound
14-19	**Baseline**					
	never	current	-122.50*	40.00	-216.95	-28.05
		prior	-29.43	43.13	-131.57	72.70
	current	never	122.50*	40.00	28.05	216.95
		prior	93.07	55.71	-38.24	224.37
	prior	never	29.43	43.13	-72.70	131.57
		current	-93.07	55.71	-224.37	38.24
20-25	**72 months**					
	never	current	-139.75*	56.09	-273.93	-5.57
		prior	-7.93	13.84	-40.44	24.57
	current	never	139.75*	56.09	5.57	273.93
		prior	131.81	56.23	-2.69	266.32
	prior	never	7.93	13.84	-24.57	40.44
		current	-131.81	56.23	-266.32	2.69

* $p < 0.05$

Prior gang members therefore were not distinguishable from either current or never gang members in their offending for this category. The baseline wave was the period for which all categories of gang member committed the most offences; frequencies dropped considerably after this wave suggesting that it is atypical of the later interview periods. Furthermore, the level of significance and effect size at month 72 were both small. Overall, the analysis indicated very little variance throughout the study for the category of total offending with drugs. Standard deviations were high for all groups throughout the study, suggesting considerable in-group variance.

Total offending (excluding drugs)

Table 1.8

Mean Scores For Total Offending Frequency Excluding Drugs

Wave and status	Age Range	N	M	SD
Baseline	14-19			
Gang never		760	155.38	368.42
Gang current		161	277.88	478.41
Gang prior		120	184.81	449.24
6 months	14-20			
Gang never		695	9.59	51.74
Gang current		149	37.11	117.58
Gang prior		135	12.15	30.47
12 months	15-20			
Gang never		680	8.99	34.68
Gang current		132	26.98	59.20
Gang prior		163	13.18	88.96
18 months	15-21			
Gang never		652	8.64	30.67
Gang current		114	25.11	49.73
Gang prior		185	25.71	120.72
24 months	16-21			
Gang never		641	12.61	74.35
Gang current		110	29.07	87.39
Gang prior		198	19.05	85.25
30 months	16-22			
Gang never		642	19.56	134.75
Gang current		104	42.54	134.07
Gang prior		205	13.26	52.22
36 months	17-22			
Gang never		636	15.05	89.88
Gang current		95	59.35	156.77
Gang prior		215	12.24	72.39
48 months	18-23			
Gang never		609	23.56	88.10
Gang current		88	71.36	160.21
Gang prior		234	23.94	92.48
60 months	18-24			
Gang never		600	24.16	96.15
Gang current		76	43.68	94.27
Gang prior		242	27.61	109.88
72 months	20-25			
Gang never		581	24.81	163.50
Gang current		70	63.36	138.08
Gang prior		243	26.95	80.36
84 months	20-26			
Gang never		557	13.04	53.98
Gang current		62	43.48	165.73
Gang prior		241	17.76	61.95

Current gang members had the highest mean score for all waves except for month 18, when prior gang members had the highest mean (Table 1.8). Respondents who had never been in a gang had the lowest mean score for all waves except month 36, when prior gang members had the lowest mean.

A one way between groups analysis of variance was conducted to explore the relationship between gang membership and frequency for total offending excluding drugs. Participants were divided into three groups: never in a gang, currently in a gang and previously in a gang.

Table 1.9
Summary of ANOVA For Total Offending Frequency Excluding Drugs

	Sum of Squares	df	Mean Square	F	*p*	Eta Sq.
Baseline						
Between groups	502036.73	2	251018.36	7.96a	.000***	.02*
Within groups	23398724.70	217.63	22542.12			
Total	23900761.40	219.63				
6 months						
Between groups	93494.58	2	46747.29	4.01a	.02*	.02*
Within groups	4028634.90	272.94	4127.70			
Total	4122129.47	274.94				
12 months						
Between groups	36031.57	2	18015.78	5.80a	.00**	.01*
Within groups	2557967.66	212.93	2631.65			
Total	2593999.23	214.93				
18 months						
Between groups	58170.73	2	29085.37	7.44a	.00**	.02*
Within groups	3573009.83	204.18	3769.00			
Total	3631180.56	206.18				
36 months						
Between groups	174410.33	2	87205.17	3.93a	.02*	.02*
Within groups	8561196.12	217.21	9078.68			
Total	8735606.45	219.21				
48 months						
Between groups	181300.24	2	90650.12	3.77a	.03*	.02*
Within groups	8944746.22	200.11	9638.74			
Total	9126046.46	202.11				

a. Equal variances not assumed. Significance: * p<.05 ** p<.01 *** p<.001.
Effect size: *Small, **Medium, ***Large

Significant variance was found at the baseline and for months 6 to 18 and 36 to 48; all effect sizes were small (Table 1.9). Post hoc comparisons indicating that the mean score for current gang members was significantly higher than those who had never been in a gang; and significantly higher than prior gang members at months 6 and 36 (Tables 1.10 and 1.11).

Table 1.10

Games-Howell Comparison For Total Offending Frequency Excluding Drugs

					95% Confidence Interval	
Age Range	Gang Status A	Gang Status B	Mean difference (A-B)	Std. Error	Lower Bound	Upper Bound
14-19	**Baseline**					
	never	current	-59.61*	15.81	-96.95	-22.28
		prior	-27.20	16.23	-65.65	11.14
	current	never	59.61*	15.81	22.28	96.95
		prior	32.41	21.55	-18.37	83.19
	prior	never	27.20	16.23	-11.24	65.65
		current	-32.41	21.55	21.55	18.37
14-20	**6 months**					
	never	current	-27.51*	9.83	-50.77	-4.26
		prior	-2.55	3.28	-10.27	5.16
	current	never	27.51*	9.83	4.26	50.77
		prior	24.96*	9.98	1.35	48.56
	prior	never	2.55	3.28	-5.16	10.27
		current	-24.96*	9.98	-48.56	-1.35
15-20	**12 months**					
	never	current	-18.00*	5.32	-30.60	-5.40
		prior	-4.19	7.09	-20.96	12.58
	current	never	18.00*	5.32	5.40	30.60
		prior	13.81	8.67	-6.61	34.23
	prior	never	4.19	7.09	-12.58	20.96
		current	-13.81	8.67	-34.23	6.61
15-21	**18 months**					
	never	current	-16.47*	4.81	-27.87	-5.06
		prior	-17.07	8.96	-38.23	4.08
	current	never	16.47*	4.81	5.06	27.87
		prior	-0.60	10.02	-24.23	23.02
	prior	never	17.07	8.96	-4.08	38.23
		current	0.60	10.02	-23.02	24.23

* $p < 0.05$

Table 1.11
Games-Howell Comparison For Total Offending Frequency Excluding Drugs

Age Range	Gang Status A	Gang Status B	Mean difference (A-B)	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
17-22	**36 months**					
	never	current	-44.30*	16.48	-83.48	-5.13
		prior	2.81	6.09	-11.51	17.13
	current	never	44.30*	16.47	5.13	83.48
		prior	47.11*	16.83	7.15	87.07
	prior	never	-2.81	6.09	-17.13	11.51
		current	-47.11*	16.83	-87.07	-7.15
18-23	**48 months**					
	never	current	-47.80*	17.45	-89.34	-6.26
		prior	-0.37	7.02	-16.89	16.14
	current	never	47.80*	17.45	6.26	89.34
		prior	47.43	18.12	4.38	90.47
	prior	never	0.37	7.02	-16.14	16.89
		current	-47.43	18.12	-90.47	-4.38

* $p < 0.05$

No pattern emerged for variance between prior and current gang members or prior and never gang members. Removing drugs from the offences that were reported did result in significant variance between current and never gang members for the first four waves of the study; this may be on account of a higher number of violent/aggressive offences being the primary difference between gang and never gang members. The mean scores were disproportionately high at the baseline interview for all offenders, irrespective of their gang status. The standard deviations were also high for all three groups, suggesting considerable in-group variance for offending frequency.

Income offending (including drugs)

Table 1.12

Mean Scores For Income Offending With Drugs

Wave and Status	Age Range	N	M	SD
Baseline	14-19			
Gang never		760	107.17	300.42
Gang current		161	180.24	385.00
Gang prior		120	113.46	308.43
6 months	14-20			
Gang never		695	17.27	107.03
Gang current		149	65.10	304.17
Gang prior		135	21.38	92.98
12 months	15-20			
Gang never		680	28.65	161.51
Gang current		132	23.53	60.22
Gang prior		163	41.02	198.97
18 months	15-21			
Gang never		652	38.49	200.64
Gang current		114	58.63	219.00
Gang prior		185	48.26	209.61
24 months	16-21			
Gang never		641	49.01	246.24
Gang current		110	59.14	167.92
Gang prior		198	44.85	173.29
30 months	16-22			
Gang never		642	36.63	201.13
Gang current		104	51.22	150.39
Gang prior		205	33.48	182.88
36 months	17-22			
Gang never		636	46.17	228.60
Gang current		95	85.92	298.72
Gang prior		215	29.59	165.27
48 months	18-23			
Gang never		609	44.22	182.04
Gang current		88	80.88	224.77
Gang prior		234	40.01	147.34
60 months	18-24			
Gang never		600	43.46	180.64
Gang current		76	92.28	253.84
Gang prior		242	36.50	126.26
72 months	20-25			
Gang never		581	38.80	169.70
Gang current		70	141.34	382.95
Gang prior		243	32.07	101.18
84 months	20-26			
Gang never		557	31.65	149.87
Gang current		62	74.11	150.68
Gang prior		241	30.04	118.34

No overall pattern was found for the mean scores (Table 1.12). Those who had never been in a gang had the lowest mean score at baseline and months 6 and 18; prior gang members had the lowest mean score for months 24 to 84; and current gang members had the lowest mean at month 12 and the highest mean score for all other waves.

A one way between groups analysis of variance was conducted to explore the relationship between gang membership and income offending frequency including drugs. Participants were divided into three groups: never in a gang, currently in a gang and previously in a gang. No significant variance was found.

The lack of variance suggests that income offending was undertaken by all of the sample, irrespective of their gang membership status. The high standard deviations and lack of consistency in which status committed the most income generating offences, suggest that offending frequency was determined by the individuals rather than gang membership status.

Income offending (excluding drugs)

Table 1.14

Mean Scores For Income Offending Excluding Drugs

Wave and Status	Age Range	N	M	SD
Baseline	14-19			
Gang never		760	17.19	70.05
Gang current		161	38.39	45.41
Gang prior		120	19.38	75.85
6 months	14-20			
Gang never		695	3.18	30.27
Gang current		149	17.26	88.27
Gang prior		135	4.15	17.91
12 months	15-20			
Gang never		680	2.16	11.96
Gang current		132	8.55	21.77
Gang prior		163	8.07	68.56
18 months	15-21			
Gang never		652	1.90	12.74
Gang current		114	6.49	17.82
Gang prior		185	8.19	57.02
24 months	16-21			
Gang never		641	2.09	13.15
Gang current		110	12.19	65.23
Gang prior		198	5.71	23.32
30 months	16-22			
Gang never		642	8.49	112.08
Gang current		104	10.87	51.98
Gang prior		205	3.61	25.53
36 months	17-22			
Gang never		636	2.36	24.72
Gang current		95	12.57	50.57
Gang prior		215	2.23	13.49
48 months	18-23			
Gang never		609	3.27	16.99
Gang current		88	21.90	103.50
Gang prior		234	4.41	22.12
60 months	18-24			
Gang never		600	6.15	61.52
Gang current		76	9.29	31.27
Gang prior		242	5.90	30.30
72 months	20-25			
Gang never		581	9.24	119.50
Gang current		70	19.20	72.72
Gang prior		243	4.03	22.57
84 months	20-26			
Gang never		557	2.42	16.29
Gang current		62	8.50	24.59
Gang prior		241	2.54	13.60

Those who had never been in a gang had the lowest mean scores at the baseline and months 6 to 24, 48 and 84; prior gang members had the lowest mean score at the baseline and months 30 to 36 (Table 1.13). Current gang members

had the highest mean score for all waves except month 18, when prior gang members scored higher.

A one way between groups analysis of variance was conducted to explore the relationship between gang membership and total offending frequency excluding drugs. Participants were divided into three groups: never in a gang, currently in a gang and previously in a gang.

Table 1.14
Summary of ANOVA For Income Offending Excluding Drugs

	Sum of Squares	df	Mean Square	F	*p*	Eta Sq.
Baseline						
Between groups	59966.47	2	29983.23	5.25	.01**	.01*
Within groups	5923769.19	1038	5706.91			
Total	5983735.67	1040				
12 months						
Between groups	7725.34	2	3862.67	5.06a	.01**	.01*
Within groups	932550.51	204.62	959.41			
Total	940275.85	206.62				
18 months						
Between groups	6720.47	2	3360.23	4.44a	.01*	.01*
Within groups	739743.78	208.60	780.32			
Total	746464.25	210.60				
24 months						
Between groups	10290.16	2	5145.08	3.38a	.04*	.02*
Within groups	681717.57	509.62	720.63			
Total	692007.73	511.62				

a. Equal variances not assumed. Significance: * p<.05 ** p<.01 *** p<.001.
Effect size: *Small, **Medium, ***Large

Significant variance was found at the baseline and months 12, 18 and 24; all effect sizes were small (Table 1.14). Post hoc comparisons indicated that the mean scores of current gang members were significantly higher than those who had never been in a gang at the baseline, and months 12 and 18; no variance was indicated for month 24 (Table 1.15).

Table 1.15

Games-Howell Comparison For Income Offending Excluding Drugs

Age Range	Gang Status A	Gang Status B	Mean difference (A-B)	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
14-19	**Baseline**[a]					
	never	current	-21.20*	6.55	-36.58	-5.82
		prior	-2.19	7.42	-19.60	15.23
	current	never	21.20*	6.55	5.82	36.58
		prior	19.02	9.11	-2.37	40.40
	prior	never	2.19	7.42	15.23	19.60
		current	-19.02	9.11	-40.40	2.37
15-20	**12 months**					
	never	current	-6.39*	2.12	-11.40	-1.37
		prior	-5.91	5.39	-18.65	6.84
	current	never	6.39*	2.12	1.37	11.40
		prior	0.48	5.76	-13.11	14.06
	prior	never	5.91	5.39	-6.84	18.65
		current	-0.48	5.76	-14.06	13.11
15-21	**18 months**					
	never	current	-4.59*	1.74	-8.72	-0.46
		prior	-6.29	4.22	-16.26	3.69
	current	never	4.59*	1.74	0.46	8.72
		prior	-1.70	4.51	-12.34	8.94
	prior	never	6.29	4.22	-3.69	16.26
		current	1.70	4.51	-8.94	12.34
16-21	**24 months**					
	never	current	-10.10	6.24	-24.93	4.73
		prior	-3.62	1.74	-7.71	0.48
	current	never	10.10	6.24	-4.73	24.93
		prior	6.48	6.44	-8.78	21.75
	prior	never	3.62	1.74	-0.48	7.71
		current	-6.48	6.44	-21.75	8.78

a. Tukey HSD Comparison. * $p < 0.05$

Prior gang members were again indistinguishable from either current or never gang members. There were only three occasions when current gang members scored significantly higher for income offending without drugs than those who had never been in a gang. That there were these three occasions when drugs were removed from this category is insightful in regard to the types of income offences that the sample committed.

Aggressive offending

Table 1.16

Mean Scores For Aggressive Offending

Wave and Status	Age Range	N	M	SD
Baseline	14-19			
Gang never		760	10.88	31.10
Gang current		161	36.86	88.63
Gang prior		120	18.93	42.94
6 months	14-20			
Gang never		695	2.82	9.60
Gang current		149	9.72	15.08
Gang prior		135	4.94	11.55
12 months	15-20			
Gang never		680	2.40	7.03
Gang current		132	11.08	24.74
Gang prior		163	4.95	21.60
18 months	15-21			
Gang never		652	1.83	6.39
Gang current		114	8.41	22.75
Gang prior		185	5.58	37.83
24 months	16-21			
Gang never		641	1.86	7.07
Gang current		110	8.52	27.02
Gang prior		198	4.38	1.45
30 months	16-22			
Gang never		642	3.10	40.71
Gang current		104	7.89	30.30
Gang prior		205	2.67	9.28
36 months	17-22			
Gang never		636	1.16	5.65
Gang current		95	16.49	67.22
Gang prior		215	2.14	10.66
48 months	18-23			
Gang never		609	2.29	11.73
Gang current		88	14.39	53.98
Gang prior		234	5.06	22.17
60 months	18-24			
Gang never		600	1.50	6.77
Gang current		76	5.87	11.59
Gang prior		242	9.10	79.37
72 months	20-25			
Gang never		581	5.51	61.02
Gang current		70	5.30	8.53
Gang prior		243	2.91	9.68
84 months	20-26			
Gang never		557	1.14	5.39
Gang current		62	14.85	93.38
Gang prior		241	2.74	13.03

Current gang members had the highest mean score for all waves except for month 72, when those who had never been in a gang had the highest offending frequency mean (Table 1.16). Those who had never been gang affiliated had the

lowest mean scores for all other waves, except for month 30, when prior gang members scored the lowest.

A one way between groups analysis of variance was conducted to explore the relationship between gang membership and aggressive offending. Participants were divided into three groups: never in a gang, currently in a gang and previously in a gang.

Table 1.17
Summary of ANOVA For Aggressive Offending

	Sum of Squares	df	Mean Square	F	*p*	Eta Sq.
Baseline						
Between groups	90970.14	2	45485.07	8.36a	.000***	.04*
Within groups	2210576.04	329.58	2129.65			
Total	2301546.18	331.58				
6 months						
Between groups	5927.60	2	2963.80	15.39a	.000***	.05*
Within groups	115528.92	226.21	118.37			
Total	121456.52	228.21				
12 months						
Between groups	8500.15	2	4250.08	9.00a	.000***	.04*
Within groups	189359.85	200.76	194.82			
Total	197860.00	202.76				
18 months						
Between groups	5343.92	2	2671.96	5.54a	.01*	.02*
Within groups	348422.18	191.00	367.53			
Total	353766.10	193.00				
24 months						
Between groups	4543.83	2	2271.92	4.67a	.01*	.02*
Within groups	193359.09	345.78	204.40			
Total	197902.92	347.78				
36 months						
Between groups	19597.55	2	9798.77	3.26a	.04*	.04*
Within groups	469273.27	183.57	497.64			
Total	488870.82	185.57				
60 months						
Between groups	10294.70	2	5147.34	6.22a	.00**	.01*
Within groups	1555581.48	162.77	1700.09			
Total	1565876.15	164.77				

a. Equal variances not assumed. Significance: * p<.05 ** p<.01 *** p<.001.

Effect size: *Small, **Medium, ***Large

Significant variance was found at the baseline and for months 6 to 24, 36 and 60; all effect sizes were small (Table 1.17). Post hoc comparisons indicated that current gang members had significantly higher scores for aggressive offending than those who had never been gang affiliates at months 6 to 24 and 48 to 60; no variance was indicated for month 36 (Tables 1.18 and 1.19).

Table 1.18
Games-Howell Comparison For Aggressive Offending

					95% Confidence Interval	
Age Range	Gang Status A	Gang Status B	Mean difference (A-B)	Std. Error	Lower Bound	Upper Bound
14-19	**Baseline**					
	never	current	-25.98*	7.08	-42.71	-9.25
		prior	-8.05	4.08	-17.72	1.61
	current	never	25.98*	7.08	9.25	42.71
		prior	17.92	8.01	-0.96	36.81
	prior	never	8.05	4.08	-1.61	17.72
		current	-17.92	8.01	-36.81	0.96
14-20	**6 months**					
	never	current	-6.90*	1.29	-9.94	-3.85
		prior	-2.12	1.06	-4.62	0.39
	current	never	6.89*	1.29	3.85	9.94
		prior	4.78*	1.59	1.04	8.51
	prior	never	2.12	1.06	-0.39	4.62
		current	-4.78*	1.59	-8.51	-1.04
15-20	**12 months**					
	never	current	-8.68*	2.17	-13.82	-3.53
		prior	-2.55	1.71	-6.60	1.50
	current	never	8.68*	2.17	3.53	13.82
		prior	6.13	2.74	-0.33	12.58
	prior	never	2.55	1.71	-1.50	6.60
		current	-6.13	2.74	-12.58	0.33
15-21	**18 months**					
	never	current	-6.58*	2.15	-11.67	-1.49
		prior	-3.75	2.79	-10.34	2.85
	current	never	6.58*	2.15	1.49	11.67
		prior	2.83	3.50	-5.42	11.09
	prior	never	3.75	2.79	-2.85	10.34
		current	-2.83	3.50	-11.09	5.42

* $p < 0.05$

Table 1.19
Games-Howell Comparison For Aggressive Offending

Age Range	Gang Status A	Gang Status B	Mean difference (A-B)	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
16-21	**24 months**					
	never	current	-6.66*	2.59	-12.82	-0.51
		prior	-2.53	1.48	-6.01	0.95
	current	never	6.66*	2.59	0.51	12.82
		prior	4.13	2.96	-2.85	11.12
	prior	never	2.53	1.48	-0.95	6.01
		current	-4.13	2.96	-11.12	2.85
17-22	**36 months**					
	never	current	-15.33	6.90	-31.76	1.10
		prior	-0.98	0.76	-2.77	0.81
	current	never	15.33	6.90	-1.10	31.76
		prior	14.35	6.93	-2.16	30.86
	prior	never	0.98	0.76	-0.81	2.77
		current	-14.35	6.93	-30.86	2.16
18-24	**60 months**					
	never	current	-4.37*	1.36	-7.61	-1.13
		prior	-7.60	5.11	-19.65	4.45
	current	never	4.37*	1.36	1.13	7.61
		prior	-3.23	5.27	-15.65	9.20
	prior	never	7.60	5.11	-4.45	19.65
		current	3.23	5.27	-9.20	15.65

* $p < 0.05$

This specific category of offending demonstrated the most variance, which accords with the previous findings for total offending without drugs. That the most variance was found between current and never gang members is insightful, and has the potential to inform gang interventions. With the exception of month 6, prior gang members again showed no variance with either of the other two status.

Illegal substance use

Table 1.20

Mean Scores For Illegal Substance Use

Wave and Status	Age Range	N	M	SD
Baseline (6 months)	14-19			
Gang never		761	1.08	1.38
Gang current		161	1.83	1.72
Gang prior		120	1.30	1.62
6 months	14-20			
Gang never		695	0.54	1.12
Gang current		149	1.20	1.52
Gang prior		135	0.81	1.34
12 months	15-20			
Gang never		680	0.56	1.05
Gang current		132	1.01	1.43
Gang prior		163	0.66	1.25
18 months	15-21			
Gang never		652	0.52	0.94
Gang current		114	0.98	1.37
Gang prior		185	0.75	1.40
24 months	16-21			
Gang never		641	0.54	0.97
Gang current		110	0.97	1.32
Gang prior		198	0.79	1.36
30 months	16-22			
Gang never		642	0.55	1.03
Gang current		104	0.80	1.15
Gang prior		205	0.58	1.04
36 months	17-22			
Gang never		636	0.55	0.99
Gang current		95	0.76	0.99
Gang prior		215	0.61	0.99
48 months	18-23			
Gang never		609	0.67	1.09
Gang current		88	1.16	1.28
Gang prior		234	0.74	1.08
60 months	18-24			
Gang never		600	0.59	1.04
Gang current		76	0.92	1.06
Gang prior		242	0.76	1.26
72 months	20-25			
Gang never		581	0.58	0.95
Gang current		70	0.99	1.12
Gang prior		243	0.70	1.05
84 months	20-26			
Gang never		557	0.57	1.08
Gang current		62	0.87	1.03
Gang prior		241	0.72	1.26

Those who had never been in a gang had the lowest mean scores for all months except for month 36, when prior gang members scored lower and at the

baseline when non-gang members scored the highest for illegal substance use; during this wave current gang members had the lowest mean score (Table 1.20).

A one way between groups analysis of variance was conducted to explore the relationship between gang membership and illegal substance use. Participants were divided into three groups: never in a gang, currently in a gang and previously in a gang.

Table 1.21
Summary of ANOVA For Illegal Substance Use

	Sum of Squares	df	Mean Square	F	*p*	Eta Sq.
Baseline						
Between groups	75.44	2	37.72	13.81a	.000***	.03*
Within groups	2233.46	223.41	2.15			
Total	2308.90	225.41				
6 months						
Between groups	56.10	2	28.05	13.88a	.000***	.04*
Within groups	1456.83	231.08	1.49			
Total	1512.93	233.08				
12 months						
Between groups	22.39	2	11.20	6.05a	.00**	.02*
Within groups	1273.08	239.75	1.31			
Total	1295.47	241.75				
18 months						
Between groups	24.04	2	12.02	7.40a	.00**	.02*
Within groups	1145.68	220.61	1.21			
Total	1169.72	222.61				
24 months						
Between groups	23.56	2	11.78	7.66a	.00**	.02*
Within groups	1159.47	226.00	1.23			
Total	1183.03	228.00				

a. Equal variances not assumed. Significance: * p<.05 ** p<.01 *** p<.001.
Effect size: *Small, **Medium, ***Large

Significant variance was found for all waves of data, with the exception of month 72; all effect sizes were small (Tables 1.21 and 1.22).

Table 1.22
Summary of ANOVA For Illegal Substance Use

	Sum of Squares	df	Mean Square	F	*p*	Eta Sq.
48 months						
Between groups	18.04	2	9.02	5.75a	.00**	.02*
Within groups	1138.01	214.13	1.23			
Total	1156.05	216.13				
60 months						
Between groups	10.99	2	5.50	4.50	.01*	.01*
Within groups	1117.29	915	1.22			
Total	1128.28	917				
72 months						
Between groups	11.07	2	5.53	5.62	.00**	.01*
Within groups	877.82	891	0.99			
Total	888.89	893				

a. Equal variances not assumed. Significance: * p<.05 ** p<.01 *** p<.001.
Effect size: *Small, **Medium, ***Large

Post hoc tests indicated that the mean scores for current gang members were significantly higher than those who had never been in a gang from the baseline to month 72 (Tables 1.23 to 1.24). The mean score for prior gang members was significantly higher than those who had never been affiliated at month 24 (Table 1.24), and significantly lower than current gang members at the baseline (Table 1.23). Standard deviations were inconsistently high for the different groups, suggesting that individuals from the sample reported more substance use than others, and thus a lack of homogeneity. Nevertheless, that substance use for current gang members was significantly higher for the first five waves of data and then for a three-year period from months 48 to 72 is inciteful in the writing of interventions. Another key finding was that substance use did not consistently reduce as the sample aged, indicating that the behaviour was still present in early adulthood and is dynamic.

Table 1.23

Games-Howell Comparison For Illegal Substance Use

Age Range	Gang Status A	Gang Status B	Mean difference (A-B)	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
14-19	**Baseline**					
	never	current	-0.75*	0.14	-1.09	-0.41
		prior	-0.22	0.16	-0.59	0.15
	current	never	0.75*	0.14	0.41	1.09
		prior	0.53*	0.20	0.06	1.00
	prior	never	0.22	0.16	-0.15	0.59
		current	-0.53*	0.20	-1.00	-0.06
14-20	**6 months**					
	never	current	-0.66*	0.13	-0.97	-0.35
		prior	-0.27	0.12	-0.56	0.02
	current	never	0.66*	0.13	0.35	0.97
		prior	0.39	0.17	-0.01	0.79
	prior	never	0.27	0.12	-0.02	0.56
		current	-0.39	0.17	-0.79	0.01
15-20	**12 months**					
	never	current	-0.45*	0.13	-0.76	-0.14
		prior	-0.10	0.11	-0.35	0.15
	current	never	0.45*	0.13	0.14	0.76
		prior	0.35	0.16	-0.03	0.72
	prior	never	0.10	0.11	-0.15	0.35
		current	-0.35	0.16	-0.72	0.03
15-21	**18 months**					
	never	current	-0.46*	0.13	-0.78	-0.14
		prior	-0.22	0.11	-0.48	0.03
	current	never	0.46*	0.13	0.14	0.78
		prior	0.24	0.17	-0.15	0.62
	prior	never	0.22	0.11	-0.03	0.48
		current	-0.24	0.17	-0.62	0.15

* $p < 0.05$

Table 1.24

Games-Howell Comparison For Illegal Substance Use

Age Range	Gang Status A	Gang Status B	Mean difference (A-B)	Std. Error	95% Confidence Interval	
					Lower Bound	Upper Bound
16-21	**24 months**					
	never	current	-0.44*	0.13	-0.75	-0.12
		prior	-0.25*	0.10	-0.50	-0.01
	current	never	0.44*	0.13	0.12	0.75
		prior	0.19	0.16	-0.19	0.56
	prior	never	0.25*	0.10	0.01	0.50
		current	-0.19	0.16	-0.56	0.19
18-23	**48 months**					
	never	current	-0.48*	0.14	-0.82	-0.14
		prior	-0.07	0.08	-0.26	0.13
	current	never	0.48*	0.14	0.14	0.82
		prior	0.42*	0.15	0.05	0.78
	prior	never	0.07	0.08	-0.13	0.26
		current	0.42*	0.15	-0.78	-0.05
18-24	**60 months**[a]					
	never	current	-0.34*	0.14	-0.65	-0.02
		prior	-0.18	0.08	-0.37	0.02
	current	never	0.34*	0.14	0.02	0.65
		prior	0.16	0.15	-0.18	0.50
	prior	never	0.18	0.08	-0.02	0.37
		current	0.16	0.15	-0.50	0.18
20-25	**72 months**[a]					
	never	current	-0.40*	0.13	-0.70	-0.11
		prior	-0.11	0.08	-0.29	0.06
	current	never	0.40*	0.13	0.11	0.70
		prior	0.29	0.08	-0.03	0.61
	prior	never	0.11	0.08	-0.06	0.29
		current	-0.29	0.08	-0.61	0.03

a. Tukey HSD Comparison. * $p < 0.05$

Marijuana selling

Table 1.25

Mean Scores For Marijuana Selling

Wave and Status	Age Range	N	M	SD
Baseline	14-19			
Never		744	37.96	139.30
Current gang		161	85.89	205.28
Prior gang		118	45.37	165.02
6 Months	14-20			
Never		688	7.68	65.42
Current gang		148	25.24	117.95
Prior gang		135	5.90	18.16
12 Months	15-20			
Never		674	12.42	80.24
Current gang		131	6.74	24.10
Prior gang		160	25.31	148.86
18 Months	15-21			
Never		649	16.02	107.42
Current gang		114	27.77	116.70
Prior gang		184	21.52	111.10
24 Months	16-21			
Never		633	20.60	126.94
Current gang		109	31.83	137.45
Prior gang		198	20.45	111.18
30 Months	16-22			
Never		639	14.81	97.54
Current gang		104	26.22	107.25
Prior gang		203	16.34	103.71
36 Months	17-22			
Never		635	15.82	110.07
Current gang		94	35.76	147.62
Prior gang		215	13.71	83.49
48 Months	18-23			
Never		607	18.90	89.14
Current gang		88	31.47	84.50
Prior gang		234	10.49	45.00
60 Months	18-24			
Never		600	20.59	96.76
Current gang		76	38.61	125.67
Prior gang		242	12.95	54.75
72 Months	20-25			
Never		580	9.54	45.42
Current gang		70	47.33	171.63
Prior gang		243	12.40	50.03
84 Months	20-26			
Never		557	15.85	87.25
Current gang		61	33.95	72.13
Prior gang		240	13.81	58.83

Those who were current gang members had the highest mean scores for all months except for month 12, when those who had never been gang affiliated scored higher (Table 1.25).

A one way between groups analysis of variance was conducted to explore the relationship between gang membership and the selling of marijuana. Participants were divided into three groups: never in a gang, currently in a gang and previously in a gang.

Table 1.26

Summary of ANOVA For Marijuana Selling

	Sum of Squares	df	Mean Square	F	*p*	Eta Squared
Baseline						
Between groups	304157.89	2	152078.94	4.00a	.02*	.01*
Within groups	24346655.50	216.20	23869.27			
Total	24650813.30	218.20				

a. Equal variances not assumed. Significance: * p<.05 ** p<.01 *** p<.001.
Effect size: *Small, **Medium, ***Large

Significant variance was only found at the baseline (Tables 1.26 and 1.27). Post hoc tests indicated that the mean scores for current gang members were significantly higher than those who had never been in a gang.

Table 1.27

Games Howell Comparison For Marijuana Selling

					95% Confidence Interval	
Age Range	Gang Status A	Gang Status B	Mean difference (A-B)	Std. Error	Lower Bound	Upper Bound
14-19	**Baseline**					
	never	current	-47.93*	16.97	-88.00	-7.86
		prior	-7.41	16.03	-45.36	30.54
	current	never	47.93*	16.97	7.86	88.00
		prior	40.52	22.19	-11.78	92.81
	prior	never	7.41	16.03	-30.54	45.36
		current	-40.52	22.19	-92.81	11.78

* p < 0.05

The lack of significant findings could be explained by the high standard deviations for each group throughout the study. This suggests that the individual plays a key role in the frequency of dealing.

Selling of drugs other than marijuana

Table 1.28

Mean scores for the sale of drugs other than marijuana

Wave and Status	Age Range	N	M	SD
Baseline	14-19			
Never		744	53.96	175.50
Current gang		161	55.96	164.01
Prior gang		119	49.88	165.84
6 Months	14-20			
Never		690	6.53	125.29
Current gang		149	22.77	86.78
Prior gang		135	11.33	76.53
12 Months	15-20			
Never		674	14.30	94.52
Current gang		131	8.36	26.70
Prior gang		162	8.15	64.67
18 Months	15-21			
Never		648	20.77	121.31
Current gang		114	24.37	106.72
Prior gang		184	18.77	111.00
24 Months	16-21			
Never		630	27.05	150.09
Current gang		109	15.55	57.57
Prior gang		198	18.69	107.35
30 Months	16-22			
Never		637	13.50	93.37
Current gang		104	14.13	41.46
Prior gang		204	13.75	89.72
36 Months	17-22			
Never		632	28.19	151.37
Current gang		94	38.37	147.27
Prior gang		213	13.78	101.94
48 Months	18-23			
Never		608	22.15	106.59
Current gang		88	27.51	74.09
Prior gang		234	25.11	127.55
60 Months	18-24			
Never		598	16.78	86.90
Current gang		76	44.38	127.95
Prior gang		242	17.65	82.08
72 Months	20-25			
Never		581	20.04	92.86
Current gang		70	74.81	209.03
Prior gang		242	15.64	67.60
84 Months	20-26			
Never		557	13.38	79.59
Current gang		61	32.74	72.09
Prior gang		241	13.75	63.80

Those who had never been in a gang had the highest mean scores for months 12 and 24 and current gang members had the highest score for all other

waves. Prior gang members had the lowest mean score at the baseline and months 12, 18, 36, and 72; those never in a gang had the lowest means scores for months 6, 30, 48, 60 and 84; and current gang members had the lowest mean score at month 24 (Table 1.28).

A one way between groups analysis of variance was conducted to explore the relationship between gang membership and illegal substance use. Participants were divided into three groups: never in a gang, currently in a gang and previously in a gang. No significant variance was found for any waves of data. The lack of consistency and high standard deviations suggest a degree of individuality irrespective of gang status.

Discussion

Present Study

Gang demographics were firstly explored, in order to determine what gang membership signified to the sample and whether gang membership could be viewed as a shared, homogenous experience. The study investigated whether gang features, such as colours or rules were present; whether the gang shared money and drugs; and whether there were punishments for breaking gang rules. The degree of contact with the gang was also investigated. With this in mind, the present study aimed to investigate the relationship between gang membership status (current, prior or never) to offending frequencies, investigating patterns of variance for all reported crimes, income generating offences, and aggressive offending. Total and income offending were investigated with or without drug selling or taking to further understand the relationship between gangs and drugs. Prior research has suggested that there is a strong relationship between gang membership and drug selling and taking. In order to test this hypothesis substance use and the selling of marijuana and other drugs were investigated. Overall, the study aimed to explore offending and substance use risk factors at specific points in time, and to investigate whether there were changes in offending patterns according to gang status as the sample aged.

Gang Demographics

As with other research that has used self-identification as an indicator of gang membership, the present sample was heterogeneous (Curry et al., 2014; Matsuda et al., 2012). This was found to be the case for the use of colours, the existence of rules, and occurrence of being punished for breaking rules within the group (Table 1.2). Activities that had a direct relationship to offending, namely

the sharing of money and drugs within the group, were also unequal; although a majority of gang members, in both cases and for all waves of data, stated that they did so (Table 1.2). This finding accords with other research on the sharing of drug sale profits (Decker & Van Winkle, 1996), and the variation between gang networks (Battin-Pearson et al., 1998).

Disparities were also found in the degree to which the sample rated the importance of their gang (Table 1.4), with the highest percentages (26.1%) at the baseline interview declaring that the gang was 'quite a bit'. This had changed by month 6 with the two highest scores (24.2%) indicating that 36 members felt the level of importance was 'quite a bit' and an equal number declaring that it was 'a little bit'. From 48 months, when the mean age of gang members was 20.7 (*SD* = 1.13, range between 18 and 22 years) over 30% of members stated that the gang was 'not at all important' to them; the highest percentage within each wave. The decrease in the importance of the group accords with other gang literature, in terms of the amount of time individuals remain in a gang (Bolden, 2012; Carson et al., 2013; Decker, 1996; Decker & Lauritsen, 2002; Esbensen & Huizinga, 1993; Thornberry et al., 1993). It also concurs with more general research on youth offending, which has found that delinquent youth either gradually become more autonomous in their offending style or desist (Reiss & Farrington, 1991; Zimring, 1981). Daily contact reflected the levels of importance of the gang (Table 1.4), which raises questions regarding the overall influence of the group on the individuals who belong to it. The age range for gang members at the baseline was considerable (between 14 and 18 years, with a mean age of 16.02); however, the standard deviation was only 1.12 years. The range may account for some of the disparities, certainly in early waves of data, because as the sample grew older it would be expected that the gang would become less important for those who

remained. Certainly, changes were found in the numbers of gang members who described themselves as leaders (Table 1.3). By the time of the final wave of data, none of the remaining gang members described themselves as a leader. Although at first this result seems incongruous, because it could be assumed that as those who remained in the gang aged, their status became more elevated; it is also possible that gang leaders did not wish to identify themselves to researchers on account of an increased suspicion towards authorities.

Offending Frequencies and Illegal Substance Use

For the purposes of the present study offences were divided into the following categories. Aggressive: destroyed property, set fire, shot and missed, shot and hit, beat someone up so badly they needed a doctor, fight and gang fight, robbery without a weapon, and robbery with a weapon. Income: entered building to steal, broke into a car to steal, shoplifted, handled stolen property, used credit cards illegally, stole a car or bike, sold marijuana, sold other drugs, was paid for sex, robbery with weapon, robbery without a weapon. With drugs: sold marijuana, sold other drugs, drove drunk or high. Total offences and income offending were investigated with and without drugs, specifically because of prior research finding a relationship between gangs and drug activities.

The offending frequencies for the period of 6 months before the baseline were higher than subsequent waves for all groups, which accords with research suggesting that as youth offenders age, their delinquency decreases (Reiss & Farrington, 1991). The sale of drugs is associated with gang culture (Esbensen et al., 2002; Howell et al., 2011); however, the present study did not find support for this relationship. The offending categories that included drugs showed less variance between current gang members and the other two groups than the data

sets that excluded drugs. For total offending (with drugs) significant variance was only found between current gang members and those who had never been involved at the baseline and month 72 (Table 1.7); and for income offending with drugs no significant variance was found for any waves of data. These findings accord with discrepancies in the drug and gang literature (Esbensen et al., 2002; Klein, 1995) and that individuals who leave a gang have been found to continue to sell drugs (Barnes et al., 2010; Bjerregaard & Lizotte, 1995; Gatti et al., 2005). This may also concur with the complex relationship between categories of offence found by other researchers (Bjerregaard, 2010; Zhang et al., 1999).

In order to investigate these findings further an additional analysis specifically for drug sales was undertaken (Tables 1.25 to 1.29). Again, no support for prior research that found a strong relationship between drug sales and gang membership was found (Esbensen et al., 2002; Howell et al., 2011). Findings were only significantly different for the sale of marijuana at the baseline (Table 1.26 to 1.27). There was no significant difference found for the sale of drugs other than cannabis, and the mean scores indicated considerable variation in regard to which group had the highest and lowest mean score for sales (Table 1.28). The standard deviations for the sales of both marijuana and other drugs were high, suggesting considerable in-group variance. These findings support prior studies that have indicated drug sales can remain high post gang involvement (Barnes et al., 2010 Bjerregaard 2010; Bolden, 2012; Gatti et al., 2005); it also suggests that delinquent juveniles and young adults do not need to be gang affiliated in order to deal in drugs.

In contrast to drug sales and related crimes, a clear pattern emerged when the drug use (Tables 1.21 to 1.22) of gang members was compared to non-gang affiliated youth, and the findings reflected previous studies (Esbensen &

Huizinga, 1993; Hall et al., 2006; Thornberry et al., 2003; Zhang et al., 1999). In the present study current gang members had significantly higher mean scores for substance use than those who had never been gang affiliated from the baseline to month 72 (Tables 1.23 and 1.24). However, prior gang members only scored significantly lower than current gang members at the baseline (Table 1.23); and were only significantly higher than those who had never been in a gang at month 24 (Table 1.24). This also accords with the reported drug sharing within gangs that were reported early in the present study; the majority for each wave of data reported sharing illegal substances, suggesting that this was a part of gang culture (Table 1.2). The present data supported a stable association between current gang membership across the study, rather than differences as the cohort aged, as had been found by previous research (Decker, 2000). Since a previous study (Walker-Barnes & Mason, 2004) identified confounding variables in the relationship between drug use and gang membership, further research is required to understand the results of the present study.

More significant variance between current members and those who had never been in a gang was found for the total offending scores when items relating to drugs had been removed (Table 1.5). The mean scores for current gang members were significantly higher than those who had never been affiliated at the baseline and for months 6, 12, 18, 36 and 48 and they were only higher than prior gang members at months 6 and 36 (Tables 1.10 and 1.11). That no significant variance was found for the last three waves of data may be relevant to the previous finding that from 48 months, when over 30% of current members stated that the gang was ‘not at all important’ to them; suggesting that the influence of gang membership was diminished. However, it should also be noted that standard

deviations were high for all groups for all waves of data, suggesting internal differences in the numbers of offences committed (Table 1.8).

The most variance between groups was found for aggressive offending; current gang members had significantly higher mean scores for the baseline and months 6 to 24 and 60 (Tables 1.18 and 1.19). The present study's findings accord with previous research that found gang members to commit more aggressive crimes than their non-gang counterparts (Bendixen et al., 2006; Bjerk, 2009; Lacourse et al., 2003; Tita & Ridgeway, 2007). Aggressive offending for gang members remained high throughout (Table 1.16), which supports previous research that found there was a strong association between violence and gangs, and that this phenomenon distinguishes members from their non-gang counterparts (Peterson et al., 2004). However, significant variance was only found with those who had never been affiliated to a gang. The present study did not support the relationship between prior gang members and increased drug sales or violent offending found by other researchers **(**Decker, Katz, & Webb, 2008). Prior gang members did not demonstrate any significant variance from either current or never-affiliated participants. This was possibly due to the transient nature of gang membership, and that disengagement can be a gradual process (Bushway, Thornberry, & Krohn, 2003; Vigil, 2010) and the increasing lack of importance of the gang to members as the study progressed (Table 1.4).

Interactional Theory

The present study sought to investigate three models to explain the relationship between gang involvement and offending (Thornberry et al., 1993; Curry et al., 2014). Overall, the findings reflected a previous study on a sample of gang affiliated youth from the same dataset (Ashton et al., 2018). This study

found that gang leavers continued to commit offences, on three occasions with significantly higher mean scores, supporting the enhancement rather than facilitation model. The inclusion of a category of prior gang members in the present study enabled a more detailed investigation of these theoretical frameworks; however, the results were inconclusive. Significant variance was only found between current and prior gang members on three occasions: the mean scores for current gang members were significantly higher than prior members for total offending excluding drugs at month 6 and 36 (Tables 1.10 and 1.11), and for aggressive offending at month 6 (Table 1.18). There were no occasions when prior gang members scored significantly higher for offending than those who had never been in a gang. These findings may be explained by the sample consisting of only juveniles who had committed a felony offence and requires further exploration of the social and psychological risk factors present for each group. That the sample continued to offend after members had left the gang suggests that other risk factors have a relationship to delinquency. The high standard deviations suggest a lack of homogeneity within each of the groups.

Previous longitudinal studies have found the most support for the enhancement model (Battin et al., 1998; Esbensen & Huizinga, 1993; Gordon et al., 2004; Krohn & Thornberry, 2014; Melde & Esbensen, 2012). Prior gang members in the present sample did continue to offend, generally with higher mean scores than those who had never been in a gang, but not significantly so. These findings suggest that prior gang membership should be treated as a criminogenic risk factor and that individual risk factors, beyond group influence, must be present. That the findings were not significant suggests variation within the group.

Implications

The lack of variance for offending suggests that gang membership should not be the main focus for identifying highly delinquent youth. Furthermore, the only pattern of variance was for aggressive offending, and this was limited to the first five waves of data between current and never gang members. This could suggest a developmental deficit for impulse control rather than gang membership per se being responsible for higher levels of aggression. The lack of homogeneity within all of the groups was notable and advocates that young people who offend should be assessed as individuals rather than on the basis of their delinquent group status. The largest variance between gang members and their non-gang counterparts was found for illegal substance use. This could be on account of easier access to illegal substances, or the normalisation of drug taking as part of a delinquent group. This finding is perhaps the most important for the planning of interventions, because of the effect that drug taking has on the development of the adolescent brain and also an individual's ability to function within society. These risks pose a threat to any individual's ability to integrate outside of their criminal networks, and to integrate into mainstream society. Overall, the results from this study suggest that gang status should not be the only or primary risk factor that is taken into account when assessing adolescents and young adults.

Limitations

The present study investigated the offending frequencies of gang members and non-gang affiliated youth, both offence categories. Although the self-reported offences were, where possible, corroborated with official records, researchers have demonstrated that offenders often under report their activities (Farrington, 1986). Only one independent variable (gang membership) was investigated, and

there may be other, confounding, variables that influenced offending amongst the sample, which are shared by the individuals who belong to gangs.

Finally, because gang members belong to a group it is often assumed that they offend with others. One of the few studies to investigate gang offending styles (Goldweber et al., 2011) found that older members often offended alone. Similarly, the offending styles of non-gang affiliated youth are important when understanding the relationship of even a temporary group activity on the individual.

Future Research

Results for the study indicated a lack of homogeneity within the three groups. For this reason and in order to take account of risk factors other than gang status, future studies should investigate the social and psychological profiles of young people who are gang involved. A second area for further investigation would be the offending styles of gang and non-gang affiliated youth; as noted it is often assumed that gang members offend together for all categories of crime. Few studies have explored whether this is the case or considered the impact of temporary groups on offending behaviours.

Conclusion

In general, offending frequencies for both gang and non-gang participants declined over time, which supports age and crime desistance literature irrespective of group membership. No overall pattern was found for variance between current, prior and non-gang affiliated participants. Although current gang members scored significantly higher than those who had never been in a gang consistently for the first five waves of aggressive offending, no significant difference was found for

final two years of the study. The most consistent variance was found for substance use, where gang members scored significantly higher than those who had never been affiliated from the baseline until month 72 but only significantly higher than prior gang members for one wave.

Although inconclusive, the lack of variance between prior and either of the other two groups suggests support for the enhancement model, which purports that already delinquent youth join a gang and group membership enhances delinquency through either group norms or increased opportunity. It is clear that prior gang members continued to offend after they have left the gang.

STUDY 2

THE RELATIONSHIP OF GANG MEMBERSHIP TO PSYCHOLOGICAL AND SOCIAL RISK FACTORS

Introduction and Aims of Study

Risk Factors and Youth Gang Membership

Gangs are not homogenous groups (Klein & Maxson, 2006; Pyrooz, Sweeten, & Piquero, 2013). Furthermore, research has found that belonging to the same gang may be a heterogenous experience (Carson, Peterson, & Esbensen, 2013). This has implications for the relationship between current and prior gang involvement and both the psychological profiles and development of members. Research on the trajectories of adolescent gang members indicated that juvenile gang membership was associated with higher rates of criminal activity, drug use and incarceration in later adulthood (Gilman, Hill, & Hawkins, 2014). These findings suggest that criminogenic outcomes extend beyond current gang membership. It is not clear from this study whether this is on account of experiencing gang membership or the individuals who are attracted to deliquent groups.

Until recently the study of gangs was dominated by sociological research, and this, in turn, has concentrated on the environmental and social factors that seek to explain why a young person joins a youth gang in the first place (Wood & Alleyne, 2010; Wood & Alleyne, 2012; Wood & Giles, 2014). Perhaps because of the dominance of sociological approaches in this area (Wood & Alleyne, 2010), and the strong support for the enhancement and facilitation models (Thornberry, Krohn, Lizotte, & Chard-Wierschem, 1993), it is often presumed that the gang is a dominant and controlling factor in the lives of its members. These assumptions have considerable impact on the development of gang intervention programmes for young people. Therefore, further research into the relationship of psychological and social risk factors that are associated with gang membership

and an investigation into whether there are differences between current and prior gang members is essential for the planning of targeted programmes and interventions. The psychological and social risk factors associated with gang membership are also relevant for further understanding which of the three Interactional Theory models are supported (Curry, Decker, & Pyrooz, 2014; Thornberry, Krohn, Lizotte, & Chard-Wiershem, 1993). The offending patterns found in Study 1 of the present thesis supported the Enhancement Model, which accords with some other longitudinal studies in regard to offending and gang membership (Battin, Hill, Abbott, Catalano, & Hawkins, 1998, Esbensen & Huizinga, 1993; Gordon, Lahey, & Kawai, 2004; Krohn & Thornberry, 2014; Melde & Esbensen, 2012). The finding that psychological and social risk factors have a relationship to gang membership and that they can be reduced even in a sample of serious juvenile offenders, is important for future interventions.

Psychological Development

The decision of whether to commit an offence has been shown to have a relationship to an individual's self-control in that individuals with low self-control are less likely to consider the consequences of their actions (Gottfredson & Hirschi, 1990; Hirschi & Gottfredson, 2000). This does not necessarily mean that low temperance levels have a significant relationship to gang membership. In one study, impulsivity was found to be a risk factor for violent offending but not gang membership (Esbensen, Peterson, Taylor, & Freng, 2009); a finding that may be explained by the fact that an individual with low self-control is likely to continue to offend when they leave the gang (Fox, Ward, & Lane, 2013).

In their General Theory of Crime, Gottfredson and Hirschi (1990) suggested that gangs attracted individuals with low impulse control, which in turn

presents little concern for other people, and so low levels of consideration for others. In support of the selection model, these authors hypothesised that membership would have little impact on an individual's levels of self-control after they had left the gang. In contrast it has been suggested that gang membership has the potential to impact more on individuals with higher levels of self-control, in that they require the influence of a delinquent group to offend (Fox, Ward & Lane, 2013; Gottfredson & Hirschi, 1990). A study using a sample of jail inmates found differences in the levels of self-control amongst gang members (Fox, Ward, & Lane, 2013). The authors found that although gang membership decreased with higher levels of self-control, some members were found to have very high levels of self-control. These findings may be explained by level of embededness (Alleyne & Wood, 2010; Pyrooz, Sweeten, & Piquero, 2013) and role within the gang (Dmitrieva, Gibson, Steinberg, Piquero & Fagan, 2014). Differences were found between the development of temperance controls of low-level gang members and leaders (Dmitrieva et al., 2014); lower level members increased psychosocial maturity as they aged, whereas the leaders did not. Researchers have also found that displaced aggression occurs within gangs, often on account of feuds between rival gangs and the inability to obtain instant or direct retribution for attacks (Vasquez, Lickel, & Hennigan, 2010). Researchers found that a sample of convicted youth in UK facilities who were gang members demonstrated higher levels of negative psychological traits of social dominance and hypermasculinity (Alleyne, Wood, Mozova, & James, 2016).

Linked to impulse control is an individual's future orientation. Researchers have concluded that in the case of the pecuniary rewards of drug dealing, gang members display future orientation, because the rewards are only evident as they progress through the ranks (Levitt & Venkatesh, 2000; Listokin,

2005). What this research fails to take into account, is the social rewards of gang membership and group offending (Weerman, 2003), and also the finding that gang members remain affiliated for an average of two years (Curry, Decker, & Pyrooz, 2014).

Psychopathy

Some studies have found a positive relationship between youth gang membership and psychopathy (Dupéré, Lacourse, Willms, Vitario, & Tremblay, 2007). As noted, gang members have been found to have higher levels of impulsivity (Fox, Lane, & Akers, 2013) than their non-gang counterparts, but they also have increased callousness (Esbensen, et al., 2009). Researchers using the PTDS baseline data found that psychopathy Factor 1 (shallow effect, superficial charm, manipulative behaviour, and lack of empathy) and Factor 2 (criminal versatility, impulsivity, antisocial behaviour) contributed to a model to predict moral disengagement (Dhingra, Debowska, Sharratt, Hyland, & Kola-Palmer, 2015). However, when researchers tested a model for gang reengagement intentions using the same data, neither factor of the PCL-YV was found to make a significant contribution (Boduszek, Dhingra & Hirschfield, 2015). Both pieces of research only analysed the baseline data, which was atypical of the other waves. Furthermore, this was the only wave of the study to utilise the PCL-YV. The present study investigated the three dimensions of the YPI in addition to the total psychopathic scores. Two studies on school samples in Singapore also found no significant relationship between gang membership and psychopathy (Ang, Huan, Chan, Cheong, & Leaw, 2015; Chu, Daffern, Thomas, & Lim, 2012).

Further exploration is required in regard to the levels of psychopathic traits reported by gang leavers. Differences between gang members have also found

depending on their status; another study using the PTDS data (Dmetrieva, et al., 2014) found that the interaction between low level gang members and the impulsive irresponsible dimension increased with age; in contrast, gang leaders indicated higher scores for this dimension at a younger age but not when they were older. Higher levels of the grandiose manipulative dimension also predicted gang leadership, but not low-level members. That changes were found as participants aged in this study is a reminder of the importance of investigating data at a particular juncture; especially for the design of age specific interventions. Furthermore, research has indicated that some traits of psychopathy are dynamic in adolescence (Cauffman, Skeem, Dmitrieva, & Cavanagh, 2016). Researchers using the PCL-YV found that although Factor 2 traits were static, the Affective and Interpersonal traits of Factor 1 decreased over time. An issue psychopathy is that individuals who have higher levels of grandiosity may be prone to exaggerate their status. For this reason the present study will consider gang membership status rather than reported status within the gang.

Peer Delinquency

Psychological risk factors can also be influenced by social criminogenic risks. One study found a correspondence between self-control and peer deviancy (McGloin, O'Neill & Shermer, 2009). Peer delinquency is associated with adolescent offending irrespective of gang membership (Dishion, Spracklen, Andrews, & Patterson, 1996; Gilman, Hill, David, Howell, & Kosterman, 2014; Snyder, Dishion, & Patterson, 1986; Weerman, 2003) and is also a strong predictor of adult criminality (Boduszek, Adamson, Shevlin, Hyland, & Bourke, 2013). Much of the research on peer delinquency and gangs has focused on the relationship between delinquent peers and joining a gang. Research has indicated

that delinquent peers and commitment to their associates were found to be significant risk factors for gang membership; however, the same study indicated that additional factors of fewer prosocial peers, and time without adults predicted violent offending behaviour in general (Esbensen, et al., 2009).

Peers are one of four recognised social risk factors for gang membership (Alleyne & Wood, 2014; Klein & Maxson, 2006). However, gang membership has been found to have significant relationship to offending, beyond peer delinquency (Battin, Hill, Abbott, Catalano & Hawkins, 1998; Battin-Pearson, Thornberry, Hawkins & Krohn, 1998). The length of time an individual spends in a gang has also been shown to have a relationship to desistance and positive risk factors because shorter involvement limits exposure to delinquent peers (Sweeten, Pyrooz, & Piquero, 2013). Furthermore, research using the Rochester Youth Developmental Study found that although there were overlaps between gang membership and peer delinquent behaviour, these measures represent different risks (Dong & Krohn, 2016). The degree of influence that delinquent peers have on gang members lies at the centre of the three models for gang involvement that were the focus of Study 1 (Thornberry et al., 1993). When offending frequencies have been examined, most studies have found support for the enhancement model, which purports that delinquent individuals increase their offending through increased opportunity and networks that are presented by membership of a gang (Hill, Howell, Hawkins, & Batin-Pearson, 1999). However, level of embededness and gang status can also impact on the degree to which membership has a relationship to offending (Boduszek et al., 2015). Delinquent peers are associated with joining a gang but are not enough alone to be a strong predictor of gang membership (Esbensen et al., 2009). Analysis of data from a longitudinal study in Germany demonstrated that peers influence to join a delinquent group was

restricted to the early teenage years (Seddig, 2014). The author also found that violent behaviour increased on account of gang membership, through the acceptance of violence as part of the group norm.

Exposure to Violence

Violent behaviour in particular has been found to be associated with gang membership (Alleyne, Fernandes, & Pritchard, 2014; Dong & Krohn, 2016). Researchers (Pyrooz, Moule, & Decker, 2014) have found that gang members were twice as likely as non-gang members to be both perpetrators and victims of crime. It has been suggested that gang membership can normalise violent and aggressive behaviour (Decker, 1996), both within the gang (Decker & Van Winkle, 1996) and for reasons of retaliation against other gangs (Klein & Maxson, 1989). Studies comparing the exposure to violence of non-gang and gang affiliated youth have found overwhelmingly that gang members experience significantly more violence than their non-gang counterparts (Barnes, Boutwell & Fox, 2012; Melde & Esbensen, 2013; O'Brien, Daffern, Chu, & Thomas, 2013; Papachristos, Braga, Piza, & Grossman, 2015). However, researchers have reported that this disparity continues when people leave the gang (Peterson, Taylor, & Esbensen, 2004). In a study with a sample 5,935 of school children (aged 13 to 14 years), gang members were found to have significantly higher experience all categories of both general and serious violent victimisation than non-gang counterparts, and the number of times they had been hit, robbed and attacked (Taylor, Peterson, Esbensen & Freng, 2007). Victimisation has also been found to extend to other criminal acts; a sample of gang involved prisoners were found to suffer from higher levels of personal crime victimisation (Fox, Lane, & Akers, 2013).

In spite of gang members being exposed to higher levels of violence, many young people cite protection from violent victimisation as a reason for joining a gang (Melde, Diem, & Drake, 2012; Taylor, 2008) and ultimately for leaving (Pyrooz, Decker, & Webb, 2014). A study on incarcerated youth who were gang involved demonstrated that they were more likely to suffer higher levels of exposure to violence than non-gang prisoners (Wood & Dennard, 2017). The relationship between violent victimisation and gang involvement may not be direct (Gibson, Miller, Jennings, Swatt, & Glover, 2009), with few researchers taking account of confounding variables to fully understand the relationship (Apel & Burrow, 2011; Barnes et al., 2012; DeLisi, Barnes, Beaver, & Gibson, 2009). A study using a sample of young people arrested for drug offences found that although current heavily involved gang members experienced higher levels of violent victimisation than others who had either a less robust connection or no affiliation, others factors influenced this relationship and gang membership per se was not enough to predict victimisation (Katz, Webb, Fox, & Shafer, 2011). Research on a sample of siblings, including twins, found that gang membership, as a non-shared factor, increased the risk of victimisation, particularly as the sample aged (Barnes et al., 2012). However, the authors point out that a major limitation of this study was that prior and current gang members were included in the same group. Taylor and colleagues (Taylor, Freng, Esbensen & Peterson, 2008) found that routine activities and the availability of drugs and/or alcohol had a relationship to violent victimisation among gang members. Indicating that specific factors, other than membership of a delinquent group per se, play a role in determining exposure to violence. However, this research focused on group membership and activities rather than the individual characteristics of members to explain increased exposure to violence. The aforementioned study using PTDS

baseline data found that in addition to psychopathic traits, exposure to violence and gang membership also contributed to a model of moral disengagement (Dhingra, et al., 2015).

A sample of prior gang-affiliated school children indicated that violence was not significantly higher than non-gang affiliated youth, but that their general offending remained elevated (Melde & Esbensen, 2013). Higher offending can increase the risk of exposure to violence, through increased exposure to criminality; a hypothesis supported by the research findings that indicated violent victimisation remained higher for prior gang members (Peterson, Taylor, & Esbensen, 2004). However, the number of studies that have investigated the relationship between violence and post gang membership are small and there is scope for further research. One such study on a UK sample found that even those who were affiliated to a gang also experienced higher levels of both gang and non-gang related violence (Wood, Kallis, & Coid, 2017). Researchers have also found that contact with a gang member via offending networks can also increase exposure to violence for non-gang members (Papachristos, Braga, Piza, & Grossman, 2015); a finding that is relevant for those who were previously gang affiliated and may continue to socialise with members.

Aims of Study

A key aim of the present study was to investigate the relationship between psychological and social risk factors to gang status by comparing the scores of offenders who had no gang affiliation with current and prior gang members. In particular, the study sought to investigate whether there were significant differences between prior members and current gang members in order to establish if there was support for the selection, facilitation or enhancement models

(Thornberry et al., 1993). The following psychological risk factors were investigated: temperance, consideration of others, future orientation, psychosocial maturity, resistance to peer influence, and psychopathy. Social risk factors included: delinquent peer behaviour, delinquent peer influence, and exposure to violence.

Method

Measures

The study investigated psychological development, by using the following measures: *Future Outlook Inventory* (Cauffman & Woolard, 1999); higher scores indicate a greater degree of future consideration and planning. *Psychosocial Maturity Inventory* (Greenberger, Josselson, Knerr, & Knerr, 1974); items in the PSMI are reverse coded so that higher scores indicate more responsible behaviour. *Resistance to Peer Influence* (Steinberg, 2000) measures the degree of autonomy that adolescents have when they are with their peers. Socio-emotional adjustment using the Temperance and Consideration of Others scales from the *Weinberger Adjustment Inventory* (Weinberger & Schwartz, 1990). Temperance is a combined score of two separate scales: Impulse Control and Suppression of Aggression. Higher scores on each of the subscales indicates more positive behaviour (for example greater temperance and greater consideration for others).

The total scores for psychopathy were investigated. At the baseline researchers used the *PCL-YV* measure (Forth, Kosson & Hare, 2003) and for subsequent waves the *Youth Psychopathic Traits Inventory* (YPI; Andershed, Kerr, Stattin & Levander, 2002) was utilised. For the purposes of the present study the total scores and those for the three dimensions of psychopathy:

Grandiose Manipulative Dimension, Callous Unemotional Dimension, and Impulsive Irresponsible Dimension were reported.

The influence of peer delinquency was also investigated, using two scales. *The Peer Delinquent Behaviour measure* (Thornberry, Lizotte, Krohn, Farnworth & Jang, 1994) encompasses the antisocial behaviour and antisocial influence of peers. Finally, exposure to violence was investigated, using the *Exposure to Violence Inventory* (Selner-O'Hagan, Kindlon, Buka, Raudenbush & Earls, 1998). The present study used a combined total score for violence experienced as a victim and witness.

Gang membership was investigated using the *Gang Involvement* measure, (Thornberry et al., 1994). For the purposes of the present study a variable for gang involvement during the recall period was created. For further details of all measures see the method section.

Study Design

The study investigated the relationship between gang affiliation and psychological/social risk factors. The sample was divided according to whether participants had never been in a gang, were currently in a gang, or had previously been gang affiliated but had left before the reporting period for each wave of data. The three groups are reported as gang never, current and prior. The first objective of the study was to investigate variance of psychological development, psychopathy, peer delinquency and exposure to violence between the styles of offenders. The second objective was to explore whether there were patterns of variance for each variable for the eleven waves of data. ANOVA was selected for the analysis because it is a robust test for abnormally distributed data (Blanca, Alarcó, Arnau, Bono, & Bendayan, 2017).

Data Analysis

Gang membership for each wave of data collection was investigated and a new variable was created with three levels: current gang member, never belonged to a gang and prior gang member. Changes to status were checked for each wave of data and where appropriate amended. A one-way between groups analysis of variance was conducted for all three categories to explore: Future orientation; socio-emotional adjustment; psychosocial development; resistance to peer influence; psychopathy; peer antisocial behaviour and influence; and exposure to violence. Based on Levene's test, where equal variance was assumed the Tukey HSD post-hoc comparison was selected; where equal variance was not assumed Welch's F was reported, and the Games-Howell test was selected for post-hoc comparisons, in recognition of unequal sample sizes and variance.

Results

Future Outlook

Table 2.1

Mean Scores For Future Outlook Inventory

Wave and Status	Age Range	N	M	SD
Baseline	14-19			
G never		759	2.32	0.54
G current		159	2.17	0.50
G prior		120	2.39	0.56
6 months	14-20			
G never		692	2.48	0.57
G current		149	2.28	0.55
G prior		135	2.40	0.55
12 months	15-20			
G never		680	2.53	0.56
G current		132	2.37	0.56
G prior		163	2.48	0.57
18 months	15-21			
G never		651	2.60	0.56
G current		114	2.33	0.51
G prior		184	2.48	0.55
24 months	16-21			
G never		640	2.62	0.54
G current		110	2.37	0.52
G prior		198	2.54	0.50
30 months	16-22			
G never		641	2.65	0.54
G current		104	2.50	0.54
G prior		205	2.58	0.57
36 months	17-22			
G never		633	2.66	0.55
G current		95	2.43	0.52
G prior		216	2.63	0.61
48 months	18-23			
G never		607	2.68	0.52
G current		86	2.50	0.51
G prior		235	2.57	0.55
60 months	18-24			
G never		601	2.71	0.53
G current		76	2.55	0.49
G prior		243	2.60	0.58
72 months	20-25			
G never		588	2.71	0.53
G current		71	2.54	0.48
G prior		243	2.68	0.58
84 months	20-26			
G never		560	2.73	0.55
G current		62	2.49	0.58
G prior		243	2.62	0.58

Current gang members had the lowest mean score out of the three groups for all waves of data; and from month 6 those who had never been affiliated to a

gang had the highest mean scores and the most positive future outlook (Table 2.1).

A one way between groups analysis of variance was conducted to explore the relationship between gang membership and future outlook. Participants were divided into three groups: never in a gang (G never), currently in a gang (G current) and previously in a gang (G prior).

Table 2.2

Summary of ANOVA For Future Outlook Inventory

	Sum of Squares	df	Mean Square	F	*p*	Eta Squared
Baseline						
Between groups	4.03	2	2.02	6.92	.00**	.01*
Within groups	301.37	1035	0.29			
Total	305.40	1037				
6 months						
Between groups	5.34	2	2.67	8.32	.000***	.02*
Within groups	312.37	973	0.32			
Total	317.72	975				
12 months						
Between groups	2.61	2	1.30	4.13	.02*	.01*
Within groups	306.89	972	0.32			
Total	309.50	974				
18 months						
Between groups	8.05	2	4.02	13.13	.000***	.03*
Within groups	289.93	946	0.31			
Total	297.98	948				
24 months						
Between groups	5.76	2	2.88	10.39	.000***	.02*
Within groups	262.15	945	0.28			
Total	267.92	947				
30 months						
Between groups	2.48	2	1.24	4.14	.02*	.01*
Within groups	283.35	947	0.30			
Total	285.83	949				

Significance: * p<.05 ** p<.01 *** p<.001

Effect size: *Small, **Medium, ***Large

Table 2.3

Summary of ANOVA For Future Outlook Inventory

	Sum of Squares	df	Mean Square	F	*p*	Eta Squared
36 months						
Between groups	4.31	2	0.44	7.85a	.00**	.02*
Within groups	295.76	262.69	0.27			
Total	219.37	264.69				
48 months						
Between groups	3.94	2	1.97	7.06	.00**	.02*
Within groups	257.84	925	0.28			
Total	261.77	927				
60 months						
Between groups	3.08	2	1.54	5.29	.01**	.01*
Within groups	266.40	917	0.29			
Total	269.47	919				
72 months						
Between groups	1.85	2	0.90	3.07	.05*	.01*
Within groups	264.07	899	0.29			
Total	265.88	901				
84 months						
Between groups	4.41	2	2.21	7.11	.00**	.02*
Within groups	267.31	862	0.31			
Total	271.72	864				

a. Equal variances not assumed. Significance: * p<.05 ** p<.01 *** p<.001.

Effect size: *Small, **Medium, ***Large

Post hoc comparisons indicated the mean score for current gang members were significantly lower than those who had never been in a gang also for waves of data (Tables 2.4 to 2.6). Significant variance was found at the baseline and at months 18, 24, 48, 60 and 84; all effect sizes were small (Tables 2.2 and 2.3). The mean score for current gang members was also significantly lower than prior gang members at the baseline and month 24 (Tables 2.4 and 2.5). Post hoc comparisons also indicated that the mean score of those who had never been in a gang was significantly higher than that of prior gang members at the baseline, and months 18, 48, 60, and 84 (Tables 2.4 to 2.6). For prior gang members more variance was found between those who had never been in a gang compared to those who were currently in a gang.

Table 2.4

Tukey HSD Comparison For Future Outlook Inventory

Age Range	Gang Status A	Gang Status B	Mean difference (A-B)	Std. Error	95% Confidence Interval	
					Lower Bound	Upper Bound
14-19	**Baseline**					
	G never	G current	0.15*	0.05	0.04	0.26
		G prior	-0.07*	0.05	-0.19	0.06
	G current	G never	-0.15*	0.05	0.26	-0.04
		G prior	-0.22*	0.07	-0.37	-0.07
	G prior	G never	0.07	0.05	-0.06	0.19
		G current	0.22*	0.07	0.07	0.37
14-20	**6 months**					
	G never	G current	0.20*	0.05	0.08	0.32
		G prior	0.08	0.05	-0.04	0.21
	G current	G never	-0.20*	0.05	-0.32	-0.08
		G prior	-0.12	0.07	-0.28	0.04
	G prior	G never	-0.08	0.05	-0.21	0.04
		G current	0.12	0.07	-0.04	0.28
15-20	**12 months**					
	G never	G current	0.15*	0.05	0.03	0.28
		G prior	0.04	0.05	-0.08	0.16
	G current	G never	-0.15*	0.05	-0.28	-0.03
		G prior	-0.11	0.07	-0.26	0.05
	G prior	G never	-0.04	0.05	-0.16	0.07
		G current	0.07	0.07	-0.05	0.26
15-21	**18 months**					
	G never	G current	0.27*	0.06	0.14	0.40
		G prior	0.12*	0.05	0.01	0.23
	G current	G never	-0.27*	0.06	-0.40	-0.14
		G prior	-0.15	0.07	-0.30	0.01
	G prior	G never	-0.12*	0.05	-0.23	-0.01
		G current	0.15	0.07	-0.01	0.30

* $p < 0.05$

Table 2.5
Tukey HSD Comparison For Future Outlook Inventory

Age Range	Gang Status A	Gang Status B	Mean difference (A-B)	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
16-21	**24 months**					
	G never	G current	0.24*	0.05	0.12	0.37
		G prior	0.07	0.04	-0.03	0.17
	G current	G never	-0.24*	0.05	-0.37	-0.12
		G prior	-0.17*	0.06	-0.32	-0.02
	G prior	G never	-0.07	0.04	-0.17	0.03
		G current	0.17*	0.06	0.02	0.32
16-22	**30 months**					
	G never	G current	0.15*	0.06	0.01	0.29
		G prior	0.07	0.04	-0.03	0.18
	G current	G never	-0.15*	0.06	-0.29	-0.10
		G prior	-0.08	0.07	-0.23	0.08
	G prior	G never	0.07	0.04	-0.18	0.03
		G current	-0.08	0.07	-0.08	0.23
17-22	**36 months**[a]					
	G never	G current	0.23*	0.06	0.09	0.37
		G prior	0.02	0.05	-0.09	0.13
	G current	G never	-0.23*	0.06	-0.37	-0.09
		G prior	-0.20*	0.07	-0.36	-0.05
	G prior	G never	-0.02	0.05	-0.13	0.09
		G current	0.20*	0.07	0.05	0.36
18-23	**48 months**					
	G never	G current	0.18*	0.06	0.04	0.33
		G prior	0.11*	0.04	0.02	0.21
	G current	G never	-0.18*	0.06	-0.33	-0.04
		G prior	-0.07	0.04	-0.23	0.08
	G prior	G never	-0.11*	0.04	-0.21	-0.02
		G current	0.07	0.07	-0.08	0.23

a. Games-Howell Comparison. * $p < 0.05$

Table 2.6
Tukey HSD Comparison For Future Outlook Inventory

Age Range	Gang Status A	Gang Status B	Mean difference (A-B)	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
18-24	**60 months**					
	G never	G current	0.16*	0.07	0.00	0.31
		G prior	0.11*	0.04	0.01	0.20
	G current	G never	-0.16*	0.07	-0.31	-0.00
		G prior	-0.05	0.07	-0.22	0.12
	G prior	G never	-0.11*	0.04	-0.20	-0.01
		G current	0.05	0.07	-0.12	0.22
20-25	**72 months**					
	G never	G current	0.17*	0.07	0.01	0.33
		G prior	0.04	0.04	-0.06	0.13
	G current	G never	-0.17*	0.07	-0.33	-0.01
		G prior	-0.13	0.07	-0.30	0.04
	G prior	G never	-0.03	0.04	-0.13	0.06
		G current	0.13	0.07	-0.04	0.30
20-26	**84 months**					
	G never	G current	0.24*	0.08	0.06	0.41
		G prior	0.11*	0.04	0.01	0.21
	G current	G never	-0.24*	0.08	-0.41	-0.06
		G prior	-0.13	0.08	-0.31	0.06
	G prior	G never	-0.11*	0.04	-0.21	-0.01
		G current	-0.13	0.08	-0.06	0.31

* $p < 0.05$

Higher mean scores for future orientation are a protective risk factor. The strongest pattern of variance was found between those who had never been in a gang and current gang members, with gang members presenting a higher negative risk. No consistent patterns were found for prior gang members. However, the results showed that current gang members scored significantly lower than prior gang members for future orientation. These results demonstrate the importance of taking account of future orientation in gang interventions, because of the potential to identify alternatives to life and a future in the gang.

Temperance

Table 2.7

Mean Scores For WAI: Temperance

Wave and Status	Age Range	N	M	SD
Baseline	14-19			
G never		761	2.93	0.80
G current		161	2.32	0.71
G prior		120	2.60	0.79
6 months	14-20			
G never		695	2.99	0.80
G current		149	2.52	0.74
G prior		135	2.70	0.81
12 months	15-20			
G never		680	3.12	0.79
G current		132	2.61	0.73
G prior		163	2.86	0.84
18 months	15-21			
G never		652	3.12	0.82
G current		114	2.61	0.73
G prior		185	2.88	0.87
24 months	16-21			
G never		641	3.01	0.81
G current		110	2.49	0.66
G prior		198	2.79	0.81
30 months	16-22			
G never		642	3.11	0.85
G current		104	2.59	0.63
G prior		205	2.92	0.84
36 months	17-22			
G never		636	3.13	0.82
G current		95	2.62	0.77
G prior		326	2.98	0.85
48 months	18-23			
G never		608	3.19	0.80
G current		88	2.71	0.76
G prior		236	3.06	0.82
60 months	18-24			
G never		603	3.23	0.81
G current		76	2.65	0.70
G prior		243	3.03	0.85
72 months	20-25			
G never		589	3.31	0.82
G current		71	2.60	0.77
G prior		243	3.08	0.88
84 months	20-26			
G never		561	3.32	0.82
G current		62	2.88	0.72
G prior		243	3.05	0.86

Current gang members had the lowest mean score and those who had never been gang affiliated had the highest mean score for all waves of data (Table 2.7)

A one way between groups analysis of variance was conducted to explore the relationship between gang membership and temperance; lower scores indicate less ability to supress aggression and control impulse. Participants were divided into three groups: never in a gang (G never), currently in a gang (G current) and previously in a gang (G prior). Significant variance was found for all waves of data; the effect size at the baseline was medium and was small for all subsequent waves (Tables 2.8 and 2.9).

Table 2.8

Summary of ANOVA For WAI: Temperance

	Sum of Squares	df	Mean Square	F	*p*	Eta Squared
Baseline						
Between groups	55.20	2	27.60	44.68	.00***	.08**
Within groups	641.75	1039	0.62			
Total	696.95	1041				
6 months						
Between groups	32.25	2	16.12	25.85	.000***	.05*
Within groups	608.69	976	0.62			
Total	640.93	978				
12 months						
Between groups	33.71	2	16.86	26.82	.000***	.05*
Within groups	610.94	972	0.63			
Total	644.65	974				
18 months						
Between groups	29.25	2	14.63	21.80	.000***	.04*
Within groups	636.11	948	0.67			
Total	665.36	950				
24 months						
Between groups	28.94	2	14.47	28.67a	.000***	.05*
Within groups	591.62	268.86	0.63			
Total	620.56	270.86				
30 months						
Between groups	27.63	2	13.82	28.94a	.000***	.04*
Within groups	646.47	270.04	0.68			
Total	674.10	272.04				

a. Equal variances not assumed. Significance: * p<.05 ** p<.01 *** p<.001.

Effect size: *Small, **Medium, ***Large

Table 2.9

Summary of ANOVA For WAI: Temperance

	Sum of Squares	df	Mean Square	F	*p*	Eta Squared
36 months						
Between groups	23.13	2	11.57	17.02	.000***	.03*
Within groups	641.63	944	0.68			
Total	664.76	946				
48 months						
Between groups	19.05	2	9.53	14.74	.000***	.03*
Within groups	600.20	929	0.65			
Total	619.26	931				
60 months						
Between groups	25.26	2	12.63	18.97	.000***	.04*
Within groups	611.90	919	0.67			
Total	637.16	921				
72 months						
Between groups	35.57	2	17.79	25.79	.000***	.05*
Within groups	620.68	900	0.69			
Total	656.25	902				
84 months						
Between groups	20.23	2	10.11	14.96	.000***	.03*
Within groups	583.57	863	0.68			
Total	603.79	865				

Significance: * p<.05 ** p<.01 *** p<.001

Effect size: *Small, **Medium, ***Large

Post hoc comparisons indicated that the mean score of those who had never been in a gang were significantly higher than participants who were currently in a gang for all waves of data; and significantly higher than prior members for the baseline and months 6 to 30 (Tables 2.10 and 2.11) and 60 to 84 (Table 2.13). Post hoc comparisons also indicated that the mean score for current gang members were significantly higher than those of prior gang members at the baseline and for months 6, 12, 18, 24, 30, 48, 60 and 72 (Tables 2.10 to 2.13); indicating prior gang members had significantly higher scores for temperance for all except two waves.

Table 2.10

Tukey HSD Comparison For WAI: Temperance

Age Range	Gang Status A	Gang Status B	Mean difference (A-B)	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
14-19	**Baseline**					
	G never	G current	0.61*	0.07	0.45	0.77
		G prior	0.34*	0.08	0.16	0.52
	G current	G never	-0.61*	0.07	-0.77	-0.45
		G prior	-0.27*	0.09	-0.49	-0.05
	G prior	G never	-0.34*	0.08	-0.52	-0.16
		G current	0.27*	0.09	0.05	0.49
14-20	**6 months**					
	G never	G current	0.47*	0.07	0.30	0.64
		G prior	0.29*	0.07	0.12	0.47
	G current	G never	-0.47*	0.07	-0.64	-0.30
		G prior	-0.18	0.09	-0.40	0.04
	G prior	G never	-0.29*	0.07	-0.47	-0.12
		G current	0.18	0.09	-0.04	0.40
15-20	**12 months**					
	G never	G current	0.51*	0.08	0.34	0.69
		G prior	0.27*	0.07	0.11	0.43
	G current	G never	-0.51*	0.08	-0.69	-0.34
		G prior	-0.25*	0.09	-0.46	-0.03
	G prior	G never	-0.27*	0.07	-0.43	-0.11
		G current	0.25*	0.09	-0.03	0.46
15-21	**18 months**					
	G never	G current	0.51*	0.08	0.31	0.71
		G prior	0.24*	0.07	0.08	0.40
	G current	G never	-0.51*	0.08	-0.71	-0.31
		G prior	-0.27*	0.10	-0.50	-0.04
	G prior	G never	-0.24*	0.07	-0.40	-0.08
		G current	0.27*	0.10	0.04	0.50

* $p < 0.05$

Table 2.11
Tukey HSD Comparison For WAI: Temperance

Age Range	Gang Status A	Gang Status B	Mean difference (A-B)	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
16-21	**24 months**[a]					
	G never	G current	0.52*	0.07	0.35	0.69
		G prior	0.23*	0.07	0.07	0.38
	G current	G never	-0.52*	0.07	-0.69	-0.35
		G prior	-0.29*	0.09	-0.49	-0.09
	G prior	G never	-0.23*	0.07	-0.38	-0.07
		G current	0.29*	0.09	0.09	0.49
16-22	**30 months**[a]					
	G never	G current	0.53*	0.07	0.36	0.70
		G prior	0.20*	0.07	0.04	0.36
	G current	G never	-0.53*	0.07	-0.70	-0.36
		G prior	-0.33*	0.09	-0.53	-0.13
	G prior	G never	-0.20*	0.07	-0.36	-0.04
		G current	0.33*	0.09	0.13	0.53
17-22	**36 months**					
	G never	G current	0.52*	0.09	0.30	0.73
		G prior	0.15	0.07	-0.00	0.30
	G current	G never	-0.52*	0.09	-0.73	-0.30
		G prior	-0.37*	0.10	-0.60	-0.13
	G prior	G never	-0.15	0.07	-0.30	0.00
		G current	0.37*	0.37	0.13	0.60
18-23	**48 months**					
	G never	G current	0.49*	0.09	0.27	0.70
		G prior	0.13	0.06	-0.01	0.28
	G current	G never	-0.49*	0.09	-0.70	-0.27
		G prior	-0.35*	0.10	-0.59	-0.12
	G prior	G never	-0.13	0.06	-0.28	0.01
		G current	0.35*	0.10	0.12	0.59

a. Games-Howell Comparison. * $p < 0.05$

Table 2.12
Tukey HSD Comparison For WAI: Temperance

Age Range	Gang Status A	Gang Status B	Mean difference (A-B)	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
18-24	**60 months**					
	G never	G current	0.58*	0.10	0.34	0.81
		G prior	0.19*	0.10	0.05	0.34
	G current	G never	-0.57*	0.06	-0.81	-0.34
		G prior	-0.38*	0.11	-0.63	-0.13
	G prior	G never	-0.19*	0.06	-0.34	-0.05
		G current	0.38*	0.11	0.13	0.63
20-25	**72 months**					
	G never	G current	0.71*	0.10	0.46	0.95
		G prior	0.23*	0.06	0.08	0.37
	G current	G never	-0.71*	0.10	-0.95	-0.46
		G prior	-0.48*	0.11	-0.74	-0.22
	G prior	G never	-0.23*	0.06	-0.37	-0.08
		G current	0.48*	0.11	0.22	0.74
20-26	**84 months**					
	G never	G current	0.44*	0.11	0.18	0.70
		G prior	0.27*	0.06	0.13	0.42
	G current	G never	-0.44*	0.11	-0.70	-0.18
		G prior	-0.17	0.12	-0.44	0.11
	G prior	G never	-0.27*	0.06	-0.42	-0.13
		G current	0.17	0.12	-0.11	0.44

* $p < 0.05$

Lower levels of the ability to control aggression and impulse, is a criminogenic risk factor. It is therefore noteworthy that patterns of significantly lower temperance were found for current gang members compared to both never and prior gang members throughout the study. This suggests that interventions need to take account of this risk for those who are gang involved. Prior gang members were also found to have lower temperance levels than never gang members for eight waves, suggesting that this particular risk factor needs to be accounted for in post gang interventions.

Consideration of Others

Table 2.13

Mean Scores For WAI: Consideration of others

Wave and Status	Age Range	N	M	SD
Baseline	14-19			
G never		761	3.46	0.88
G current		161	3.19	0.90
G prior		120	3.46	0.80
6 months	14-20			
G never		695	3.46	0.88
G current		149	3.16	0.92
G prior		135	3.46	0.74
12 months	15-20			
G never		680	3.53	0.82
G current		132	3.36	0.75
G prior		163	3.48	0.85
18 months	15-21			
G never		652	3.51	0.86
G current		114	3.31	0.90
G prior		185	3.56	0.83
24 months	16-21			
G never		641	3.66	0.79
G current		110	3.22	0.75
G prior		198	3.52	0.77
30 months	16-22			
G never		642	3.65	0.83
G current		104	3.38	0.78
G prior		205	3.60	3.60
36 months	17-22			
G never		636	3.64	0.81
G current		95	3.42	0.74
G prior		216	3.63	0.82
48 months	18-23			
G never		608	3.71	0.80
G current		88	3.59	0.83
G prior		236	3.66	0.81
60 months	18-24			
G never		603	3.75	0.78
G current		76	3.62	0.75
G prior		243	3.74	0.87
72 months	20-25			
G never		589	3.78	0.77
G current		71	3.74	0.71
G prior		243	3.84	0.81
84 months	20-26			
G never		561	3.78	0.74
G current		62	3.50	0.86
G prior		243	3.67	0.80

Current gang members had the lowest mean score for consideration of others for all waves of data; those who had never been in a gang scored the highest for nine waves and prior gang members for two (Table 2.13).

A one way between groups analysis of variance was conducted to explore the relationship between gang membership and consideration of others; lower scores indicate less consideration. Participants were divided into three groups: never in a gang (G never), currently in a gang (G current) and previously in a gang (G prior).

Table 2.14

Summary of ANOVA For WAI: Consideration of Others

	Sum of Squares	df	Mean Square	F	*p*	Eta Squared
Baseline						
Between groups	10.02	2	5.01	6.56	.00**	.01*
Within groups	793.48	1039	0.76			
Total	803.49	1041				
6 months						
Between groups	11.38	2	5.69	7.60	.00**	.02*
Within groups	730.73	976	0.75			
Total	742.11	978				
12 months						
Between groups	3.41	2	1.70	2.54	.08	.01*
Within groups	650.91	972	0.67			
Total	654.32	974				
18 months						
Between groups	5.01	2	2.51	3.39	.03*	.01*
Within groups	701.42	948	0.74			
Total	706.43	950				
24 months						
Between groups	19.28	2	9.64	15.81	.000***	.03*
Within groups	576.89	946	0.61			
Total	596.17	948				
30 months						
Between groups	6.48	2	3.24	4.92	.01**	.01*
Within groups	624.78	948	0.66			
Total	631.26	950				
36 months						
Between groups	4.07	2	2.03	3.14	.04*	.01*
Within groups	611.04	944	0.65			
Total	615.10	946				
84 months						
Between groups	5.39	2	2.70	4.63	.01*	.01*
Within groups	502.98	863	0.58			
Total	508.38	865				

Significance: * p<.05 ** p<.01 *** p<.001

Effect size: *Small, **Medium, ***Large

Table 2.15

Tukey HSD Comparison For WAI: Consideration of Others

Age Range	Gang Style A	Gang Style B	Mean difference (A-B)	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
14-19	**Baseline**					
	G never	G current	0.27*	0.07	0.09	0.45
		G prior	0.00	0.09	-0.20	0.21
	G current	G never	-0.27*	0.08	-0.45	-0.09
		G prior	-0.27*	0.11	-0.51	-0.02
	G prior	G never	-0.01	0.09	-0.21	0.20
		G current	0.27*	0.11	0.20	0.51
14-20	**6 months**					
	G never	G current	0.30*	0.08	0.12	0.48
		G prior	-0.00	0.08	-0.19	0.19
	G current	G never	-0.30*	0.08	-0.48	-0.12
		G prior	-0.30*	0.10	-0.54	-0.06
	G prior	G never	0.00	0.08	-0.19	0.19
		G current	0.30*	0.10	0.01	0.54
15-21	**18 months**					
	G never	G current	0.21*	0.09	0.00	0.41
		G prior	-0.05	0.07	-0.22	0.12
	G current	G never	-0.21*	0.09	-0.41	-0.00
		G prior	-0.25*	0.10	-0.49	-0.01
	G prior	G never	0.05	0.07	-0.12	0.22
		G current	0.25*	0.10	0.01	0.49

* $p < 0.05$

Significant variance was found at the baseline and months 6, 18, 24, 30, 36 and 84; all effect sizes were small (Table 2.14). Post hoc comparisons indicated that current gang members had a significantly lower mean score than both prior and never gang members at the baseline and months 6, 18, and 24; and a significantly lower mean score than those who had never been in a gang at months 30, 36, and 84 (Tables 2.15 and 2.16). No significant variance between the mean scores of current and prior gang members was found.

Table 2.16
Tukey HSD Comparison For WAI: Consideration of Others

Age Range	Gang Status A	Gang Status B	Mean difference (A-B)	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
16-21	**24 months**					
	G never	G current	0.44*	0.08	0.26	0.63
		G prior	0.14	0.06	-0.01	0.29
	G current	G never	-0.44*	0.08	-0.63	-0.26
		G prior	-0.31*	0.09	-0.53	-0.09
	G prior	G never	-0.14	0.06	-0.29	0.01
		G current	0.31*	0.09	0.09	0.52
16-22	**30 months**					
	G never	G current	0.27*	0.09	0.07	0.47
		G prior	0.05	0.07	-0.11	0.20
	G current	G never	-0.27*	0.09	-0.47	-0.07
		G prior	-0.22	0.10	-0.45	0.01
	G prior	G never	-0.05	0.07	-0.20	0.11
		G current	0.22	0.10	-0.01	0.45
17-22	**36 months**					
	G never	G current	0.22*	0.09	0.01	0.43
		G prior	0.01	0.06	-0.14	0.16
	G current	G never	-0.22*	0.09	-0.43	-0.01
		G prior	-0.21	0.10	-0.44	0.03
	G prior	G never	-0.01	0.06	-0.16	0.14
		G current	0.21	0.10	-0.02	0.44
20-26	**84 months**					
	G never	G current	0.28*	0.10	0.04	0.52
		G prior	0.11	0.06	-0.03	0.24
	G current	G never	-0.28*	0.10	-0.52	-0.04
		G prior	-0.17	0.11	-0.43	0.09
	G prior	G never	-0.11	0.06	-0.24	0.03
		G current	0.17	0.11	-0.09	0.43

* $p < 0.05$

Lower levels of consideration for others is a negative risk factor. Ironically current gang members scored significantly lower than never gang members for seven waves and prior gang members for four waves, limited to the first half of the study. No variance was found between prior and never gang members. These findings suggest that the trait of lower consideration of others could be a dynamic risk factor, and one that has a relationship to gang status.

Psycho-social maturity

Table 2.17

Mean Scores For PSMI Total

Wave and Status	Age Range	N	M	SD
Baseline	14-19			
G never		759	3.05	0.45
G current		159	2.84	0.42
G prior		120	2.95	0.42
6 months	14-20			
G never		692	3.10	0.44
G current		149	2.88	0.40
G prior		135	2.94	0.47
12 months	15-20			
G never		680	3.16	0.44
G current		132	2.93	0.44
G prior		163	3.07	0.49
18 months	15-21			
G never		651	3.20	0.46
G current		114	2.97	0.42
G prior		184	3.01	0.54
24 months	16-21			
G never		640	3.19	0.47
G current		110	2.87	0.47
G prior		198	3.03	0.50
30 months	16-22			
G never		641	3.22	0.48
G current		104	2.92	0.48
G prior		205	3.08	0.50
36 months	17-22			
G never		633	3.25	0.44
G current		95	2.95	0.40
G prior		216	3.12	0.46
48 months	18-23			
G never		608	3.25	0.43
G current		87	3.11	0.47
G prior		236	3.18	0.47
60 months	18-24			
G never		602	3.30	0.43
G current		76	3.11	0.38
G prior		243	3.23	0.49
72 months	20-25			
G never		588	3.34	0.44
G current		71	3.21	0.44
G prior		243	3.27	0.46
84 months	20-26			
G never		560	3.33	0.41
G current		62	3.19	0.36
G prior		243	3.19	0.45

Those who had never been gang affiliated had the highest mean scores for all waves of data and current gang members had the lowest scores, with the

exception of the final interview when their mean score was the same as those who had previously been in a gang (Table 2.17).

A one way between groups analysis of variance was conducted to explore the relationship between gang membership and psychosocial maturity; lower scores indicate less maturity. Participants were divided into three groups: never in a gang (G never), currently in a gang (G current) and previously in a gang (G prior). Significant variance was found for all waves of data; however, the post hoc test for month 72 did not indicate any significant differences between groups (Table 2.22).

Table 2.18

Summary of ANOVA For PSMI Total

	Sum of Squares	df	Mean Square	F	*p*	Eta Squared
Baseline						
Between groups	6.37	2	3.19	16.18	.000***	.03*
Within groups	203.75	1035	0.20			
Total	210.12	1037				
6 months						
Between groups	7.31	2	3.65	19.04	.000***	.04*
Within groups	186.66	973	0.19			
Total	193.97	975				
12 months						
Between groups	6.03	2	3.02	14.87	.000***	.03*
Within groups	197.22	972	0.20			
Total	203.25	974				
18 months						
Between groups	9.02	2	4.51	21.04a	.000***	.04*
Within groups	208.34	251.87	0.22			
Total	217.36	253.87				
24 months						
Between groups	11.20	2	5.60	24.97	.000***	.05*
Within groups	212.00	945	0.22			
Total	223.20	947				
30 months						
Between groups	9.59	2	4.79	20.58	.000***	.04*
Within groups	220.63	947	0.23			
Total	230.22	949				

a. Equal variances not assumed. Significance: * p<.05 ** p<.01 *** p<.001.

Effect size: *Small, **Medium, ***Large

Table 2.19

Summary of ANOVA For PSMI Total

	Sum of Squares	df	Mean Square	F	*p*	Eta Squared
36 months						
Between groups	8.57	2	4.28	24.79a	.000***	.05*
Within groups	183.14	24.79	0.20			
Total	191.71	26.79				
48 months						
Between groups	1.93	2	0.97	4.86	.01**	.01*
Within groups	184.23	928	0.20			
Total	186.16	930				
60 months						
Between groups	2.97	2	1.48	9.10a	.000***	.02*
Within groups	178.12	198.99	0.19			
Total	181.08	200.99				
72 months						
Between groups	1.46	2	0.73	3.74	.02	.01*
Within groups	175.97	899	0.20			
Total	177.43	901				
84 months						
Between groups	3.83	2	1.92	11.00	.000***	.03*
Within groups	150.12	862	0.17			
Total	153.95	864				

a. Equal variances not assumed. Significance: * p<.05 ** p<.01 *** p<.001.

Effect size: *Small, **Medium, ***Large

Post hoc comparisons indicated that the mean score of those who had never been in a gang were significantly higher than those of current gang members for all waves (Tables 2.20 to 2.22). Post hoc tests indicated that the mean score of those who had never been in a gang was significantly higher than prior gang members at months 6, 18, 24, 30, 36, and 84 (Tables 2.20 to 2.22). Prior gang members had a significantly higher mean score than current members at months 12, 24, 30, and 36 (Tables 2.20 to 2.21). However, the post hoc tests did not indicate significant variance for month 72.

Table 2.20

Tukey HSD Comparison For PSMI Total

Age Range	Gang Status A	Gang Status B	Mean difference (A-B)	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
14-19	**Baseline**					
	G never	G current	0.21*	0.04	0.12	0.30
		G prior	0.10	0.04	-0.00	0.20
	G current	G never	-0.21*	0.04	-0.30	-0.12
		G prior	-0.11	0.05	-0.24	0.01
	G prior	G never	-0.10	0.04	-0.20	0.00
		G current	0.11	0.05	-0.01	0.24
14-20	**6 months**					
	G never	G current	0.22*	0.04	0.12	0.31
		G prior	0.15*	0.04	0.06	0.25
	G current	G never	-0.22*	0.04	-0.31	-0.12
		G prior	-0.06	0.05	-0.18	0.06
	G prior	G never	-0.15*	0.04	-0.25	-0.06
		G current	0.06	0.05	-0.06	0.18
15-20	**12 months**					
	G never	G current	0.23*	0.04	0.13	0.33
		G prior	0.09*	0.04	-0.00	0.18
	G current	G never	-0.23*	0.04	-0.33	-0.13
		G prior	-0.13*	0.05	-0.26	-0.01
	G prior	G never	-0.09*	0.04	-0.18	0.00
		G current	0.13*	0.05	0.01	0.26
15-21	**18 months**[a]					
	G never	G current	0.24*	0.04	0.14	0.34
		G prior	0.19*	0.04	0.09	0.30
	G current	G never	-0.24*	0.04	-0.34	-0.13
		G prior	-0.04	0.06	-0.18	0.09
	G prior	G never	-0.19*	0.04	-0.30	-0.09
		G current	0.04	0.06	-0.09	0.18

a. Games-Howell Comparison. * $p < 0.05$

Table 2.21
Tukey HSD Comparison For PSMI Total

Age Range	Gang Status A	Gang Status B	Mean difference (A-B)	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
16-21	**24 months**					
	G never	G current	0.31*	0.05	0.20	0.43
		G prior	0.16*	0.04	0.07	0.25
	G current	G never	-0.31*	0.05	-0.43	-0.20
		G prior	-0.15*	0.06	-0.29	-0.02
	G prior	G never	-0.16*	0.04	-0.25	-0.07
		G current	0.15*	0.06	0.02	0.28
16-22	**30 months**					
	G never	G current	0.30*	0.05	0.18	0.42
		G prior	0.14*	0.04	0.05	0.23
	G current	G never	-0.30*	0.05	-0.42	-0.18
		G prior	-0.16*	0.06	-0.30	-0.02
	G prior	G never	-0.14*	0.04	-0.23	-0.05
		G current	0.16*	0.06	0.02	0.30
17-22	**36 months**[a]					
	G never	G current	0.30*	0.04	0.19	0.40
		G prior	0.13*	0.04	0.04	0.21
	G current	G never	-0.30*	0.04	-0.40	-0.19
		G prior	-0.17*	0.05	-0.29	0.05
	G prior	G never	-0.13*	0.04	-0.21	-0.04
		G current	0.17*	0.05	0.05	0.29
18-23	**48 months**					
	G never	G current	0.14*	0.05	0.02	0.26
		G prior	0.07	0.03	-0.01	0.15
	G current	G never	-0.14*	0.05	-0.26	-0.02
		G prior	-0.07	0.06	-0.20	0.06
	G prior	G never	-0.07	0.03	-0.15	0.01
		G current	0.07	0.06	-0.06	0.20

a. Games-Howell Comparison. * $p < 0.05$

Table 2.22
Tukey HSD Comparison For PSMI Total

Age Range	Gang Status A	Gang Status B	Mean difference (A-B)	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
18-24	**60 months**[a]					
	G never	G current	0.19*	0.05	0.08	0.30
		G prior	0.07	0.04	-0.01	0.16
	G current	G never	-0.18*	0.05	-0.30	-0.08
		G prior	-0.12	0.05	-0.25	0.01
	G prior	G never	-0.07	0.04	-0.16	0.01
		G current	0.12	0.05	-0.01	0.25
20-25	**72 months**					
	G never	G current	0.12	0.06	-0.01	0.25
		G prior	0.07	0.03	-0.01	0.15
	G current	G never	-0.12	0.06	-0.25	0.01
		G prior	-0.05	0.06	-0.20	0.09
	G prior	G never	-0.07	0.03	-0.15	0.01
		G current	0.05	0.06	-0.09	0.20
20-26	**84 months**					
	G never	G current	0.14*	0.06	0.01	0.27
		G prior	0.14*	0.03	0.06	0.22
	G current	G never	-0.14*	0.06	-0.27	-0.01
		G prior	0.00	0.06	-0.14	0.14
	G prior	G never	-0.14*	0.03	-0.22	-0.06
		G current	-0.00	0.06	-0.14	0.14

a. Games-Howell Comparison. * $p < 0.05$

Higher levels of psycho-social maturity are a protective risk factor. Current gang members were found to have significantly lower levels of maturity than those who had never been in a gang for ten waves, and lower levels than prior gang members for five consecutive waves between the age ranges of 15 to 22 years. The results also demonstrated that prior gang members had significantly lower levels than those who had never been affiliated for six waves, although not consistently so. Gang involvement there seems to have a relationship to lower levels of psycho-social maturity.

Resistance to Peer Influence

Table 2.23

Mean Scores For Resistance to Peer Influence

Wave and Status	Age Range	N	M	SD
Baseline	14-19			
G never		759	3.00	0.57
G current		159	2.81	0.56
G prior		120	2.87	0.58
6 months	14-20			
G never		692	3.09	0.55
G current		149	2.80	0.52
G prior		135	2.97	0.62
12 months	15-20			
G never		680	3.16	0.56
G current		130	2.89	0.62
G prior		163	2.98	0.63
18 months	15-21			
G never		651	3.19	0.55
G current		114	3.00	0.55
G prior		184	3.02	0.60
24 months	16-21			
G never		640	3.23	0.54
G current		110	3.04	0.62
G prior		198	3.06	0.58
30 months	16-22			
G never		641	3.29	0.54
G current		104	3.00	0.61
G prior		205	3.11	0.57
36 months	17-22			
G never		633	3.33	0.54
G current		95	3.05	0.63
G prior		216	3.23	0.53
48 months	18-23			
G never		608	3.35	0.54
G current		87	3.16	0.57
G prior		236	3.26	0.53
60 months	18-24			
G never		602	3.40	0.52
G current		76	3.17	0.59
G prior		243	3.32	0.55
72 months	20-25			
G never		587	3.44	0.52
G current		71	3.45	0.57
G prior		243	3.33	0.56
84 months	20-26			
G never		560	3.46	0.51
G current		62	3.39	0.50
G prior		243	3.34	0.55

Current gang members had the lowest resistance to peers from the baseline to month 60; however, at month 72 they scored highest and at month 84 their mean score was between that of the other two groups (Table 2.23).

A one way between groups analysis of variance was conducted to explore the relationship between gang membership and resistance to peer influence; lower scores indicate less ability to resist peers. Participants were divided into three groups: never in a gang (G never), currently in a gang (G current) and previously in a gang (G prior). Those who had never been in a gang had the highest mean score for all waves except for month 72; prior gang members had the lowest mean score for the final two waves of data (Table 2.23). Significant variance was found for all months; all effect sizes were small (Tables 2.24 and 2.25).

Table 2.24

Summary of ANOVA For Resistance to Peer Influence

	Sum of Squares	df	Mean Square	F	*p*	Eta Squared
Baseline						
Between groups	5.36	2	2.68	8.19	.000***	.02*
Within groups	338.50	1035	0.33			
Total	343.86	1037				
6 months						
Between groups	11.29	2	5.69	18.33	.000***	.04*
Within groups	302.18	973	0.31			
Total	313.57	975				
12 months						
Between groups	10.83	2	5.42	16.10	.000***	.03*
Within groups	326.46	970	0.34			
Total	337.30	972				
18 months						
Between groups	6.79	2	3.39	10.72	.000***	.02*
Within groups	299.52	946	0.32			
Total	306.31	948				
24 months[a]						
Between groups	6.38	2	3.19	9.54a	.000***	.02*
Within groups	293.51	242.60	0.31			
Total	299.89	244.60				
30 months						
Between groups	10.42	2	5.21	16.95	.000***	.04*
Within groups	291.00	947	0.31			
Total	301.42	949				

a. Equal variances not assumed. Significance: * p<.05 ** p<.01 *** p<.001.

Effect size: *Small, **Medium, ***Large

Table 2.25

Summary of ANOVA For Resistance to Peer Influence

	Sum of Squares	df	Mean Square	F	*p*	Eta Squared
36 months						
Between groups	7.29	2	3.65	12.08	.000***	.03*
Within groups	284.07	941	0.30			
Total	291.36	943				
48 months						
Between groups	3.51	2	1.75	6.08	.01**	.01*
Within groups	267.69	928	0.29			
Total	271.20	930				
60 months						
Between groups	4.02	2	2.01	6.98	.00**	.02*
Within groups	264.55	918	0.29			
Total	268.55	920				
72 months						
Between groups	2.40	2	1.20	4.24	.02*	.01*
Within groups	254.43	898	0.28			
Total	256.83	900				
84 months						
Between groups	2.47	2	1.24	4.56	.01*	.01*
Within groups	233.34	862	0.27			
Total	235.81	864				

Significance: * p<.05 ** p<.01 *** p<.001

Effect size: *Small, **Medium, ***Large

Post hoc comparisons indicated that the mean score of those who had never been in a gang was significantly higher than those of current gang members for all waves except for month 72 (Tables 2.26 to 2.28). Comparisons also indicated that the mean score of those who had never been in a gang was higher than those of prior gang members at months 6, 12, 18, 24, 30, 36 and 72 (Tables 2.26 to 2.28). Finally, comparisons indicated that the mean score of current gang members was significantly lower than that of prior gang members at months 6, 36, and 48.

Table 2.26

Tukey HSD Comparison For Resistance to Peer Influence

Age Range	Gang Status A	Gang Status B	Mean difference (A-B)	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
14-19	**Baseline**					
	G never	G current	0.18*	0.05	0.07	0.30
		G prior	0.13	0.06	-0.00	0.26
	G current	G never	-0.18*	0.05	-0.30	-0.07
		G prior	-0.06	0.07	-0.22	0.11
	G prior	G never	-0.13	0.06	-0.26	0.00
		G current	0.06	0.07	-0.11	0.22
14-20	**6 months**					
	G never	G current	0.30*	0.05	0.18	0.41
		G prior	0.13*	0.05	0.00	0.25
	G current	G never	-0.30*	0.05	-0.41	-0.18
		G prior	-0.17*	0.07	-0.32	-0.01
	G prior	G never	-0.13*	0.05	-0.25	-0.00
		G current	0.17*	0.17	0.01	0.32
15-20	**12 months**					
	G never	G current	0.28*	0.06	0.15	0.41
		G prior	0.18*	0.05	0.06	0.30
	G current	G never	-0.28*	0.06	-0.41	-0.15
		G prior	-0.09	0.07	-0.26	0.07
	G prior	G never	-0.18*	0.05	-0.30	-0.06
		G current	0.09	0.07	-0.07	0.26
15-21	**18 months**					
	G never	G current	0.19*	0.06	0.06	0.33
		G prior	0.18*	0.05	0.07	0.29
	G current	G never	-0.19*	0.06	-0.33	-0.06
		G prior	-0.01	0.07	-0.17	0.14
	G prior	G never	-0.18*	0.05	-0.29	-0.07
		G current	0.01	0.07	-0.14	0.17

* $p < 0.05$

Table 2.27
Tukey HSD Comparison For Resistance to Peer Influence

Age Range	Gang Status A	Gang Status B	Mean difference (A-B)	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
16-21	**24 months**[a]					
	G never	G current	0.18*	0.06	0.04	0.33
		G prior	0.17*	0.05	0.06	0.28
	G current	G never	-0.18*	0.06	-0.33	-0.04
		G prior	-0.01	0.07	-0.18	0.16
	G prior	G never	-0.17*	0.05	-0.28	-0.06
		G current	0.01	0.07	-0.16	0.18
16-22	**30 months**					
	G never	G current	0.29*	0.06	0.15	0.42
		G prior	0.18*	0.04	0.08	0.28
	G current	G never	-0.29*	0.06	-0.42	-0.15
		G prior	-0.11	0.07	-0.26	0.05
	G prior	G never	-0.18*	0.04	-0.28	-0.07
		G current	0.11	0.07	-0.05	0.26
17-22	**36 months**					
	G never	G current	0.28*	0.06	0.14	0.42
		G prior	0.10*	0.04	0.00	0.21
	G current	G never	-0.28*	0.06	-0.42	-0.14
		G prior	-0.18*	0.07	-0.34	-0.02
	G prior	G never	-0.10*	0.04	-0.21	-0.00
		G current	0.18*	0.07	0.02	0.34
18-23	**48 months**					
	G never	G current	0.19*	0.06	0.05	0.33
		G prior	0.09	0.04	-0.01	0.19
	G current	G never	-0.19*	0.06	-0.33	-0.05
		G prior	-0.10*	0.07	-0.26	0.06
	G prior	G never	-0.09	0.04	-0.19	0.01
		G current	0.10*	0.07	-0.06	0.26

a. Games-Howell Comparison. * $p < 0.05$

Table 2.28
Tukey HSD Comparison For Resistance to Peer Influence

					95% Confidence Interval	
Age Range	Gang Status A	Gang Status B	Mean difference (A-B)	Std. Error	Lower Bound	Upper Bound
18-24	**60 months**					
	G never	G current	0.23*	0.07	0.07	0.38
		G prior	0.08	0.04	-0.02	0.18
	G current	G never	-0.23*	0.07	-0.38	-0.07
		G prior	-0.15	0.04	-0.31	0.02
	G prior	G never	-0.08	0.04	-0.18	0.02
		G current	0.15	0.07	-0.02	0.31
20-25	**72 months**					
	G never	G current	0.09	0.07	-0.07	0.25
		G prior	0.11*	0.04	0.02	0.21
	G current	G never	-0.09	0.07	-0.25	0.07
		G prior	0.02	0.07	-0.15	0.19
	G prior	G never	-0.11*	0.04	-0.21	-0.02
		G current	-0.02	0.07	-0.19	0.15
20-26	**84 months**					
	G never	G current	0.08	0.07	-0.09	0.24
		G prior	0.12*	0.04	0.03	0.21
	G current	G never	-0.08	0.07	-0.24	0.09
		G prior	0.04	0.07	-0.13	0.22
	G prior	G never	-0.12*	0.04	-0.21	-0.03
		G current	-0.04	0.07	-0.22	0.13

* $p < 0.05$

A lower level of resistance to peer influence is a negative risk factor and one that could be compounded for those who belong to a delinquent group. Current gang members showed patterns of significantly lower levels of resistance to peer influence for the first nine waves of data; consistently over those who had never been in a gang, and for six waves over prior gang members. These findings are of concern given their delinquent group membership. Prior gang members scored significantly lower than never gang members for the last two waves only. This finding is hard to explain, especially when the age range was between 20 and 26 years; a point at which peer influence is traditionally seen to be reduced.

Psychopathy

Table 2.29

Mean Scores For PCL (baseline) and YPI (subsequent waves) Total

Wave and status	Age Range	N	M	SD
Baseline	14-19			
G never		732	15.49	7.59
G current		151	20.39	7.08
G prior		115	18.58	6.47
6 months	14-20			
G never		598	110.07	22.85
G current		124	117.50	22.90
G prior		109	111.96	21.39
12 months	15-20			
G never		680	107.61	22.28
G current		132	115.42	19.99
G prior		163	107.28	23.98
18 months	15-21			
G never		652	105.77	23.71
G current		114	114.72	20.83
G prior		185	106.57	23.63
24 months	16-21			
G never		640	105.73	22.60
G current		110	119.60	22.00
G prior		198	109.86	21.78
30 months	16-22			
G never		642	103.17	22.78
G current		104	114.28	23.06
G prior		204	106.66	23.49
36 months	17-22			
G never		636	103.68	22.58
G current		95	117.11	24.20
G prior		216	104.49	22.33
48 months	18-23			
G never		608	102.55	21.78
G current		87	113.21	23.87
G prior		235	103.06	22.88
60 months	18-24			
G never		602	115.80	22.08
G current		76	102.99	25.11
G prior		243	101.79	23.67
72 months	20-25			
G never		589	98.76	22.43
G current		71	115.20	24.53
G prior		243	100.64	21.96
84 months	20-26			
G never		561	98.75	21.66
G current		62	114.19	19.43
G prior		243	103.10	21.59

Current gang members had the highest mean score for psychopathy for all waves of data; those who had never been in a gang had the lowest mean score,

with the exception of month 12 when it was 0.33 higher than prior gang members (Table 2.29).

A one way between groups analysis of variance was conducted to explore the relationship between gang membership and total psychopathy score; higher scores indicate higher psychopathic traits. Participants were divided into three groups: never in a gang (G never), currently in a gang (G current) and previously in a gang (G prior). Significant variance was found for all waves of data; the effect size at the baseline was medium and for all subsequent waves of data was small (Tables 2.30 and 2.31).

Table 2.30

Summary of ANOVA For PCL (baseline) and YPI (subsequent waves) Total

	Sum of Squares	df	Mean Square	F	*p*	Eta Squared
Baseline						
Between groups	3522.90	2	1761.45	34.59a	.000***	.06**
Within groups	54368.85	239.02	54.64			
Total	57891.74	241.02				
6 months						
Between groups	5713.59	2	2856.79	5.56	.00**	.01*
Within groups	425627.31	828	514.04			
Total	431340.90	830				
12 months						
Between groups	7082.62	2	3541.31	7.13	.00**	.02*
Within groups	482566.83	972	496.47			
Total	489649.45	974				
18 months						
Between groups	7810.77	2	3905.38	7.15	.00**	.02*
Within groups	517627.23	948	546.02			
Total	525428.00	950				
24 months						
Between groups	18734.33	2	9367.16	18.73	.000***	.04*
Within groups	472508.56	945	500.01			
Total	491242.89	947				
30 months						
Between groups	11639.51	2	5819.75	11.03	.000***	.02*
Within groups	499484.70	947	527.44			
Total	511124.21	949				

a. Equal variances not assumed. Significance: * p<.05 ** p<.01 *** p<.001.

Effect size: *Small, **Medium, ***Large

Table 2.31

Summary of ANOVA For YPI Total

	Sum of Squares	df	Mean Square	F	*p*	Eta Squared
36 months						
Between groups	15041.20	2	7520.60	14.61	.000***	.03*
Within groups	485925.14	944	514.75			
Total	500966.34	946				
48 months						
Between groups	8767.45	2	4383.73	8.85	.000***	.02*
Within groups	459369.17	927	495.54			
Total	468136.63	929				
60 months						
Between groups	18319.43	2	9159.71	16.92	.000***	.04*
Within groups	497022.55	918	541.42			
Total	515341.00	920				
72 months						
Between groups	17123.68	2	8561.84	16.95	.000***	.04*
Within groups	454749.14	900	505.28			
Total	471872.81	902				
84 months						
Between groups	14696.00	2	7348.00	15.91	.000***	.04*
Within groups	398684.67	863	461.98			
Total	413380.66	865				

Significance: * p<.05 ** p<.01 *** p<.001

Effect size: *Small, **Medium, ***Large

Post hoc comparisons indicated that the mean score of current gang members was significantly higher than those who had never been affiliated for all waves of data (Tables 2.32 to 2.34). Comparisons also revealed that the mean score of current gang members was significantly higher than that of prior members from months 18 to 84 (Tables 2.32-2.34). Finally, the mean score of those who had a prior affiliation was significantly higher than that of those who never been in a gang at the baseline and month 84 (Table 2.32 and 2.34).

Table 2.32

Tukey HSD Comparison For PCL (baseline) and YPI (subsequent waves)

Age Range	Gang Status A	Gang Status B	Mean difference (A-B)	Std. Error	95% Confidence Interval	
					Lower Bound	Upper Bound
14-19	**Baseline**[a]					
	G never	G current	-4.90*	0.64	-6.41	-3.39
		G prior	-3.09*	0.67	-4.66	-1.52
	G current	G never	4.90*	0.64	3.39	6.41
		G prior	1.81	0.83	-0.16	3.77
	G prior	G never	3.09*	0.67	1.52	4.66
		G current	-1.81	0.83	-3.77	0.16
14-20	**6 months**					
	G never	G current	-7.44*	2.24	-12.69	-2.18
		G prior	-1.90	2.36	-7.44	3.65
	G current	G never	7.44*	2.24	2.18	12.69
		G prior	5.54	2.98	-1.45	12.53
	G prior	G never	1.90	2.36	-3.65	7.44
		G current	-5.54	2.98	-12.53	1.45
15-20	**12 months**					
	G never	G current	-7.81*	2.12	-12.78	-2.83
		G prior	0.33	1.94	-4.23	4.89
	G current	G never	7.81*	2.12	2.83	12.78
		G prior	8.13*	2.61	2.01	14.26
	G prior	G never	-0.33	1.94	-4.89	4.23
		G current	-8.13*	2.61	-14.26	-2.01
15-21	**18 months**					
	G never	G current	-9.00*	2.37	-14.52	-3.38
		G prior	-0.80	1.95	-5.37	3.77
	G current	G never	9.00*	2.37	3.38	14.52
		G prior	8.15*	2.78	1.62	14.68
	G prior	G never	0.80	1.95	-3.77	5.37
		G current	-9.00*	2.78	14.68	-1.62

a. Games-Howell Comparison. * $p < 0.05$

Table 2.33
Tukey HSD Comparison For YPI Total

Age Range	Gang Status A	Gang Status B	Mean difference (A-B)	Std. Error	95% Confidence Interval	
					Lower Bound	Upper Bound
16-21	**24 months**					
	G never	G current	-13.87*	2.31	-19.28	-8.45
		G prior	-4.13	1.82	-8.40	0.14
	G current	G never	13.87*	2.31	8.45	19.28
		G prior	9.74*	2.66	3.49	15.98
	G prior	G never	4.13	1.82	-0.14	8.40
		G current	-9.74*	2.66	-15.98	-3.49
16-22	**30 months**					
	G never	G current	-11.11*	2.43	-16.80	-5.41
		G prior	-3.48	1.85	-7.82	0.85
	G current	G never	11.11*	2.43	5.41	16.80
		G prior	7.62*	2.77	1.13	14.12
	G prior	G never	3.48	1.85	-0.85	7.82
		G current	-7.62*	2.77	-14.12	-1.13
17-22	**36 months**					
	G never	G current	-13.42*	2.50	-19.28	-7.57
		G prior	-0.81	1.79	-5.00	3.38
	G current	G never	13.42*	2.50	7.57	19.28
		G prior	12.62*	2.80	6.06	19.17
	G prior	G never	0.81	1.79	-3.38	5.00
		G current	-12.62*	2.80	-19.17	-6.06
18-23	**48 months**					
	G never	G current	-10.66*	2.55	-16.65	-4.67
		G prior	-0.51	1.71	-4.52	3.51
	G current	G never	10.66*	2.55	4.67	16.65
		G prior	10.15*	2.79	3.59	16.71
	G prior	G never	0.51	1.71	-3.51	4.52
		G current	-10.15*	2.79	1-6.71	-3.59

* $p < 0.05$

Table 2.34
Tukey HSD Comparison For YPI Total

Age Range	Gang Status A	Gang Status B	Mean difference (A-B)	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
18-24	**60 months**					
	G never	G current	-16.27*	2.83	-22.91	-9.61
		G prior	-3.45	1.77	-7.60	0.70
	G current	G never	16.26*	2.83	9.61	22.91
		G prior	12.82*	3.06	5.64	19.99
	G prior	G never	3.45	1.77	-0.70	7.60
		G current	-12.82*	3.06	-19.99	-5.64
20-25	**72 months**					
	G never	G current	-16.44*	2.82	-23.07	-9.81
		G prior	-1.88	1.71	-5.90	2.14
	G current	G never	16.44*	2.82	9.81	23.07
		G prior	14.56*	3.03	7.44	21.68
	G prior	G never	1.88	1.71	-2.14	5.90
		G current	-14.56*	3.03	-21.68	-7.44
20-26	**84 months**					
	G never	G current	-15.44*	2.88	-22.19	-8.69
		G prior	-4.35*	1.65	-8.23	-0.48
	G current	G never	15.44*	2.88	8.69	22.19
		G prior	11.09*	3.06	3.91	18.27
	G prior	G never	4.35*	1.65	0.48	8.23
		G current	-11.09*	3.06	-18.27	-3.91

* $p < 0.05$

Psychopathy is a negative risk factor, with total scores reflecting the integrated relationship between factors or dimensions. The consistently higher scores for current gang members are therefore important when considering gang interventions. That prior gang members scored significantly lower than current gang members from month 18 to 84, might suggest that psychopathy is dynamic beyond adolescence.

Grandiose Manipulative Dimension

Table 2.35

Mean scores for YPI Grandiose Manipulative Dimension

Wave and status	Age Range	N	M	SD
6 months	14-20			
G never		598	40.93	11.82
G current		124	41.85	11.61
G prior		109	40.64	10.69
12 months	15-20			
G never		680	39.75	11.43
G current		132	41.62	10.62
G prior		163	38.74	11.47
18 months	15-21			
G never		652	39.17	11.93
G current		114	41.54	11.09
G prior		185	37.89	10.98
24 months	16-21			
G never		640	39.17	11.56
G current		110	42.78	11.55
G prior		198	39.82	10.96
30 months	16-22			
G never		642	38.16	11.24
G current		104	40.36	12.27
G prior		204	38.61	11.16
36 months	17-22			
G never		636	38.30	11.17
G current		95	42.03	12.12
G prior		216	37.56	10.59
48 months	18-23			
G never		608	37.88	10.79
G current		87	39.37	11.71
G prior		235	36.52	10.73
60 months	18-24			
G never		602	36.41	10.89
G current		76	41.11	11.12
G prior		243	36.56	11.52
72 months	20-25			
G never		589	35.77	10.63
G current		71	40.01	12.11
G prior		243	34.96	10.21
84 months	20-26			
G never		561	35.98	10.48
G current		62	41.48	10.53
G prior		243	36.25	10.15

Current gang members had the highest mean score for all waves of data; prior gang members had the lowest score at months 6, 12, 18, 36, 48, and 72 and those who had never been in a gang had the lowest mean score at months 24, 30, 60 and 84 (Table 2.35).

A one way between groups analysis of variance was conducted to explore the relationship between gang membership and the grandiose manipulative dimension of psychopathy; higher scores indicate higher psychopathic traits. Participants were divided into three groups: never in a gang (G never), currently in a gang (G current) and previously in a gang (G prior). Significant variance was found from months 18 to 84; all effect sizes were small (Table 2.36).

Table 2.36

Summary of ANOVA For YPI Grandiose Manipulative Dimension

	Sum of Squares	df	Mean Square	F	*p*	Eta Squared
18 months						
Between groups	946.02	2	473.01	3.48	.03*	.01*
Within groups	128769.00	948	135.83			
Total	129715.02	950				
24 months						
Between groups	1227.60	2	613.80	4.69	.01**	.01*
Within groups	123625.99	945	130.82			
Total	124853.59	947				
36 months						
Between groups	1400.55	2	700.27	5.64	.00**	.01*
Within groups	117158.16	944	124.11			
Total	118558.71	946				
48 months						
Between groups	587.21	2	293.66	2.48	.08	.01*
Within groups	109423.56	927	118.04			
Total	110010.87	929				
60 months						
Between groups	1515.99	2	757.99	6.18	.00**	.01*
Within groups	112580.26	918	122.64			
Total	114096.25	920				
72 months						
Between groups	1424.54	2	712.27	6.29	.00**	.01*
Within groups	101941.17	900	113.27			
Total	103365.70	902				
84 months						
Between groups	1703.87	2	851.94	7.89	.000***	.02*
Within groups	93136.49	863	107.92			
Total	94840.37	865				

a Equal variances not assumed

Effect size: *Small, **Medium, ***Large

Post hoc comparisons indicated that the mean score of current gang members was significantly higher than that of those who had never been in a gang at months 24, 36, and 60 to 84; and the mean score of current gang members was significantly higher than that of prior gang members at months 18, 36, and 60 to 84 (Tables 2.37 and 2.38). No significant difference was found between prior gang members and those who had never been affiliated to a gang.

Table 2.37

Tukey HSD Comparison For YPI Grandiose Manipulative Dimension

					95% Confidence Interval	
Age Range	Gang Status A	Gang Status B	Mean difference (A-B)	Std. Error	Lower Bound	Upper Bound
15-21	**18 months**					
	G never	G current	-2.37	1.18	-5.15	0.40
		G prior	1.28	0.97	-1.00	3.56
	G current	G never	2.37	1.18	-0.40	5.15
		G prior	3.66*	1.39	0.40	6.91
	G prior	G never	-1.28	0.97	-3.56	1.00
		G current	-3.66*	1.39	-6.91	-0.40
16-21	**24 months**					
	G never	G current	-3.61*	1.18	-6.38	-0.84
		G prior	-0.65	0.93	-2.83	1.53
	G current	G never	3.61*	1.18	0.84	6.38
		G prior	2.96	1.36	-0.23	6.16
	G prior	G never	0.65	0.93	-1.53	2.83
		G current	-2.96	1.36	-6.16	0.23
17-22	**36 months**					
	G never	G current	-3.73*	1.23	-6.61	-0.85
		G prior	0.74	0.88	-1.32	2.80
	G current	G never	3.73*	1.23	0.85	6.61
		G prior	4.47*	1.37	1.25	7.69
	G prior	G never	-0.74	0.88	-2.80	1.32
		G current	-4.47*	1.37	-7.69	-1.25

* $p < 0.05$

Table 2.38
Tukey HSD Comparison For YPI Grandiose Manipulative Dimension

Age Range	Gang Status A	Gang Status B	Mean difference (A-B)	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
18-24	**60 months**					
	G never	G current	-4.70*	1.35	-7.86	-1.54
		G prior	-0.15	0.84	-2.13	1.83
	G current	G never	4.70*	1.35	1.54	7.86
		G prior	4.55*	1.46	1.13	7.97
	G prior	G never	0.15	0.84	-1.83	2.13
		G current	-4.55*	0.01	-7.97	-1.13
20-25	**72 months**					
	G never	G current	-4.24*	1.34	-7.38	-1.10
		G prior	0.81	0.81	-1.10	2.71
	G current	G never	4.24*	1.34	1.10	7.38
		G prior	5.05*	1.44	1.68	8.42
	G prior	G never	-0.81	0.81	-2.71	1.10
		G current	-5.05*	1.44	-8.42	-1.68
20-26	**84 months**					
	G never	G current	-5.50*	1.39	-8.77	-2.24
		G prior	-0.27	0.80	-2.14	1.61
	G current	G never	5.50*	1.39	2.24	8.77
		G prior	5.23*	1.48	1.77	8.71
	G prior	G never	0.27	0.80	-1.61	2.14
		G current	-5.24*	1.48	-8.71	-1.77

* $p < 0.05$

High scores in this dimension have the potential to impact upon an individual's ability to successfully engage in interventions. Current gang members scored significantly higher than both never and prior gang members for five waves respectively; however, it was only for the last three years of the study where a consistent pattern emerged. The mean ages for this period were 21.05 to 23.06, suggesting that the risk factor had a strong relationship to gang membership. Furthermore, there was no significant variance found between prior and never gang members, which again suggests that the relationship may be between gang member and risk factor rather and is therefore dynamic. It is also possible that individuals who score highly on this risk factor are attracted to and remain in gangs.

Callous Unemotional Dimension

Table 2.39

Mean Scores For YPI Callous Unemotional Dimension

Wave and status	Age Range	N	M	SD
6 months	14-20			
G never		598	33.63	6.68
G current		124	36.27	7.33
G prior		109	34.45	6.68
12 months	15-20			
G never		680	33.09	6.41
G current		132	35.47	6.44
G prior		163	33.03	6.61
18 months	15-21			
G never		652	32.65	6.62
G current		114	35.23	6.51
G prior		185	33.41	6.72
24 months	16-21			
G never		640	32.59	6.38
G current		110	37.02	6.93
G prior		198	33.84	5.97
30 months	16-22			
G never		642	31.83	6.49
G current		104	35.54	6.49
G prior		204	33.18	6.46
36 months	17-22			
G never		636	32.23	6.40
G current		95	36.46	7.17
G prior		216	33.09	6.29
48 months	18-23			
G never		608	31.56	6.30
G current		87	35.92	7.21
G prior		235	32.34	6.88
60 months	18-24			
G never		602	31.04	6.30
G current		76	36.00	7.23
G prior		243	32.43	7.59
72 months	20-25			
G never		589	31.07	6.34
G current		71	35.92	8.00
G prior		243	31.95	7.00
84 months	20-26			
G never		561	30.87	6.04
G current		62	35.74	6.67
G prior		243	32.88	6.66

Current gang members had the highest mean score for all waves of data; and those who had never been in a gang had the lowest mean score for all waves with the exception of month 12, when the group had a mean score of 33.09 compared to 33.03 for prior gang members (Table 2.39).

A one way between groups analysis of variance was conducted to explore the relationship between gang membership and the callous unemotional dimension of psychopathy. Higher scores indicate greater psychopathic traits. Participants were divided into three groups: never in a gang (G never), currently in a gang (G current) and previously in a gang (G prior). Significant variance was found for all waves of data; all effect sizes were small (Tables 2.40 to 2.41).

Table 2.40

Summary of ANOVA For YPI Callous Unemotional Dimension

	Sum of Squares	df	Mean Square	F	*p*	Eta Squared
6 months						
Between groups	730.46	2	365.23	7.95	.000***	.02*
Within groups	38040.98	828	45.94			
Total	38771.44	830				
12 months						
Between groups	653.77	2	326.88	7.86	.000***	.02*
Within groups	40418.43	972	41.58			
Total	41072.20	974				
18 months						
Between groups	662.61	2	331.30	7.55	.00**	.02*
Within groups	41606.02	948	43.89			
Total	42268.63	950				
24 months						
Between groups	1899.28	2	949.64	23.46	.000***	.05*
Within groups	38247.89	945	40.47			
Total	40147.17	947				
30 months						
Between groups	1338.13	2	669.06	15.92	.000***	.03*
Within groups	39792.66	947	42.02			
Total	41130.79	949				

Significance: * p<.05 ** p<.01 *** p<.001

Effect size: *Small, **Medium, ***Large

Table 2.41

Summary of ANOVA For YPI Callous Unemotional Dimension

	Sum of Squares	df	Mean Square	F	*p*	Eta Squared
36 months						
Between groups	1496.03	2	748.02	17.97	.000***	.04*
Within groups	39295.97	944	41.63			
Total	40792.01	946				
48 months						
Between groups	1457.62	2	728.81	17.05	.000***	.04*
Within groups	39632.87	927	42.75			
Total	41090.48	929				
60 months						
Between groups	1785.64	2	892.82	17.15a	.000***	.04*
Within groups	41741.61	186.66	45.47			
Total	43527.25	188.66				
72 months						
Between groups	1511.60	2	755.80	17.03	.000***	.04*
Within groups	39947.08	900	44.39			
Total	41458.68	902				
84 months						
Between groups	1733.73	2	866.87	22.12	.000***	.05*
Within groups	33825.14	863	39.20			
Total	35558.87	865				

a. Equal variances not assumed. Significance: * p<.05 ** p<.01 *** p<.001.

Effect size: *Small, **Medium, ***Large

Post hoc comparisons indicated that the mean score of current gang members was significantly higher than the mean of those who had never been in a gang for all waves of data; the mean score of current gang members was also significantly higher than that of prior gang members for months 12, 24, 30, 36, and 60 to 84 (Tables 2.42 to 2.44). Comparisons indicated that the mean score of prior gang members was significantly higher than that of those who had never been in a gang at months 24, 30, 60 and 84.

Table 2.42

Tukey HSD Comparison For YPI Callous Unemotional Dimension

Age Range	Gang Status A	Gang Status B	Mean difference (A-B)	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
14-20	**6 months**					
	G never	G current	-2.64*	0.67	-4.21	-1.07
		G prior	-0.82	0.71	-2.48	0.84
	G current	G never	2.64*	0.67	1.07	4.21
		G prior	1.83	0.89	-0.26	3.91
	G prior	G never	0.82	0.71	-0.84	2.48
		G current	-1.83	0.89	-3.91	0.26
15-20	**12 months**					
	G never	G current	-2.38*	0.61	-3.82	-0.94
		G prior	0.06	0.99	-1.26	1.38
	G current	G never	2.38*	0.61	0.94	3.82
		G prior	2.44*	0.76	0.67	4.21
	G prior	G never	-0.58	0.56	-1.38	1.26
		G current	-2.44*	0.76	-4.21	-0.67
15-21	**18 months**					
	G never	G current	-2.57*	0.67	-4.15	-0.99
		G prior	-0.75	0.55	-2.05	0.54
	G current	G never	2.57*	0.67	0.99	4.15
		G prior	1.82*	0.79	-0.03	3.67
	G prior	G never	0.75	0.55	-0.54	2.05
		G current	-1.82*	0.79	-3.67	0.03

* $p < 0.05$

Current gang members scored significantly higher than both never and prior gang members for this negative psychological risk factor. The results for prior gang members when compared to never gang members did not form a consistent pattern. The results suggest that gang involvement has a relationship to callous and unemotional traits, perhaps for some even after exiting the gang. These findings could inform interventions, especially those where victim empathy is required.

Table 2.43
Tukey HSD Comparison For YPI Callous Unemotional Dimension

Age Range	Gang Status A	Gang Status B	Mean difference (A-B)	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
16-21	**24 months**					
	G never	G current	-4.43*	0.66	-5.97	-2.89
		G prior	-1.25*	0.52	-2.47	-0.04
	G current	G never	4.43*	0.66	2.89	5.97
		G prior	3.18*	0.75	1.40	4.96
	G prior	G never	1.25*	0.52	0.04	2.47
		G current	-3.18*	0.76	-4.96	-1.40
16-22	**30 months**					
	G never	G current	-3.71*	0.69	-5.31	-2.10
		G prior	-1.34*	0.52	-2.57	-0.12
	G current	G never	3.71*	0.69	2.10	5.31
		G prior	2.36*	0.78	0.53	4.20
	G prior	G never	1.34*	0.52	0.12	2.57
		G current	-2.36*	0.78	-4.20	-0.53
17-22	**36 months**					
	G never	G current	-4.23*	0.71	-5.90	-2.57
		G prior	-0.86	0.51	-2.05	0.34
	G current	G never	4.23*	0.71	2.57	5.90
		G prior	3.38*	0.79	1.51	5.24
	G prior	G never	0.86	0.51	-0.34	2.05
		G current	-3.38*	0.79	-5.24	-1.51
18-23	**48 months**					
	G never	G current	-4.36*	0.75	-6.12	-2.60
		G prior	-0.78	0.50	-1.96	0.40
	G current	G never	4.36*	0.75	2.60	6.12
		G prior	3.58*	0.82	1.66	5.51
	G prior	G never	0.78	0.50	-0.40	1.96
		G current	-3.58*	0.82	-5.51	-1.66

* $p < 0.05$

Table 2.44

Tukey HSD Comparison For YPI Callous Unemotional Dimension

Age Range	Gang Status A	Gang Status B	Mean difference (A-B)	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
18-24	**60 months**[a]					
	G never	G current	-4.96*	0.87	-7.03	-2.89
		G prior	-1.39*	0.55	-2.69	-0.09
	G current	G never	4.96*	0.87	2.89	7.03
		G prior	3.57*	0.96	1.29	5.85
	G prior	G never	1.39*	0.55	0.09	2.69
		G current	-3.57*	0.96	-5.85	-1.29
20-25	**72 months**					
	G never	G current	-4.85*	0.84	-6.81	-2.88
		G prior	-0.88	0.51	-2.07	0.31
	G current	G never	4.85*	0.84	2.88	6.81
		G prior	3.97*	0.90	1.86	6.08
	G prior	G never	0.88	0.51	-0.31	2.07
		G current	-3.97*	0.90	-6.08	-1.86
20-26	**84 months**					
	G never	G current	-4.88*	0.84	-6.84	-2.91
		G prior	-2.01*	0.48	-3.14	-0.88
	G current	G never	4.88*	0.84	2.91	6.84
		G prior	2.87*	0.89	0.77	4.96
	G prior	G never	2.01*	0.48	0.88	3.14
		G current	-2.87*	0.89	-4.96	-0.77

a. Games-Howell Comparison. * $p < 0.05$

Impulsive Irresponsible Dimension

Table 2.45

Mean Scores For YPI Impulsive Irresponsible Dimension

Wave and status	Age Range	N	M	SD
6 months	14-20			
G never		598	35.51	8.07
G current		124	39.38	7.89
G prior		109	36.87	7.68
12 months	15-20			
G never		680	34.77	8.02
G current		132	38.33	7.32
G prior		163	35.52	9.34
18 months	15-21			
G never		652	33.95	8.45
G current		114	37.95	7.70
G prior		185	35.28	9.15
24 months	16-21			
G never		640	33.98	8.04
G current		110	39.80	7.28
G prior		198	36.21	7.95
30 months	16-22			
G never		642	33.18	8.26
G current		104	38.38	8.06
G prior		204	34.87	8.77
36 months	17-22			
G never		636	33.15	8.18
G current		95	38.61	8.18
G prior		216	33.84	8.54
48 months	18-23			
G never		608	33.11	8.13
G current		87	37.92	8.47
G prior		235	34.20	8.53
60 months	18-24			
G never		602	32.10	8.77
G current		76	38.70	8.25
G prior		243	34.00	8.97
72 months	20-25			
G never		589	31.92	8.60
G current		71	39.27	8.77
G prior		243	33.73	8.56
84 months	20-26			
G never		561	31.90	8.45
G current		62	36.97	7.11
G prior		243	33.98	8.52

The same pattern for mean scores was found throughout the study: current gang members had the highest mean score, those never in a gang the lowest, and prior gang members scored in between (Table 2.45).

A one way between groups analysis of variance was conducted to explore the relationship between gang membership and the impulsive irresponsible dimension of psychopathy; higher scores indicate greater psychopathy. Participants were divided into three groups: never in a gang (G never), currently in a gang (G current) and previously in a gang (G prior). Significant variance was found for all waves of data; the effect size at month 24 was medium and for all other waves of data was small (Tables 2.46 to 2.47).

Table 2.46

Summary of ANOVA For YPI Impulsive Irresponsible Dimension

	Sum of Squares	df	Mean Square	F	*p*	Eta Squared
6 months						
Between groups	1586.43	2	793.21	12.40	.000***	.03*
Within groups	52948.86	828	63.95			
Total	54535.29	830				
12 months						
Between groups	1402.00	2	701.08	12.61a	.000***	.02*
Within groups	64806.46	262.79	66.67			
Total	66208.61	264.79				
18 months						
Between groups	1634.80	2	817.40	11.29	.000***	.02*
Within groups	68628.19	948	72.39			
Total	70263.00	950				
24 months						
Between groups	3477.73	2	1738.86	27.60	.000***	.06**
Within groups	59531.80	945	63.00			
Total	63009.53	947				
30 months						
Between groups	2578.98	2	1289.49	18.48	.000***	.04*
Within groups	66070.41	947	69.77			
Total	68649.40	949				

a. Equal variances not assumed. Significance: * p<.05 ** p<.01 *** p<.001.

Effect size: *Small, **Medium, ***Large

Table 2.47

Summary of ANOVA For YPI Impulsive Irresponsible Dimension

	Sum of Squares	df	Mean Square	F	*p*	Eta Squared
36 months						
Between groups	2466.55	2	1233.27	18.08	.000***	.04*
Within groups	64391.35	944	68.21			
Total	66857.89	946				
48 months						
Between groups	1804.35	2	902.17	13.20	.000***	.03*
Within groups	63355.48	927	68.35			
Total	65159.83	929				
60 months						
Between groups	3184.35	2	1592.17	20.65	.000***	.04*
Within groups	70783.45	918	77.11			
Total	73967.79	920				
72 months						
Between groups	3606.67	2	1803.34	24.36	.000***	.05*
Within groups	66624.08	900	74.03			
Total	70230.75	902				
84 months						
Between groups	1863.64	2	931.77	13.27	.000***	.03*
Within groups	60593.64	863	70.21			
Total	62457.18	865				

Significance: * p<.05 ** p<.01 *** p<.001

Effect size: *Small, **Medium, ***Large

Post hoc comparisons indicated that the mean score of current gang members was significantly higher than that of those who had never been in a gang for all waves of data; the mean score of current members was also significantly higher than prior gang members for months 24 and 30 (Tables 2.48 to 2.50). Comparisons indicated that the mean score of prior gang members was significantly higher than that of those who had never been gang affiliated at months 24, 30, and 60 to 84.

Table 2.48

Tukey HSD Comparison For YPI Impulsive Irresponsible Dimension

Age Range	Gang Status A	Gang Status B	Mean difference (A-B)	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
14-20	**6 months**					
	G never	G current	-3.87*	0.79	-5.73	-2.02
		G prior	-1.37	0.83	-3.32	0.59
	G current	G never	3.87*	0.79	2.02	5.73
		G prior	2.51*	1.05	0.04	4.97
	G prior	G never	1.37	0.83	-0.59	3.32
		G current	-2.51*	1.05	-4.97	-0.04
15-20	**12 months**[a]					
	G never	G current	-3.56*	0.71	-5.23	-1.89
		G prior	-0.75	0.79	-2.62	1.13
	G current	G never	3.56*	0.71	1.89	5.23
		G prior	2.81*	0.97	0.52	5.10
	G prior	G never	0.75	0.79	-1.13	2.62
		G current	-2.81*	0.97	-5.10	-0.52
15-21	**18 months**					
	G never	G current	-4.00*	0.86	-6.03	-1.97
		G prior	-1.34	0.71	-3.00	0.33
	G current	G never	0.40*	0.86	1.97	6.03
		G prior	2.67*	1.01	0.29	5.04
	G prior	G never	1.34	0.71	-0.33	3.00
		G current	-2.67*	1.01	-5.04	-0.29

a. Games-Howell Comparison. * $p < 0.05$

Gang members demonstrated a consistent pattern of significantly higher levels of impulsiveness than both never and prior gang members for all waves of data. This could be explained in two ways: Individuals with this trait being drawn to and remaining in a gang; or current gang membership having a strong relationship to impulsivity. Prior gang members scored significantly higher than never gang members for five waves, which although inconsistent indicates that some individuals with this trait remain with a higher risk after they have left the gang.

Table 2.49

Tukey HSD Comparison For YPI Impulsive Irresponsible Dimension

Age Range	Gang Status A	Gang Status B	Mean difference (A-B)	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
16-21	**24 months**					
	G never	G current	-5.82*	0.82	-7.74	-3.90
		G prior	-2.23*	0.65	-3.74	-0.71
	G current	G never	5.82*	0.82	3.90	7.74
		G prior	3.59*	0.94	1.38	5.81
	G prior	G never	2.23*	0.65	0.71	3.74
		G current	-3.59*	0.94	-5.81	-1.38
16-22	**30 months**					
	G never	G current	-5.21*	0.88	-7.28	-3.14
		G prior	-1.70*	0.67	-3.27	-0.12
	G current	G never	5.21*	0.88	3.14	7.28
		G prior	3.51*	1.01	1.15	5.87
	G prior	G never	1.70*	0.67	0.12	3.27
		G current	-3.51*	1.01	-5.87	-1.15
17-22	**36 months**					
	G never	G current	-5.46*	0.91	-7.60	-3.33
		G prior	-0.70	0.65	-2.22	0.83
	G current	G never	5.46*	0.91	3.33	7.60
		G prior	4.77*	1.02	2.38	7.15
	G prior	G never	0.70	0.65	-0.83	2.22
		G current	-4.77*	1.02	-7.15	-2.38
18-23	**48 months**					
	G never	G current	-4.81*	0.95	-7.04	-2.59
		G prior	-1.09	0.64	-2.58	0.40
	G current	G never	4.81*	0.95	2.59	7.04
		G prior	3.72*	1.04	1.29	6.16
	G prior	G never	1.09	0.64	-0.40	2.58
		G current	-3.72*	1.04	-6.16	-1.29

* $p < 0.05$

Table 2.50
Tukey HSD Comparison For YPI Impulsive Irresponsible Dimension

Age Range	Gang Status A	Gang Status B	Mean difference (A-B)	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
18-24	**60 months**					
	G never	G current	-6.60*	1.07	-9.11	-4.09
		G prior	-1.92*	0.67	-3.47	-0.34
	G current	G never	6.60*	1.07	4.09	9.11
		G prior	4.69*	1.15	1.98	7.40
	G prior	G never	1.91*	0.67	0.34	3.47
		G current	-4.69*	1.15	-7.40	-1.98
20-25	**72 months**					
	G never	G current	-7.35*	1.08	-9.89	-4.81
		G prior	-1.81*	0.66	-3.35	-0.27
	G current	G never	7.35*	1.08	4.81	9.89
		G prior	5.54*	1.16	2.81	8.26
	G prior	G never	1.81*	0.66	0.27	3.35
		G current	-5.54*	1.16	-8.26	-2.81
20-26	**84 months**					
	G never	G current	-5.06*	1.12	-7.70	-2.43
		G prior	-2.08*	0.64	-3.59	-0.56
	G current	G never	5.06*	1.12	2.43	7.70
		G prior	2.99*	1.19	0.19	5.79
	G prior	G never	2.08*	0.64	0.56	3.59
		G current	-2.99*	1.19	-5.79	-0.19

* $p < 0.05$

Peer Delinquency Antisocial Behaviour

Table 2.51

Mean Scores For Peer Delinquency Antisocial Behaviour

Wave and Status	Age Range	N	M	SD
Baseline	14-19			
G never		738	2.26	0.87
G current		154	3.12	0.86
G prior		119	2.67	0.86
6 months	14-20			
G never		667	1.92	0.81
G current		148	2.55	0.96
G prior		132	2.21	0.91
12 months	15-20			
G never		670	1.82	0.78
G current		129	2.39	1.06
G prior		160	1.96	0.84
18 months	15-21			
G never		638	1.78	0.78
G current		112	2.19	0.95
G prior		181	1.91	0.85
24 months	16-21			
G never		636	1.73	0.75
G current		109	2.30	1.01
G prior		195	1.82	0.85
30 months	16-22			
G never		627	1.65	0.71
G current		102	2.17	0.98
G prior		200	1.72	0.76
36 months	17-22			
G never		619	1.64	0.71
G current		92	2.05	1.02
G prior		206	1.62	0.72
48 months	18-23			
G never		604	1.72	0.74
G current		88	2.24	1.10
G prior		230	1.80	0.84
60 months	18-24			
G never		595	1.74	0.77
G current		75	2.13	0.99
G prior		241	1.75	0.78
72 months	20-25			
G never		585	1.67	0.68
G current		69	2.06	0.99
G prior		236	1.82	0.84
84 months	20-26			
G never		556	1.62	0.67
G current		59	1.87	0.87
G prior		239	1.71	0.80

Current gang members had the highest mean score for all waves of data, demonstrating higher levels of antisocial behaviour amongst their peers; those who had never been in a gang scored the lowest for all waves (Table 2.51).

A one way between groups analysis of variance was conducted to explore the relationship between gang membership and antisocial behaviour amongst peers. Participants were divided into three groups: (G never), currently in a gang (G current) and previously in a gang (G prior). Significant variance was found for all waves of data; the effect size was medium at the baseline and month 12; and small for all other waves (Tables 2.52 and 2.53).

Table 2.52

Summary of ANOVA For Peer Delinquency Antisocial Behaviour

	Sum of Squares	df	Mean Square	F	*p*	Eta Squared
Baseline						
Between groups	99.52	2	49.76	66.27	.000***	.12**
Within groups	756.88	1008	0.75			
Total	856.41	1010				
6 months						
Between groups	51.00	2	25.50	30.02a	.000***	.07*
Within groups	680.78	236.34	0.72			
Total	731.77	238.34				
12 months						
Between groups	36.00	2	18.00	17.98a	.000***	.05**
Within groups	663.85	239.50	0.69			
Total	699.85	241.50				
18 months						
Between groups	17.31	2	8.65	10.54a	.000***	.03*
Within groups	614.43	234.32	0.66			
Total	631.74	236.32				
24 months						
Between groups	30.42	2	15.21	16.04a	.000***	.05*
Within groups	611.88	231.11	0.65			
Total	642.30	233.11				
30 months						
Between groups	23.69	2	11.84	13.27a	.000***	.04*
Within groups	525.52	222	0.57			
Total	549.21	224				

a. Equal variances not assumed. Significance: * p<.05 ** p<.01 *** p<.001.

Effect size: *Small, **Medium, ***Large

Table 2.53

Summary of ANOVA For Peer Delinquency Antisocial Behaviour

	Sum of Squares	df	Mean Square	F	*p*	Eta Squared
36 months						
Between groups	14.27	2	7.14	7.23a	.00**	.03*
Within groups	508.78	206.61	0.56			
Total	523.06	208.61				
48 months						
Between groups	21.19	2	10.59	9.68a	.000***	.03*
Within groups	599.15	202.39	0.65			
Total	620.33	204.39				
60 months						
Between groups	10.26	2	5.32	5.40a	.01**	.02*
Within groups	568.14	182.91	0.50			
Total	578.40	184.91				
72 months						
Between groups	11.47	2	5.73	7.29a	.00**	.02*
Within groups	502.57	163.68	0.66			
Total	514.04	165.68				
84 months						
Between groups	4.48	2	2.24	3.42a	.04*	.01*
Within groups	443.33	144.95	0.52			
Total	447.82	146.95				

Significance: * p<.05 ** p<.01 *** p<.001

Effect size: *Small, **Medium, ***Large

Post hoc comparisons indicated that the mean score of current gang members was significantly higher than the mean of those who had never been in a gang for all waves, except for 84 where no variance was indicated (Tables 2.54 to 2.56). The mean score of current gang members was also higher than prior members from the baseline to month 36, and at month 60 (Tables 2.54 to 2.56). Prior gang members had a significantly higher mean score than those who had never been in a gang at the baseline and month 6.

Table 2.54

Tukey HSD Comparison For Peer Delinquency Antisocial Behaviour

Age Range	Gang Status A	Gang Status B	Mean difference (A-B)	Std. Error	95% Confidence Interval	
					Lower Bound	Upper Bound
14-19	**Baseline**[a]					
	G never	G current	-0.85*	0.08	-1.03	-0.67
		G prior	-0.40*	0.09	-0.61	-0.20
	G current	G never	0.85*	0.08	0.67	1.03
		G prior	0.45*	0.11	0.20	0.70
	G prior	G never	0.40*	0.09	0.20	0.61
		G current	-0.45*	0.11	-0.70	-0.20
14-20	**6 months**[a]					
	G never	G current	-0.63*	0.08	-0.83	-0.43
		G prior	-0.29*	0.09	-0.49	-0.08
	G current	G never	0.63*	0.08	0.43	0.83
		G prior	0.34*	0.11	0.08	0.61
	G prior	G never	0.29*	0.09	0.08	0.49
		G current	-0.34*	0.11	-0.61	-0.08
15-20	**12 months**[a]					
	G never	G current	-0.57*	0.10	-0.81	-0.34
		G prior	-0.15	0.07	-0.32	0.02
	G current	G never	0.57*	0.10	0.34	0.81
		G prior	0.43*	0.11	0.16	0.70
	G prior	G never	0.15	0.07	-0.02	0.32
		G current	-0.43*	0.11	-0.70	-0.16
15-21	**18 months**[a]					
	G never	G current	-0.42*	0.10	-0.64	-0.19
		G prior	-0.14	0.07	-0.30	0.03
	G current	G never	0.41*	0.10	0.19	0.64
		G prior	0.28*	0.11	0.02	0.54
	G prior	G never	0.14	0.07	-0.03	0.30
		G current	-0.28*	0.11	-0.54	-0.02

a. Games-Howell Comparison. * $p < 0.05$

Table 2.55

Tukey HSD Comparison For Peer Delinquency Antisocial Behaviour

Age Range	Gang Status A	Gang Status B	Mean difference (A-B)	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
16-21	**24 months**[a]					
	G never	G current	-0.57*	0.10	-0.81	-0.33
		G prior	-0.09	0.07	-0.25	0.07
	G current	G never	0.57*	0.10	0.33	0.81
		G prior	0.48*	0.11	0.21	0.75
	G prior	G never	0.09	0.07	-0.07	0.25
		G current	-0.48*	0.11	-0.75	-0.21
16-22	**30 months**[a]					
	G never	G current	-0.52*	0.10	-0.76	-0.28
		G prior	-0.07	0.06	-0.22	0.07
	G current	G never	0.52*	0.10	0.28	0.76
		G prior	0.45*	0.11	0.19	0.71
	G prior	G never	0.07	0.06	-0.07	0.22
		G current	-0.45*	0.11	-0.71	-0.19
17-22	**36 months**					
	G never	G current	-0.41*	0.11	-0.67	-0.15
		G prior	0.02	0.06	0.12	0.15
	G current	G never	0.41*	0.11	0.15	0.67
		G prior	0.43	0.12	0.15	0.71
	G prior	G never	-0.02	0.06	-0.15	0.12
		G current	-0.43*	0.12	-0.71	-0.15
18-23	**48 months**[a]					
	G never	G current	-0.53*	0.12	-0.81	-0.24
		G prior	-0.08	0.06	-0.23	0.07
	G current	G never	0.53*	0.12	0.24	0.81
		G prior	0.45*	0.13	0.14	0.75
	G prior	G never	0.08	0.06	-0.07	0.23
		G current	-0.45*	0.13	-0.75	-0.14

a. Games-Howell Comparison. * $p < 0.05$

Table 2.56
Tukey HSD Comparison For Peer Delinquency Antisocial Behaviour

Age Range	Gang Status A	Gang Status B	Mean difference (A-B)	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
18-24	**60 months**[a]					
	G never	G current	-0.39*	0.12	-0.67	-0.11
		G prior	-0.01	0.06	-0.15	0.13
	G current	G never	0.39*	0.12	0.11	0.67
		G prior	0.38*	0.13	0.09	0.68
	G prior	G never	0.01	0.06	-0.13	0.15
		G current	-0.38*	0.13	-0.68	-0.09
20-25	**72 months**[a]					
	G never	G current	-0.39*	0.12	-0.69	-0.10
		G prior	-0.15*	0.06	-0.29	-0.00
	G current	G never	0.39*	0.12	0.10	0.69
		G prior	0.25	0.13	-0.07	0.56
	G prior	G never	0.15*	0.06	0.00	0.29
		G current	-0.25	0.13	-0.56	0.07
20-26	**84 months**[a]					
	G never	G current	-0.26	0.12	-0.54	0.02
		G prior	-0.10	0.06	-0.24	0.04
	G current	G never	0.25	0.12	-0.02	0.54
		G prior	0.16	0.12	-0.13	0.46
	G prior	G never	0.10	0.06	-0.04	0.24
		G current	-0.16	0.12	-0.46	0.13

a. Games-Howell Comparison. * $p < 0.05$

Peer antisocial behaviour is a negative risk factor, and one which current gang members consistently scored significantly higher for, when compared to those participants who had never been in a gang. Current gang members also scored higher than prior gang members, but with a less uniform pattern. There were three waves when prior gang members scored significantly higher than never gang members. The first two waves may have been because some of the prior gang members re-joined gangs; however, the same result at month 72 is more difficult to explain, and requires further investigation of offending styles across the study.

Peer Delinquency Antisocial Influence

Table 2.57

Mean Scores For Peer Delinquency Antisocial Influence

Wave and Status	Age Range	N	M	SD
Baseline	14-19			
G never		752	1.71	0.79
G current		159	2.34	0.98
G prior		120	2.12	0.97
6 months	14-20			
G never		684	1.46	0.67
G current		148	2.03	0.95
G prior		133	1.71	0.79
12 months	15-20			
G never		676	1.45	0.65
G current		131	1.98	1.00
G prior		162	1.53	0.71
18 months	15-21			
G never		646	1.47	0.69
G current		113	1.86	0.97
G prior		181	1.58	0.72
24 months	16-21			
G never		639	1.44	0.69
G current		110	1.98	1.00
G prior		197	1.58	0.78
30 months	16-22			
G never		635	1.40	0.64
G current		103	1.78	0.98
G prior		200	1.44	0.66
36 months	17-22			
G never		625	1.39	0.64
G current		93	1.76	0.98
G prior		209	1.44	0.66
48 months	18-23			
G never		607	1.44	0.65
G current		88	1.86	1.06
G prior		230	1.47	0.72
60 months	18-24			
G never		598	1.45	0.66
G current		75	1.84	0.97
G prior		241	1.54	0.73
72 months	20-25			
G never		586	1.42	0.60
G current		69	1.82	0.97
G prior		236	1.55	0.80
84 months	20-26			
G never		557	1.40	0.63
G current		59	1.57	0.90
G prior		242	1.45	0.64

The same pattern was found for all waves of data; current gang members had the highest mean score and those never in a gang scored the lowest (Table 2.57).

A one way between groups analysis of variance was conducted to explore the relationship between gang membership and antisocial influence of peers. Higher scores indicate greater influence. Participants were divided into three groups: (G never), currently in a gang (G current) and previously in a gang (G prior). Significant variance was found for all waves of data except for the final; the effect size was medium at the baseline, and for months 6, 12 and 24; and small at months 18, and 30 to 72; however (Tables 5.58 and 5.59).

Table 2.58

Summary of ANOVA For Peer Delinquency Antisocial Influence

	Sum of Squares	df	Mean Square	F	*p*	Eta Squared
Baseline						
Between groups	62.36	2	31.18	35.76a	.000***	.08**
Within groups	734.00	220.70	0.71			
Total	796.36	222.70				
6 months						
Between groups	40.62	2	20.31	26.36a	.000***	.07**
Within groups	536.41	227.82	0.55			
Total	567.02	229.82				
12 months						
Between groups	30.81	2	15.41	17.29a	.000***	.06**
Within groups	496.69	237.65	0.51			
Total	527.51	239.65				
18 months						
Between groups	14.49	2	7.25	8.81a	.000***	.03*
Within groups	505.16	230.95	0.54			
Total	519.65	232.95				
24 months						
Between groups	27.55	2	13.77	15.98a	.000***	.05**
Within groups	529.78	230.09	0.56			
Total	557.33	232.09				
30 months						
Between groups	12.63	2	5.21	7.17a	.00**	.03*
Within groups	447.11	222.03	0.31			
Total	459.74	224.03				

a. Equal variances not assumed. Significance: * p<.05 ** p<.01 *** p<.001.

Effect size: *Small, **Medium, ***Large

Table 2.59

Summary of ANOVA For Peer Delinquency Antisocial Influence

	Sum of Squares	df	Mean Square	F	*p*	Eta Squared
36 months[a]						
Between groups	11.06	2	5.53	6.82a	.00**	.03*
Within groups	386.91	204.76	0.42			
Total	397.96	206.76				
48 months						
Between groups	14.23	2	7.11	6.83a	.00**	.03*
Within groups	468.86	199.83	0.51			
Total	483.09	201.83				
60 months						
Between groups	10.64	2	5.32	6.61a	.00**	.02*
Within groups	455.90	178.15	0.50			
Total	466.54	180.15				
72 months						
Between groups	11.20	2	5.60	7.47a	.00**	.03*
Within groups	423.71	160.36	0.48			
Total	434.91	162.36				

a. Equal variances not assumed. Significance: * p<.05 ** p<.01 *** p<.001.

Effect size: *Small, **Medium, ***Large

Post hoc comparisons indicated that the mean score of current gang members was significantly higher than that of those who had never been in a gang from the baseline to month 72; the mean score of current gang members was also significantly higher than that of prior gang members only for the first two waves of the study (Tables 5.60 to 5.62).

Table 2.60

Tukey HSD Comparison For Peer Delinquency Antisocial Influence

Age Range	Gang Status A	Gang Status B	Mean difference (A-B)	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
14-19	**Baseline**[a]					
	G never	G current	-0.63*	0.08	-0.83	-0.44
		G prior	-0.41*	0.09	-0.63	-0.19
	G current	G never	0.63*	0.08	0.44	0.83
		G prior	0.22	0.12	-0.05	0.50
	G prior	G never	0.41*	0.09	0.19	0.63
		G current	-0.22	0.12	-0.50	0.05
14-20	**6 months**[a]					
	G never	G current	-0.56*	0.08	-0.76	-0.37
		G prior	-0.24*	0.07	-0.42	-0.69
	G current	G never	0.56*	0.08	0.37	0.76
		G prior	0.32*	0.10	0.07	0.56
	G prior	G never	0.24*	0.07	0.07	0.42
		G current	-0.32*	0.10	-0.56	-0.07
15-20	**12 months**[a]					
	G never	G current	-0.53*	0.09	-0.74	-0.32
		G prior	-0.08	0.06	-0.22	0.07
	G current	G never	0.53*	0.09	0.32	0.74
		G prior	0.45*	0.10	0.21	0.70
	G prior	G never	0.08	0.06	-0.07	0.22
		G current	-0.45*	0.10	-0.70	-0.21
15-21	**18 months**[a]					
	G never	G current	-0.38*	0.10	-0.61	-0.16
		G prior	-0.11	0.06	-0.25	0.04
	G current	G never	0.38*	0.10	0.16	0.61
		G prior	0.28*	0.10	0.03	0.53
	G prior	G never	-0.26*	0.06	-0.04	0.25
		G current	-0.44	0.11	-0.53	-0.03

a. Games-Howell Comparison. * $p < 0.05$

Table 2.61

Tukey HSD Comparison For Peer Delinquency Antisocial Influence

Age Range	Gang Status A	Gang Status B	Mean difference (A-B)	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
16-21	**24 months**[a]					
	G never	G current	-0.54*	0.10	-0.77	-0.30
		G prior	-0.14	0.06	-0.29	0.01
	G current	G never	0.54*	0.10	0.30	0.77
		G prior	0.40*	0.11	0.14	0.66
	G prior	G never	0.14	0.06	-0.01	0.29
		G current	-0.40*	0.11	-0.66	-0.14
16-22	**30 months**[a]					
	G never	G current	-0.38*	0.10	-0.61	-0.14
		G prior	-0.04	0.05	-0.16	0.09
	G current	G never	0.38*	0.10	0.14	0.61
		G prior	0.34*	0.11	0.09	0.59
	G prior	G never	0.04	0.05	-0.09	0.16
		G current	-0.34*	0.11	-0.59	-0.09
17-22	**36 months**[a]					
	G never	G current	-0.37*	0.10	-0.61	-0.13
		G prior	-0.04	0.05	-0.16	0.08
	G current	G never	0.37*	0.10	0.13	0.61
		G prior	0.33*	0.11	0.08	0.59
	G prior	G never	0.04	0.05	-0.08	0.16
		G current	-0.33*	0.11	-0.59	-0.08
18-23	**48 months**[a]					
	G never	G current	-0.43*	0.12	-0.71	-0.15
		G prior	-0.03	0.05	-0.16	0.10
	G current	G never	0.43*	0.12	0.15	0.71
		G prior	0.40*	0.12	0.11	0.69
	G prior	G never	0.03	0.05	-0.10	0.16
		G current	-0.40*	0.12	-0.69	-0.11

a. Games-Howell Comparison. * $p < 0.05$

Table 2.62
Tukey HSD Comparison For Peer Delinquency Antisocial Influence

Age Range	Gang Status A	Gang Status B	Mean difference (A-B)	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
18-24	**60 months**[a]					
	G never	G current	-0.39*	0.12	-0.67	-0.12
		G prior	-0.09	0.05	-0.22	0.04
	G current	G never	0.39*	0.12	0.12	0.67
		G prior	0.30*	0.12	0.01	0.59
	G prior	G never	0.09	0.05	-0.04	0.22
		G current	-0.30*	-0.59	-0.59	-0.01
20-25	**72 months**[a]					
	G never	G current	-0.40*	0.12	-0.69	-0.11
		G prior	-0.13	0.06	-0.26	0.01
	G current	G never	0.40*	0.12	0.11	0.69
		G prior	0.27	0.13	-0.03	0.58
	G prior	G never	0.13	0.06	-0.01	0.26
		G current	-0.27	0.13	-0.58	0.03

a. Games-Howell Comparison. * $p < 0.05$

Similar patterns that were found for current gang members in regard to peer antisocial behaviour, were also found for antisocial influence. The results for prior gang members were similar when compared to current gang members but did not follow the same pattern in relation to those who had had never been in a gang. These findings have the potential to inform anti-gang interventions, not least of all because this social risk factor is dynamic to some extent. Removing people from their neighbourhoods and social networks, whether gang or non-gang affiliated is not always possible or straightforward.

Exposure to Violence

Table 2.63

Mean Scores For Exposure to Violence

Wave and Status	Age Range	N	M	SD
Baseline	14-19			
Never		761	5.23	2.86
Current gang		161	7.39	2.66
Prior gang		120	6.63	2.80
6 Months	14-20			
Never		695	1.29	1.70
Current gang		149	2.55	2.58
Prior gang		135	1.98	2.23
12 Months	15-20			
Never		680	1.30	1.81
Current gang		132	1.95	2.20
Prior gang		163	1.39	1.72
18 Months	15-21			
Never		652	1.21	1.75
Current gang		114	1.75	2.08
Prior gang		185	1.35	1.72
24 Months	16-21			
Never		641	0.97	1.62
Current gang		110	1.73	2.25
Prior gang		198	1.04	1.53
30 Months	16-22			
Never		642	0.93	1.54
Current gang		104	1.72	1.90
Prior gang		205	1.09	1.56
36 Months	17-22			
Never		636	0.93	1.55
Current gang		95	1.62	2.25
Prior gang		216	0.78	1.20
48 Months	18-23			
Never		609	1.25	1.82
Current gang		88	2.28	2.76
Prior gang		236	1.46	2.11
60 Months	18-24			
Never		603	1.22	1.87
Current gang		76	2.25	2.48
Prior gang		243	1.19	1.67
72 Months	20-25			
Never		589	1.07	1.63
Current gang		71	2.35	2.19
Prior gang		243	1.23	1.79
84 Months	20-26			
Never		561	1.01	1.54
Current gang		62	1.90	2.19
Prior gang		243	1.31	1.87

Current gang members had the highest mean score for all waves of data (Table 2.63). Those who had never been in a gang had the lowest mean scores at

the baseline and months 6 to 30, 48 and 84; and prior gang members had the lowest mean score for months 36 and 60 (Table 2.63).

A one way between groups analysis of variance was conducted to explore the relationship between gang membership and future outlook. Participants were divided into three groups: (G never), currently in a gang (G current) and previously in a gang (G prior). Significance variance was found for all waves of data; the effect size was medium at the baseline and month 6, and small for all other waves (Tables 5.64 and 5.65).

Table 2.64

Summary of ANOVA For Exposure to Violence

	Sum of Squares	df	Mean Square	F	*p*	Eta Squared
Baseline						
Between groups	726.41	2	363.20	45.48	.000***	.08**
Within groups	8297.55	1039	7.99			
Total	9023.95	1041				
6 months						
Between groups	219.83	2	109.92	20.37a	.000***	.06**
Within groups	3647.10	223.46	3.74			
Total	3866.93	225.46				
12 months						
Between groups	47.00	2	23.50	6.86	.00**	.01*
Within groups	3329.97	972	3.42			
Total	3376.97	974				
18 months						
Between groups	28.83	2	14.41	4.51	.01*	.01*
Within groups	3028.35	948	3.19			
Total	3057.18	950				
24 months						
Between groups	53.92	2	26.96	5.69a	.00**	.02*
Within groups	2696.07	239.64	2.85			
Total	2749.98	241.64				
30 months						
Between groups	56.23	2	28.12	8.35a	.000***	.02*
Within groups	2393.14	233.76	2.52			
Total	2393.14	235.76				

a. Equal variances not assumed. Significance: * p<.05 ** p<.01 *** p<.001.

Effect size: *Small, **Medium, ***Large

Table 2.65
Summary of ANOVA For Exposure to Violence

	Sum of Squares	df	Mean Square	F	*p*	Eta Squared
36 months						
Between groups	48.76	2	24.38	6.01a	.00**	.02*
Within groups	2319.22	223.06	2.46			
Total	2367.99	225.06				
48 months						
Between groups	82.45	2	41.22	6.17a	.00**	.02*
Within groups	3726.02	202.26	4.01			
Total	3808.47	204.26				
60 months						
Between groups	75.62	2	37.81	6.38a	.000***	.02*
Within groups	3248.13	186.75	3.53			
Total	3323.76	188.75				
72 months						
Between groups	104.89	2	52.45	11.61a	.000***	.04*
Within groups	2681.71	172.40	2.98			
Total	2786.60	179.40				
84 months						
Between groups	51.53	2	25.77	6.48a	.00**	.02*
Within groups	2469.16	150.40	2.86			
Total	2520.69	152.40				

a. Equal variances not assumed. Significance: * p<.05 ** p<.01 *** p<.001.
Effect size: *Small, **Medium, ***Large

Post hoc comparisons indicated that the mean score of current gang members was significantly higher than for those who had never been in a gang for all waves (Tables 5.66 to 5.68). Current gang members were also found to have a significantly higher mean score than prior gang members at the baseline, and months 12, 24, 30, 36, 60 and 72.

Table 2.66
Tukey HSD Comparison For Exposure to Violence

Age Range	Gang Status A	Gang Status B	Mean difference (A-B)	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
14-19	**Baseline**					
	never	current	-0.75*	0.13	-1.05	-0.45
		prior	-0.22	0.14	-0.56	0.12
	current	never	0.75*	0.13	0.45	1.05
		prior	0.53*	0.18	0.12	0.95
	prior	never	0.22	0.14	-0.12	0.56
		current	-0.53*	0.18	-0.95	-0.12
14-20	**6 months**[a]					
	never	current	-0.66*	0.13	0.00	-0.35
		prior	-0.27	0.12	0.07	0.02
	current	never	0.66*	0.13	0.00	0.97
		prior	0.39	0.17	0.06	0.79
	prior	never	0.27	0.12	0.07	0.56
		current	-0.39	0.17	-0.79	0.01
15-20	**12 months**					
	never	current	-0.45*	0.11	-0.70	-0.19
		prior	-0.10	0.10	-0.34	0.13
	current	never	0.45*	0.11	0.19	0.70
		prior	0.35*	0.13	0.03	0.66
	prior	never	0.10	0.10	-0.13	0.34
		current	-0.35*	0.13	-0.66	-0.03
15-21	**18 months**					
	never	current	-0.54*	0.18	-0.97	-0.12
		prior	-0.13	0.15	-0.48	0.22
	current	never	0.54*	0.18	0.12	0.97
		prior	0.41	0.21	-0.09	0.91
	prior	never	0.13	0.15	-0.22	0.48
		current	-0.41	0.21	-0.91	0.09

a. Games-Howell Comparison. * $p < 0.05$

Table 2.67
Tukey HSD Comparison For Exposure to Violence

Age Range	Gang Status A	Gang Status B	Mean difference (A-B)	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
16-21	**24 months**[a]					
	never	current	-0.76*	0.22	-1.29	-0.23
		prior	-0.06	0.13	-0.36	0.23
	current	never	0.76*	0.22	0.23	1.29
		prior	0.69*	0.24	0.12	1.26
	prior	never	0.06	0.13	-0.23	0.36
		current	-0.69*	0.24	-1.26	-0.12
16-22	**30 months**[a]					
	never	current	-0.79*	0.19	-1.25	-0.33
		prior	-0.16	0.20	-0.45	0.13
	current	never	0.79*	0.13	0.33	1.25
		prior	0.63*	0.20	0.12	1.14
	prior	never	0.16	0.13	-0.13	0.45
		current	-0.63*	0.22	-1.14	-0.12
17-22	**36 months**[a]					
	never	current	-0.69*	0.24	-1.26	-0.12
		prior	0.15	0.10	-0.09	0.39
	current	never	0.69*	0.24	0.12	1.26
		prior	0.84*	0.25	0.26	1.42
	prior	never	-0.15	0.10	-0.39	0.09
		current	-0.84*	0.25	-1.42	-0.26
18-23	**48 months**[a]					
	never	current	-1.03*	0.30	-1.75	-0.31
		prior	-0.20	0.16	-0.57	0.16
	current	never	1.03*	0.30	0.31	1.75
		prior	0.83*	0.32	0.06	1.60
	prior	never	0.20	0.16	-0.16	0.57
		current	-0.83*	0.32	-1.60	-0.06

a. Games-Howell Comparison. * $p < 0.05$

Table 2.68
Tukey HSD Comparison For Exposure to Violence

Age Range	Gang Status A	Gang Status B	Mean difference (A-B)	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
18-24	**60 months**[a]					
	never	current	-1.03*	0.30	-1.74	-0.33
		prior	0.02	0.13	-0.29	0.33
	current	never	1.03*	0.30	0.33	1.74
		prior	1.06*	0.30	0.33	1.78
	prior	never	-0.22	0.13	-0.33	0.29
		current	-1.06*	0.30	-1.78	-0.33
20-25	**72 months**[a]					
	never	current	-1.29*	0.27	-1.93	-0.64
		prior	-0.16	0.13	-0.48	0.15
	current	never	1.29*	0.27	0.64	1.93
		prior	1.12*	0.28	0.45	1.80
	prior	never	0.16	0.13	-0.15	0.48
		current	-1.22*	0.28	-1.80	-0.45
20-26	**84 months**[a]					
	never	current	-0.89*	0.29	-1.57	-0.20
		prior	-0.29	0.14	-0.61	0.03
	current	never	0.89*	0.29	0.20	1.57
		prior	0.60	0.30	-0.13	1.32
	prior	never	0.29	0.14	-0.03	0.61
		current	-0.60	0.30	-1.32	0.13

a. Games-Howell Comparison. * $p < 0.05$

Current gang members were found to have consistently higher levels of exposure to violence than both never and prior gang members; and with a medium effect size for the first two waves. Exposure to violence is a dynamic risk factor. However, the impact of having experienced violent events can lead to trauma, thus the risk can be longer term and even static. No significant variance was found between prior and never gang members, which could indicate that in this sample the negative risk of exposure to violence does decrease after an individual has left the gang. This finding is extremely important for the design of interventions, both in terms of removing young people from exposure to increased violence and in considering a therapeutic approach for those who have been gang affiliated.

Discussion

Present Study

The present study explored the relationship of gang status (current, prior and never gang members) to psychological and social criminogenic risk factors; and considered whether patterns changed as the sample aged. The following psychological measures were investigated: Temperance, consideration of others, future outlook, psychosocial maturity, resistance to peer influence, and psychopathy. The following social risk factors were explored: Peer delinquent behaviour and influence, and exposure to violence. A key purpose of the study was to consider the extent to which risk factors associated with gang membership and offending were dynamic. To investigate this, the study explored whether prior gang members scored significantly differently to current gang members or never gang members.

Psychological Development

The present study found that gang members had significantly lower levels of future orientation than those who had never been in a gang for all waves of data (Tables 2.34 to 2.36). This finding does not accord with prior research that suggested gang members are able to consider their future because when new to the gang they receive relatively low pecuniary rewards and are therefore required to think ahead (Levitt & Venkatesh, 2000; Listokin, 2005). Although this discrepancy could be explained by the present study not distinguishing between the level of gang membership, a change over the duration of the present study as gang members became more established would have been evident nonetheless. The findings for prior gang members were inconclusive. Their future orientation was significantly lower than never gang members at months 18, 48, 60 and 84 and

only significantly higher than current gang members at the baseline and months 24 and 36 (Tables 2.4 to 2.6). That no significant differences were found between current and prior gang members for the final four waves of data, but that there was significant variance between prior and never gang members might suggest that as the sample aged, previous contact with a gang became impactful in respect to an individual's future orientation and outlook (Tables 2.5 to 2.6).

There are two opposing viewpoints regarding the relationship between gang membership and temperance, which combines two measures: impulse control and suppression of aggression. The first advocates that individuals with low self-control will have little regard for their actions irrespective of gang membership (Gottfredson & Hirschi, 1990; Hirschi & Gottfredson, 2000); whereas the second posits that individuals with higher levels of temperance require membership of a delinquent group and antisocial group norms for their temperance levels to be lowered, (Fox et al., 2013; Gottfredson & Hirschi, 1990). In the present study current gang members were found to have significantly lower temperance levels than both prior and never gang members for nine waves (Tables 2.10 to 2.12). This does not necessarily suggest that leaving a gang increases temperance; it could equally be the case that individuals with higher levels of impulse control do not remain in the gang for long periods. It is also noteworthy that those who had never been in a gang had significantly higher levels of temperance than both prior and current gang members. This finding suggests that prior gang members lie somewhere between current and never gang affiliated youth, which supports the enhancement model of gang membership (Hill, Howell, Hawkins, & Batin-Pearson, 1999).

The association of low impulse control amongst gang members with low levels of consideration of others (Gottfredson & Hirschi, 1990) was partly

supported. In addition to lower levels of impulse control, current gang members had significantly lower scores for consideration of others than both prior and never gang affiliated youth for the first five waves of data; additionally, current gang members also scored significantly lower than only those who had never been in a gang at month 30 and for the subsequent waves of months 36 and 84 (Tables 2.16 to 2.17). These findings suggest some age specific variance; as the sample aged the significant differences between current gang members and those who were not affiliated became less regular.

Research has demonstrated that individuals with low levels of impulse control may be drawn to similar, delinquent peers (McGloin, O'Neill & Shermer, 2009). In the present study current gang members scored significantly lower for resistance to peer influence than those who had never been affiliated for the first nine waves of the study (Tables 2.26 to 2.28). However, for the last two waves never gang members only scored significantly lower than prior members. This may be explained by a decrease in daily contact and importance of the gang that was reported by members during the study (Table 1.4). Prior gang members also demonstrated significantly lower levels of resistance to peer influence than never gang members from months 6 to 36 and significantly higher resistance than current members additionally for months 48 and 60. These findings lend support to the enhancement model and important in light of the results of the analysis of delinquent peer influence and behaviour below.

Previous studies have found differences in the psychological development of lower level gang members and leaders (Dmetrieva et al., 2014). In the present study lower level members constituted the largest status for gang members; at the baseline interview 67.1% (n = 108) of the sample reported that they were just members of the gang, and this continued to be the largest group for subsequent

waves (Table 1.3). A clear pattern of variance in psychosocial maturity was found between those who had never been in a gang and those who were currently gang affiliated; significantly so for all waves except for month 72 (Tables 2.20 to 2.22). This finding suggests that even if lower level gang members are able to increase their psychosocial maturity whilst affiliated (Dmetrieva et al., 2014), it may be impeded when a comparison is made to offenders who have never been gang involved. The findings for prior gang members were, again, inconclusive. From month 6 to 36 and 84 prior gang members had significantly lower psychosocial maturity than never gang members; and for months 12, and 24 to 36 significantly higher maturity than current gang members (Tables 2.20 to 2.22). These findings support a significant relationship between gang membership and lower levels of psychosocial development. Although, inconclusive, the patterns of variance between prior gang members and the other two groups lend some support to the enhancement model. It is clear that those who have never been in a gang exhibited higher levels throughout the study.

Psychopathy

As with research that has found a positive relationship between gang membership and psychopathy (Dupéré, et al., 2007), the present study indicated that current gang members had significantly higher total psychopathy scores than both prior and never gang members from months 12 to 84 (Tables 2.32 to 2.34). The only significant variance between prior and never gang members was found during the final wave of data collection, when prior gang members scored significantly higher (Table 2.34). These findings suggest that the characteristics associated with the total psychopathy measure are dynamic in nature, although it is worth noting that the standard deviations are high for all three groups.

Nevertheless, these findings are important both in the writing of anti-gang programmes and for reducing the risk that higher psychopathic traits present for those who remain in the gang.

Disparity was found when the individual dimensions of psychopathy were considered. Gang members had significantly higher scores for the grandiose manipulative dimension than both prior and never gang members for months 36, and 60 to 84 (tables 2.37 and 2.38). Prior research had suggested that only gang leaders showed an increase in this element as they aged (Dmetrieva et al., 2014); however, the present study suggests that this factor was higher for the sample of gang members overall (Table 2.35). The highest percentage of leaders in the present study was found at 72 months when 8.5% (n = 6, out of total of 71) identified themselves as such. By 84 months, however, none of the remaining gang members reported that they were leaders (Table 1.3). These findings are relevant to gang interventions for those in late adolescence, in that grandiosity and manipulative behaviour may impact upon an individual's ability to adjust their behaviour. It is also possible that individuals who require group membership to support these characteristics may struggle to leave a gang because of the social support it provides (Wood & Alleyne, 2010).

Higher levels of violent offending have been found to co-exist with increased callousness in samples of gang affiliated youth (Esbensen et al., 2009). The present study accords with these findings in that current gang members had significantly higher levels of callous unemotional characteristics than never gang members for months 6 to 84 (Tables 2.42 to 2.44). The findings also indicated that prior gang members had significantly lower levels of callousness than current gang members for months 12 to 84, further supporting the relationship between current gang membership and callous unemotional characteristics (Tables 2.42 to

2.44). However, it is also notable that prior gang members only scored significantly higher than never gang members for this dimension for four inconsecutive waves of the study, showing no consistent pattern of variance.

Research has also found that the impulsive irresponsible dimension increased for low level gang members with age (Dmetrieva et al., 2014). In the present study the overall means scores decreased as the sample aged (Table 2.45). Current gang members scored significantly higher than both prior and never gang members for all waves of data; with a medium effect size at month 24 (Table 2.46). Prior gang members also scored significantly higher than never gang members with a medium effect size at month 24, and then subsequently with a small effect size at months 30, and 60 to 84 (Tables 2.49 and 2.50). The lack of systematic variance between prior and never gang members could be explained by the fact that in the present sample even those who had never been gang affiliated had been found guilty of a serious felony offence and were not drawn for a general sample of youth. The pattern of variance for the last three years of the study supports the enhancement model, suggesting that prior gang members do maintain a higher level of impulsive and irresponsible characteristics, but less so than those who were currently gang affiliated. Again, the findings are significant for interventions targeting those in their late adolescence, depending on their history of gang affiliation status.

Social Risk Factors

Peer delinquency is associated with general adolescent offending (Dishion, et al., 1996; Snyder, et al., 1986; Weerman, 2003). The degree of influence that membership of a delinquent group has on an individual's offending lies at the core of the three models of gang involvement and subsequent explanations

(Thornberry et al., 1993; Wood & Alleyne, 2010). The present study sought to determine if there were significant differences between the delinquent behaviour and influence of the peers for current, prior and never gang members in order to determine the extent to which they posed a risk to offending. It cannot be assumed that gang members' friends are all affiliated. For the present study at the baseline 56.5% (n = 91) of gang members reported that "a few of their friends" were not members of their gang, and this remained the highest percentage for subsequent waves of data; decreasing to 38.7% (n = 24) at 84 months (Table 1.4). Furthermore, daily contact with the gang was also common for members; at the baseline 68.9% (n = 111) had contact each day, but from month 6 the percentage decreased substantially to 33.1% (n = 49) and was 38.7% (n = 24) for the last wave of data (Table 1.4).

In the present study current gang members were found to have significantly higher levels of peer delinquent behaviour than those who had never been in a gang from the baseline to month 60 (Table 2.54 to 2.56). Significant differences were also found between current and prior gang members for eight out of the eleven waves; with gang members scoring higher than those who were no longer affiliated. Furthermore, prior gang members were only found to experience significantly higher levels of delinquent peer behaviour than the never gang group for the first two waves and month 72 (Table 2.54 and 2.56). These findings support prior research that suggests a significant relationship between delinquent peers and gang membership (Klein & Maxson, 2006; Wood & Alleyne, 2010).

Similar patterns and results were found for the delinquent peer influence measure. Current gang members had significantly higher scores than both prior and never gang members from months 6 to 60 (table 2.60 to 2.62). Those who had never been affiliated scored significantly lower than prior gang members for the

first two waves only. The effect sizes were medium for the first three waves of data and month 24; all other waves were small (tables 2.58 and 2.59).

Previous research has suggested that gang membership is a criminogenic risk factor beyond peer delinquency (Battin, Hill, Abbott, Catalano & Hawkins, 1998; Battin-Pearson, Thornberry, Hawkins & Krohn, 1998). Results for the present study indicated that current gang members are exposed to significantly higher levels of peer delinquent behaviour and influence than their non-affiliated counterparts. Overall, peer delinquency decreased as the sample aged, and no variance between groups was found for either peer delinquent behaviour or influence at month 84. This may suggest that this risk factor is developmentally time specific and becomes less relevant to gang members as they reach early adulthood. These conclusions were supported when resistance to peer influence was considered for the present study, no significant variance was found between current gang members and those who had never been in a gang; although as noted above never gang members did score significantly higher than prior members for the last two waves of data (Tables 2.23 to 2.28). The previous waves, however, indicated that current gang members had significantly lower resistance to peer influence than the other two groups in the study. This finding, combined with significantly increased peer delinquent behaviour and influence, indicate that gang membership increases an identified criminogenic risk (Thornberry et al., 1993).

Research has demonstrated that gang members experience significantly more exposure to violence than non-gang counterparts (Barnes, Boutwell & Fox, 2012; Melde & Esbensen, 2013). Furthermore, some studies have indicated that prior gang members continued to experience high levels of exposure to violence after they have left the gang (Peterson et al., 2004). The present study supported that current gang members are exposed to significantly more violence than those

who had never been in a gang. It also indicated that current gang members scored significantly higher than prior gang members for eight out of the eleven waves of the study (tables 2.66 to 2.68); contradicting the finding of Peterson and colleagues (2004). Previous research has indicated that the relationship between violent victimisation and gang membership is not necessarily straight forward, with a number of potentially confounding variables (Apel & Burrow, 2011; Barnes, Boutwell, & Fox, 2012; DeLisi, Barnes, Beaver, & Gibson, 2009). Further analysis of the relationship of risk factors to each other is therefore required.

Interactional Theory

Current gang members were found to have higher negative psychological and social risk factors than those who had never been gang affiliated. Prior gang members also had higher negative risk factors scores, but there was no pattern of significant variance overall. This finding suggests that there is a relationship between current gang membership and all negative risk factors; furthermore, when the sample left the gang their levels of resistance to peer influence and consideration of others increased, and their psychopathic traits decreased. This would lend support to the Facilitation or Enhancement Models. However, also noteworthy in regard to Interactional Theory was the finding that prior gang members continued to score more highly for the impulsive irresponsible dimension. This additional finding could suggest that some negative risk factors were enhanced during gang membership, but that key psychological risk factors such as impulsivity and temperance were present for those who were drawn to gang membership in the first instance, and who subsequently left. It should be noted that no strong patterns of variance emerged between prior and never gang

members. This could be the explained by the sample, which contained only juvenile felony offenders. Negative psychological and social risk factors are associated with criminality in general, irrespective of gang membership.

Implications

The present study demonstrated that some risk factors, including psychopathy, decreased when individuals left the gang and that consideration of others and resistance to peer influence increased. This does not necessarily indicate a causal relationship, it is equally possible that an individual developed psychologically the appeal of gang membership, alongside the associated higher levels of antisocial and violence, diminished. Prior gang members showed the least patterns of variance, making them a difficult group to assess in terms of risk and intervention. As noted some of the negative risk factors decreased and positive risk factors increased when they were no longer gang involved; however, there were no strong patterns of variance between prior and never gang members. This could be because the entire sample consisted of serious juvenile offenders and so even those who had no gang affiliated had higher levels of delinquency than a general population and the associated risk factors. The decrease in psychopathic traits for those who left the gang is an important finding, especially because it included the later waves of data when psychological and personality development is typically seen to be fixed. Decreases in callous-unemotional and impulsive-irresponsible dimensions for those who left the gang could be explained by the decrease in exposure to violence that was also found for those who were members of a gang. The pattern of higher means scores for current gang members for the grandiose-manipulative dimension for the last three waves of data could suggest either that membership of a delinquent group enhances these

characteristics; or equally, that those with higher levels of this trait are not only drawn to gangs but remain members. Irrespective of how this relationship is viewed, gang interventions need to take account of higher psychopathic traits when working with individuals towards desistance; both from gang membership and offending. Since prior gang members showed no variance in their levels of grandiose-manipulative trait when compared to offenders who had never been in a gang; higher levels of this particular psychopathic dimension seem to most affect current gang members.

Limitations

The sample consisted of adolescents who had committed and been convicted of at least one felony offence prior to the commencement of the study, and previous research suggests that young people typically offend in groups drawn from delinquent peers. This may have impacted on the extent to which non-gang members who offend with others could be categorised as a distinct group, compared to those who were gang affiliated. The study also assumed that gang members offending with their group; however, offending style (whether an individual offends alone or with others) was not considered for the present study.

The present study was designed to investigate risk factors at an age specific and particular point in time rather than individual trajectories, which has been the focus of prior research. Some prior gang members from the sample subsequently re-joined gangs, and this may have resulted in individuals who wanted to be associated with a criminal group being temporarily rather than permanently removed from this risk factor. Differences in the risk factors for different ethnic groups were not investigated.

Future Research

The present study indicated that there are significantly higher psychological and social risk factors associated with current gang membership. However, as prior research has indicated, the relationship between gang membership and social risk factors may not be direct. Further research investigating which risk factors contribute to a model of desistance is necessary in order to better understand the relationship between criminogenic risks, gang affiliation, and recidivism.

Conclusion

The study found significant variance between current and never gang members for all risk factors that were investigated. The relationship of prior gang membership to risk factors was inconclusive; however, in general, the findings suggested that those who had left a gang experienced significantly higher risk factors than never gang members, but less than their peers who were still gang affiliated. These findings support the enhancement model, which suggests that those with increased risk and offending behaviours are attracted to gangs and that their delinquency and associated characteristics decrease when they leave. Further research is necessary to understand how each of the risk factors interact with each other and which predict offending recidivism and desistance.

STUDY 3

AN ANALYSIS OF THE OFFENDING FREQUENCIES OF SOLO, CO AND MIXED STYLE OFFENDERS

Introduction and Aims of Study

Offending Styles

Offenders can be categorised by three styles: those who act alone (solo); those who act with other people (co-offenders); and those who adapt their offending style to the offence type or situation (mixed). Although some individuals sometimes have been found to repeat offend with the same group (Reiss & Farrington, 1991), most criminal youth offend in groups of 2 or 3 people (Reiss, 1988; Shaw & McKay, 1931; Weerman, 2003; Zimring, 1981), in temporary groups drawn from larger available networks (Warr, 2002), typically of similar ages (Carrington, 2015). A phenomenon that mirrors the developmental processes that typically enhance the importance of peers during adolescence (Piquero, Brame, Mazerolle, & Haapanen, 2002; Goldweber, Giles, & Hogg, 2011).

Individuals co-offend for a variety of reasons and obtain different rewards. In addition to the more obvious pecuniary rewards, it has been suggested that individuals also co-offend to obtain acceptance by peers and status by sharing their knowledge and criminal skills (Calvó-Armengol & Zenou, 2004; Weerman, 2003). Co-offending is more common for certain categories of crime, for example robbery and burglary (van Mastrigt & Farrington, 2009); however, it is not without risk. One study demonstrated that those who offend with others have higher levels of re-arrest (Ouellet, Boivin, Leclerc, & Morselli, 2013). A study that used police data from the UK found that group offending was common for: affray, burglary, robbery, vehicle taking, arson without the intention of endangering life, and drug use (Hodgson, 2007). However, offending with others has been found to not only decrease financial rewards for acquisitive crimes, but

also to increase the risk of arrest (Tillyer & Tillyer, 2015); a disadvantage that may become apparent to persistent offenders over time. Furthermore, the shift from co to solo offending that has been reported by academic research is not consistent across all offending categories (Andresen & Felson, 2012b). Andersen and Felson (2012b) found that violent offending continued to involve more than one offender past the mid-life point.

There are two factors that differentiate co-offenders from gangs. First, there is the temporary nature of co-offending groups (Reiss, 1986; Sarnecki, 2001; Warr, 1996). With no allegiance to associates, if one member is incarcerated, the others have the potential to seek new accomplices and to continue to offend (Felson, 2009). Second, youth gangs are one type of group offending that is assumed to have hierarchy, and so are seen to be different to those who are non-gang affiliated group offenders (Reiss & Farrington, 1991). These distinctions are not as fixed as they may first seem. As noted in study 1 of the present thesis, neither homogeneity nor hierarchy have been found to be consistent amongst gangs (Curry, Decker & Pyrooz, 2014), leaving researchers and policy makers alike struggling to even define them (Goldman, Giles & Hogg, 2014; Wood & Alleyne, 2010). Furthermore, co-offenders have been found to fulfil different roles (Warr, 1996), some of which are suggestive of a hierarchy, albeit temporary. Co-offending groups contain instigators and recruiters, who are typically older and who are often family members (Reiss, 1988; Van Mastrigt & Farrington, 2011). This type of mobilisation among non-gang affiliated offenders has serious implications for preventing individuals from becoming involved in crime in the first place, but also for encouraging them to desist. A prison-based study showed that 40% of prisoners could identify a male ‘mentor’ who encouraged them to become involved with crime (Morselli, Tremblay & McCarthy, 2006).

Both gang membership (Curry et al., 2014) and co-offending (Andresen & Felson, 2010; Reiss, 1980; Reiss & Farrington, 1991; Sarnecki, 2001) have been shown to be criminogenic risk factors for some categories of offence. Whereas gang membership has received considerable academic attention, there have been comparatively fewer studies on non-gang affiliated youth who co-offend. This is in spite of research concluding that, like gang members, those who engage in delinquent or criminal behaviour in the company of others typically commit more offences than those who act alone (Andresen & Felson, 2010), including higher levels of violent crimes (Conway & McCord, 2002; McCord & Conway, 2002). Furthermore, increased illegal drug use has been associated not only with gang membership (Esbensen, Peterson, Freng & Taylor, 2002; Howell, Egley, Tita & Griffiths, 2011), but more widely with those who commit higher levels of delinquent acts (Gordon, Lahey & Kawai, 2004). A study on offending style and crime type in Canada also indicated that co-offenders commit a wider variety of criminal acts (Andresen & Felson, 2012a).

Researchers have identified that non-gang affiliated co-offenders have the potential to offend more frequently, because of the temporary and flexible nature of the group (Reiss, 1988). This supposition assumes that gang members offend together. However, there has been very little research on the offending styles of gang affiliated individuals; one exception being the study by Goldweber and colleagues (2011), which investigated gang membership and offending style trajectories in relation to psychological and social risk factors. This study did not consider the offending frequencies or each style of offending.

Research has found that as young people mature from adolescence into early adulthood their involvement with crime decreases (Farrington, 1986; Hirschi & Gottfredson, 1983). However, whereas some youth desist, others adapt their

offending styles and begin to offend alone (Reiss & Farrington, 1991; Zimring, 1981). This is the traditional and most frequently supported trajectory used to explain adolescent limited and extended criminal careers (Andreson & Felson, 2012). However, some studies using large police datasets have cast doubt on the customary trajectory from co to solo offender for delinquent youth (Andreson & Felson, 2012). Carrington (2002) using data reported by the Canadian police found that co-offending rates were lower for juveniles than previous studies had intonated, and a subsequent analysis of equivalent data in the US by Stolzenberg and D'Alessi (2008 and 2016) indicated that solo offending was more common for juvenile offenders. Although, a reanalysis of these data contested these findings and reiterated support for the traditional trajectory of co to solo offending (Zimring & Lacqueur, 2015). These discrepancies in the co-offending findings require further investigation in order to understand whether delinquent youth follow a natural trajectory from offending with others to offending alone.

Research has shown that co-offending groups vary in size, a cross-cultural study on data from Canada, England and the US demonstrated that between 73.8% and 79.5% of the sample offended in pairs, with the second most common occurrence ranging from 14.5% to 17.5% for a group of 3 people (Carrington & Van Mastrigt, 2013). Researchers (Hood & Sparks, 1970; Reiss, 1986; Warr, 1996) have suggested that the size of offending group diminishes as individuals age. In fact, it has been demonstrated that adolescent specific offenders require a group to which to offend whereas offenders who progress into adulthood become more autonomous and prefer to offend alone (Moffitt, 1993). Shaw and McKay's (1931) analysis of data from a juvenile court identified that 82% of recorded offences involved more than one offender. Their detailed investigation of one particular offender demonstrated that he associated with a range of existing

offending groups and his offending escalated over time from petty theft to armed robbery and rape. It is notable that this offender's criminal behaviour has been viewed as a single offence category (Warr, 1996); however, the involvement of a sexual offence for his last reported crime suggests greater diversity and escalation either in his own offending or within the group to which he temporarily belonged. This observation is relevant when understanding the impact of the group on the individual and their offending patterns.

Violent crimes in particular are associated with more than one offender (McCord & Conway, 1996). The influence of the group on an individual is further evidenced through research that has demonstrated the presence of a violent offender can influence non-violent offenders in the orchestration of a crime, resulting in increased aggression towards victims (Conway & McCord, 2002). These findings were supported by a later study (Alarid, Burton, & Hochstetler, 2009), which found that in robberies a dominant instigator controlled other members of the group, who conformed to their instruction. It is clear that novice offenders learn from the more experienced members of a group; however, researchers have also indicated that group offending is also a criminogenic risk for future offending. A number of studies have indicated that those who began offending in a group are more likely to escalate to more serious crimes for longer periods (Felson, 2009; McCord & Conway, 2002; Sarnecki, 2001; Warr, 2002). Further investigation of longitudinal data is necessary in order to establish the relationship between offending style and frequency for both acquisitive and aggressive offending.

One study (Hodgson & Costello, 2002) found that individuals who offended with more experienced burglars had extended future offending trajectories. These findings may be explained by research on the roles that occur

within co-offending groups. Uhnoo's (2015) study of arsonists indicated that the orchestration of the act involved specific roles for those involved in terms of both the planning and execution of the offence. Just as Shaw and McKay (1931) identified older and more experienced offenders who encouraged younger men to become involved in crime, Albert Reiss (1988), who introduced the term co-offending, distinguished between high rate/persistent offenders and low rate offenders in his seminal essay on the relationship between youth offending with accomplices.

As noted, two distinct roles have been identified in the group offending process: instigator/recruiter and joiner/follower (Moffitt, 1993; Reiss, 1988). Recruiters in co-offending groups have been identified as higher rate offenders who enlist others to offend with, drawing upon their immediate networks and often engaging people who are less experienced than themselves (Carrington, 2009; Moffitt, 1993; Reiss, 1988). Subsequent research has demonstrated that these roles are dynamic and that offenders can alternate between instigator and follower depending on the type of offence and temporary group (Warr, 1996). This study found that 51% of a sample taken from Gold's National Survey of Youth were both instigators and joiners in criminal groups; 18% were instigators and 31% were joiners. These percentages are noteworthy because an individual who is prepared to instigate a crime also has the potential to offend alone. In contrast, research using English police data found only a small number of instigators in the sample (Van Mastrigt, 2008). However, this finding could have been affected by the nature of the data; it is possible that if the instigator was an individual with a former criminal record, s/he may not be present at the scene of an offence to avoid re-arrest. The same criticism is valid for another study that used police data from Canada and which concluded that those who offend in

groups do so with people of their own age (Carrington, 2015). Identifying instigators within an offending group is difficult from quantitative data; however, evidence of an individual offending both alone and with others is representative of a flexibility that may mimic the role of instigator within offending groups. Exploring the offending frequencies of each style of offender could enhance an understanding not only of age-specific styles but also offending variety and frequency across time. However, some joiners have been found to be persistent and high level offenders (Reiss, 1988). Perhaps not surprisingly, flexibility has been found amongst long term serious offenders who are prepared to offend both with others and alone (McCord & Conway, 2002; Reiss, 1986; Reiss & Farrington, 1991).

Most individuals who have a long history of crime will offend alone and with others over their life course (Reiss, 1986; Reiss and Farrington, 1991; McCord and Conway, 2002). Reiss and Farrington 1991 found that neither solo or co-offending exclusively was common for any age group. In contrast, Warr (1996) suggested that offenders are consistent and display one style or the other. This finding was supported by Hodgson (2007) who found that offenders committed crimes both alone and with others were the smallest group, but they committed the most crimes. However, the author did not distinguish between adult and juvenile offenders within the sample. Other researchers found that in a sample of incarcerated adults, individuals who had early onset of criminal behaviour were more likely to instigate group offending (Mcgloin, & Nguyen, 2012). The sample for the present study consisted entirely of such a group, and so offers an oportunity to explore whether a distinct category of instigators or mixed style offenders emerges from the analysis.

What remains unclear, however, is whether contemporaneous mixed style offending (solo and co offending during the same period), as evidenced by Goldweber and colleagues (2011) is in itself a criminogenic risk factor. The classification of mixed style offender is typically applied and investigated longitudinally rather than as a simultaneous offending style over a shorter period (Goldweber, Dmitrieva, Cauffman, Piquero & Steinberg, 2011; Piquero, Farrington & Blumstein, 2003; Reiss, 1988). Falco Metcalfe and Baker (2014) investigated the frequency and length of time between criminal acts for solo, co and mixed style offenders, and found that individuals who adopted a mixed style over their lifecourse had the shortest periods of time between their offences. They also found that there were longer periods between offences for mixed style offenders after they had co-offended; these findings bring into question the criminogenic risk posed by temporary groups.

Aims of Study

The present study aimed to understand the offending styles of gang and non-gang members from the sample, to establish any notable patterns or differences. The principle aim of the study was to investigate offending frequencies for the entire sample to ascertain whether there were any significant differences in the number of crimes that were reported by solo, co, and mixed style offenders. The study also considered whether offending frequencies and styles changed over time. In addition to investigating total offences, income offending with drugs and aggressive offending frequencies were also analysed. Finally, substance use for each style of offender was investigated.

Method

Measures

Offending was measured using a *Self Reported Offending* (SRO) measure (Huizinga, Esbensen, & Weihar, 1991), which was adapted for the PTDS to record antisocial and criminal behaviour; two additional items were added after the initial baseline interview: "joyriding" and "broke into a car to steal". The SRO consists of 24-item questionnaire for offending behaviour. Two items were masked for confidentiality: "killed someone" and "forced someone to have sex".

The PTDS researchers used an existing *Substance Abuse* measure (Chassin, Rogosch & Barrera, 1991). It recorded the frequency of use of 10 different drug categories 6 months before the baseline interview and then in the periods prior to each wave of data and provided a count of illegal items.

Gang membership was investigated using the *Gang Involvement* measure, (Elliot, 1990; Thornberry, Lizotte, Krohn, Farnworth & Jang, 1994). For the purposes of the present study a variable for gang involvement during the recall period was created. For further details of all measures see the method section.

Study Design

A frequency score (total number of criminal acts) was obtained for total offending; this included the following offences: broke into a car to steal; bought or received stolen property; used a check/credit card illegally; shoplifted; stole a car or motorcycle; sold marijuana; sold other drugs; been paid for sex; took by force with a weapon and took by force without a weapon; shot someone and hit; shot at someone, no hit; beat someone causing serious injury; in a fight; beat

someone up as part of a gang; carried a gun; destroyed or damaged property; set fire to a building or vacant lot. With the additional offences of joyriding and broke into a car to steal added for 12 to 84 months. In the original study participants were asked "was anyone with you the last time [offence]". For the purposes of the present study a new variable of offending style was created for each offence with the categories of: solo, co, mixed, and no offence reported.

Two separate categories of offending were also investigated. Income offending included the following offences: broke into a car to steal; bought or received stolen property; used a check/credit card illegally; shoplifted; stole a car or motorcycle; sold marijuana; sold other drugs; been paid for sex; took by force with a weapon and took by force without a weapon. Aggressive offending included the following offences: destroyed or damaged property; set fire to a building or vacant lot; shot someone and hit; shot at someone, no hit; beat someone causing serious injury; in a fight; beat someone up as part of a gang; carried a gun; took by force with a weapon; and took by force without a weapon. A previous study using the PTDS dataset found that self-reported offending was correlated to the official records (Brame, Fagan, Piquero, Schubert, Steinberg, 2004).

Data Analysis

The offending styles for total with drugs, aggressive and income offences with drugs were investigated for the entire sample and a new variable for offending style for each category of offending was created. Participants who reported no crimes were removed from the respective wave of data, and the entire cohort was then divided into 3 groups according to offending style of solo, co or mixed style for aggressive offending, and income offending. The data was

abnormally distributed, and it was decided to retain outliers in the analysis because they are typical of this type of data and in order to maintain the integrity of the study (Bakker & Wicherts, 2014). The number of individual offence counts were too low to investigate each offence in isolation.

A one-way between groups analysis of variance was conducted for all three categories to explore the relationship between offending style for each wave of data on offending frequencies. Based on Levene's test, equal variance was not assumed for any of the waves of data; Welch's F was reported, and the Games-Howell test was selected for post-hoc comparisons, in recognition of unequal sample sizes and variance. ANOVA was selected for the analysis because it is a robust test for abnormally distributed data (Blanca, Alarcó, Arnau, Bono, & Bendayan, 2017).

Results

Descriptive Statistics

The offending styles over the course of the study were investigated (Table 3.1). Mixed style offending accounted for the highest percentage, with a total of 94.7% of the sample offending both alone and with others when all offence categories were considered. It should be noted, that the percentage for mixed style offending was highest at the baseline interview when 79.2% of the sample reported offending in this way (Table 3.2). For aggressive offending 82% of the sample were found to mixed style offend, and 73.9% when income generating offences were investigated (Table 3.1). The percentage of the sample who only offended in the company of others was higher for aggressive (8.9%) and income offences (7.6%) than when all offences types were combined (2.9%). The largest percentage for solo offending was found for income generating offences (4.9%), followed by aggressive offending (2%), and only 0.2% for the total offence count.

Table 3.1

Overall Offending Styles Over All Waves of Data For the Entire Sample

Style	Total N	Total %	Aggress. N	Aggress. %	Income N	Income %
Solo only	2	0.2	21	2.0	51	4.9
Co only	30	2.9	93	8.9	80	7.6
Unknown*	23	2.2	69	6.6	119	11.4

* Participants were classified as unknown if only one style or no offences were reported and there were missing data for any of the waves

Table 3.2

Style For Total, Income and Aggressive Offending, Baseline to 30 Months

Wave and style	Total N	Total %	Income N	Income %	Agg. N	Agg. %
Baseline						
Solo	6	0.6	106	10.9	93	9.0
Co	207	19.8	317	32.5	420	40.7
Mixed	831	79.6	552	56.6	520	50.3
6 months						
Solo	181	29.3	122	34.7	193	34.7
Co	198	32.0	134	38.1	237	42.6
Mixed	239	38.7	96	27.3	126	22.7
12 months						
Solo	167	30.3	101	33.9	167	34.8
Co	200	36.3	106	35.6	222	46.3
Mixed	184	33.4	91	30.5	91	19.0
18 months						
Solo	158	32.6	100	38.9	156	37.6
Co	178	36.7	91	35.9	187	45.1
Mixed	149	30.7	66	25.7	72	17.3
24 months						
Solo	136	30.4	114	46.7	128	35.4
Co	169	37.7	91	37.3	176	48.6
Mixed	143	31.9	39	16.0	58	16.0
30 months						
Solo	137	35.4	84	39.8	120	40.8
Co	128	33.1	77	36.5	121	41.2
Mixed	122	31.5	50	23.7	53	18.0

As noted, at the start of the study 79.6% (n = 831) of the sample reported contemporaneously offending alone and with others (Table 3.2). By the 6 month interview, although this remained the preferred offending style, only 38.7% (n = 239) of the sample reported mixed style offending, and the number of those who reported only offending alone rose from 0.6% (n = 6) at the baseline to 29.3% (n = 181). Between months 12 and 24, co-offending was reported by the highest percentage of participants, and this changed to solo offending from 30 months until the end of the study. The offence style for income generating offending followed a similar pattern, with the preferred style of offending changing from mixed at the baseline, to co-offending at months 6 and 12, to solo offending at 18 months. Aggressive offending style followed a different pattern. As with total and

income, the highest percentage of the sample reported offending alone and with others at the baseline (Table 3.2). This changed to offending with others from months 6 to 30, and for month 48; and then solo offending at month 36 at for the last three waves of the study (Tables 3.2 to 3.3).

Table 3.3

Style For Total, Income and Aggressive Offending, 36 to 84 Months

Wave and style	Total N	Total %	Income N	Income %	Agg. N	Agg. %
36 months						
Solo	140	35.4	86	39.4	129	44.6
Co	135	34.1	78	35.8	117	40.5
Mixed	121	30.6	54	24.8	43	14.9
48 months						
Solo	157	35.0	120	44.6	137	39.1
Co	134	29.9	93	34.6	148	42.3
Mixed	157	35.0	56	20.8	65	18.6
60 months						
Solo	180	43.2	122	52.6	122	52.6
Co	105	25.2	56	24.1	56	24.1
Mixed	132	31.7	54	23.3	54	23.3
72 months						
Solo	169	43.0	124	52.5	146	48.8
Co	104	26.5	65	27.5	115	38.5
Mixed	120	30.5	47	19.9	38	12.7
84 months						
Solo	160	45.5	106	55.8	119	49.2
Co	100	28.4	51	26.8	99	40.9
Mixed	92	26.1	33	17.4	24	9.9

The offending style for gang and non-gang affiliated participants was investigated for total offend style (Table 3.4). Mixed style offending remained the preferred style for the largest percentage of gang members until month 84, when more reported committing offences alone. Non-gang members followed a different trajectory after the first two waves when mixed style offending was also the most common. Their preferred offending style changed from co to solo at month 30.

Table 3.4

Frequencies of Offending Styles For Total Offending of Gang and Non-Gang

Wave	Solo N	Solo %	Co N	Co %	Mixed N	Mixed %
Baseline						
Gang	6	3.8	23	14.4	131	81.9
Non-gang	0	0	182	20.7	698	79.3
6 months						
Gang	19	16.1	36	30.5	63	53.4
Non-gang	162	32.4	162	32.4	176	35.2
12 months						
Gang	19	19.2	36	36.4	44	44.4
Non-gang	148	32.7	164	36.3	140	31.0
18 months						
Gang	18	23.7	22	28.9	36	47.4
Non-gang	140	34.2	156	38.1	113	27.6
24 months						
Gang	15	22.7	17	25.8	34	51.5
Non-gang	119	31.3	152	40.0	109	28.7
30 months						
Gang	13	21.7	21	35.0	26	43.3
Non-gang	123	37.8	106	32.6	96	29.5
36 months						
Gang	12	21.8	9	16.4	34	61.8
Non-gang	127	37.6	125	37.0	86	25.4
48 months						
Gang	19	31.1	13	21.3	29	47.5
Non-gang	137	35.5	121	31.3	128	33.2
60 months						
Gang	17	30.9	13	23.6	25	45.5
Non-gang	162	44.9	92	25.5	107	29.6
72 months						
Gang	18	37.5	11	22.9	19	39.6
Non-gang	151	43.8	93	27.0	101	29.3
84 months						
Gang	19	43.2	9	20.5	16	36.4
Non-gang	140	45.6	91	29.6	76	24.8

The descriptive statistics indicate that the majority of gang members offend both alone and with others and so can be categorised as mixed style offenders. This finding is important when considering how to report or assess criminogenic risk. Gang membership, which is seen by policy makers as a criminogenic risk, can be difficult to determine. However, offending style is

easier to ascertain because it enables practitioners to check arrest reports in order to see if an individual offends both alone and with others, rather than establishing whether a young person is gang affiliated. In recognition that the patterns of gang members' offending styles are different to non-gang affiliated individuals, the present study investigated patterns of variance in offending frequencies according to style.

Inferential Statistics

Total offending

Table 3.5

Mean Scores For Total Offending

Wave and Style	Age Range	N	M	SD
Baseline	14-19			
Solo		6	60.50	122.25
Co		207	103.27	286.56
Mixed		831	197.69	421.15
6 Months	14-20			
Solo		181	13.88	76.86
Co		198	37.42	164.65
Mixed		239	102.56	294.90
12 Months	15-20			
Solo		167	14.38	46.75
Co		200	43.70	159.09
Mixed		184	154.01	337.47
18 Months	15-21			
Solo		158	33.41	110.44
Co		178	66.20	253.78
Mixed		149	214.18	417.64
24 Months	16-21			
Solo		136	69.53	264.44
Co		169	111.51	475.89
Mixed		143	218.48	410.25
30 Months	16-22			
Solo		137	62.88	213.69
Co		128	64.54	155.93
Mixed		122	284.46	585.89
36 Months	17-22			
Solo		140	96.75	360.90
Co		135	65.59	146.85
Mixed		121	327.00	641.02
48 Months	18-23			
Solo		156	115.29	325.98
Co		134	108.07	224.50
Mixed		157	218.90	408.91
60 Months	18-24			
Solo		180	76.39	164.32
Co		105	87.25	215.37
Mixed		132	320.73	485.01
72 Months	20-25			
Solo		169	85.32	191.24
Co		104	85.98	201.65
Mixed		120	328.29	506.51
84 Months	20-26			
Solo		160	85.57	208.95
Co		100	60.64	231.32
Mixed		92	259.86	332.88

Mixed style offenders had the highest mean scores for all waves (Table 3.5). A one way between groups analysis of variance was conducted to explore

the relationship between offending styles and total offending frequencies. Participants were divided into three groups: solo, co and mixed style offenders. Significant variance was found for all waves of data (Tables 3.6 and 3.7); the effect size was small at the baseline and month 48; medium at months 12, 18, 30, and 36, and large at months 60, 72 and 84.

Table 3.6

Summary of ANOVA For Total Offending

	Sum of Squares	df	Mean Square	F	*p*	Eta Squared
Baseline						
Between groups	1561181.76	2	780590.88	4.95a	.01*	.01*
Within groups	164206993.00	14.67	157739.67			
Total	165768175.00	16.67				
6 months						
Between groups	07571.04	2	453785.52	10.30a	.00***	.03*
Within groups	27102488.40	359.89	44069.09			
Total	28010059.40	361.89				
12 months						
Between groups	1952214.09	2	976107.04	20.39a	.00***	.07**
Within groups	26239749.60	281.35	47882.76			
18 months						
Between groups	2846003.75	2	1423001.87	17.53a	.00***	.07**
Within groups	39129175.10	258.80	81180.86			
Total	41975178.80	260.80				
24 months						
Between groups	1670654.67	2	835327.33	5.21a	.01*	.02*
Within groups	71387735.80	287.34	160421.88			
Total	73058390.40	289.34				
30 months						
Between groups	4072094.07	2	2036047.03	15.38a	.00***	.07**
Within groups	50833064.20	223.80	132377.77			
Total	54905158.30	225.80				

a. Equal variances not assumed. Significance: * p<.05 ** p<.01 *** p<.001.

Effect size: *Small, **Medium, ***Large

Table 3.7

Summary of ANOVA For Total Offending

	Sum of Square	df	Mean Square	F	*p*	Eta Squared
36 months						
Between groups	5133151.82	2	2566575.91	14.35a	.00***	.07**
Within groups	70302913.00	201.22	178887.82			
Total	75436064.80	203.22				
48 months						
Between groups	1168804.75	2	584402.37	5.27a	.01*	.02*
Within groups	49258378.80	289.67	110942.30			
Total	50427183.60	291.67				
60 months						
Between groups	5218729.14	2	2609364.57	26.69a	.00***	.11***
Within groups	40472784.70	207.87	97760.35			
Total	45691513.90	209.87				
72 months						
Between groups	4910953.38	2	2455476.69	23.44a	.00***	.11***
Within groups	40862051.50	211	104774.49			
Total	45773004.90	213				
84 months						
Between groups	2335860.00	2	1167930.00	18.26a	.00***	.09***
Within groups	22322869.40	184.17	63962.38			
Total	24658729.40	186.17				

a. Equal variances not assumed. Significance: * p<.05 ** p<.01 *** p<.001.

Effect size: *Small, **Medium, ***Large

Post hoc comparisons indicated that the mean score for mixed style offenders was significantly higher than that of solo offenders for months 6 to 84; and higher than that of co-offenders from the baseline to month 18, and from month 30 to 84 (Tables 3.8 to 3.10). Comparisons also indicated that the mean score of co-offenders was significantly higher than that of solo offenders at month 12 (Table 3.8).

Table 3.8

Games-Howell Comparison For Total Offending

					95% Confidence Interval	
Age Range	Offend Style A	Offend Style B	Mean difference (A-B)	Std. Error	Lower Bound	Upper Bound
14-19	**Baseline**					
	solo	co	-42.77	53.74	-202.67	117.14
		mixed	-137.19	52.00	-297.59	23.21
	co	solo	42.77	53.74	-117.14	202.67
		mixed	-94.43*	24.70	-152.51	-36.34
	mixed	solo	137.192	52.00	-23.21	297.59
		co	94.43*	24.70	36.34	152.51
14-20	**6 months**					
	solo	co	-23.54	13.02	-54.22	7.14
		mixed	-88.68*	19.91	-135.60	-41.76
	co	solo	23.54	13.02	-7.14	54.22
		mixed	-65.14*	22.38	-117.79	-12.49
	mixed	solo	88.68*	19.91	41.76	135.60
		co	65.14*	22.38	12.49	117.79
15-20	**12 months**					
	solo	co	-29.32*	11.82	-57.19	-1.45
		mixed	-139.63*	25.14	-199.02	-80.25
	co	solo	29.32*	11.82	1.45	57.19
		mixed	-110.32*	27.30	-174.68	-45.95
	mixed	solo	139.63*	25.14	80.25	199.02
		co	110.32*	27.30	45.95	174.68
15-21	**18 months**					
	solo	co	-32.79	20.95	-82.20	16.61
		mixed	-180.77*	35.32	-264.30	-97.24
	co	solo	32.79	20.95	-16.61	82.20
		mixed	-147.98*	39.15	-240.31	-55.65
	mixed	solo	180.77*	35.32	97.24	264.30
		co	147.98*	39.15	55.65	240.31

* $p < 0.05$

Table 3.9

Games-Howell Comparison For Total Offending

Age Range	Offend Style A	Offend Style B	Mean difference (A-B)	Std. Error	95% Confidence Interval	
					Lower Bound	Upper Bound
16-21	**24 months**					
	solo	co	-41.99	43.06	-143.46	59.49
		mixed	-148.95*	41.12	-245.92	-51.97
	co	solo	41.99	43.06	-59.49	143.46
		mixed	-106.96	50.17	-225.11	11.19
	mixed	solo	148.96*	41.12	51.97	245.92
		co	106.96	50.17	-11.19	225.11
16-22	**30 months**					
	solo	co	-1.66	22.88	-55.59	52.28
		mixed	-221.58*	56.10	-345.38	-88.78
	co	solo	1.66	22.88	-52.28	55.59
		mixed	-219.92*	54.81	-349.78	-90.06
	mixed	solo	221.58*	56.10	88.78	354.38
		co	219.92*	54.81	90.06	349.78
17-22	**36 months**					
	solo	co	31.17	33.02	-46.84	109.17
		mixed	-230.25*	65.77	-385.67	-74.83
	co	solo	-31.17	33.02	-109.17	46.84
		mixed	-261.42*	59.63	-402.77	-120.06
	mixed	solo	230.25*	65.77	74.83	385.67
		co	261.42*	59.63	120.06	402.77
18.23	**48 months**					
	solo	co	7.21	32.52	-69.41	83.84
		mixed	-103.62*	41.79	-202.05	-5.18
	co	solo	-7.21	32.52	-83.84	69.41
		mixed	-110.83*	27.96	-200.34	-21.32
	mixed	solo	103.62*	41.79	5.18	202.05
		co	110.83*	37.96	21.32	200.34

* $p < 0.05$

Table 3.10

Games-Howell Comparison For Total Offending

Age Range	Offend Style A	Offend Style B	Mean difference (A-B)	Std. Error	95% Confidence Interval	
					Lower Bound	Upper Bound
18-24	**60 months**					
	solo	co	-10.85	24.33	-68.36	46.65
		mixed	-244.33*	43.96	-348.36	-140.30
	co	solo	10.85	24.33	-46.65	68.36
		mixed	-233.48*	47.16	-344.88	-122.08
	mixed	solo	244.33*	43.96	140.30	348.36
		co	233.48*	47.16	122.08	344.88
20-25	**72 months**					
	solo	co	-0.66	-58.84	58.84	57.51
		mixed	-242.97*	-357.89	357.89	-128.06
	co	solo	0.66	-57.51	-57.51	58.84
		mixed	-242.31*	-361.28	361.28	-123.35
	mixed	solo	242.97*	128.06	-128.06	357.89
		co	242.31*	123.35	-123.35	361.28
20-26	**84 months**					
	solo	co	24.93	28.43	-42.20	92.06
		mixed	-174.29*	38.44	-265.39	-83.19
	co	solo	-24.93	28.43	-92.06	42.20
		mixed	-199.22*	41.71	-297.88	-100.55
	mixed	solo	174.29*	38.44	83.19	265.39
		co	199.22*	41.71	100.55	297.88

* $p < 0.05$

Mixed style offenders committed significantly more offences than both solo and co-offenders for ten out of eleven waves. The effect size was large for the last three years of the study. This finding is particularly useful when considering the level of criminogenic risk that offending style presents for young adults. Although standard deviations were high for all styles throughout the study, the significant risk that mixed style offenders present could be useful for agencies for monitor offenders.

Income offending

Table 3.11

Mean Scores For Income Offending

Wave and Style	Age Range	N	M	SD
Baseline	14-19			
Solo		106	48.11	223.95
Co		317	90.20	263.41
Mixed		552	155.59	343.23
6 Months	14-20			
Solo		122	39.95	136.35
Co		134	58.22	210.52
Mixed		96	124.02	376.00
12 Months	15-20			
Solo		101	53.40	170.13
Co		106	98.71	274.98
Mixed		91	146.37	355.80
18 Months	15-21			
Solo		100	85.02	220.92
Co		91	140.63	389.54
Mixed		66	224.47	448.79
24 Months	16-21			
Solo		114	137.83	357.08
Co		91	153.32	412.43
Mixed		39	274.08	438.37
30 Months	16-22			
Solo		84	151.77	355.17
Co		77	118.96	220.46
Mixed		50	275.88	561.55
36 Months	17-22			
Solo		86	197.85	425.57
Co		78	132.92	290.67
Mixed		54	305.80	582.27
48 Months	18-23			
Solo		120	165.04	340.50
Co		93	125.44	213.40
Mixed		56	212.98	343.34
60 Months	18-24			
Solo		122	140.75	297.16
Co		56	167.04	251.59
Mixed		54	285.06	383.38
72 Months	20-25			
Solo		124	134.67	206.33
Co		65	140.49	322.14
Mixed		47	303.79	512.04
84 Months	20-26			
Solo		106	137.93	242.43
Co		51	99.96	190.00
Mixed		333	290.45	397.36

Mixed style offenders had a higher mean score for income offending frequency for all waves of data (Table 3.11).

A one way between groups analysis of variance was conducted to explore the relationship between offending styles and income offending frequencies. Participants were divided into three groups: solo, co and mixed style offenders. Significant variance was found at the baseline and final wave of data; the effect size was small at the baseline and medium for the last wave (Table 3.12).

Table 3.12

Summary of ANOVA For Income Offending

	Sum of Squares	df	Mean Square	F	*p*	Eta Squared
Baseline						
Between groups	1521701.62	2	760850.81	8.03a	.00***	.02*
Within groups	92103041.00	330.41	94756.22			
Total	93624742.60	332.41				
84 Months						
Between groups	790737.17	2	395368.59	5.68a	.00***	.06**
Within groups	13028630.60	72.88	69671.82			
Total	13819367.80	74.88				

a. Equal variances not assumed. Significance: * p<.05 ** p<.01 *** p<.001.

Effect size: *Small, **Medium, ***Large

Post hoc comparisons indicated that the mean score for mixed style offenders was significantly higher than that of both solo and co-offenders at the baseline, and co-offenders at month 84 (Table 3.13).

Table 3.13

Games-Howell Comparison For Income Offending

Age Range	Offend Style A	Offend Style B	Mean difference (A-B)	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
14-19	**Baseline**					
	solo	co	-42.09	26.31	-104.18	20.01
		mixed	-107.48*	26.20	-169.32	-45.64
	co	solo	42.09	26.31	-20.01	104.18
		mixed	-65.39*	20.79	-114.21	-16.57
	mixed	solo	107.48*	26.20	45.64	169.32
		co	65.39*	20.79	16.57	114.21
20-26	**84 months**					
	solo	co	37.97	0.54	-46.32	122.26
		mixed	-152.52	0.11	-330.42	25.38
	co	solo	-37.97	0.54	-122.26	46.32
		mixed	-190.49*	0.04	-370.61	-10.37
	mixed	solo	152.52	0.11	-25.38	330.42
		co	190.49*	0.04	10.37	370.61

* $p < 0.05$

Although mixed style offenders demonstrated higher mean scores for income offending there were only two waves of significant variance. This could be explained by the high standard deviations, which were found for all three offending styles through all waves of data. There were, however, no consistent patterns of significant variance between styles for income offending. The significant variance between mixed and co-style offenders for the final wave of data, might be explained by the finding that most of the sample were solo offending by this point in the study. Solo and mixed style offending demonstrate a degree of autonomy and flexibility, both of which are required for criminal careers. Overall the results for income only offending were not as helpful as total offending in terms of demonstrating variance, and so risk. It is notable that there were no significant variance between solo and co offenders.

Aggressive offending

Table 3.14

Mean Scores For Aggressive Offending

Wave and Style	Age Range	N	M	SD
Baseline	14-19			
Solo		93	6.55	17.84
Co		420	11.11	27.62
Mixed		520	21.62	60.73
6 Months	14-20			
Solo		193	4.71	14.81
Co		237	6.36	13.43
Mixed		126	13.17	12.01
12 Months	15-20			
Solo		167	4.05	10.17
Co		222	7.41	18.80
Mixed		91	17.04	29.13
18 Months	15-21			
Solo		156	8.29	41.47
Co		187	4.69	9.10
Mixed		72	14.04	27.43
24 Months	16-21			
Solo		128	4.68	12.67
Co		176	7.68	21.36
Mixed		58	18.71	36.47
30 Months	16-22			
Solo		120	4.08	5.84
Co		121	5.10	11.12
Mixed		53	42.57	143.35
36 Months	17-22			
Solo		129	7.43	47.45
Co		117	7.35	24.36
Mixed		43	22.16	50.10
48 Months	18-23			
Solo		137	5.91	20.78
Co		148	11.91	45.35
Mixed		65	19.46	32.49
60 Months	18-24			
Solo		163	5.44	25.74
Co		104	6.80	16.07
Mixed		58	33.59	155.06
72 Months	20-25			
Solo		146	12.55	83.60
Co		115	4.41	5.76
Mixed		38	51.08	169.83
84 Months	20-26			
Solo		119	4.24	7.13
Co		99	12.34	74.38
Mixed		24	20.00	35.35

Mixed style offenders scored more highly for frequency of aggressive offending than both solo and co-offenders for all waves of data (Table 3.14).

A one way between groups analysis of variance was conducted to explore the relationship between aggressive offending styles and frequencies. Participants were divided into three groups: solo, co and mixed style offenders. Significant variance was found from the baseline to month 12 and for months 24 and 48; all effect sizes were small except for 12 months when the effect size was medium (Table 3.15).

Table 3.15

Summary of ANOVA For Aggressive Offending

	Sum of Squares	df	Mean Square	F	*p*	Eta Squared
Baseline						
Between groups	34782.04	2	17391.02	7.91a	.00***	.02*
Within groups	2263309.82	367.83	2197.39			
Total	2298091.86	369.83				
6 months						
Between groups	5850.741	2	2925.37	15.75a	.00***	.05*
Within groups	102688.70	328.22	185.69			
Total	108539.44	330.22				
12 months						
Between groups	10120.01	2	5060.01	14.06a	.00***	.06**
Within groups	171655.85	202.94	359.87			
Total	181775.87	204.94				
24 months						
Between groups	8023.79	2	4011.90	8.18a	.00***	.04*
Within groups	176088.07	133.54	490.50			
Total	184.111.86					
48 months						
Between groups	8322.63	2	4161.31	3.37a	.04***	.02*
Within groups	428668.96	155.98	1235.36			
Total	436991.59	157.98				

a. Equal variances not assumed. Significance: * p<.05 ** p<.01 *** p<.001.

Effect size: *Small, **Medium, ***Large

Post hoc comparisons indicated that the mean score for mixed style offenders was significantly higher than that of solo offenders for all significant waves; and higher than that of co-offenders from the baseline to month 12 (Table 3.16).

Table 3.16

Games-Howell Comparison For Aggressive Offending

Age Range	Offend Style A	Offend Style B	Mean difference (A-B)	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
14-19	**Baseline**					
	solo	co	-4.56	2.29	-9.96	0.85
		mixed	-15.07*	3.24	-22.69	-7.45
	co	solo	4.56	2.29	-0.85	9.96
		mixed	-10.51*	2.99	-17.52	-3.50
	mixed	solo	15.07*	3.24	7.45	22.69
		co	10.51*	2.99	3.50	17.52
14-20	**6 months**					
	solo	co	-1.65	1.38	-4.89	1.59
		mixed	-8.47*	1.51	-12.02	-4.91
	co	solo	1.65	1.38	-1.59	4.89
		mixed	-6.81*	1.38	-10.06	-3.56
	mixed	solo	8.47*	1.51	4.91	12.02
		co	6.81*	1.38	3.56	10.06
15-20	**12 months**					
	solo	co	-3.35	1.49	-6.85	0.15
		mixed	-12.99*	3.15	-20.49	-5.49
	co	solo	3.35	1.49	-0.15	6.85
		mixed	-9.64*	3.30	-17.48	-1.80
	mixed	solo	12.99*	3.15	5.49	20.49
		co	9.64*	3.30	1.80	17.48
16-21	**24 months**					
	solo	co	-3.00	1.96	-7.62	1.62
		mixed	-14.03*	4.92	-25.83	-2.22
	co	solo	3.00	1.96	-1.62	7.62
		mixed	-11.03	5.05	-23.12	1.07
	mixed	solo	14.03*	4.92	2.22	25.83
		co	11.03	5.05	-1.07	23.12
18-23	**48 months**					
	solo	co	-6.00	4.13	-15.75	3.75
		mixed	-13.55*	4.40	-24.04	-3.05
	co	solo	6.00	4.13	-3.75	15.75
		mixed	-7.55	5.49	-20.53	5.43
	mixed	solo	13.55*	4.40	3.05	24.04
		co	7.55	5.49	-5.43	20.53

* $p < 0.05$

There was a pattern of significant variance between mixed and co-style offenders for the first three waves of the study; with mixed style reporting

significantly more aggressive crimes. The same pattern emerged for solo offenders, with an additional two waves of significant variance at months 24 and 48. It is notable that there were no significant variance between solo and co offenders.

Substance use

Table 3.17
Mean Scores For Substance Use

Wave and Style	N	M	SD
Baseline			
Solo	6	0.83	0.98
Co	206	1.03	1.46
Mixed	829	1.28	1.50
6 Months			
Solo	181	0.40	0.85
Co	198	0.79	0.09
Mixed	239	1.52	0.11
12 Months			
Solo	167	0.41	0.96
Co	200	0.84	1.34
Mixed	184	1.56	1.53
18 Months			
Solo	158	0.55	0.81
Co	178	0.81	1.20
Mixed	149	1.60	1.57
24 Months			
Solo	136	0.72	1.15
Co	169	0.82	1.03
Mixed	143	1.64	1.50
30 Months			
Solo	137	0.87	1.25
Co	128	0.73	0.90
Mixed	122	1.54	1.58
36 Months			
Solo	140	0.65	0.89
Co	135	0.92	1.23
Mixed	121	1.61	1.51
48 Months			
Solo	156	0.87	1.09
Co	134	1.00	1.12
Mixed	157	1.80	1.54
60 Months			
Solo	179	0.69	0.82
Co	105	1.03	1.45
Mixed	132	1.73	1.56
72 Months			
Solo	169	0.83	0.99
Co	104	1.01	1.09
Mixed	120	1.67	1.37
84 Months			
Solo	159	0.81	1.31
Co	100	1.04	1.41
Mixed	92	1.83	1.41

Mixed style offenders had the highest mean score for using substances for all waves of data and solo offenders had the lowest mean score, with the exception of month 30 (Table 3.17).

A one way between groups analysis of variance was conducted to explore the relationship between aggressive offending styles and frequencies. Participants were divided into three groups: solo, co and mixed style offenders. Significant variance was found from month 6 to 84; all effect sizes were medium (Tables 3.18 and 3.19).

Table 3.18

Summary of ANOVA For Substance Use

	Sum of Squares	df	Mean Square	F	*p*	Eta Squared
6 months						
Between groups	138.50	2	69.25	36.73a	.000***	.11**
Within groups	1159.49	401.51	1.89			
Total	1297.99	403.51				
12 months						
Between groups	118.96	2	59.48	34.80a	.000***	.11**
Within groups	936.71	358.71	1.71			
Total	1055.68	360.71				
18 months						
Between groups	91.03	2	45.52	30.45a	.000***	.11**
Within groups	270.44	296.20				
Total	811.47	298.20				
24 months						
Between groups	73.85	2	36.92	24.35a	.000***	.11**
Within groups	674.87	277.92	1.52			
Total	748.71	279.92				
30 months						
Between groups	46.59	2	23.30	12.20a	.000***	.07**
Within groups	618.90	240.89	1.61			
Total	665.49	242.89				

a. Equal variances not assumed. Significance: * p<.05 ** p<.01 *** p<.001.

Effect size: *Small, **Medium, ***Large

Table 3.19

Summary of ANOVA For Substance Use

	Sum of Squares	df	Mean Square	F	*p*	Eta Squared
36 months						
Between groups	62.81	2	31.40	21.11a	.000***	.10**
Within groups	584.70	240.38	1.49			
Total	647.51	242.38				
48 months						
Between groups	78.55	2	39.27	24.21a	000***	.10**
Within groups	720.32	290.80	1.62			
Total	798.86	292.80				
60 months						
Between groups	82.98	2	41.49	26.06a	000***	.11**
Within groups	657.58	201.52	1.59			
Total	740.56	203.52				
72 months						
Between groups	51.44	2	25.72	19.60a	000***	.09**
Within groups	511.68	224.62	1.31			
Total	563.12	226.62				
84 months						
Between groups	62.15	2	31.07	16.74a	000***	.09**
Within groups	646.01	199.29	1.86			
Total	708.16	201.29				

a. Equal variances not assumed. Significance: * p<.05 ** p<.01 *** p<.001.

Effect size: *Small, **Medium, ***Large

Post hoc comparisons indicated that the mean score of mixed style offenders was significantly higher than that of both solo and co-offenders from month 6 to the end of the study (Tables 3.20 to 3.22). Post hoc comparisons also indicated that the mean score of co-offenders was significantly higher than that of solo offenders at months 6 and 12 (Table 3.20).

Table 3.20

Games-Howell Comparison For Substance Use

					95% Confidence Interval	
Age Range	Offend Style A	Offend Style B	Mean difference (A-B)	Std. Error	Lower Bound	Upper Bound
14-20	**6 months**					
	solo	co	-0.40*	0.11	-0.65	-0.14
		mixed	-1.13*	0.13	-1.43	-0.82
	co	solo	0.40*	0.11	0.14	0.65
		mixed	-0.73*	0.14	-1.07	-0.39
	mixed	solo	1.13*	0.13	0.82	1.43
		co	0.73*	0.14	0.39	1.07
15-20	**12 months**					
	solo	co	-0.43*	0.12	-0.71	-0.14
		mixed	-1.15*	0.14	-1.46	-0.83
	co	solo	0.43*	0.12	0.14	0.71
		mixed	-0.72*	0.15	-1.07	-0.37
	mixed	solo	1.15*	0.14	0.83	1.46
		co	0.72*	0.15	0.37	1.07
15-21	**18 months**					
	solo	co	-0.26	0.11	-0.52	0.00
		mixed	-1.05*	0.14	-1.39	-0.71
	co	solo	0.26	0.11	0.00	0.52
		mixed	-0.79*	0.16	-1.16	-0.42
	mixed	solo	1.05*	0.14	0.71	1.39
		co	0.79*	0.16	0.42	1.16

* $p < 0.05$

Table 3.21

Games-Howell Comparison For Substance Use

Age Range	Offend Style A	Offend Style B	Mean difference (A-B)	Std. Error	95% Confidence Interval	
					Lower Bound	Upper Bound
16-21	**24 months**					
	solo	co	-0.10	0.13	-0.40	0.20
		mixed	-0.92*	0.16	-1.30	-0.55
	co	solo	0.10	0.13	-0.20	0.40
		mixed	-0.82*	0.15	-1.17	-0.47
	mixed	solo	0.92*	0.16	0.55	1.30
		co	0.82*	0.15	0.47	1.17
16-22	**30 months**					
	solo	co	0.13	0.57	-0.18	0.45
		mixed	-0.67*	0.00	-1.09	-0.25
	co	solo	-0.13	0.57	-0.45	0.18
		mixed	-0.81*	0.00	-1.19	-0.42
	mixed	solo	0.67*	0.00	0.25	1.09
		co	0.81*	0.00	0.42	1.19
17-22	**36 months**					
	solo	co	-0.27	0.10	-0.57	0.04
		mixed	-0.96*	0.00	-1.33	-0.59
	co	solo	0.27	0.10	-0.04	0.57
		mixed	-0.69*	0.00	-1.10	-0.28
	mixed	solo	0.96*	0.00	0.59	1.33
		co	0.69*	0.00	0.28	1.10
18-23	**48 months**			0.59	-0.44	0.18
	solo	co	-0.13			
		mixed	-0.93*	0.00	-1.29	-0.58
	co	solo	0.13	0.59	-0.18	0.44
		mixed	-0.80*	0.00	-1.17	-0.43
	mixed	solo	0.93*	0.00	0.58	1.29
		co	0.80*	0.00	0.43	1.17

* $p < 0.05$

Table 3.22

Tukey HSD Comparison For Substance Use

				95% Confidence Interval	
Offend Style A	Offend Style B	Mean difference (A-B)	Std. Error	Lower Bound	Upper Bound
60 months					
solo	co	-0.34	0.07	-0.71	0.02
	mixed	-1.04*	0.00	-1.39	-0.69
co	solo	0.34	0.07	-0.02	0.71
	mixed	-0.70*	0.00	-1.16	-0.24
mixed	solo	1.04*	0.00	0.69	1.39
	co	0.70*	0.00	0.24	1.16
72 months					
solo	co	-0.18	0.36	-0.49	0.13
	mixed	-0.84*	0.15	-1.18	-0.49
co	solo	0.18	0.13	-0.13	0.49
	mixed	-0.66*	0.17	-1.05	-0.27
mixed	solo	0.84*	0.15	0.49	1.18
	co	0.66*	0.17	0.27	1.05
84 months					
solo	co	-0.24	0.37	-0.65	0.18
	mixed	-1.02*	0.00	-1.45	-0.60
co	solo	0.24	0.37	-0.18	0.65
	mixed	-0.79*	0.00	-1.27	-0.31
mixed	solo	1.02*	0.00	0.60	1.45
	co	0.79*	0.00	0.31	1.27

* $p < 0.05$

It is notable that mixed style offenders scored significantly higher than both solo and co-offenders from months 6 to 84, with a medium effect size. In comparison co-offenders only scored significantly higher than solo offenders for two waves. This could be explained the higher levels of variance for mixed style offenders for total offending; in that this particular group are involved in a wider range of delinquent behaviour, including the use of illegal substances.

Discussion

Present Study

The present study sought to explore patterns of offending styles for gang and non-gang involved participants. It then investigated the frequencies of solo, co and mixed style offenders for the entire sample irrespective of gang membership over eleven waves of data for income, aggressive and total reported crimes.

Offending Styles

When the offending trajectories over all waves of data were considered, most participants were found to offend both alone and with others during the same period (Tables 3.2 and 3.3). For total offences, 94.7% (n = 991) of the sample mixed their offending style over the duration of the study; for aggressive offending 82% (n = 859) and for income offending 73.9% (n = 774) participants reported mixed style offending. The findings make a new contribution to previous literature on serious persistent offenders, who have been found to have histories of co and solo offending over their criminal careers (Reiss & Farrington, 1991; Zimring, 1981) in that they indicated contemporaneous solo and co offending. However, when the individual trajectories of the present sample were examined, there was no clear shift from co to solo offending with age, as indicated by the high percentages of the sample who reported mixed style offending at the baseline: 81.9% of gang members and 79.3% of non-gang youth (Table 3.2).

The preliminary results are important regarding the offending style of gang members. Mixed style offending remained the preferred style for the largest percentage of gang members until month 84, when more reported committing offences alone (Table 3.4). This finding is noteworthy because it is often assumed

that gang membership is a risk factor on account of access to a criminal group and delinquent peers (Thornberry et al., 1993); however, in the present sample offending autonomy and flexibility were found. Gang members also followed a different trajectory compared to non-gang affiliated youth in terms of their offending styles. This is an observation that could impact upon the design of gang interventions, and which might suggest that the relationship between belonging to a delinquent group and increased offending is not simply an enhanced network, but could include other factors such as confidence in offending or the normalisation of criminality.

Within a criminal justice setting, offending style, as opposed to gang affiliation, has the potential to be more easily determined, through either official records or self-reporting. The presence of both offending styles in an individual's history may also indicate the role of an instigator of group crime or delinquency; a role which many offenders might be reluctant to admit.

Since it is more common for certain offence categories to involve more than one person, the present study also investigated the trajectories of offending styles for acquisitive and aggressive crimes. Crimes such as affray, burglary, robbery, vehicle taking, arson without the intention of endangering life, and drug use were found to frequently involve more than one offender in police data (Hodgson, 2007). Over the entire present study, the highest frequency for solo offending was found for acquisitive crimes (4.9%, $n = 51$). The highest percentage for co-offending across the entire study was for aggressive crimes (8.9%, $n = 80$), which supports previous research by Andersen and Felson (2012b). These findings accord with studies that have found that violence is prone to escalate when there are co-offenders (Alarid, Burton & Hochstetler, 2009; Conway & McCord, 2002). They also offer further support for Weerman's (2003) Social

Gain Theory; in that crimes without an obvious pecuniary reward were more likely to involve another offender.

Although researchers have concluded that serious, persistent offenders are more likely to adapt their style of offending over their criminal trajectories (Reiss & Farrington, 1991; Zimring, 1981), there has been very little research into the relationship between simultaneous mixed style offending and frequencies. The results from the present study, which investigated offending frequencies for the entire sample for all crimes at each wave of data, found that mixed style offenders reported committing significantly more crimes than those who were restricted to solo offending for all waves of data except for the baseline. Mixed style offenders also reported committing significantly more crimes than co-offenders for all waves of data except for 24 months (Table 3.9). There was only a significant difference between co and solo offenders at 12 months (Table 3.9), with the former reporting more crimes. Given that 81.9% of gang members and 79.3% of non-gang were found to mixed style offend at the baseline, when offending rates were also at their highest for all offences (Table 3.4), the findings do not support the traditional trajectory of co-offending to solo or mixed style. They also suggest that offenders who are more flexible in terms of their style of offending pose a greater criminal risk. Nor do they support the research of Stolzenberg and D'Alessio (2008 and 2016), which concluded that solo offending was the most prominent style irrespective of age. It is possible, however that the authors of this study included individuals who offended both alone and with others as instigators, which would explain why their offending was higher than their peers who offending only in the presence of others.

When total offending was investigated, the study demonstrated that simultaneous mixed style offending over a range of different types of offence category is a

criminogenic risk for both gang and non-gang affiliated offenders The findings also supported earlier research (Falco Metcalfe & Baker, 2014), which demonstrated that co-offending was not necessarily a criminogenic risk for life course mixed-style offenders.

However, the results for income and aggressive offending categories were different to total offending. Although the mean scores for mixed style offenders for income generating crimes were higher than those of solo or co-offenders for all waves of data (Table 3.11), they were only significantly so at the baseline, over both solo and co; and at 84 months (Tables 3.12 and 3.13), when they were significantly higher than co-offenders only. Table 3.4 shows that at the baseline mixed style offending accounted for 69.2% of gang members, and 54.4.1% of non-gang. At 84 months only 28.6% of gang members and 15.4% of non-gang reported mixed style offending; so, the minority adopted this style but they committed significantly more income generating crimes than those who co-offended. The majority, 50% of gang and 56.8% of non-gang, solo offended during the last wave of data collection. This may explain why a significant difference was only found between mixed and co style offenders - because some of the more active offenders had changed style. The overall lack of significant results may also be explained by the fact that only at the baseline was mixed style offending the dominant form for both gang and non-gang youth. The highest percentage of offending style for non-gang members was solo for all subsequent waves of data (Table 3.4); gang members were less consistent. The fewer significant differences for income generating offences could perhaps be explained by the acquisitive nature of these crimes and the desire for an individual to obtain the most financial gain, rather than for social benefits (Weerman, 2003). However, mixed style offenders consistently scored the highest mean for

offending frequency, with co-offenders as the next highest for the baseline and months 6, 12, 18, 24, 60 and 72; and solo offenders scoring the second highest for months: 30, 36, and 84 (Table 3.11).

For aggressive offending mixed style offenders reported committing significantly more crimes than both solo and co-offenders for the first three waves of data (Table 3.16). This was in spite of mixed style aggressive offending scoring the highest percentage at the baseline, with 57.2% of gang members and 49.1% of non-gang youth adopting this style (Table 3.4). At months 6 and 12, co-offending scored the highest percentages for both groups. At 18 months mixed style offenders reported committing significantly more crimes than co-offenders, even though co-offending was the most common style, with 43.2% of gang members and 45.5% of non-gang compared to 27% and 15.2% of the respective group mixed style offending (Table 3.4). At months 24 and 48 mixed style offenders had a higher mean score than solo offenders only for frequency of reported aggressive criminal activity; again, for both waves the highest percentage was for co style offending for gang and non-gang participants.

Aggressive offending is often associated with group activities and has been suggested as a key difference between gang and non-gang youth (Peterson, Taylor, & Esbensen, 2004). However, the present study suggests that those who commit aggressive offences alone and with others present a higher criminogenic risk on four out of eleven waves of data in regard to those who only offend with others; and for five out of eleven waves of data for solo offenders (Table 3.16). That no significant differences were found at 60 months and subsequent waves, when the mean age of participants was 21.05 (SD = 1.16, range between 18 and 24 months), may suggest that as persistent career offenders continue on their trajectories and settle into a preferred style of offending, there are fewer

significant differences. The mean score of offending frequencies for all waves of data was highest for mixed style offenders, perhaps because they are more flexible in their offending style. Whereas an individual who only offends in the presence of others may forgo opportunities to commit offences or may not fulfil the role of instigator, those who will adopt either style are less restricted.

As with earlier studies (Gordon et al., 2004) that found a relationship between drug taking and delinquency, the present study found an overall pattern of mixed style offenders using significantly more substances than both solo and co-offenders from month 6 to 84 (Tables 3.20 to 3.22). Only on one occasion, at month 12, did co-offenders report using illegal drugs significantly more than solo offenders. The findings suggest that in addition to mixed style offending indicating criminogenic risk across in the life course (Moffitt, 1993), its contemporaneous presence is associated with significantly more offending than either co or solo styles. This conclusion has both theoretical and practical implications.

Interactional Theory

Study 1 found support for the Enhancement Model, suggesting that although gang membership can offer greater opportunity to offend, those who had been involved continued to be involved in criminal activities after they had left the gang. These findings which reflected previous research on the same dataset (Ashton, Ioannou, & Hammond, 2018) and studies using other longitudinal data sets (Battin et al., 1998; Esbensen & Huizinga, 1993; Gordon, Lahey, & Kawai, 2004; Krohn & Thornberry, 2014; Melde & Esbensen, 2012). The present study found that mixed-style offenders committed significantly more offences than their solo and co offending counterparts for ten waves of data. This suggests that

offending versatility has a relationship to higher rates of offending; a conclusion that is supported by the greatly reduced variance that was found when income and aggressive offending were investigated separately. The implications of this finding are important for Interactional Theory, because in the same way that gang membership can be seen to enhance offending capacity, the present study demonstrated significantly higher reported offending for those who demonstrated versatility of style. These findings included both current, former and non-gang members, and support the Enhancement Model.

Implications

A key finding from this study was that mixed-style offenders demonstrated a pattern of variance for total offending; this was not the case in Study 1 for gang members. Given the preoccupation with gang membership as both a predictor of recidivism and higher levels of offending in youth interventions, this finding is extremely important. If offending alone and with others is a criminogenic risk, individuals who mixed-style offend require more attention from the criminal justice system. At present this risk factor is not reported by police forces, nor is it recorded by those who work in youth justice. As noted, establishing an individual's offending style is a more reliable indicator of higher offending than determining gang membership status, and level of embededness for those who are involved. Offending style could therefore be seen as a valid alternative to reporting gang status when identifying individuals who are most at risk of offending. That the most variance was found for total offending, also suggests a wider offending variety for this group. It is also noteworthy, that mixed-style offenders use more illegal substances than their solo

and co-offending counterparts, because this has implications for an individual's response to offender interventions.

Limitations

Participants were excluded from the style analysis if data was missing for any of the waves and only one style was present; thus 2.2% (n = 23) of the sample for total offending was lost. Another limitation of the study was that the offending styles were calculated based on whether participants were accompanied the last time they committed any of the given offences. It is therefore possible that rather than following a style pattern for an individual offence, some participants were flexible; this would not be represented in the data. Robbery was included in both income and aggressive offending categories; because the motives for committing this act were not reported at the time of the interviews a decision was taken to retain the offence in both categories. This decision limited the heterogeneousness of the two offending categories. It should be noted that the present sample was drawn from two U.S. cities and comprised a majority of African Caribbean and Hispanic youth. As with all quantitative data sets, the present study lacks qualitative narratives that could explain an individual's decision to adopt a particular offending style, and their role within group offending.

Future research

The findings from this study suggest that those who mixed style offend during the same period are worthy of further investigation, to better understand if there are significant differences or confounding criminogenic risk factors for this group. Another key finding of the present study was that gang members do not always offend in the presence of others. Their preferred offending style overall

was mixed style. Building on previous studies (Goldweber et al., 2011), future research should be undertaken to investigate the relationship between offending styles and risk factors, including gang membership. The relationship between substance use and delinquency also warrants further exploration with a view to understanding risk and pathways to desistance.

The implications of the present findings are important for the management of young people who offend, because those who pose the greatest risk are people who adapt their style of offending for a situation. With interventions and the management of offenders in mind, future studies should investigate whether risk factors associated with this group are static or dynamic. As noted in the limitations of the present study, the sample is nationally and culturally specific; future research should investigate whether similar patterns are found within samples of youth who are under supervision. The addition of qualitative research could also greatly enhance our understanding of why some offenders contemporaneously mix their offending style and the relationship of this practice to risk.

Conclusion

The findings from this study suggest that those who mixed style offend during the same period are worthy of further investigation, to better understand if there are significant differences in criminogenic risk factors for this group. When all offence categories were considered, along with the degree of variety of offending, substantial significant differences were found between mixed style offenders and those who maintained a single style of offending over either a six month or twelve-month period. Mixed style offenders were also found to use illegal drugs significantly more times than co and solo offenders for ten waves of

data, perhaps suggesting an increased general delinquency. By investigating the offending styles for each wave of data, the present study demonstrated that in addition to serious persistent offenders adapting their offending style over their trajectories, those who offend the most utilise both solo and co-offending during the same period of time. This was also found to be the case for the sample at the baseline.

Another key finding was that gang members do not always offend in the presence of others. The implications for the present study's findings are important for the management of young people who offend, because those who pose the greatest risk are people who adapt their style of offending for a situation. With interventions and the management of offenders in mind, Study 4 will investigate whether risk factors associated with this group are static or dynamic.

STUDY 4

THE RELATIONSHIP OF OFFENDING STYLE TO PSYCHOLOGICAL AND SOCIAL RISK FACTORS

Introduction and aims of study

Offending Styles

Although the traditional trajectory for criminality in youth and early adulthood is seen to be from co to solo offender (Reiss, 1988; Zimring, 1981), Study 3 supported the identification of a group of contemporaneous mixed style offenders (Goldweber, Dmitrieva, Cauffman, Piquero & Steinberg, 2011), who committed significantly more offences in total than their solo and co-offending counterparts. It is possible that the mixed style group are equivalent to instigators rather than followers (Van Mastrigt & Farrington, 2011; Warr, 1996), hence requiring both the skills to act autonomously but also to recruit and accompany others. Mixed style offending is a criminogenic risk factor, which accords with findings that persistent long-term offenders vary their style (Goldweber et al., 2011; McCord & Conway, 2002; Reiss, 1986; Reiss & Farrington, 1991). Therefore, understanding the psychological and social traits that can be associated with mixed style offenders is paramount when considering interventions; both in terms of their form and timing.

Gang Membership and Offending Style

Study 3 indicated that gang members followed a different offending style trajectory than solo or co-offenders (Table 3.4). The majority of the sample who were gang-involved, demonstrated a mixed style of offending for all waves until the final wave of data, when the preferred style changed to solo offending. These results, therefore, suggest a degree of offending autonomy for those who are gang

members. Study 2, which investigated the relationship between gang membership and psychological and social risk factors demonstrated that current gang membership was associated with higher levels of all negative risk factors. It also indicated that when the individuals left the gang, their levels of resistance to peer influence and consideration of others increased, and their psychopathic traits decreased. However, no strong patterns of variance emerged for prior gang members when they were compared to either current or never gang members. Thus, because criminogenic risk factors increased for those who were gang involved, the results could support either the Enhancement (Battin, Hill, Abbott, Catalano, & Hawkins, 1998; Battin-Pearson, Thornberry, Hawkins, & Krohn, 1998) or Facilitation Model (Hall, Thornberry, & Lizotte, 2006; Thornberry, Krohn, Lizotte, Smith, & Tobin, 2003). Investigating the relationship between offending style and the same psychological and social risk factors, will indicate whether such traits are associated with the style of offending irrespective of gang membership. This is important for two reasons: Firstly, because offending style can be more easily determined through official records than gang involvement; Secondly, if an individual has the ability to mixed style offend, irrespective of gang membership this would lend support to the Enhancement Model.

Psychological Development

Low psychosocial maturity is a developmental risk factor that typically decreases with age; it includes three components: Temperance (impulse control and suppression of aggression); Perspective (consideration of others and future orientation); and responsibility, or self-control (Steinberg & Cauffman, 1996; Monahan, Steinberg, Cauffman & Mulvey, 2013). Since psychosocial maturity has been associated with independent thinking (Steinberg & Cauffman, 1996), it

could impact on an individual's choice of offending style. Goldweber and colleagues (2011) were the first researchers to investigate the relationship of perspective, future orientation and consideration of other others, to offending styles. They found that solo-limited offenders exhibited higher levels of perspective than their mixed style offending counterparts; a surprising result given that it might be assumed that to offend in groups required more consideration of others.

Low impulse control has been associated with increased group offending (Hirschi & Gottfredson, 2000; Gottfredson & Hirschi, 1990; McGloin, Sullivan, Piquero & Bacon, 2008), and it has been suggested that individuals with poor self-control may be drawn to others who share the same deficit (McGloin, O'Neill & Shermer, 2009). Only one, aforementioned, study (Goldweber et al., 2011) has compared levels of impulse control between individuals who engage in mixed style and solo offending. The results of this research, using data from the PTDS, indicated that late adolescents who engaged in group offending showed higher levels of criminality and lower levels of temperance, the ability to control impulses and supress aggression. Using trajectory analysis on the same data, other researchers found that less mature individuals are likely to be persistent and offend more frequently (Steinberg, Cauffman & Monahan, 2015).

Psychosocial maturation is a dynamic risk factor for adolescents; and its increase has been associated with desistance from crime for adolescent-limited offenders (Moffitt, 1993). It is therefore valuable to consider whether the level of risk changed over the duration of the present study. Research using PTDS data found that psychosocial maturity continued to develop into the mid-twenties and was associated to desistance from offending as aged increased (Monahan et al., 2013). However, since some individuals do not mature psychosocially until their

mid-twenties (Steinberg, 2010) this factor presents a risk that potentially extends beyond adolescence.

Few researchers have investigated whether there are differences between the psychosocial characteristics of solo and co-offenders. One exception being a study using the PTDS data, which investigated the individual and developmental differences between offenders who adopted either style (Goldweber, et al., 2011). The authors found that over a 3-year trajectory 83% of adolescents in their sample began to offend alone, and the remaining 17% adopted a mixed-style of solo and co-offending. The solo offenders in their sample displayed lower psychosocial and psychological risk factors than their mixed-style offending counterparts. This finding accords with prior research that found the majority of offences were committed by a minority of mixed-style offenders (Hodgson, 2007). However, it does not support other research, which has suggested that persistent long term offenders embark on a solo trajectory (Moffitt, 1993). This could relate to the sample's age, which ranged from 14 to 17 years.

Psychopathy

Given the higher rates of offending for mixed style offenders that were found in Study 3 and the known association of psychopathic traits and offending (Widiger, 2006), higher levels of psychopathy may be associated with those who offend the most. This hypothesis was confirmed by a previous study using data from the same sample as the present, which found that solo offenders were increasingly less psychopathic than co and mixed style offenders as they aged, and were associated with different dimensions (Goldweber et al., 2011). However, this study concentrated on individual trajectories rather than patterns for each group across time. Furthermore, not all dimensions of psychopathy are equally

associated with all categories of crime; differences have been found between violent and non-violent crimes (Dhingra, Boduszek & Kola-Palmer, 2015). Also of relevance is research that has found psychopathic traits to be a dynamic risk factor for adult offenders (Cauffman, Skeem, Dmitrieva, & Cavanagh, 2016; Gendreau, Little, & Goggin, 1996). Researchers found a correlation between higher psychopathic levels and offending frequencies in a sample of adolescent offenders (Dyck, Campbell, Schmidt, & Wershler, 2013). However, they also demonstrated that offending for this group decreased with age to levels that were similar to members of the sample who fewer psychopathic traits. This would suggest that the influence of psychopathy is age specific.

Social Risk Factors

The influence of peers during adolescence is seen to be developmentally normal and is often cited to explain an increase in offending amongst early and mid-adolescents (Warr, 2002). Some researchers have suggested that peer influence is greater for those who begin offending during their adolescence, because their reasons for committing crimes are socially motivated and relate to status (Weerman, 2003). It is important, when considering the effect of delinquent peers, to distinguish between persistent and age-specific offenders, motivation for offending, and category of offence (McGloin & Povitsky Stickle, 2011). Theories that associate low self-control with offending (Gottfredson & Hirschi, 1990) are also relevant to an individual's ability to resist the influence of delinquent peers (McGloin & Shermer, 2009; Wright, Caspi & Moffitt, 2001).

Increased exposure to violence and violent offending have been associated with gang membership (Decker, Melde & Pyrooz, 2013; Ozer & Engle, 2012; Petersen, Taylor & Esbensen, 2004; Sarnecki, 2001; Taylor, Peterson, Esbensen,

Freng, 2007), as supported by Studies 1 and 2 of the present thesis. It has been suggested that this increase can be explained by the group processes of belonging to a gang (Klein & Maxson, 2006). The question remains, therefore, of whether temporary criminal groupings can also be associated with an increase in violence. Non-gang research has demonstrated that there is a relationship between violent crime and offending with others. A large study using police data in Canada showed that co-offending amongst youth was higher for all offending categories, except for property crime (Carrington, 2002). Other research has found that instances of non-acquisitive violent co-offending do not follow the same trajectories as other types of crime (Andreson & Felson, 2012). This study concluded that there was no decrease in the percentage of co-offending and mean number of offenders over time for assault, homicide and sexual assault. Research using a sample of UK recorded crime data demonstrated that violent disorder, affray, and violent acquisitive crime all had high percentages of co-offending (Hodgson, 2007). Furthermore, co-offending may have a relationship to the development of a violent career trajectory. In comparing two groups of randomly sampled solo and co youth offenders, Conway & McCord (2002) found that those who committed their first offence with violent accomplices were more likely to continue to use violence in their offending. These findings were supported by qualitative research, which revealed that adolescents and young adults were more likely to commit violent crime when in the company of others (Alarid, Burton & Hochstetler, 2009). It has been suggested that offending as part of a group depersonalises crime (Reidel, 1993), which may in turn lead to an increase in an individual experiencing or committing violent acts in a group. However, aging has been associated with both an increase in violent offending and a decrease in co-offending (Reiss & Farrington, 1991).

Aims of Study

It is unclear whether mixed style offenders share the psychological and social characteristics of solo or co-offenders. Nor is it known, if mixed style offenders are removed from a sample whether significant differences between the traits of solo and co style offenders remain, as suggested by the previous literature. Given that mixed style offenders commit significantly more crimes than their solo or co-offending counterparts, a key research question is whether they have significantly higher scores for criminogenic risk factors that are associated with offending. These include: psychopathic traits, slower psychological development, and delinquent peers. The study also investigated whether mixed style offenders have personality traits that are significantly different to those of their counterparts. Finally, with their increased offending, the study considered if mixed style offenders are exposed to more violence than solo or co-offenders.

Method

Measures

The study investigated psychological development, by using the following measures: *Future Outlook Inventory* (Cauffman & Woolard, 1999); higher scores indicate a greater degree of future consideration and planning. *Psychosocial Maturity Inventory* (Greenberger, Josselson, Knerr & Knerr, 1974); items in the PSMI are reverse coded so that higher scores indicate more responsible behaviour. *Resistance to Peer Influence* (Steinberg, 2000) measures the degree of autonomy that adolescents have when they are with their peers. Socio-emotional adjustment was measured using the Temperance and Consideration of Others scales from the *Weinberger Adjustment Inventory* (Weinberger & Schwartz,

1990). Temperance is a combined score of two separate scales: Impulse Control and Suppression of Aggression. Higher scores on each of the subscales indicates more positive behaviour (for example greater temperance and greater consideration for others).

The total scores for psychopathy were investigated. At the baseline researchers used the *PCL-YV* measure (Forth, Kosson & Hare, 2003) and for subsequent waves the *Youth Psychopathic Traits Inventory* (YPI; Andershed, Kerr, Stattin & Levander, 2002) was utilised. For the purposes of the present study the total scores and those for the three dimensions of psychopathy: Grandiose Manipulative Dimension, Callous Unemotional Dimension, and Impulsive Irresponsible Dimension were reported.

The influence of peer delinquency was also investigated, using two scales. *The Peer Delinquent Behaviour* measure (Thornberry, Lizotte, Krohn, Farnworth & Jang, 1994) encompasses the antisocial behaviour and antisocial influence of peers. Finally, exposure to violence was investigated, using the *Exposure to Violence Inventory* (Selner-O'Hagan, Kindlon, Buka, Raudenbush & Earls, 1998). The present study used a combined total score for violence experienced as a victim and witnessed. For further details of all measures see the method section.

Study Design

The sample was divided into solo, co and mixed style offenders using the total offending report for individual waves of data. The first objective of the study was to investigate variance of psychological development, psychopathy, peer delinquency and exposure to violence between the styles of offenders. The second objective was to explore whether there were patterns of variance for each variable for the eleven waves of data.

Data Analysis

The offending styles for total, aggressive and income offences were investigated for the entire sample and a new variable for offending style for each category of offending was created. Participants who reported no crimes were removed from the respective wave of data, and the entire cohort was then divided into 3 groups according to offending style of solo, co or mixed style for aggressive offending, and income offending. A one-way between groups analysis of variance was conducted for all three categories to explore: Future orientation; socio-emotional adjustment; psychosocial development; resistance to peer influence; psychopathy; peer antisocial behaviour and influence; and exposure to violence. Based on Levene's test, where equal variance was assumed the Tukey HSD post-hoc comparison was selected; where equal variance was not assumed Welch's F was reported, and the Games-Howell test was selected for post-hoc comparisons, in recognition of unequal sample sizes and variance. ANOVA was selected for the analysis because it is a robust test for abnormally distributed data (Blanca, Alarcó, Arnau, Bono, & Bendayan, 2017).

Results

Future Outlook

Table 4.1
Mean Scores For Future Outlook Inventory

Wave and Style	Age Range	N	M	SD
Baseline	14-19			
Solo		6	2.29	0.67
Co		206	2.31	0.54
Mixed		825	2.31	0.54
6 months	14-20			
Solo		181	2.43	0.61
Co		197	2.41	0.54
Mixed		239	2.35	0.52
12 months	15-20			
Solo		167	2.56	0.51
Co		200	2.49	0.54
Mixed		184	2.32	0.54
18 months	15-21			
Solo		158	2.47	0.56
Co		178	2.47	0.51
Mixed		148	2.48	0.53
24 months	16-21			
Solo		134	2.52	0.52
Co		168	2.49	0.51
Mixed		143	2.45	0.53
30 months	16-22			
Solo		136	2.62	0.50
Co		127	2.55	0.52
Mixed		122	2.45	0.60
36 months	17-22			
Solo		138	2.62	0.56
Co		135	2.67	0.50
Mixed		120	2.45	0.57
48 months	18-23			
Solo		155	2.67	0.53
Co		134	2.61	0.50
Mixed		155	2.54	0.50
60 months	18-24			
Solo		179	2.58	0.53
Co		104	2.57	0.50
Mixed		132	2.54	0.53
72 months	20-25			
Solo		168	2.64	0.52
Co		104	2.63	0.56
Mixed		120	2.57	0.47
84 months	20-26			
Solo		159	2.62	0.56
Co		99	2.61	0.54
Mixed		92	2.48	0.55

There was no overall pattern for the mean scores for any of the groups. Solo offenders had the highest score for months 6, 12, 24, 30, and 48 to 84 (Table 4.1), and mixed style offenders scored the lowest for months 6, 12, 24, and 30 to 84.

A one way between groups analysis of variance was conducted to explore the relationship between offending styles and future outlook. Participants were divided into three groups: solo, co and mixed style offenders. Significant variance was found at months 12, 30 and 36; all effect sizes were small (Table 4.2).

Table 4.2
Summary of Significant ANOVA's For Future Outlook Inventory

	Sum of Squares	df	Mean Square	F	*p*	Eta Squared
12 months						
Between groups	5.19	2	2.59	9.23	.000***	.03*
Within groups	153.95	548	0.28			
Total	159.13	550				
30 months						
Between groups	1.93	2	0.96	3.34	.05*	.02*
Within groups	110.21	382	0.29			
Total	112.14	384				
36 months						
Between groups	3.48	2	1.74	5.90	.01**	.03*
Within groups	115.09	390	0.30			
Total	118.57	392				

Significance: * p<.05 ** p<.01 *** p<.001

Effect size: *Small, **Medium, ***Large

Post hoc comparisons indicated that the mean score of mixed style offenders were significantly lower than that of both solo and co-offenders at months 12 and 36; and significantly lower than solo offenders at month 30 (Tables 4.2 to 4.3).

Table 4.3
Tukey HSD Comparison For Future Outlook Inventory

					95% Confidence Interval	
Age Range	Offend Style A	Offend Style B	Mean difference (A-B)	Std. Error	Lower Bound	Upper Bound
15-20	**12 months**					
	solo	co	0.07	0.06	0.20	-0.06
		mixed	0.24*	0.06	0.37	0.10
	co	solo	-0.07	0.06	0.06	-0.20
		mixed	0.17*	0.05	0.29	0.04
	mixed	solo	-0.24*	0.06	-0.10	-0.37
		co	-0.17*	0.05	-0.04	-0.29
16-22	**30 months**					
	solo	co	0.07	0.07	-0.08	0.23
		mixed	0.17*	0.07	0.02	0.33
	co	solo	-0.07	0.07	-0.23	0.08
		mixed	0.10	0.07	-0.06	0.26
	mixed	solo	-0.17*	0.07	-0.33	-0.02
		co	-0.10	0.07	-0.26	0.06
17-22	**36 months**					
	solo	co	-0.54	0.07	-0.21	0.10
		mixed	0.17*	0.07	0.01	0.33
	co	solo	0.05	0.07	-0.10	0.21
		mixed	0.22*	0.07	0.07	0.39
	mixed	solo	-0.17*	0.07	-0.33	-0.01
		co	-0.22*	0.07	-0.39	-0.07

* $p < 0.05$

Mixed style offenders had significantly lower future orientation than both solo and co-offenders for three waves at months 12, 30 and 36. However, there was no significant variance between solo and co-offenders. Overall no consistent patterns emerged.

Temperance

Table 4.4
Mean Scores For Temperance

Wave and Style	Age Range	N	M	SD
Baseline	14-19			
Solo		6	2.97	1.07
Co		206	2.98	0.83
Mixed		829	2.75	0.81
6 months	14-20			
Solo		181	2.87	0.83
Co		198	2.73	0.75
Mixed		239	2.54	0.73
12 months	15-20			
Solo		167	2.95	0.69
Co		200	2.87	0.78
Mixed		184	2.55	0.80
18 months	15-21			
Solo		158	2.92	0.84
Co		178	2.86	0.76
Mixed		149	2.45	0.68
24 months	16-21			
Solo		136	2.85	0.74
Co		169	2.73	0.73
Mixed		143	2.37	0.64
30 months	16-22			
Solo		137	2.92	0.74
Co		128	2.75	0.74
Mixed		122	2.42	0.69
36 months	17-22			
Solo		140	2.99	0.77
Co		135	2.87	0.73
Mixed		121	2.44	0.73
48 months	18-23			
Solo		156	3.08	0.73
Co		133	2.92	0.76
Mixed		157	2.64	0.71
60 months	18-24			
Solo		179	2.93	0.76
Co		105	2.99	0.79
Mixed		132	2.64	0.68
72 months	20-25			
Solo		169	2.97	0.80
Co		104	2.90	0.81
Mixed		120	2.72	0.75
84 months	20-26			
Solo		159	3.05	0.78
Co		100	2.99	0.84
Mixed		92	2.62	0.69

Mixed style offenders had lowest mean score for all waves of data, indicating that their levels of suppression of aggression and impulse control were lower than the other styles of offenders (Table 4.4).

A one way between groups analysis of variance was conducted to explore the relationship between offending styles and temperance. Participants were divided into three groups: solo, co and mixed style offenders. Significant variance was found for all waves of data; the effect size was small from the baseline to month 12 and months 60 to 84; medium at months 18 to 30 and 48; and large at month 36 (Table 4.5 to 4.6).

Table 4.5
Summary of ANOVA For WAI: Temperance

	Sum of Squares	df	Mean Square	F	*p*	Eta Squared
Baseline						
Between groups	8.69	2	4.35	6.58	.03	.01*
Within groups	685.37	1038	0.66			
Total	694.07	1040				
6 months						
Between groups	11.03	2	5.52	9.17a	.000***	.03*
Within groups	360.10	390.15	0.59			
Total	371.13	392.15				
12 months						
Between groups	16.32	2	8.16	14.14	.000***	.05*
Within groups	316.24	548	0.58			
Total	332.56	550				
18 months						
Between groups	20.23	2	10.12	19.18a	.000***	.07**
Within groups	282.89	317.65	0.59			
Total	303.12	319.65				
24 months						
Between groups	18.01	2	9.01	18.01	.000***	.08**
Within groups	222.59	445	0.50			
Total	240.60	447				
30 months						
Between groups	16.53	2	8.27	15.59	.000***	.08**
Within groups	203.57	384	0.53			
Total	220.10	386				

a. Equal variances not assumed. Significance: * p<.05 ** p<.01 *** p<.001.
Effect size: *Small, **Medium, ***Large

Table 4.6
Summary of ANOVA For WAI: Temperance

	Sum of Squares	df	Mean Square	F	*p*	Eta Squared
36 months						
Between groups	21.58	2	10.79	19.37	.000***	.09***
Within groups	218.81	393	0.56			
Total	240.38	395				
48 months						
Between groups	15.91	2	7.95	14.82	.000***	.06**
Within groups	237.74	443	0.54			
Total	253.64	445				
60 months						
Between groups	8.97	2	4.49	8.14	.000***	.04*
Within groups	227.53	413	0.55			
Total	236.50	415				
72 months						
Between groups	4.55	2	2.28	3.68	.03*	.02*
Within groups	241.14	390	0.62			
Total	245.69	392				
84 months						
Between groups	11.20	2	5.60	9.40	.000***	.05*
Within groups	207.24	348	0.60			
Total	218.44	350				

Significance: * p<.05 ** p<.01 *** p<.001

Effect size: *Small, **Medium, ***Large

Post hoc comparisons indicated that the mean score of mixed style offenders was significantly lower than that of solo offenders from months 6 to 84; and lower than that of co style offenders for all waves with the exception of month 72 (Tables 4.7 to 4.9).

Table 4.7
Tukey HSD Comparison For WAI: Temperance

					95% Confidence Interval	
Age Range	Offend Style A	Offend Style B	Mean difference (A-B)	Std. Error	Lower Bound	Upper Bound
14-19	**Baseline**					
	solo	co	-0.01	0.34	-0.80	0.78
	co	solo	0.01	0.34	-0.78	0.80
		mixed	0.23*	0.06	0.08	0.38
	mixed	solo	-0.21	0.33	-1.00	0.57
		co	-0.23*	0.06	-0.38	-0.08
14-20	**6 months**[a]					
	solo	co	0.14	0.08	-0.06	0.33
		mixed	0.32*	0.08	0.14	0.51
	co	solo	-0.14	0.08	-0.33	0.06
		mixed	0.19*	0.07	0.02	0.35
	mixed	solo	-0.32*	0.08	-0.51	-0.14
		co	-0.19*	0.07	-0.35	-0.02
15-20	**12 months**					
	solo	co	0.08	0.08	-0.11	0.27
		mixed	0.40*	0.08	0.21	0.59
	co	solo	-0.08	0.08	-0.27	0.11
		mixed	0.32*	0.08	0.14	0.51
	mixed	solo	-0.40*	0.08	-0.59	-0.21
		co	-0.32*	0.08	-0.51	-0.14
15-21	**18 months**[a]					
	solo	co	0.06	0.09	-0.14	0.27
		mixed	0.47*	0.09	0.27	0.68
	co	solo	-0.06	0.09	-0.27	0.14
		mixed	0.41*	0.08	0.22	0.60
	mixed	solo	-0.47*	0.09	-0.68	-0.27
		co	-0.41*	0.08	-0.60	-0.22

a. Games-Howell Comparison. * $p < 0.05$

Table 4.8
Tukey HSD Comparison For WAI: Temperance

Age Range	Offend Style A	Offend Style B	Mean difference (A-B)	Std. Error	95% Confidence Interval	
					Lower Bound	Upper Bound
16-21	**24 months**					
	solo	co	0.13	0.08	-0.07	0.32
		mixed	0.49*	0.08	0.29	0.68
	co	solo	-0.13	0.08	-0.32	0.07
		mixed	0.36*	0.08	0.17	0.55
	mixed	solo	-0.49*	0.08	-0.68	-0.29
		co	-0.36*	0.08	-0.55	-0.17
12-22	**30 months**					
	solo	co	0.18	0.09	-0.34	0.39
		mixed	0.50*	0.09	0.29	0.71
	co	solo	-0.18	0.09	-0.39	0.03
		mixed	0.32*	0.09	0.11	0.54
	mixed	solo	-0.50*	0.09	-0.71	-0.29
		co	-0.32*	0.09	-0.54	-0.11
17-22	**36 months**					
	solo	co	0.12	0.09	-0.09	0.33
		mixed	0.55*	0.09	0.34	0.77
	co	solo	-0.12	0.09	-0.33	0.09
		mixed	0.43*	0.09	0.21	0.65
	mixed	solo	-0.55*	0.09	-0.77	-0.34
		co	-0.43*	0.09	-0.65	-0.21
18-23	**48 months**					
	solo	co	0.16	0.09	-0.04	0.37
		mixed	0.45*	0.08	0.25	0.64
	co	solo	-0.16	0.09	-0.37	0.04
		mixed	0.28*	0.09	0.08	0.49
	mixed	solo	-0.45*	0.08	-0.64	-0.25
		co	-0.28*	0.09	-0.49	-0.08

* $p < 0.05$

Table 4.9
Tukey HSD Comparison For WAI: Temperance

Age Range	Offend Style A	Offend Style B	Mean difference (A-B)	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
18-24	**60 months**					
	solo	co	-0.06	0.09	-0.28	0.15
		mixed	0.29*	0.09	0.09	0.49
	co	solo	0.06	0.09	-0.15	0.28
		mixed	0.35*	0.10	0.12	0.58
	mixed	solo	-0.29*	0.09	-0.49	-0.09
		co	-0.35*	0.10	-0.58	-0.12
20-25	**72 months**					
	solo	co	0.07	0.10	-0.16	0.30
		mixed	0.25*	0.09	0.03	0.47
	co	solo	-0.07	0.10	-0.30	0.16
		mixed	0.18	0.11	-0.06	0.43
	mixed	solo	-0.25*	0.09	-0.47	-0.03
		co	-0.18	0.11	-0.43	0.06
20-26	**84 months**					
	solo	co	0.05	0.10	-0.18	0.29
		mixed	0.42*	0.10	0.19	0.66
	co	solo	-0.05	0.10	-0.29	0.18
		mixed	0.37*	0.11	0.11	0.63
	mixed	solo	-0.42*	0.10	-0.66	-0.19
		co	-0.37*	0.11	-0.63	-0.11

* $p < 0.05$

Mixed style offenders consistently scored significantly lower for impulse control and suppression of aggression. For solo offenders there was a pattern of variance from months 6 to 84; and for co-offenders, there was a pattern of variance from the baseline to month 60, and also at month 84. The effect sizes were largest from months 18 to 48, when the mean ages were between 17.55 (*SD* = 1.14) and 20.06 (*SD* = 1.16). This could reflect the different developmental rates for participants, which would stabilise, as the sample reached their early twenties.

Consideration of Others

Table 4.10
Mean Scores For WAI: Consideration of Others

Wave and Style	Age Range	N	M	SD
Baseline	14-19			
Solo		2	4.05	0.78
Co		206	3.50	0.87
Mixed		829	3.40	0.88
6 months	14-20			
Solo		181	3.45	0.85
Co		198	3.38	0.93
Mixed		239	3.24	0.85
12 months	15-20			
Solo		167	3.60	0.75
Co		200	3.52	0.77
Mixed		184	3.21	0.87
18 months	15-21			
Solo		158	3.45	0.86
Co		178	3.37	0.78
Mixed		149	3.30	0.91
24 months	16-21			
Solo		136	3.53	0.75
Co		169	3.52	0.72
Mixed		143	3.32	0.79
30 months	16-22			
Solo		137	3.59	0.73
Co		128	3.61	0.79
Mixed		122	3.37	0.85
36 months	17-22			
Solo		140	3.60	0.91
Co		135	3.58	0.79
Mixed		121	3.32	0.71
48 months	18-23			
Solo		156	3.63	0.85
Co		133	3.64	0.78
Mixed		157	3.52	0.76
60 months	18-24			
Solo		179	3.64	0.84
Co		105	3.75	0.72
Mixed		132	3.60	0.81
72 months	20-25			
Solo		169	3.69	0.86
Co		104	3.57	0.80
Mixed		120	3.67	0.75
84 months	20-26			
Solo		159	3.63	0.79
Co		100	3.71	0.78
Mixed		92	3.50	0.82

Solo offenders had the highest mean for all waves, except for the final wave when co-offenders had a higher mean (Table 4.10).

A one way between groups analysis of variance was conducted to explore the relationship between offending styles and consideration of others. Participants were divided into three groups: solo, co and mixed style offenders. Significant variance was found at months 12, 24, 30 and 36; all effect sizes were small (Table 4.11).

Table 4.11
Summary of ANOVA For WAI: Consideration of Others

	Sum of Squares	df	Mean Square	F	*p*	Eta Squared
12 months						
Between groups	15.45	2	7.72	11.28a	.000***	.04*
Within groups	344.83	359.85	0.63			
Total	360.28	361.85				
24 months						
Between groups	4.09	2	9.00	18.01	.03*	.02*
Within groups	252.30	445	0.50			
Total	256.39	447				
30 months						
Between groups	4.62	2	2.31	3.69	.03*	.02*
Within groups	240.23	384	0.63			
Total	244.23	386				
36 months						
Between groups	6.07	2	3.04	5.22a	.01*	.02*
Within groups	260.33	261.77	0.66			
Total	266.41	263.77				

a. Equal variances not assumed. Significance: * p<.05 ** p<.01 *** p<.001.
Effect size: *Small, **Medium, ***Large

Post hoc comparisons indicated that the mean score for mixed style offenders was significantly lower than those of both solo and co-offenders at months 12 and 36; and lower than that of co-offenders at month 30 (Table 4.12). Post hoc comparisons did not indicate any significant variance between groups for month 24.

Table 4.12
Tukey HSD Comparison For WAI: Consideration of Others

Age Range	Offend Style A	Offend Style B	Mean difference (A-B)	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
14-20	**12 months**[a]					
	solo	co	0.08	0.08	-0.10	0.27
		mixed	0.39*	0.09	0.19	0.60
	co	solo	-0.08	0.08	-0.27	0.10
		mixed	0.30*	0.08	0.11	0.51
	mixed	solo	-0.39*	0.09	-0.60	-0.19
		co	-0.31*	0.08	-0.51	-0.11
16-21	**24 months**					
	solo	co	0.01	0.09	-0.19	0.21
		mixed	0.21	0.09	-0.00	0.42
	co	solo	-0.01	0.09	-0.21	0.19
		mixed	0.20	0.09	-0.00	0.40
	mixed	solo	-0.21	0.09	-0.42	0.00
		co	-0.20	0.09	-0.40	0.00
16-22	**30 months**					
	solo	co	-0.03	0.10	-0.26	0.20
		mixed	0.22	0.10	-0.01	0.45
	co	solo	0.03	0.10	-0.20	0.26
		mixed	0.25*	0.10	0.01	0.48
	mixed	solo	-0.22	0.10	-0.45	0.01
		co	-0.25*	0.10	-0.48	-0.01
17-22	**36 months**[a]					
	solo	co	0.02	0.10	-0.22	0.27
		mixed	0.28*	0.10	0.04	0.52
	co	solo	-0.02	0.10	-0.27	0.22
		mixed	0.26*	0.09	0.03	0.48
	mixed	solo	-0.28*	0.10	-0.52	-0.04
		co	-0.26*	0.09	-0.48	-0.03

a. Games-Howell Comparison. * $p < 0.05$

Mixed style offenders scored significantly higher than both solo and co offenders for the same waves as future orientation (Table 4.3) at months 12, 30 and 36. However, no consistent patterns of variance emerged over all waves.

Psycho Social Maturity

Table 4.13
Mean Scores For PSMI Total

Wave and Style	Age Range	N	M	SD
Baseline	14-19			
Solo		6	2.58	0.42
Co		206	3.04	0.43
Mixed		825	3.00	0.45
6 months	14-20			
Solo		181	3.08	0.45
Co		197	3.01	0.45
Mixed		239	2.96	0.41
12 months	15-20			
Solo		167	3.11	0.63
Co		200	3.09	0.57
Mixed		183	3.01	0.60
18 months	15-21			
Solo		158	3.08	0.49
Co		178	3.13	0.45
Mixed		148	2.95	0.49
24 months	16-21			
Solo		134	3.10	0.47
Co		168	3.11	0.49
Mixed		143	2.89	0.43
30 months	16-22			
Solo		136	3.13	0.47
Co		127	3.08	0.50
Mixed		122	3.03	0.54
36 months	17-22			
Solo		138	3.10	0.44
Co		135	3.18	0.45
Mixed		120	3.02	0.43
48 months	18-23			
Solo		155	3.20	0.42
Co		134	3.22	0.40
Mixed		156	3.13	0.46
60 months	18-24			
Solo		179	3.23	0.45
Co		104	3.25	0.42
Mixed		132	3.14	0.39
72 months	20-25			
Solo		168	3.23	0.45
Co		104	3.25	0.41
Mixed		120	3.22	0.42
84 months	20-26			
Solo		159	3.28	0.40
Co		99	3.22	0.42
Mixed		92	3.21	0.40

From month 24 to 72 co-offenders the highest mean scores and mixed style the lowest (Table 4.13).

A one way between groups analysis of variance was conducted to explore the relationship between offending styles and psychosocial maturity. Participants were divided into three groups: solo, co and mixed style offenders. Significant variance was found at the baseline and months 6, 18, 24 and 36; all effect sizes were small (Table 4.14).

Table 4.14
Summary of ANOVA For PSMI Total

	Sum of Squares	df	Mean Square	F	*p*	Eta Squared
Baseline						
Between groups	1.32	2	0.66	1.19	.04*	.01*
Within groups	207.87	1034	0.20			
Total	209.19	1036				
6 months						
Between groups	1.44	2	0.72	3.80	.02*	.01*
Within groups	116.42	614	0.19			
Total	117.86	616				
18 months						
Between groups	2.68	2	1.34	5.94	.00**	.02*
Within groups	108.48	481	0.23			
Total	111.16	483				
24 months						
Between groups	4.54	2	2.27	11.32a	.000***	.04*
Within groups	96.39	290.21	0.22			
Total	100.93	292.21				
36 months						
Between groups	1.57	2	0.79	4.10	.02*	.02*
Within groups	74.84	390	0.19			
Total	76.41	392				

a. Equal variances not assumed. Significance: * p<.05 ** p<.01 *** p<.001.
Effect size: *Small, **Medium, ***Large

Post hoc comparisons indicated that the mean score of co-offenders was significantly higher than that of solo offenders at the baseline (table 4.15), indicating greater psycho-social maturity. However, the number of solo offenders was very low (n = 6) for this wave. Post hoc comparisons also indicated that the

mean score of mixed style offenders was significantly lower than that of solo offenders at months 6, 18 and 24; and lower than the mean score of co-offenders at months 18, 24 and 36 (Table 4.15).

Table 4.15
Tukey HSD Comparison For PSMI Total

Age Range	Offend Style A	Offend Style B	Mean difference (A-B)	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
14-19	**Baseline**					
	solo	co	-0.46*	0.19	-0.90	-0.02
		mixed	-0.42	0.18	-0.86	0.01
	co	solo	0.46*	0.19	0.02	0.90
		mixed	0.04	0.03	-0.05	0.12
	mixed	solo	0.42	0.18	-0.01	0.86
		co	-0.04	0.03	-0.12	0.05
14-20	**6 months**					
	solo	co	0.07	0.04	-0.04	0.17
		mixed	0.12*	0.04	0.02	0.22
	co	solo	-0.07	0.04	-0.17	0.04
		mixed	0.05	0.04	-0.05	0.15
	mixed	solo	-0.12*	0.04	-0.22	-0.02
		co	-0.05	0.04	-0.15	0.05
15-21	**18 months**					
	solo	co	-0.04	0.05	-0.16	0.08
		mixed	0.13*	0.05	0.01	0.26
	co	solo	0.04	0.05	-0.08	0.16
		mixed	0.18*	0.05	0.05	0.30
	mixed	solo	-0.13*	0.05	-0.26	-0.01
		co	-0.18*	0.05	-0.30	-0.05
16-21	**24 months**[a]					
	solo	co	-0.01	0.06	-0.14	0.13
		mixed	0.21*	0.05	0.09	0.34
	co	solo	0.01	0.06	-0.13	0.14
		mixed	0.22*	0.05	0.10	0.34
	mixed	solo	-0.21*	0.05	-0.34	-0.09
		co	-0.22*	0.05	-0.34	-0.10
17-22	**36 months**					
	solo	co	-0.08	0.05	-0.20	0.05
		mixed	0.08	0.05	-0.05	0.21
	co	solo	0.08	0.05	-0.05	0.20
		mixed	0.16*	0.05	0.03	0.29
	mixed	solo	-0.08	0.05	-0.21	0.05
		co	-0.16*	0.05	-0.29	-0.03

a. Games-Howell Comparison. * $p < 0.05$

No overall pattern emerged for significant differences in psychosocial maturity. No variance was found at all from month 48, when the age range was 18 to 23 years and the mean age was 20.06 (*SD* = 1.16). This may reflect the overall age-determined development of the sample's psycho-social maturity.

Resistance to Peer Influence

Table 4.16

Mean Scores For Resistance to Peer Influence

Wave and Style	Age Range	N	M	SD
Baseline	14-19			
Solo		6	2.63	0.59
Co		206	2.98	0.53
Mixed		825	2.95	0.59
6 months	14-20			
Solo		181	3.07	0.56
Co		197	2.96	0.58
Mixed		239	3.01	0.56
12 months	15-20			
Solo		167	3.11	0.63
Co		200	3.09	0.57
Mixed		183	3.01	0.60
18 months	15-21			
Solo		158	3.06	0.52
Co		178	3.07	0.60
Mixed		148	3.10	0.60
24 months	16-21			
Solo		134	3.18	0.56
Co		168	3.17	0.56
Mixed		143	3.06	0.53
30 months	16-22			
Solo		136	3.22	0.57
Co		127	3.21	0.50
Mixed		122	3.16	0.59
36 months	17-22			
Solo		138	3.19	0.59
Co		135	3.24	0.54
Mixed		120	3.30	0.51
48 months	18-23			
Solo		155	3.34	0.50
Co		134	3.36	0.54
Mixed		156	3.20	0.57
60 months	18-24			
Solo		179	3.32	0.54
Co		104	3.30	0.49
Mixed		132	3.27	0.55
72 months	20-25			
Solo		167	3.38	0.52
Co		104	3.41	0.48
Mixed		120	3.37	0.52
84 months	20-26			
Solo		159	3.40	0.54
Co		99	3.36	0.52
Mixed		92	3.41	0.47

No overall patterns emerged from the mean scores for each group (Table 4.16).

A one way between groups analysis of variance was conducted to explore the relationship between offending styles and resistance to peer influence. Participants were divided into three groups: solo, co and mixed style offenders.

Table 4.17
Summary of ANOVA For Resistance to Peer Influence

	Sum of Squares	df	Mean Square	F	*p*	Eta Squared
48 months						
Between groups	2.18	2	1.09	3.77	.02*	.02*
Within groups	127.76	442	0.29			
Total	129.94	444				

Significance: * p<.05 ** p<.01 *** p<.001.
Effect size: *Small, **Medium, ***Large

Significant variance was found for only one wave of data: month 48, when mixed style offenders had a significantly lower mean than co-offenders for levels of resistance (Table 4.18); the effect size was small (Table 4.17).

Table 4.18
Tukey HSD Comparison For Resistance to Peer Influence

					95% Confidence Interval	
Age Range	Offend Style A	Offend Style B	Mean difference (A-B)	Std. Error	Lower Bound	Upper Bound
18-23	**48 months**					
	solo	co	-0.01	0.06	-0.16	0.14
		mixed	0.14	0.06	-0.00	0.28
	co	solo	0.01	0.06	-0.14	0.16
		mixed	0.15*	0.06	0.00	0.30
	mixed	solo	-0.14	0.06	-0.28	0.00
		co	-0.15*	0.06	-0.30	-0.00

* p < 0.05

These findings need to be considered alongside peer antisocial peer behaviour and influence in order to fully assess the potential impact of a lack of variance.

Psychopathy

Table 4.19
Mean Scores for PCL (baseline) and YPI (subsequent waves)

Wave and Style	Age Range	N	M	SD
Baseline	14-19			
Solo		6	14.33	8.87
Co		200	14.34	7.45
Mixed		794	17.20	7.56
6 months	14-20			
Solo		152	110.56	21.69
Co		168	113.92	23.42
Mixed		199	119.67	19.94
12 months	15-20			
Solo		167	109.21	20.79
Co		200	112.29	20.65
Mixed		184	119.58	21.19
18 months	15-21			
Solo		158	109.85	22.13
Co		178	110.45	20.29
Mixed		149	120.93	22.26
24 months	16-21			
Solo		134	109.16	23.05
Co		168	112.55	21.68
Mixed		143	121.03	20.82
30 months	16-22			
Solo		135	107.49	21.67
Co		127	110.12	22.89
Mixed		122	117.94	21.29
36 months	17-22			
Solo		139	106.62	21.09
Co		135	109.21	22.68
Mixed		121	120.06	20.87
48 months	18-23			
Solo		155	105.71	20.26
Co		134	107.83	21.69
Mixed		156	113.94	20.77
60 months	18-24			
Solo		179	105.97	23.41
Co		105	106.30	22.16
Mixed		132	115.41	21.51
72 months	20-25			
Solo		169	105.01	22.65
Co		104	109.69	22.05
Mixed		120	112.46	21.46
84 months	20-26			
Solo		159	104.37	20.88
Co		100	106.79	21.64
Mixed		92	114.53	21.69

The mean scores were consistently highest for mixed style offenders and lowest for solo (Table 4.19).

A one way between groups analysis of variance was conducted to explore the relationship between offending styles and total psychopathy score. Participants were divided into three groups: solo, co and mixed style offenders. Significant variance between groups was found for all waves of data; all effect sizes were small, with the exception of month 36, which was medium (Tables 4.20 and 4.21).

Table 4.20
Summary of ANOVA For Total Score PCL (baseline) and YPI (subsequent waves)

	Sum of Squares	df	Mean Square	F	*p*	Eta Squared
Baseline						
Between groups	1340.66	2	670.33	11.77	.000***	.02*
Within groups	56766.57	997	56.94			
Total	58107.23	999				
6 months						
Between groups	7521.60	2	3760.80	8.04	.000***	.03*
Within groups	241398.41	516	467.83			
Total	248920.01	518				
12 months						
Between groups	10116.80	2	5058.40	11.61	.000***	.04*
Within groups	238747.36	548	435.67			
Total	248864.16	550				
18 months						
Between groups	11987.95	2	5993.98	12.95	.000***	.05*
Within groups	223045.03	482	462.75			
Total	235032.98	484				
24 months						
Between groups	10532.55	2	5266.28	11.05	.000***	.05*
Within groups	210658.73	442	476.60			
Total	221191.28	444				
30 months						
Between groups	7466.04	2	3733.02	7.74	.00**	.05*
Within groups	183807.56	384	482.44			
Total	191273.60	386				

Significance: * p<.05 ** p<.01 *** p<.001

Effect size: *Small, **Medium, ***Large

Table 4.21
Summary of ANOVA For Total Score PCL (baseline) and YPI (subsequent waves)

	Sum of Squares	df	Mean Square	F	*p*	Eta Squared
36 months						
Between groups	12872.64	2	6436.32	13.82	.000***	.07**
Within groups	182564.16	392	465.73			
Total	195436.80	394				
48 months						
Between groups	5638.81	2	2819.41	6.47	.00**	.03*
Within groups	192610.35	442	435.77			
Total	198249.16	444				
60 months						
Between groups	7836.58	2	3918.29	7.73	.00**	.04*
Within groups	209233.56	413	506.62			
Total	217070.13	415				
72 months						
Between groups	4091.13	2	2045.56	4.18	.02*	.02*
Within groups	191050.94	390	489.87			
Total	195142.07	392				
84 months						
Between groups	613960	2	3069.80	6.76	.00**	.04*
Within groups	158038.60	348	454.13			
Total	164178.19	350				

Significance: * p<.05 ** p<.01 *** p<.001

Effect size: *Small, **Medium, ***Large

Post hoc comparisons indicated that the mean score for mixed style offenders was significantly higher than those of both solo and co-offenders for all months, except for the baseline, when significant variance was only found with co-offenders (Tables 4.22 to 4.24).

Table 4.22
Tukey HSD Comparison For Total Score PCL (baseline) and YPI (subsequent waves)

					95% Confidence Interval	
Age Range	Offend Style A	Offend Style B	Mean difference (A-B)	Std. Error	Lower Bound	Upper Bound
14-19	**Baseline**					
	solo	co	-0.01	3.13	-7.34	7.33
		mixed	-2.87	3.09	-10.13	4.39
	co	solo	0.01	3.13	-7.33	7.34
		mixed	-2.86*	0.60	-4.26	-1.46
	mixed	solo	2.87	3.09	-4.39	10.13
		co	2.86*	0.60	1.46	4.26
14-20	**6 months**					
	solo	co	-3.36	2.42	-9.05	2.33
		mixed	-9.11*	2.33	-14.59	-3.63
	co	solo	3.36	2.42	-2.33	9.05
		mixed	-5.75*	2.27	-11.08	-0.43
	mixed	solo	9.11*	2.33	3.63	14.59
		co	5.75*	2.27	0.43	11.08
15-20	**12 months**					
	solo	co	-3.08	2.19	-8.22	2.07
		mixed	-10.37*	2.23	-15.61	-5.12
	co	solo	3.08	2.19	-2.07	8.22
		mixed	-7.29*	2.13	-12.30	-2.28
	mixed	solo	10.37*	2.23	5.12	15.61
		co	7.29*	2.13	2.28	12.30
15-21	**18 months**					
	solo	co	-0.60	2.35	-6.12	4.93
		mixed	-11.08*	2.46	-16.85	-5.30
	co	solo	0.60	2.35	-4.93	6.12
		mixed	-10.48*	2.39	-16.10	-4.87
	mixed	solo	11.08*	2.46	5.30	16.85
		co	10.48*	2.39	4.87	16.10

* $p < 0.05$

Table 4.23
Tukey HSD Comparison For Total Score YPI

Age Range	Offend Style A	Offend Style B	Mean difference (A-B)	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
16-21	**24 months**					
	solo	co	-3.39	2.53	-9.34	2.56
		mixed	-11.87*	2.63	-18.04	-5.70
	co	solo	3.39	2.53	-2.56	9.34
		mixed	-8.48*	2.48	-14.32	-2.64
	mixed	solo	11.87*	2.63	5.70	18.04
		co	8.48*	2.48	2.64	14.32
16-22	**30 months**					
	solo	co	-2.63	2.72	-9.02	3.76
		mixed	-10.45*	2.74	-16.91	-4.00
	co	solo	2.63	2.72	-3.76	9.02
		mixed	-7.83*	2.78	-14.38	-1.27
	mixed	solo	10.45*	2.74	4.00	16.91
		co	7.83*	2.78	1.27	14.38
17-22	**36 months**					
	solo	co	-2.60	2.61	-8.73	3.54
		mixed	-13.44*	2.68	-19.75	-7.13
	co	solo	2.60	2.61	-3.54	8.73
		mixed	-10.84*	2.70	-17.20	-4.49
	mixed	solo	13.44*	2.68	7.13	19.75
		co	10.84*	2.70	4.49	17.20
18-23	**48 months**					
	solo	co	-2.12	2.46	-7.91	3.67
		mixed	-8.23*	2.37	-13.79	-2.66
	co	solo	2.12	2.46	-3.67	7.91
		mixed	-6.11*	2.46	-11.89	-0.33
	mixed	solo	8.23*	2.37	2.66	13.79
		co	6.11*	2.46	0.33	11.89

* $p < 0.05$

Table 4.24
Tukey HSD Comparison For Total Score YPI

				95% Confidence Interval	
Offend Style A	Offend Style B	Mean difference (A-B)	Std. Error	Lower Bound	Upper Bound
60 months					
solo	co	-0.33	2.77	-6.84	6.18
	mixed	-9.44*	2.58	-15.52	-3.37
co	solo	0.33	2.77	-6.18	6.84
	mixed	-9.11*	2.94	-16.04	-2.19
mixed	solo	9.44*	2.58	3.37	15.52
	co	9.11*	2.94	2.19	16.04
72 months					
solo	co	-4.69	2.76	-11.18	1.80
	mixed	-7.45*	2.64	-13.67	-1.24
co	solo	4.69	2.76	-1.80	11.18
	mixed	-2.77	2.97	-9.74	4.21
mixed	solo	7.45*	2.64	1.24	13.67
	co	2.77	2.97	-4.21	9.74
84 months					
solo	co	-2.42	2.72	-8.82	3.98
	mixed	-10.16*	2.79	-16.73	-3.59
co	solo	2.42	2.72	-3.98	8.82
	mixed	-7.74*	3.08	-14.99	-0.50
mixed	solo	10.16*	2.79	3.59	16.73
	co	7.74*	3.08	0.03	14.99

* $p < 0.05$

Mixed style offenders were found to score significantly and consistently higher than both solo and co-offenders. This suggests that individuals who are capable of offending both along and with others present a particular risk. Psychopathic traits can also impact on the effectiveness of interventions and offending programmes.

Grandiose Manipulative

Table 4.25

Mean Scores For YPI Grandiose Manipulative Dimension

Wave and Style	Age Range	N	M	SD
6 months	14-20			
Solo		152	41.07	10.98
Co		168	42.42	12.77
Mixed		199	43.75	10.91
12 months	15-20			
Solo		167	40.28	11.06
Co		200	41.20	10.84
Mixed		184	43.68	11.72
18 months	15-21			
Solo		158	40.35	10.81
Co		178	41.01	10.91
Mixed		149	44.95	12.08
24 months	16-21			
Solo		134	40.34	11.88
Co		168	41.65	11.24
Mixed		143	44.78	11.25
30 months	16-22			
Solo		135	38.73	10.98
Co		127	40.57	11.67
Mixed		122	43.59	11.72
36 months	17-22			
Solo		139	39.45	10.50
Co		135	40.00	11.38
Mixed		121	44.48	10.36
48 months	18-23			
Solo		155	38.87	10.07
Co		134	39.61	11.31
Mixed		156	41.51	11.05
60 months	18-24			
Solo		179	38.35	11.45
Co		105	38.95	10.31
Mixed		132	41.18	11.49
72 months	20-25			
Solo		169	37.70	10.84
Co		104	39.36	10.87
Mixed		120	40.98	11.09
84 months	20-26			
Solo		159	37.58	10.16
Co		100	39.37	10.83
Mixed		92	41.27	11.81

Solo offenders had the lowest mean scores for all waves of data, and mixed style offenders had the highest mean scores (Tale 4.25).

A one way between groups analysis of variance was conducted to explore the relationship between offending styles and the grandiose manipulative dimension of the youth psychopathy index. Participants were divided into three groups: solo, co and mixed style offenders. Significant variance was found at months 12 to 36, 72 and 84; all effect sizes were small (Table 4.26).

Table 4.26
Summary of ANOVA For YPI Grandiose Manipulative Dimension

	Sum of Squares	df	Mean Square	F	*p*	Eta Squared
12 months						
Between groups	1112.39	2	556.19	4.43	.01*	.02*
Within groups	68783.05	548	125.52			
Total	69895.44	550				
18 months						
Between groups	1901.166	2	950.58	7.59	.00**	.03*
Within groups	61016.80	482	126.59			
Total	62917.97	484				
24 months						
Between groups	1468.09	2	735.05	5.61	.00**	.02*
Within groups	57868.14	442	130.92			
Total	59336.24	444				
30 months						
Between groups	1530.64	2	765.32	5.84	.00**	.03*
Within groups	49911.09	381	131.00			
Total	51441.73	383				
36 months						
Between groups	1923.05	2	961.52	8.30	.000***	.05*
Within groups	45430.54	392	115.89			
Total	47353.60	394				
72 months						
Between groups	761.01	2	380.51	3.19	.04*	.02*
Within groups	46561.01	390	119.39			
Total	47322.02	392				
84 months						
Between groups	805.62	2	402.81	3.45	.03*	.02*
Within groups	40604.12	348	116.68			
Total	41409.74	350				

Significance: * p<.05 ** p<.01 *** p<.001

Effect size: *Small, **Medium, ***Large

Post hoc comparisons indicated that the mean score of mixed style offenders was significantly higher than that of solo offenders at months 12 to 36, 72 and 84; and significantly higher than that of co-offenders at months 18, 24, 30 and 36 (Tables 4.27 and 4.28).

Table 4.27
Tukey HSD Comparison For YPI Grandiose Manipulative Dimension

					95% Confidence Interval	
Age Range	Offend Style A	Offend Style B	Mean difference (A-B)	Std. Error	Lower Bound	Upper Bound
15-20	**12 months**					
	solo	co	-0.93	1.17	-3.68	1.84
		mixed	-3.41*	1.20	-6.22	-0.60
	co	solo	0.93	1.17	-1.84	3.68
		mixed	-2.49	1.14	-5.17	0.20
	mixed	solo	3.41*	1.20	0.60	6.22
		co	2.49	1.14	-0.20	5.17
15-21	**18 months**					
	solo	co	-0.66	1.23	-3.55	2.23
		mixed	-4.60*	1.29	-7.62	-1.58
	co	solo	0.66	1.23	-2.23	3.55
		mixed	-3.94*	1.25	-6.88	-1.00
	mixed	solo	4.60*	1.29	1.58	7.62
		co	3.94*	1.25	1.00	6.88
16-21	**24 months**					
	solo	co	-1.32	1.33	-4.44	1.80
		mixed	-4.45*	1.38	-7.68	-1.21
	co	solo	1.32	1.33	-1.80	4.44
		mixed	-3.13*	1.30	-6.19	-0.07
	mixed	solo	4.45*	1.38	1.21	7.68
		co	3.13*	1.30	0.07	6.19
16-22	**30 months**					
	solo	co	-1.83	1.42	-5.16	1.50
		mixed	-4.86*	1.43	-8.22	-1.49
	co	solo	1.83	1.42	-1.50	5.16
		mixed	-3.02	1.45	-6.44	0.39
	mixed	solo	4.86*	1.43	1.49	8.22
		co	3.02	1.45	-0.39	6.44

* $p < 0.05$

Table 4.28
Tukey HSD Comparison For YPI Grandiose Manipulative Dimension

Age Range	Offend Style A	Offend Style B	Mean difference (A-B)	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
17-22	**36 months**					
	solo	co	-0.55	1.30	-3.61	2.51
		mixed	-5.03*	1.34	-8.18	-1.88
	co	solo	0.55	1.30	-2.51	3.61
		mixed	-4.48*	1.35	-7.65	-1.31
	mixed	solo	5.03*	1.34	1.88	8.18
		co	4.48*	1.35	1.31	7.65
20-25	**72 months**					
	solo	co	-1.65	1.36	-4.86	1.55
		mixed	-3.28*	1.30	-6.35	-0.21
	co	solo	1.65	1.36	-1.55	4.86
		mixed	-1.63	1.46	-5.07	1.82
	mixed	solo	3.28*	1.30	0.21	6.35
		co	1.63	1.46	-1.82	5.07
20-26	**84 months**					
	solo	co	-1.79	1.38	-5.03	1.46
		mixed	-3.69*	1.42	-7.02	-0.36
	co	solo	1.79	1.38	-1.46	5.03
		mixed	-1.90	1.56	-5.57	1.77
	mixed	solo	3.69*	1.42	0.36	7.02
		co	1.90	1.56	-1.77	5.57

* $p < 0.05$

A more consistent pattern of variance was found between mixed style offenders and solo offenders; only three waves of data demonstrated significant variance between mixed style and co-offenders. Perhaps suggesting that it is the group aspect of offending that has the strongest relationship to grandiose and manipulative traits.

Callous Unemotional

Table 4.29
Mean Scores For YPI Callous Unemotional Dimension

Wave and Style	Age Range	N	M	SD
6 months	14-20			
Solo		152	33.66	6.52
Co		168	34.42	6.86
Mixed		199	36.41	6.43
12 months	15-20			
Solo		167	33.04	6.19
Co		200	34.12	6.21
Mixed		184	36.21	6.73
18 months	15-21			
Solo		158	33.72	6.65
Co		178	33.50	6.14
Mixed		149	35.99	6.82
24 months	16-21			
Solo		134	33.71	6.08
Co		168	33.93	6.54
Mixed		143	36.41	6.77
30 months	16-22			
Solo		135	33.07	6.37
Co		127	33.87	7.03
Mixed		122	35.49	6.33
36 months	17-22			
Solo		139	33.06	6.42
Co		135	33.83	6.37
Mixed		121	36.47	6.78
48 months	18-23			
Solo		155	32.68	6.75
Co		134	32.69	7.02
Mixed		156	34.78	6.59
60 months	18-24			
Solo		179	32.85	6.69
Co		105	32.74	6.80
Mixed		132	35.40	7.57
72 months	20-25			
Solo		169	32.34	7.08
Co		104	34.15	6.44
Mixed		120	34.39	6.54
84 months	20-26			
Solo		159	32.49	6.15
Co		100	33.03	5.80
Mixed		92	35.43	7.15

The mean scores were consistently highest for mixed style offenders for all waves of data (Table 4.29).

A one way between groups analysis of variance was conducted to explore the relationship between offending styles and the callous unemotional dimension of the youth psychopathy index. Participants were divided into three groups: solo, co and mixed style offenders. Significant variance was found for all waves of data; all effect sizes were small (Tables 4.30 and 4.31).

Table 4.30
Summary of ANOVA For YPI Callous Unemotional Dimension

	Sum of Squares	df	Mean Square	F	*p*	Eta Squared
6 months						
Between groups	726.90	2	363.45	8.34	.000***	.03*
Within groups	22479.26	516	43.56			
Total	23206.15	518				
12 months						
Between groups	923.90	2	461.95	11.34	.000***	.04*
Within groups	22325.80	548	40.74			
Total	23249.70	550				
18 months						
Between groups	593.30	2	296.65	6.97	.00**	.03*
Within groups	20505.24	482	42.54			
Total	21098.54	484				
24 months						
Between groups	646.81	2	323.41	7.70	.00**	.03*
Within groups	18555.27	442	41.98			
Total	19202.08	444				
30 months						
Between groups	387.42	2	193.71	4.47	.01*	.02*
Within groups	16507.62	381	43.33			
Total	16895.04	383				

Significance: * p<.05 ** p<.01 *** p<.001.

Effect size: *Small, **Medium, ***Large

Table 4.31
Summary of ANOVA For YPI Callous Unemotional Dimension

	Sum of Squares	df	Mean Square	F	*p*	Eta Squared
36 months						
Between groups	810.39	2	405.19	9.54	.000***	.05*
Within groups	16641.65	392	42.45			
Total	17452.04	394				
48 months						
Between groups	444.24	2	222.12	4.84	.01**	.02*
Within groups	20305.85	442	45.94			
Total	20750.09	444				
60 months						
Between groups	606.02	2	303.01	6.17	.00**	.03*
Within groups	20274.70	413	49.09			
Total	2088.73	415				
72 months						
Between groups	367.17	2	183.58	4.03	.02*	.02*
Within groups	17781.91	390	45.60			
Total	18149.07	392				
84 months						
Between groups	526.02	2	263.01	5.56a	.00**	.04*
Within groups	13957.26	200.02	40.11			
Total	14483.27	202.02				

Significance: * p<.05 ** p<.01 *** p<.001.

Effect size: *Small, **Medium, ***Large

Post hoc comparisons indicated that the mean score of mixed style offenders was significantly higher than that of solo offenders for all waves; and significantly higher than the mean score of co-offenders for months 6 to 24, 36 to 60, and 84 (Tables 4.32 and 4.33).

Table 4.32
Tukey HSD Comparison For YPI Callous Unemotional Dimension

Age Range	Offend Style A	Offend Style B	Mean difference (A-B)	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
14-20	**6 months**					
	solo	co	-0.76	0.74	-2.50	0.98
		mixed	-2.75*	0.71	-4.43	-1.08
	co	solo	0.76	0.74	-0.98	2.50
		mixed	-2.00*	0.69	-3.62	-0.37
	mixed	solo	2.75*	0.71	1.08	4.43
		co	2.00*	0.69	0.37	3.62
15-20	**12 months**					
	solo	co	-1.07	0.67	-2.65	0.50
		mixed	-3.17*	0.68	-4.77	-1.57
	co	solo	1.07	0.67	-0.50	2.65
		mixed	-2.10*	0.65	-3.63	-0.56
	mixed	solo	3.17*	0.68	1.57	4.77
		co	2.10*	0.65	0.56	3.63
15-21	**18 months**					
	solo	co	0.22	0.71	-1.45	1.90
		mixed	-2.27*	0.75	-4.02	-0.52
	co	solo	-0.22	0.71	-1.90	1.45
		mixed	-2.49*	0.72	-4.20	-0.79
	mixed	solo	2.27*	0.75	0.52	4.02
		co	2.49*	0.72	0.79	4.20
16-21	**24 months**					
	solo	co	-0.22	0.75	-1.98	1.55
		mixed	-2.70*	0.78	-4.53	-0.86
	co	solo	0.22	0.75	-1.55	1.98
		mixed	-2.48*	0.74	-4.21	-0.74
	mixed	solo	2.70*	0.78	0.86	4.53
		co	2.48*	0.74	0.74	4.21
16-22	**30 months**					
	solo	co	-0.80	0.81	-2.71	1.12
		mixed	-2.43*	0.82	-4.36	-0.49
	co	solo	0.80	0.81	-1.12	2.71
		mixed	-1.63	0.83	-3.59	0.34
	mixed	solo	2.43*	0.82	0.49	4.36
		co	1.63	0.84	-0.34	3.59

* $p < 0.05$

Table 4.33
Tukey HSD Comparison For YPI Callous Unemotional Dimension

Age Range	Offend Style A	Offend Style B	Mean difference (A-B)	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
17-22	**36 months**					
	solo	co	-0.77	0.78	-2.62	1.09
		mixed	-3.41*	0.81	-5.31	-1.50
	co	solo	0.77	0.79	-1.09	2.62
		mixed	-2.64*	0.82	-4.56	-0.72
	mixed	solo	3.41*	0.81	1.50	5.31
		co	2.64*	0.82	0.72	4.56
18-23	**48 months**					
	solo	co	-0.01	0.80	-1.89	1.87
		mixed	-2.10*	0.77	-3.91	-0.29
	co	solo	0.01	0.80	-1.87	1.89
		mixed	-2.09*	0.80	-3.97	-0.21
	mixed	solo	2.10*	0.77	0.29	3.91
		co	2.09*	0.80	0.21	3.97
18-24	**60 months**					
	solo	co	0.11	0.86	-1.92	2.13
		mixed	-2.55*	0.80	-4.44	-0.66
	co	solo	-0.11	0.86	-2.13	1.92
		mixed	-2.66*	0.92	-4.81	-0.50
	mixed	solo	2.55*	0.80	0.66	4.44
		co	2.66*	0.92	0.50	4.81
20-25	**72 months**					
	solo	co	-1.82	0.84	-3.80	0.16
		mixed	-2.06*	0.81	-3.95	-0.16
	co	solo	1.82	0.84	-0.16	3.80
		mixed	-0.24	0.91	-2.37	1.89
	mixed	solo	2.05*	0.81	0.16	3.95
		co	0.24	0.91	-2.37	2.37
20-26	**84 months**[a]					
	solo	co	-0.54	0.76	-2.33	1.25
		mixed	-2.94*	0.89	-5.05	-0.84
	co	solo	0.54	0.76	-1.25	2.33
		mixed	-2.41*	0.94	-4.64	-0.17
	mixed	solo	2.94*	0.89	0.84	5.05
		co	2.41*	0.94	0.17	4.64

* $p < 0.05$

Similar patterns of variance were found between mixed style and both solo and co-offenders. The most consistence variance was found between mixed and solo.

Impulsive Irresponsible

Table 4.34
Mean Scores For YPI Impulsive Irresponsible Dimension

Wave and Style	Age Range	N	M	SD
6 months	14-20			
Solo		152	35.83	7.98
Co		168	37.08	7.91
Mixed		199	39.52	7.42
12 months	15-20			
Solo		167	35.89	7.57
Co		200	36.97	7.74
Mixed		184	39.68	7.68
18 months	15-21			
Solo		158	35.78	8.23
Co		178	35.94	7.52
Mixed		149	39.99	8.14
24 months	16-21			
Solo		134	35.12	8.25
Co		168	36.97	8.03
Mixed		143	39.85	7.88
30 months	16-22			
Solo		135	35.69	8.38
Co		127	35.69	8.22
Mixed		122	38.86	8.22
36 months	17-22			
Solo		139	34.11	7.65
Co		135	35.39	8.34
Mixed		121	39.11	7.90
48 months	18-23			
Solo		155	34.16	7.42
Co		134	35.53	7.54
Mixed		156	37.65	7.66
60 months	18-24			
Solo		179	34.77	9.36
Co		105	34.60	8.00
Mixed		132	38.83	7.47
72 months	20-25			
Solo		169	34.96	9.02
Co		104	36.18	8.48
Mixed		120	37.08	8.37
84 months	20-26			
Solo		159	34.30	8.59
Co		100	34.39	8.38
Mixed		92	37.83	8.00

Mixed style offenders had the highest mean score for all waves of data (Table 4.34).

A one way between groups analysis of variance was conducted to explore the relationship between offending styles and the impulsive irresponsible dimension of the youth psychopathy index. Participants were divided into three groups: solo, co and mixed style offenders. Significant variance was found for all months other than 72; effect sizes were small for all significant waves, except for month 36, when it was medium (Tables 4.35 and 4.36).

Table 4.35
Summary of ANOVA For YPI Impulsive Irresponsible Dimension

	Sum of Squares	df	Mean Square	F	*p*	Eta Squared
6 months						
Between groups	1256.98	2	628.49	10.48	.000***	.04*
Within groups	30937.20	516	59.96			
Total	32194.18	518				
12 months						
Between groups	1360.51	2	680.26	11.57	.000***	.04*
Within groups	32211.96	548	58.78			
Total	33572.48	550				
18 months						
Between groups	1757.28	2	878.64	13.92	.000***	.05*
Within groups	30433.54	482	63.14			
Total	32190.82	484				
24 months						
Between groups	1581.88	2	790.94	12.21	.00**	.05*
Within groups	28627.56	442	64.77			
Total	30209.44	444				
30 months						
Between groups	838.39	2	419.19	6.12	.00**	.03*
Within groups	26090.97	381	68.48			
Total	26269.35	383				

Significance: * p<.05 ** p<.01 *** p<.001

Effect size: *Small, **Medium, ***Large

Table 4.36
Summary of ANOVA For YPI Impulsive Irresponsible Dimension

	Sum of Squares	df	Mean Square	F	*p*	Eta Squared
36 months						
Between groups	1714.76	2	857.38	13.51	.000***	.06**
Within groups	24884.96	392	63.48			
Total	26599.72	394				
48 months						
Between groups	958.43	2	479.22	8.43	.000***	.04*
Within groups	25131.96	442	56.86			
Total	26090.39	444				
60 months						
Between groups	1532.60	2	766.30	12.30a	.000***	.05*
Within groups	29562.34	256.35	71.58			
Total	31094.94	258.35				
84 months						
Between groups	829.32	2	414.66	5.91	.00**	.03*
Within groups	24416.11	348	70.16			
Total	25245.44	350				

a. Equal variances not assumed. Significance: * p<.05 ** p<.01 *** p<.001.

Effect size: *Small, **Medium, ***Large

Post hoc comparisons indicated that the mean score for mixed style offenders was significantly higher than those of both solo and co-offenders for all waves except for month 72 (Tables 4.37 and 4.38).

Table 4.37
Tukey HSD Comparison For YPI Impulsive Irresponsible Dimension

				95% Confidence Interval	
Offend Style A	Offend Style B	Mean difference (A-B)	Std. Error	Lower Bound	Upper Bound
6 months					
solo	co	-1.25	0.87	-3.29	0.79
	mixed	3.69*	0.83	-5.65	-1.73
co	solo	1.25	0.87	-0.79	3.29
	mixed	-2.45*	0.81	-4.35	-0.54
mixed	solo	3.69*	0.83	1.73	5.65
	co	2.45*	0.81	0.54	4.35
12 months					
solo	co	-1.08	0.80	-2.97	0.81
	mixed	-3.79*	0.82	-5.71	-1.86
co	solo	1.08	0.80	-0.81	2.97
	mixed	-2.71*	0.78	-4.55	-0.87
mixed	solo	3.79*	0.82	1.86	5.71
	co	2.71*	0.78	0.87	4.55
18 months					
solo	co	-0.16	0.87	-2.20	1.88
	mixed	-4.21*	0.91	-6.34	-2.07
co	solo	0.16	0.87	-1.88	2.20
	mixed	-4.05*	0.88	-6.12	-1.97
mixed	solo	4.21*	0.91	2.07	6.34
	co	4.05*	0.88	1.97	6.12
24 months					
solo	co	-1.85	0.93	-4.04	0.34
	mixed	-4.73*	0.97	-7.00	-2.45
co	solo	1.85	0.93	-0.34	4.04
	mixed	-2.88*	0.92	-5.03	-0.72
mixed	solo	4.73*	0.97	2.45	7.00
	co	2.88*	0.92	0.72	5.03
30 months					
solo	co	0.00	1.02	-2.40	2.41
	mixed	-3.17*	1.03	-5.60	-0.74
co	solo	-0.00	1.02	-2.41	2.40
	mixed	-3.18*	1.05	-5.64	-0.71
mixed	solo	3.17*	1.03	0.74	5.60
	co	3.18*	1.05	0.71	5.64

* $p < 0.05$

Table 4.38
Tukey HSD Comparison For YPI Impulsive Irresponsible Dimension

Age Range	Offend Style A	Offend Style B	Mean difference (A-B)	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
17-22	**36 months**					
	solo	co	-1.28	0.96	-3.54	0.99
		mixed	-5.00*	0.99	-7.33	-2.67
	co	solo	1.28	0.96	-0.99	3.54
		mixed	-3.72*	1.00	-6.07	-1.38
	mixed	solo	5.00*	0.99	2.67	7.33
		co	3.72*	1.00	1.38	6.07
18-23	**48 months**					
	solo	co	-1.37	0.90	-3.46	0.72
		mixed	-3.49*	0.86	-5.50	-1.48
	co	solo	1.37	0.90	-0.72	3.46
		mixed	-2.12*	0.89	-4.21	-0.03
	mixed	solo	3.49*	0.86	1.48	5.50
		co	2.12*	0.89	0.03	4.21
18-24	**60 months**[a]					
	solo	co	0.17	1.05	-2.31	2.64
		mixed	-4.06*	0.96	-6.31	-1.81
	co	solo	-0.17	1.05	-2.64	2.31
		mixed	-4.23*	1.02	-6.62	-1.83
	mixed	solo	4.06*	0.96	1.81	6.31
		co	4.23*	1.02	1.83	6.62
20-26	**84 months**					
	solo	co	-0.09	1.07	-2.61	2.42
		mixed	-3.53*	1.10	-6.11	-0.95
	co	solo	0.09	1.07	-2.42	2.61
		mixed	-3.44*	1.21	-6.28	-0.59
	mixed	solo	3.53*	1.10	0.95	6.11
		co	3.44*	1.21	0.59	6.28

a. Games-Howell Comparison. * $p < 0.05$

The same patterns of variance were found between mixed style offenders and their solo and co-offending counterparts. This could explain why some individuals are prepared to offend using both styles, because they do so when the opportunity presents itself in an impulsive manner.

Peer Delinquency Antisocial Behaviour

Table 4.39

Mean Scores For Peer Delinquency Antisocial Behaviour

Wave and Style	Age Range	N	M	SD
Baseline	14-19			
Solo		6	2.22	0.96
Co		203	2.25	0.91
Mixed		801	2.49	0.92
6 months	14-20			
Solo		168	2.01	0.79
Co		194	2.23	0.88
Mixed		235	2.54	0.80
12 months	15-20			
Solo		161	1.96	0.76
Co		200	2.12	0.88
Mixed		180	2.56	0.81
18 months	15-21			
Solo		153	1.83	0.74
Co		174	2.07	0.82
Mixed		147	2.52	0.85
24 months	16-21			
Solo		132	1.99	0.84
Co		168	1.98	0.74
Mixed		142	2.51	0.86
30 months	16-22			
Solo		132	1.95	0.77
Co		125	2.03	0.82
Mixed		122	2.45	0.80
36 months	17-22			
Solo		131	1.75	0.74
Co		134	1.95	0.68
Mixed		118	2.50	0.81
48 months	18-23			
Solo		153	1.90	0.77
Co		133	2.00	0.81
Mixed		157	2.51	0.80
60 months	18-24			
Solo		176	1.87	0.71
Co		105	1.95	0.75
Mixed		132	2.50	0.82
72 months	20-25			
Solo		167	2.01	0.83
Co		104	2.01	0.71
Mixed		119	2.32	0.79
84 months	20-26			
Solo		153	1.79	0.81
Co		100	1.95	0.75
Mixed		90	2.32	0.66

Mixed style offenders had the highest mean scores for all waves, and solo offenders had the lowest mean scores for all waves except for month 24 (Table 4.39).

A one way between groups analysis of variance was conducted to explore the relationship between offending styles and peer antisocial behaviour. Participants were divided into three groups: solo, co and mixed style offenders. Significant variance was found for all waves of data; the effect size was large for months 6 to 18 and 36 to 60; medium for months 24, 30 and 84; and small for month 72 (Tables 4.40 and 4.41).

Table 4.40
Summary of ANOVA For Peer Delinquency Antisocial Behaviour

	Sum of Squares	df	Mean Square	F	*p*	Eta Squared
Baseline						
Between groups	9.64	2	4.82	5.76	.00**	.01*
Within groups	842.23	1007	0.84			
Total	851.87	1009				
6 months						
Between groups	29.35	2	14.68	21.73	.000***	.10***
Within groups	401.21	594	0.68			
Total	430.56	596				
12 months						
Between groups	33.96	2	16.98	26.78a	.000***	.10***
Within groups	364.31	356.63	0.68			
Total	398.27	358.63				
18 months						
Between groups	36.37	2	18.19	28.06a	.000***	.11***
Within groups	304.97	309.80	0.65			
Total	341.35	311.80				
24 months						
Between groups	26.13	2	13.06	19.04	.000***	.08**
Within groups	288.12	439	0.66			
Total	314.24	441				
30 months						
Between groups	17.68	2	8.84	13.89	.000***	.07**
Within groups	239.33	376	0.64			
Total	257.00	378				

a. Equal variances not assumed. Significance: * p<.05 ** p<.01 *** p<.001.
Effect size: *Small, **Medium, ***Large

Table 4.41
Summary of ANOVA For Peer Delinquency Antisocial Behaviour

	Sum of Squares	df	Mean Square	F	*p*	Eta Squared
36 months						
Between groups	37.21	2	18.60	33.48	.000***	.15***
Within groups	211.19	380	0.56			
Total	248.40	382				
48 months						
Between groups	33.25	2	16.62	26.57	.000***	.11***
Within groups	275.33	440	0.63			
Total	308.58	442				
60 months						
Between groups	32.79	2	16.39	28.56	.000***	.12***
Within groups	235.37	410	0.57			
Total	268.15	412				
72 months						
Between groups	7.81	2	3.91	6.27	.00**	.03*
Within groups	241.12	387	0.62			
Total	248.93	389				
84 months						
Between groups	16.35	2	8.18	14.31	.000***	.08**
Within groups	194.26	340	0.55			
Total	210.61	342				

Significance: * p<.05 ** p<.01 *** p<.001

Effect size: *Small, **Medium, ***Large

Post hoc comparisons indicated that the mean score for mixed style offenders was significantly higher than the mean score for co-offenders for all waves (Table 4.42); and significantly higher than the mean score for solo offenders for months 6 to 48 and 72 to 84. Comparisons also indicated that the mean score for co-offenders was higher than that of solo offenders at month 18 (Table 4.42).

Table 4.42
Tukey HSD Comparison For Peer Delinquency Antisocial Behaviour

					95% Confidence Interval	
Age Range	Offend Style A	Offend Style B	Mean difference (A-B)	Std. Error	Lower Bound	Upper Bound
14-19	**Baseline**					
	solo	co	-0.03	0.38	-0.92	0.86
		mixed	-0.27	0.37	-1.15	0.61
	co	solo	0.23	0.38	-0.86	0.92
		mixed	-0.24*	0.07	-0.41	-0.07
	mixed	solo	0.27	0.37	-0.61	1.15
		co	0.24*	0.07	0.07	0.41
14-20	**6 months**					
	solo	co	-0.22	0.09	-0.42	-0.13
		mixed	-0.54*	0.08	-0.73	-0.34
	co	solo	0.22	0.09	0.01	0.42
		mixed	-0.32*	0.08	-0.51	-0.13
	mixed	solo	0.54*	0.08	0.34	0.73
		co	0.32*	0.08	0.13	0.51
15-20	**12 months**[a]					
	solo	co	-0.16	0.09	-0.36	0.04
		mixed	-0.60*	0.09	-0.80	-0.40
	co	solo	0.16	0.09	-0.04	0.36
		mixed	-0.44*	0.09	-0.65	-0.24
	mixed	solo	0.60*	0.09	0.40	0.80
		co	0.44*	0.09	0.24	0.64
15-21	**18 months**[a]					
	solo	co	-0.23*	0.09	-0.44	-0.03
		mixed	-0.69*	0.09	-0.90	-0.47
	co	solo	0.23*	0.09	0.03	0.44
		mixed	-0.45*	0.09	-0.67	-0.23
	mixed	solo	0.69*	0.09	0.47	0.90
		co	0.45*	0.09	0.23	0.67

a. Games-Howell Comparison. * $p < 0.05$

Table 4.43

Tukey HSD Comparison For Peer Delinquency Antisocial Behaviour

Age Range	Offend Style A	Offend Style B	Mean difference (A-B)	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
16-21	**24 months**					
	solo	co	0.01	0.09	-0.21	0.23
		mixed	-0.52*	0.10	-0.75	-0.29
	co	solo	-0.01	0.09	-0.23	0.21
		mixed	-0.52*	0.09	-0.74	-0.31
	mixed	solo	0.52*	0.10	0.29	0.75
		co	0.52*	0.09	0.31	0.74
16-22	**30 months**					
	solo	co	-0.08	0.10	-0.31	0.15
		mixed	-0.50*	0.10	-0.73	-0.26
	co	solo	0.08	0.10	-0.15	0.31
		mixed	-0.42*	0.10	-0.65	-0.18
	mixed	solo	0.50*	0.10	0.26	0.73
		co	0.42*	0.10	0.18	0.65
17-22	**36 months**					
	solo	co	-0.20	0.09	-0.42	0.01
		mixed	-0.75*	0.09	-0.98	-0.53
	co	solo	0.20	0.09	-0.01	0.42
		mixed	-0.55*	0.09	-0.77	-0.33
	mixed	solo	0.75*	0.09	0.53	0.98
		co	0.55*	0.09	0.33	0.77
18-23	**48 months**					
	solo	co	-0.11	0.09	-0.33	0.11
		mixed	-0.61*	0.09	-0.83	-0.40
	co	solo	0.11	0.09	-0.12	0.33
		mixed	-0.51*	0.09	-0.73	-0.29
	mixed	solo	0.61*	0.09	0.40	0.82
		co	0.51*	0.09	0.29	0.73

* $p < 0.05$

Table 4.44
Tukey HSD Comparison For Peer Delinquency Antisocial Behaviour

Age Range	Offend Style A	Offend Style B	Mean difference (A-B)	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
18-24	**60 months**					
	solo	co	-0.08	0.09	-0.30	0.14
		mixed	-0.63*	0.09	-0.83	-0.42
	co	solo	0.08	0.09	-0.14	0.30
		mixed	-0.55*	0.10	-0.79	-0.32
	mixed	solo	0.63*	0.09	-0.42	0.83
		co	0.55*	0.10	0.32	0.79
20-25	**72 months**					
	solo	co	0.00	0.10	-0.23	0.24
		mixed	-0.31*	0.09	-0.53	-0.08
	co	solo	-0.00	0.10	-0.24	0.23
		mixed	-0.31*	0.11	-0.56	-0.06
	mixed	solo	0.31*	0.09	0.08	0.53
		co	0.31*	0.11	0.06	0.56
20-26	**84 months**					
	solo	co	-0.17	0.10	-0.40	0.06
		mixed	-0.54*	0.10	-0.77	-0.30
	co	solo	0.17	0.10	-0.06	0.40
		mixed	-0.37*	0.11	-0.63	-0.11
	mixed	solo	0.54*	0.10	0.30	0.77
		co	0.37*	0.11	0.11	0.63

* $p < 0.05$

Mixed style offenders consistently had a significantly lower mean score than both solo and co-offenders, suggesting that there is a strong relationship between the two risk factors. Only once, at month 18, was there significant variance between solo and co-offenders. No consistent patterns were found when resistance to peer influence was analysed, suggesting that mixed style offenders are no better equipped than their solo and co-offending counterparts to lessen the risk of peer antisocial behaviour.

Peer Delinquency Antisocial Influence

Table 4.45
Mean Scores For Peer Delinquency Antisocial Influence

Wave and Style	Age Range	N	M	SD
Baseline	14-19			
Solo		6	2.36	1.35
Co		205	1.72	0.82
Mixed		819	1.88	0.89
6 months	14-20			
Solo		177	1.47	0.71
Co		196	1.73	0.82
Mixed		238	1.96	0.78
12 months	15-20			
Solo		163	1.50	0.67
Co		200	1.70	0.81
Mixed		183	2.02	0.84
18 months	15-21			
Solo		157	1.59	0.77
Co		175	1.69	0.77
Mixed		147	2.07	0.90
24 months	16-21			
Solo		133	1.65	0.84
Co		169	1.68	0.81
Mixed		143	2.07	0.88
30 months	16-22			
Solo		134	1.53	0.70
Co		125	1.68	0.76
Mixed		122	1.99	0.86
36 months	17-22			
Solo		134	1.46	0.69
Co		135	1.67	0.68
Mixed		119	2.03	0.84
48 months	18-23			
Solo		154	1.48	0.66
Co		133	1.65	0.75
Mixed		157	2.05	0.91
60 months	18-24			
Solo		177	1.55	0.66
Co		105	1.67	0.71
Mixed		132	2.21	0.95
72 months	20-25			
Solo		167	1.67	0.78
Co		104	1.67	0.65
Mixed		119	1.99	0.96
84 months	20-26			
Solo		154	1.54	0.74
Co		100	1.61	0.72
Mixed		90	2.00	0.77

Mixed style offenders had the highest mean score for antisocial influence for all waves except the baseline (Table 4.45).

A one way between groups analysis of variance was conducted to explore the relationship between offending styles and peer antisocial influence. Participants were divided into three groups: solo, co and mixed style offenders. Significant variance between groups was found for all waves of data. A medium effect size was reported for months 6 to 18, 30 to 48, and 84; a large effect size was recorded for month 60 and a small effect size for months 24 and 72 (Tables 4.46 and 4.47).

Table 4.46
Summary of ANOVA For Peer Delinquency Antisocial Influence

	Sum of Squares	df	Mean Square	F	*p*	Eta Squared
Baseline						
Between groups	5.63	2	2.82	3.67	.03*	.01*
Within groups	788.75	1027	0.77			
Total	794.39	1029				
6 months						
Between groups	24.46	2	12.23	22.19a	.000***	.06**
Within groups	365.74	395.15	0.60			
Total	390.20	397.95				
12 months						
Between groups	23.74	2	11.87	20.31a	.000***	.07**
Within groups	331.34	360.35	0.61			
Total	355.07	362.35				
18 months						
Between groups	19.33	2	9.66	13.08a	.000***	.06**
Within groups	313.53	308.54	0.66			
Total	332.86	310.54				
24 months						
Between groups	15.38	2	7.69	10.86	.000***	.05*
Within groups	312.91	442	0.71			
Total	328.29	444				
30 months						
Between groups	13.83	2	6.91	10.67a	.000***	.06**
Within groups	227.94	246.93	0.60			
Total	241.76	248.93				

a. Equal variances not assumed. Significance: * p<.05 ** p<.01 *** p<.001.
Effect size: *Small, **Medium, ***Large

Table 4.47
Summary of ANOVA For Peer Delinquency Antisocial Influence

	Sum of Squares	df	Mean Square	F	*p*	Eta Squared
36 months						
Between groups	21.26	2	10.63	17.60a	.000***	.09**
Within groups	207.22	249.03	0.54			
Total	228.48	251.03				
48 months						
Between groups	26.63	2	13.32	20.11a	.000***	.09**
Within groups	268.98	287.07	0.61			
Total	295.61	289.07				
60 months						
Between groups	35.17	2	17.59	23.80a	.000***	.13***
Within groups	246.06	236.37	0.60			
Total	281.23	238.37				
72 months						
Between groups	8.49	2	4.25	5.31a	.00**	.03*
Within groups	252.68	238.28	0.65			
Total	261.17	240.28				
84 months						
Between groups	12.77	2	6.39	11.66	.000***	.06**
Within groups	186.73	341	0.55			
Total	199.50	343				

a. Equal variances not assumed. Significance: * p<.05 ** p<.01 *** p<.001.

Effect size: *Small, **Medium, ***Large

At the baseline a significant variance with a small effect size was reported (Table 4.46); however, the post hoc comparison showed no significant differences between the three groups (Table 4.48). Post hoc comparisons indicated that the mean score for mixed style offenders was significantly higher than solo offenders for months 6 to 84; and for co-offenders for months 6 to 48 and 72 to 84 (Tables 4.48 to 4.50).

Table 4.48
Tukey HSD Comparison For Peer Delinquency Antisocial Influence

					95% Confidence Interval	
Age Range	Offend Style A	Offend Style B	Mean difference (A-B)	Std. Error	Lower Bound	Upper Bound
14-19	**Baseline**					
	solo	co	0.63	0.36	-0.22	1.49
		mixed	0.48	0.36	-0.37	1.31
	co	solo	-0.63	0.36	-1.49	0.22
		mixed	-0.16	0.07	-0.32	0.00
	mixed	solo	-0.48	0.36	-1.32	0.37
		co	0.16	0.07	-0.00	0.32
14-20	**6 months**[a]					
	solo	co	-0.26*	0.08	-0.45	-0.07
		mixed	-0.49*	0.07	-0.66	-0.32
	co	solo	0.26*	0.08	0.07	0.45
		mixed	-0.23*	0.08	-0.41	-0.05
	mixed	solo	0.49*	0.07	0.32	0.66
		co	0.23*	0.08	0.05	0.41
15-20	**12 months**[a]					
	solo	co	-0.20*	0.08	-0.38	-0.02
		mixed	-0.52*	0.08	-0.71	-0.33
	co	solo	0.20*	0.08	0.02	0.38
		mixed	-0.32*	0.08	-0.52	-0.12
	mixed	solo	0.52*	0.08	0.33	0.71
		co	0.32*	0.08	0.12	0.52
15-21	**18 months**[a]					
	solo	co	-0.10	0.08	-0.30	0.10
		mixed	-0.48*	0.10	-0.71	-0.25
	co	solo	0.10	0.08	-0.10	0.30
		mixed	-0.38*	0.09	-0.60	-0.16
	mixed	solo	0.48*	0.10	0.25	0.71
		co	0.38*	0.09	0.16	0.60

a. Games-Howell Comparison. * $p < 0.05$

Table 4.49
Tukey HSD Comparison For Peer Delinquency Antisocial Influence

Age Range	Offend Style A	Offend Style B	Mean difference (A-B)	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
16-21	**24 months**					
	solo	co	-0.03	0.10	-0.25	0.20
		mixed	-0.41*	0.10	-0.65	-0.17
	co	solo	0.03	0.10	-0.20	0.25
		mixed	-0.39*	0.10	-0.61	-0.16
	mixed	solo	0.41*	0.10	0.17	0.65
		co	0.39*	0.10	0.16	0.61
16-22	**30 months**[a]					
	solo	co	-0.15	0.09	-0.36	0.06
		mixed	-0.46*	0.10	-0.69	-0.22
	co	solo	0.15	0.09	-0.06	0.36
		mixed	-0.31*	0.10	-0.55	-0.06
	mixed	solo	0.46*	0.10	0.22	0.69
		co	0.31*	0.10	0.06	0.55
17-22	**36 months**[a]					
	solo	co	-0.22*	0.08	-0.41	-0.02
		mixed	-0.58*	0.10	-0.81	-0.35
	co	solo	0.22*	0.08	0.02	0.41
		mixed	-0.36*	0.10	-0.59	-0.13
	mixed	solo	0.58*	0.10	0.35	0.81
		co	0.36*	0.10	0.13	0.59
18-23	**48 months**[a]					
	solo	co	-0.16	0.08	-0.36	0.04
		mixed	-0.57*	0.09	-0.78	-0.36
	co	solo	0.16	0.09	-0.04	0.36
		mixed	-0.41*	0.10	-0.64	-0.18
	mixed	solo	0.57*	0.09	0.36	0.78
		co	0.41*	0.10	0.18	0.64

a. Games-Howell Comparison. * $p < 0.05$

Table 4.50
Tukey HSD Comparison For Peer Delinquency Antisocial Influence

Age Range	Offend Style A	Offend Style B	Mean difference (A-B)	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
18-24	**60 months**[a]					
	solo	co	-0.12	0.85	-0.32	0.08
		mixed	-0.66*	0.10	-0.89	-0.43
	co	solo	0.12	0.08	-0.08	0.32
		mixed	-0.54*	0.11	-0.80	-0.29
	mixed	solo	0.66*	0.10	0.43	0.89
		co	0.54*	0.11	0.29	0.80
20-25	**72 months**[a]					
	solo	co	0.00	0.09	-0.20	0.21
		mixed	-0.32*	0.11	-0.57	-0.07
	co	solo	-0.00	0.09	-0.21	0.20
		mixed	-0.32*	0.11	-0.58	-0.07
	mixed	solo	0.32*	0.11	0.07	0.57
		co	0.32*	0.11	0.07	0.58
20-26	**84 months**					
	solo	co	-0.07	0.10	-0.30	0.15
		mixed	-0.46*	0.10	-0.69	-0.23
	co	solo	0.07	0.10	-0.15	0.30
		mixed	-0.39*	0.11	-0.64	-0.14
	mixed	solo	0.46*	0.10	0.23	0.69
		co	0.39*	0.11	0.14	0.64

a. Games-Howell Comparison. * $p < 0.05$

In respect to mixed style offenders, a pattern that was similar and consistent to that of peer antisocial behaviour also emerged for peer antisocial influence. However, co-offenders were also found to have significantly higher levels of peer antisocial influence when compared to solo offenders. This was demonstrated at months 12, 18 and 48; greater variance was found in regard to influence rather than behaviour.

Exposure to Violence

Table 4.51

Mean scores For Exposure to Violence (total score witnessed plus victim)

Wave and Style	Age Range	N	M	SD
Baseline	14-19			
Solo		6	4.83	2.79
Co		206	4.93	2.92
Mixed		829	5.92	2.93
6 months	14-20			
Solo		181	1.30	1.47
Co		198	1.97	2.06
Mixed		239	2.92	2.44
12 months	15-20			
Solo		167	1.44	1.54
Co		200	1.68	2.01
Mixed		184	3.02	2.22
18 months	15-21			
Solo		158	1.19	1.54
Co		178	1.83	1.93
Mixed		149	2.97	2.33
24 months	16-21			
Solo		136	1.29	1.73
Co		169	1.30	1.66
Mixed		143	2.66	2.35
30 months	16-22			
Solo		137	1.33	1.56
Co		128	1.52	1.76
Mixed		122	2.60	2.17
36 months	17-22			
Solo		140	1.10	1.54
Co		135	1.49	1.77
Mixed		121	2.39	2.34
48 months	18-23			
Solo		156	1.69	1.94
Co		134	1.84	2.31
Mixed		157	2.94	2.50
60 months	18-24			
Solo		179	1.53	1.91
Co		105	1.94	2.21
Mixed		132	2.97	2.45
72 months	20-25			
Solo		169	1.47	1.75
Co		104	1.73	2.00
Mixed		120	2.76	2.23
84 months	20-26			
Solo		159	1.44	1.79
Co		100	1.86	1.89
Mixed		92	2.54	2.25

Mixed style offenders had the highest mean scores for all waves of data and solo offenders the lowest (Table 4.51).

A one way between groups analysis of variance was conducted to explore the relationship between offending styles and exposure to violence. Participants were divided into three groups: solo, co and mixed style offenders. Significant variance between groups was found for all waves of data; the effect size was small for the baseline and final wave; medium for months 30, 48 and 60 (Tables 4.52 and 4.53); and large for months 6 to 24 (Table 4.52).

Table 4.52
Summary of ANOVA For Exposure to Violence (total score witnessed plus victim)

	Sum of Squares	df	Mean Square	F	*p*	Eta Squared
Baseline						
Between groups	167.89	2	83.94	9.81	.000***	.02*
Within groups	8880.65	1038	8.56			
Total	9048.53	1040				
6 months						
Between groups	279.09	2	139.54	35.98a	.000***	.10***
Within groups	2645.81	405.42	4.30			
Total	2924.89	407.42				
12 months						
Between groups	260.69	2	130.34	31.76a	.000***	.11***
Within groups	2099.68	361.55	3.83			
Total	2360.37	363.55				
18 months						
Between groups	249.80	2	124.90	31.10a	.000***	.12***
Within groups	1829.80	307.41	3.80			
Total	2079.60	309.41				
24 months						
Between groups	180.68	2	90.34	19.33a	.000***	.10***
Within groups	1647.64	281.31	3.70			
Total	1828.32	283.31				
30 months						
Between groups	118.54	2	59.27	14.85a	.000***	.08**
Within groups	1295.51	246.36	3.37			
Total	1414.05	248.36				

a. Equal variances not assumed. Significance: * p<.05 ** p<.01 *** p<.001.
Effect size: *Small, **Medium, ***Large

Table 4.53

Summary of ANOVA For Exposure to Violence (total score witnessed plus victim)

	Sum of Squares	df	Mean Square	F	*p*	Eta Squared
36 months						
Between groups	111.61	2	55.81	13.32a	.000***	.07**
Within groups	1409.08	247.04	3.59			
Total	1520.69	249.04				
48 months						
Between groups	143.61	2	71.81	14.06	.000***	.06**
Within groups	2267.42	444	5.11			
Total	2411.04	446				
60 months						
Between groups	161.54	2	80.77	15.80a	.000***	.08**
Within groups	1944.17	235.16	4.71			
Total	2105.71	237.16				
72 months						
Between groups	121.70	2	60.85	13.99a	.000***	.07**
Within groups	1516.58	225.11	3.89			
Total	1638.28	227.11				
84 months						
Between groups	70.95	2	35.47	8.22a	.000***	.05*
Within groups	1318.05	194.00	3.79			
Total	1389.00	196.00				

a. Equal variances not assumed. Significance: * p<.05 ** p<.01 *** p<.001.

Effect size: *Small, **Medium, ***Large

Post hoc comparisons indicated that the mean score for mixed style offenders was significantly higher than that of solo offenders for months 6 to 84; and significantly higher than the mean score for co-offenders from the baseline to month 72 (Tables 4.54 to 4.56).

Table 4.54
Tukey HSD Comparison For Exposure to Violence (total score witnessed plus victim)

					95% Confidence Interval	
Age Range	Offend Style A	Offend Style B	Mean difference (A-B)	Std. Error	Lower Bound	Upper Bound
14-19	**Baseline**					
	solo	co	-0.09	1.21	-2.94	2.75
		mixed	-1.09	1.20	-3.90	1.72
	co	solo	0.09	1.21	-2.75	2.94
		mixed	-0.99*	0.23	-1.53	-0.46
	mixed	solo	1.09	1.20	1.72	3.90
		co	0.99*	0.23	0.46	1.53
14-20	**6 months**[a]					
	solo	co	-0.67*	0.18	-1.10	-0.24
		mixed	-1.62*	0.19	-2.07	-1.17
	co	solo	0.67*	0.18	0.24	1.10
		mixed	-0.95*	0.22	-1.46	-0.44
	mixed	solo	1.62*	0.19	1.17	2.07
		co	0.95*	0.222	0.44	1.46
15-20	**12 months**[a]					
	solo	co	-0.24	0.19	-0.67	0.20
		mixed	-1.57*	0.20	-2.05	-1.10
	co	solo	0.24	0.19	-0.20	0.67
		mixed	-1.34*	0.22	-1.85	-0.83
	mixed	solo	1.57*	0.20	1.10	2.05
		co	1.34*	0.22	0.83	1.85
15-21	**18 months**[a]					
	solo	co	-0.64*	0.19	-1.08	-0.19
		mixed	-1.78*	0.23	-2.32	-1.25
	co	solo	0.64*	0.19	0.19	1.08
		mixed	-1.15*	0.24	-1.71	-0.58
	mixed	solo	1.78*	0.23	1.25	2.32
		co	1.15*	0.24	0.58	1.71

a. Games-Howell Comparison. * $p < 0.05$

Table 4.55

Tukey HSD Comparison For Exposure to Violence (total score witnessed plus victim)

Age Range	Offend Style A	Offend Style B	Mean difference (A-B)	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
16-21	**24 months**[a]					
	solo	co	-0.02	0.20	-0.48	0.45
		mixed	-1.37*	0.25	-1.95	-0.79
	co	solo	0.02	0.20	-0.45	0.48
		mixed	-1.36*	0.23	-1.91	-0.80
	mixed	solo	1.37*	0.25	0.79	1.95
		co	1.36*	0.23	0.80	1.91
16-22	**30 months**[a]					
	solo	co	-0.19	0.21	-0.67	0.30
		mixed	-1.27*	0.24	-1.83	-0.71
	co	solo	0.19	0.21	-0.30	0.67
		mixed	-1.08*	0.25	-1.67	-0.49
	mixed	solo	1.27*	0.24	0.71	1.83
		co	1.08*	0.25	0.49	1.67
17-22	**36 months**[a]					
	solo	co	-0.39	0.20	-0.86	0.08
		mixed	-1.29*	0.25	-1.88	-0.70
	co	solo	0.39	0.20	-0.08	0.86
		mixed	-0.90*	0.26	-1.52	-0.28
	mixed	solo	1.29*	0.25	0.70	1.88
		co	0.90*	0.26	0.28	1.52
18-23	**48 months**					
	solo	co	-0.15	0.27	-0.78	0.47
		mixed	-1.25*	0.26	-1.85	-0.65
	co	solo	0.15	0.27	-0.47	0.78
		mixed	-1.10*	0.27	-1.72	-0.47
	mixed	solo	1.25*	0.26	0.65	1.85
		co	1.10*	0.27	0.47	1.72

a. Games-Howell Comparison. * $p < 0.05$

Table 4.56
Tukey HSD Comparison For Exposure to Violence (total score witnessed plus victim)

Age Range	Offend Style A	Offend Style B	Mean difference (A-B)	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
18-24	**60 months**[a]					
	solo	co	-0.42	0.26	-1.03	0.19
		mixed	-1.45*	0.26	-2.05	-0.84
	co	solo	0.42	0.26	-0.19	1.03
		mixed	-1.03*	0.30	-1.74	-0.31
	mixed	solo	1.45*	0.26	0.84	2.05
		co	1.03*	0.30	0.31	1.74
20-25	**72 months**[a]					
	solo	co	-0.26	0.24	-0.82	0.30
		mixed	-1.29*	0.24	-1.86	-0.71
	co	solo	0.26	0.24	-0.30	0.82
		mixed	-1.03*	0.28	-1.69	-0.36
	mixed	solo	1.29*	0.24	0.71	1.86
		co	1.03*	0.28	0.36	1.69
20-26	**84 months**[a]					
	solo	co	-0.42	0.24	-0.98	0.14
		mixed	-1.10*	0.27	-1.75	-0.45
	co	solo	0.42	0.24	-0.14	0.98
		mixed	-0.68	0.30	-1.39	0.03
	mixed	solo	1.10*	0.27	0.45	1.75
		co	0.68	0.30	-0.03	1.39

a. Games-Howell Comparison. * $p < 0.05$

Mixed style offenders scored consistently and significantly higher than both solo and co offenders for exposure to violence. Their exposure to violence is therefore greater than the variance that was found in Study 3. Mixed style offenders scored significantly higher than solo offenders at the baseline and for months 6, 12, 18, 24, and 48; and higher than co-offenders for the first three waves.

Discussion

Present Study

The present study aimed to investigate the relationship between psychological and social risk factors to style of offending and to explore whether patterns changed as the sample aged. Study 3 found that mixed style offenders committed significantly more total offences than their solo and co-offending counterparts. The present study therefore sought to consider whether there were differences in the risk factors associated with persistent offending.

Psychological development

The ability of mixed style offenders to resist the influence of their delinquent peers relates to impulse control, and prior findings that individuals with low levels of impulse control may be drawn to similar peers (McGloin, et al., 2009). Temperance, which combined the scores for impulse control and suppression of aggression was significantly lower for mixed style offenders compared to both other groups from months 6 to 84, and additionally than co-offenders at the baseline (Tables 4.7 to 4.9). Effect sizes were medium for months 18 to 48, perhaps suggesting that specific ages may play a role in this risk factor (Table 4.5 to 4.6). Less consistent were the significant differences for consideration of others; although again mixed style offenders had the lowest mean scores (Tables 4.10 to 4.12). These findings concur with the higher levels of offending for mixed style offenders in the group and research that has demonstrated that lower levels of temperance are associated with higher levels of offending (Steinberg, et al., 2015). The only significant difference that was found between the mean scores for temperance for solo and co-offenders was at month

48, when solo offenders scored significantly higher. These findings do not confer with previous research, which suggested that low impulse control was associated with increased group offending (Hirschi & Gottfredson 2000; McGloin et al., 2008). The reason for the discrepancy is likely on account of the omittance of a category of mixed style offenders in the samples.

Psychosocial maturity (Tables 4.13 to 4.15), on the other hand, was only significantly lower for mixed style offenders for months 6, 8, 24 and 36, when the sample had a mean age of between 16.59 (*SD* = 1.15, range between 14 and 20) and 19.04 (SD = 1.16, range between 17 and 22). The findings for psychosocial maturity do not accord with previous research on the delayed psychosocial maturation for some individuals into their twenties (Steinberg, 2010). However, they may suggest that socio-emotional development can be delayed. The final psychological measure was for future orientation; here mixed style offenders scored lower than solo and co-offenders at months 12 and 36, and additionally, than solo offenders at month 30. Solo offenders scored significantly lower than co-offenders at the baseline; however, it should be noted the numbers were very low for the former group.

Psychopathy

Mixed style offenders consistently had a significantly higher mean scores for total psychopathy than solo offenders, from month 6 to 84; and significantly higher mean scores than co-offenders for all waves except for month 72 (Tables 4.22 to 4.24). However, all of the effect sizes were small with the exception of month 36, which was medium (Tables 4.20 to 4.21). It is also noteworthy that solo offenders scored more highly than co-offenders for all waves of data, although not significantly so. These findings, alongside the higher levels of overall offending, and significant differences to solo offenders, suggests that the

three styles of offender form distinct groups. The findings do not accord with those from the study of Goldweber et al. (2011) using the same data set, which found that increasingly solo offenders presented fewer psychopathic traits than those who only offended with others. Although the mean scores for solo offenders were lower than their co-offending counterparts, no significant variance was found. The reason for this discrepancy can be explained by the methodology, because Goldweber and colleagues (2011) concentrated their investigation on exclusively and increasingly solo offenders rather than contemporaneous style groups. Their study also followed individual trajectories rather than investigating groups across time. Since Study 2 indicated that mixed style offenders commit significantly more offences and continue to have a higher mean score into early adulthood, the results do not support a previous study, which found the association between criminality and high psychopathic scores was age limited to adolescence (Dyck et al., 2013).

Higher impulsive irresponsible traits would be expected for the present sample overall, because having committed a felony offence was a criterion for inclusion in the study. Mixed style offenders were found to score significantly higher for the irresponsible-impulsive dimension than both solo and co-offenders for 9 out of 10 waves of data (Tables 4.37 to 4.38). This finding concurs with the higher levels of the antisocial behaviour, as manifested in the higher levels of total offending, that were found in Study 3.

The callous-unemotional dimension falls under the factor 1 affective facet. Here, mixed style offenders scored significantly higher than solo offenders for all waves of data and than co-offenders for 8 out of the 10 waves (Tables 4.32 to 4.33). This accords with findings that this trait is associated with higher levels of anti-social behaviour in adjudicated youth (Caputo et al., 1999; Silverhorne et al.,

2001). Fewer significant results were found for the interpersonal traits of the grandiose-manipulative dimension; mixed style offenders scored significantly higher than solo offenders for 7 out of 10 waves, and higher than co-offenders for 3 waves (Tables 4.27 to 4.28).

Although both total and individual dimensional scores demonstrated that mixed style offenders are more psychopathic than their solo and co-offending counterparts, the findings support the hypothesis that some elements of psychopathy may be dynamic in nature. At the baseline, 829 participants reported mixed style offending (81.9% for gang affiliated and 79.1% for non-gang members). The total score PCL-YV was only available for the baseline, when mixed style offenders scored significantly higher than co-offenders. However, many of these participants changed their subsequent styles and so if psychopathy were static fewer significant results would be expected as these individuals moved to a new style. These findings are in accordance with the suggestion that psychopathy should be treated as a dynamic risk factor (Gendreau et al., 1996), but the findings did find distinct patterns for factor 1 and factor 2 traits (Dhingra et al., 2015). Not all antisocial youth are psychopathic, and there are other risk factors - for example, delinquent peers - which may lead to this type of behaviour (Frick & Marsee, 2006). This finding is important both in terms of identifying higher risk offenders and also in the design of offending interventions. That there was no significant difference found between solo and co-offenders is also notable, because traditionally co-offending is seen as a risk factor, especially for youth. If authorities were able to determine adolescent and young adult offenders who demonstrate autonomy and flexibility in their criminal style, interventions could be targeted and tailored towards this particular group.

The findings from this study may also explain the dynamic nature of psychopathy in regard to gang membership that was noted in Study 2. Current gang members were found to score significantly higher than prior gang members consistently for callous unemotional and impulsive irresponsible traits, suggesting that these traits are dynamic. However, the pattern of variance for the last three years of the study suggested that prior gang members maintain a higher level of impulsive and irresponsible characteristics, but less so than those who were currently gang affiliated. As noted in Study 3, the preferred style of offending for gang members was mixed for the first ten waves of the study. It is, therefore, possible that mixed style offenders are drawn to gangs for the reason that membership can be seen as a way to enhance criminal opportunities and the normalisation of delinquent behaviour. It could be equally plausible that those who maximise their offending by adapting their style would leave a gang if membership did not benefit opportunities to offend.

Social Risk Factors

Significant differences were found between solo and co-offenders for delinquent behaviour of peers at month 18 (Table 4.42); and for influence at months 6, 12, and 36 (Tables 4.48 and 4.49). Mixed style offenders, on the other hand, scored significantly higher than co-offenders for all waves of data and solo offenders between months 6 and 84 for antisocial behaviour of peers (Tables 4.42 to 4.44). For antisocial influence of peers, mixed style offenders scored significantly higher than solo offenders between months 6 and 84; and likewise, than co-offenders except for the baseline and month 60 (Tables 4.48 to 4.50). The effect sizes were medium and large for peer antisocial behaviour for nine out of the eleven waves (Tables 4.40 and 4.41), and medium for peer antisocial influence

for six waves of data (Tables 4.46 and 4.47). Although higher levels of offending have been associated with antisocial peers, especially within the gang literature (Battin et al., 1998; Curry et al., 2014), it has been suggested that serious persistent offenders are more influenced by neurological deficits than peers (Moffitt, 1993; Rutter, 1997). The findings for resistance to peer influence for the present study support the notion that although mixed style persistent offenders have more delinquent peers in their social networks, they may not necessarily be influenced by them regarding their own offending. The resistance to peer influence scores were only significantly lower for mixed style offenders at month 48. Nevertheless, access to networks of delinquent peers is necessary for successful co-offending (Warr, 2002). If mixed style offenders are versatile and not always dependent upon others to offend, the degree of influence that peers have should - theoretically - be inconsequential. This may be explained by the findings in Study 3, which relate to the total offending scores being higher for all waves of data, but the scores for acquisitive only at the baseline and month 84, and aggressive offending only up to 48. It is possible that mixed style offenders have a larger and more influential network of delinquent peers who influence the group aspects of their offending, or perhaps influence crime that is ultimately committed alone.

In regard to exposure to violence, although Study 3 revealed that mixed style offenders in the present sample scored significantly higher for total offences for all waves of data, the significant differences in their aggressive offending was limited to the first half of the study. Nevertheless, mixed style offenders witnessed and were victims of significantly higher levels of violence than solo and co-offenders between months 6 and 72, and additionally for solo offenders at month 84 and co-offenders at the baseline (Tables 4.54 to 4.56); it is worth noting that

for eight out of nine of these occasions, the effect sizes were medium (Tables 4.52 and 4.53). A general pattern of solo offenders experiencing less violence than co-offenders was found, which is consistent with the literature (Carrington, 2002). However, these results were only significantly different at months 6 and 18.

Offending Style vs Gang Membership

The highlighted cells in Table 4.57 show the waves of data where current gang members and mixed style offenders scored significantly higher for negative risk factors or lower for protective risk factors than at least one of the other relevant groups. The most striking difference is the resistance to peer influence measure; current gang members had lower levels whereas this protective risk factor showed no patterns of variance dependent upon offending style. The other notable differences were for the final four waves of data, where current gang members continued to have lower levels of future orientation, psychosocial maturity and grandiose- manipulative traits. Mixed-style offenders by comparison showed no variance for these factors from month 48 onwards. Nevertheless, the patterns of variance were similar and show that many of the same risk factors are shared by mixed style offenders and gang members. There were, of course overlaps, in the two categories because the majority of gang members were also mixed style offenders. However, what the present study demonstrates is that offending style has a relationship to increased criminogenic risk factors. This finding is extremely important when considering the appropriate interventions for adolescents and young adults who offend.

Table 4.57

Patterns of Significant Variance For Current Gang Members and Mixed Style Offenders

Gang Status	BL	6	12	18	24	30	36	48	60	72	84
Future Orientation											
Temperance											
Consider. Others											
PSMI											
Resistance to Peers											
Psychopathy Total											
Psychopathy G-M											
Psychopathy. C-U											
Psychopathy I-I											
Peer Behaviour											
Peer Influence											
Exposure Violence											
Offending Style	BL	6	12	18	24	30	36	48	60	72	84
Future Orientation											
Temperance											
Consider. Others											
PSMI											
Resistance to Peers											
Psychopathy Total											
Psychopathy G-M											
Psychopathy. C-U											
Psychopathy I-I											
Peer Behaviour											
Peer Influence											
Exposure Violence											

Interactional Theory

Table 3.4 showed that the preferred style of offending for gang members was mixed style for the first ten waves of data and solo for the final wave; thus, suggesting a degree of autonomy in offending style. However, non-gang affiliated participants were also found to vary their offending style and so the present study sought to analyse the same traits as Study 2, which found that current gang membership was associated with higher negative psychological and social risk factors. The present study demonstrated a similar pattern to that of current gang members, with the main variance found between mixed style offenders and their

solo and co-offending counterparts. The only exception to this, was resistance to peer influence; whereas current gang members were found to have significantly lower levels of resistance (Tables 2.26 to 2.28), no pattern of significant difference emerged for mixed style offenders (Tables 4.17 and 4.18). Mixed style offenders, irrespective of gang membership scored significantly higher on a number of other negative risk factors. This finding therefore lends further support to the Enhancement Model (Battin, Hill, Abbott, Catalano, & Hawkins, 1998; Battin-Pearson, Thornberry, Hawkins, & Krohn, 1998), because it demonstrates that individuals who adapt their offending style have a distinct psychological profile in respect to lower temperance, higher levels of psychopathy and also higher levels of peer antisocial influence and behaviour than solo and co-offenders.

Limitations

Categorisation of offending style was self-reported by participants, who were asked if they were accompanied when they last committed each offence. If participants did not have a consistent offending pattern, then it is possible that they may have been incorrectly categorised when the dummy variable was created. This is an accepted methodology (Goldweber et al., 2011); however, it is necessary to acknowledge the potential that some solo or co-offenders should have been categorised as mixed style. Another limitation was that if data was missing for any of the offence categories, a participant was removed from the analysis, thus restricting the sample size. Finally, there was a disproportionate number of mixed style offenders reported at the baseline interview, which was atypical of subsequent waves of data.

Future Research

The present study has indicated that mixed style offenders differ significantly from their solo and co offending counterparts in regard to both psychopathy levels and social dynamics, and some psychosocial risk factors. However further research to better understand the relationship between these characteristics and choice of offending style would greatly enhance an understanding of how they relate. An analysis of the narrative roles of young people who offend in different styles would enable researchers to obtain a clearer understanding of the individual risk factors in regard to the individual and the group. The relationship between psychological and social risk factors could also be explored further with a binary logistic regression analysis.

Conclusion

Mixed style offenders scored significantly higher on negative psychological traits and significantly lower on psychosocial and socio-emotional factors which are associated with increased offending and delinquency. That variance between mixed and co style offenders was consistently found in these areas is important, given the prior concentration of research on solo versus co-offending styles. There were no consistently significant differences or patterns for solo and co-offenders, which does not accord with literature on offending styles. However, the findings of contemporaneous mixed style offending do support previous studies that show a trajectory of mixed style offending over time for persistent recidivists (Reiss & Farrington, 1991; Zimring, 1981). The present studies would suggest that this group may be identifiable sooner than proposed.

STUDY 5

THE RELATIONSHIP BETWEEN PSYCHOLOGICAL AND SOCIAL RISK FACTORS TO DESISTANCE FROM OFFENDING

Introduction and Aims of Study

Gang Membership, Peers and Desistance

There is no academic consensus on measuring or defining desistance (Brame, Bushway, & Paternoster, 2003; Lussier, McCuish, & Corrado, 2015). The desistance process includes changes in behaviours and attitudes (Weaver, 2014). For some offenders aging has a strong relationship to the cessation of their involvement with crime (Farrington, Loeber, & Joliffe, 2008; Gottfredson & Hirschi, 1990; McNeill & Maruna, 2007; Moffitt, 1993; Warr, 2002). This is because the process involves the age-specific development of key psychological and social risk factors, as an individual moves from adolescence to early adulthood. There is a general consensus among researchers that membership of a delinquent group, whether in the form of a gang or in the company of delinquent peers, can negatively influence both the development and maintenance of psychological risk factors that are associated with delinquency (Curry, Decker, & Pyrooz, 2014; Warr, 2002; Wood, 2014).

Many studies have shown an association between gang membership and offending (Decker, Melde, & Pyrooz, 2013; Melde & Esbensen, 2014; Pyrooz, Turanovic, Decker, & Wu, 2016; Thornberry, Krohn, Lizotte, Smith, & Tobin, 2003). However, gang membership can be viewed as a dynamic risk factor. Research has indicated that most gang members leave between one and two years after joining (Bolden, 2012; Carson, Peterson & Esbensen, 2013; Decker, 1996; Decker & Lauritsen, 2002; Esbensen & Huizinga, 1993; Thornberry et al., 1993). Even for those who remain, their involvement may not be uniform or consistent (Bolden, 2012 and 2013; Pyrooz, Sweeten, & Piquero, 2013). Researchers using

data from the Rochester Youth Development Study and Netherlands NSCR School Study found that among both cohorts 75% of members left the gang within the first year of joining (Weerman, Lovegrove, & Thornberry, 2015). The relationship between gang membership, and other psychological/social risk factors to offending desistance is not straightforward (Obrien, Daffern, Chu, & Thomas, 2013). However, leaving the gang does not necessarily result in a decrease in offending and nor do all prolific offenders belong to a gang (Ashton, Ioannou, & Hammond, 2018; Sweeten, Pyrooz, & Piquero, 2013).

Within the gang desistance literature two procedures emerge: (1) A gradual process of disengagement (Bushway, Thornberrry, & Krohn, 2003; Pyrooz & Decker, 2011; Vigil, 2010); (2) a sudden separation from the people, the environment and associated criminal behaviours, known as 'knifing off' (Maruna & Roy, 2007). Gang research has found evidence of both practices amongst former members (Decker & Lauritsen, 2002; Jankowksi, 1991; Pyrooz, Decker, & Webb, 2010). These desistance pathways are reported by general populations of offenders (Maruna, 2000).

Researchers using the PTDS data observed that recidivism rates were highest during the early phases of the study (Mulvey, Steinberg, Piquero, Besana, Fagan, Schubert, & Cauffman, 2010). As individuals move from late adolescence into early adulthood their involvement in crime decreases (Farrington, 1986; Farrington, Loeber, & Joliffe, 2008; Hirschi & Gottfredson, 1983; Piquero, 2008). The desistance path influences the extent to which an individual disengages with the gang and also criminal activities. However, joining and leaving a gang are not the same processes. Joining a gang has been found to create a change in attitude which then impacts on socially embedded controls that make delinquent behaviour and criminal involvement acceptable to individuals (Melde &

Esbensen, 2011). A meta-analysis of research on the relationship between gang membership and offending found that although the association was supported, the relationship became less robust when taking confounding variables into account in more complex models and analysis of data (Pyrooz, Turanovic, Decker, & Wu, 2016).

Changes in attitudes or behaviours do not automatically revert when an individual disengages with a gang (Decker & Lauritsen, 2002; Pyrooz et al., 2010). More recently researchers have begun to attempt to understand the risk factors associated with gang membership rather than treat gang involvement per se as a criminogenic risk (Obrien, Daffern, Chu, & Thomas, 2013). This research design is important given the co-occurrence of key social risk factors such as peer delinquency, with more general groups of juvenile offenders (McGloin & Stickle, 2011; Patterson, 1982 and 1995; Warr, 2002).

Gang membership has been found to be a risk factor for delinquency beyond the association of delinquent peers (Battin, Hill, Abbott, Catalano, & Hawkins, 1998; Battin-Pearson, Thornberry, Hawkins, & Krohn, 1998). Researchers using longitudinal data from the Rochester Youth Developmental Study found that although gang membership and peer delinquency were associated, they followed separate risk trajectories (Dong & Krohn, 2016). Gang membership was found to be associated with violent offending, over peer delinquency. Other studies have found unique risk predictors for violent offences, but not gang membership (Esbensen, Peterson, Taylor, & Freng, 2009); a further indication of the complex relationship between violence and gangs, which is often assumed (Esbensen, Peterson, Freng, & Taylor, 2002). Esbensen and colleagues (Esbensen et al., 2009) found that a greater number of cumulative factors resulted in an individual joining a gang as opposed to committing violent crimes.

An analysis of offending frequency and variety of the PTDS data supported the association between peer delinquency and antisocial behaviour (Monahan & Piquero, 2009). The study demonstrated higher levels of both peer antisocial behaviour and influence for persistent and varied offenders in the sample. The authors also found that members of the sample with greater resistance to peer influence were also more likely to desist earlier in the study. Resistance to peers has been shown to be age specific. Another study using the same data (Monahan, Steinberg, & Cauffman, 2009) found that resistance to peer influence only moderated peer antisocial behaviour until the age of 20 years. Using data from multiple studies, researchers found that the ability to resist peers has been found to peak during the ages of 14 and 18 (Steinberg & Monahan, 2007). These findings have implications for the impact of delinquent peers during early adulthood. A meta-analysis of data from studies that investigated gang membership and offending frequencies concluded that there is a strong relationship between the two (Pyrooz, Turanovic, Decker, & Wu, 2016). However, the authors concluded that future research should investigate the relationship between gang membership and other negative psychological and social risk factors.

Using data from the first two waves of the PTDS data, Walters (2016b) found that moral disengagement and offending behaviour mediated the selection of delinquent peers. High correlation led the author to combine the peer antisocial influence and behaviour scales. It is, therefore, not clear whether the two scales make an equal contribution to predicting recidivism. Resistance to peer influence was also neglected in this study; an important factor because higher levels of resistance could influence the extent to which an individual can be influenced by even the most delinquent peers. Researchers have also suggested that the

relationship between peer delinquency and delinquent behaviour is not necessarily straightforward (Matsueda & Anderson, 1998) and that confounding variables, such as self-control can override the influence of peers. It is also noteworthy that research on the relationship of peer delinquency to offending has largely been limited to adolescent samples (Schroeder, Giordano, & Cernkovich, 2007).

Psychological and Social Risk Factors

Steinberg and Cauffman's (1996) model of psychosocial development recognises three discreet factors: temperance (impulse control and suppression of aggression); perspective (consideration of others and future orientation); and responsibility (personal responsibility and resistance to peers). The relationship of these risk factors to adolescent offending is well documented in the research (Cauffman & Stein, 2000; Monahan, Steinberg, Cauffman, & Mulvey, 2013). Researchers who studied a sample of court referred youth as part of a community programme suggested that lower levels of anger and impulse control, and empathy may be associated with recidivism (Balkin, Miller, Richard, Garcia, & Lancaster, 2011). Variance has been found in samples of offenders; individuals with lower levels of self control have been found to commit more crimes (DeLisi, 2001a and 2001b; Longshore & Turner, 1998). A study exploring the levels of self-control in a sample containing both persistent and non-career criminals found that low self-control was a significant predictor for continued offending (DeLisi & Vaughn, 2008). However, as a risk factor, self-control in children and adolescents has been found to increase in response to targeted interventions (Piquero, Jennings, & Farrington, 2010). It has also been found to interact to other key risk and protective factors (Pratt, 2016).

Also relevant is the finding that the majority of adolescent offenders desist after they reach adulthood (Laub & Sampson, 2001; Piquero, 2008; Sampson & Laub, 2003). Moffitt (1993) hypothesised two distinct offending trajectories of adolescent specific and life course persistent, suggesting that chronic persistent offending is the result of neuropsychological deficits rather than environment or peers. An exploration of the key developmental and social risk factors associated with this phenomenon was undertaken using the PTDS data (Sweeten, Piquero, Steinberg, 2013). The authors concluded that desistance was the result of cumulative and simultaneous changes that occur in early adulthood. The authors demonstrated that peer influence and delinquency, gang embededness, and lower resistance to peer influence were strongly associated with recidivism. Study 2 of the present thesis demonstrated that when psychological risk factors were investigated according to gang membership, they were different to previous studies that had categorised their sample according to level of embededness. The present study seeks to inform interventions and given the complexity in establishing level of embededness, it will investigate gang membership status as a predictor in a model of desistance. Another study of a UK school sample (Alleyne & Wood, 2014) found that deviant peer pressure was not a direct predictor of gang involvement. In contrast, a study of youth who had been referred by the justice system for community mental health treatment found that peer deviance and risk taking contributed to a model to predict gang involvement (Boxer, Veysey, Ostermann, & Kubik, 2015). However, risk taking can result from higher levels of the impulsive irresponsible dimension of psychopathy and lower levels of impulse control. The discrepancy in the findings of these two studies may be on account of the differences in samples, namely adjudicated and school.

Psychosocial factors such as temperance and psychosocial maturity also made significant contributions to their model of age specific change and desistance. Although traditionally self-control has been associated with a number of environmental factors (Gottfredson & Hirschi, 1990; Buker, 2011), researchers have more recently found that neuropsychological deficits are associated with low levels of control in children (Beaver, Wright, & Delisi, 2007). Levels of psychosocial maturity typically increase for both crime desisters and recidivist as they age; however, some individuals have been found to continue to mature into their mid-twenties (Monahan, Steinberg, Cauffman, & Mulvey, 2013). The authors of this study also found that recidivists and late desisters had significantly lower levels of psychosocial maturity than those who ceased their antisocial and criminal behaviour at an earlier age; thus lower levels of psychosocial maturity during adolescence may be a longer-term predictor of recidivism. It has been posited by some researchers that self-control is dependent upon moral decision making processes in response to a particular situation and is thus dynamic and influenced by confounding risk factors (Wikström & Treiber, 2007). Self-control is also responsive to interventions (Piquero, Jennings, & Farrington, 2010).

Psychopathy

The extent to which psychopathy is static or dynamic remains open to question. The characteristics manifested in psychopathy appear to be genetically determined and seem to be relatively stable (Larsson, Tuvblad, Rijsdijk, Andersher, Grann, & Lichtenstein, 2007). This has not prevented some researchers from categorising psychopathic traits as a dynamic risk factor, alongside personality disorders (Gendreau, Little, & Goggin, 1996). Other researchers have made a distinction between primary and secondary psychopaths,

concluding that Factor 2 traits (criminal versatility, impulsivity, antisocial behaviour) are behavioural and therefore dynamic and more prone to change, but Factor 1 traits (shallow effect, superficial charm, manipulative behaviour, and lack of empathy) are relatively static (Cauffman, Skeem, Dmitrieva, & Cavanagh, 2016; Dhingra, Debowska, Sharratt, Hyland, & Kola-Palmer, 2015). Psychopathic traits emerge in childhood or adolescence and have been associated with increased aggressive and non-violent behaviours (Forth, 1995; Forth & Mailloux, 2000). However, not all violent offenders are psychopathic (Hare & Hare, 1989).

Children exhibiting high levels of delinquency can also be explained by conduct disorder (American Psychiatric Association, 2013; Frick & Marsee, 2006) and oppositional defiant disorder (American Psychiatric Association, 2013; Salekin, 2006). There is a distinct sub-category of children and adolescents with conduct disorder who show callous and unemotional traits and typically demonstrate high levels of thrill seeking behaviour (American Psychiatric Association, 2013; Frick, Bodin, & Barry, 2000). However, a key distinction between behavioural disorders and psychopathy remains the interaction between interpersonal and affective traits (Frick & Marsee, 2006). More than other psychopathic traits, callousness and unemotionality are associated with high levels of anti-social behaviours amongst incarcerated youth (Silverthorne, Frick, & Reynolds, 2001) and general populations of adolescents (Frick & Marsee, 2006). Researchers found that high levels of callous-unemotional traits were associated with an increase in violence and substance use, while controlling for environmental factors (Baskin-Sommers, Waller, Fish, & Hyde, 2015). Empathy has also been found to be a protective risk factor against involvement in criminal activities (Morgado & Vale-Dias, 2013). In a study on the relationship between peer delinquency and psychopathy, the authors (Kerr, Van Zelk, & Stattin, 2012)

question how the three dimensions of psychopathy (Cooke & Michie, 2001) might influence interactions with others in offending groups. The study found that individuals who scored highly on the callous-unemotional and grandiose manipulative dimensions had a greater influence over others and higher resistance to peer influence.

There has been relatively little research on the relationship between gang membership and psychopathy. Neither Factor 1 (selfish, remorseless and exploitative traits) or Factor 2 (unstable and antisocial lifestyle) of the PCL-YV scale contributed to a model of gang re-engagement in an analysis of the PTDS data (Boduszek, Dhingra, & Hirschfield, 2015). These findings were not consistent with prior research, which found an association between psychopathy and gang involvement (Chu, Daffern, Thomas, Ang, & Long, 2014; Valdez, Kaplan, & Codina, 2000). In another study using the same data, researchers found that psychopathy, gang membership, exposure to violence, and factors 1 and 2 made a contribution to a model to predict moral disengagement (Dhingra, Debowska, Sharratt, Hyland, & Kola-Palmer, 2015); age and gender were also found to be significant contributors. However, both of these studies used data from the PTDS baseline; a wave that is atypical of subsequent points of data collection.

Exposure to Violence

A study of young offenders who were participating in a drug programme found that although current and prior gang members were more likely to become victims of violent victimisation than those who had never been affiliated, gang membership alone did not predict victimisation (Katz, Webb, Fox, & Shaffer, 2010). The authors suggested that associated risk factors such as routine activities

and neighbourhood also influenced the level of victimisation an individual experienced. This study did not take account of individual characteristics such as impulsivity, which have been found to have a relationship to offending (Masten & Cicchetti, 2010; Piquero, Daigle, Gibson, Piquero, & Tobbetts, 2007). Violence, both within and between gangs is well documented in research (Decker & Van Winkle, 1996; Van Winkle, 1996). However, the relationship between gang membership and violent victimisation is not straightforward (Taylor, Peterson, Esbensen, & Freng, 2007). Taylor and colleagues (2007) found that when other factors were controlled for, gang involvement protected its members from violent victimisation. The authors suggest that increased violent victimisation may be explained by other factors that are associated with being in a gang, but not membership alone. More generally, A study on risk factors associated with homicide using the PTDS data found exposure to violence to be a predictor (DeLisi, Piquero, & Cardwell, 2016).

Substance Use

Substance use has been found to be a strong predictor of recidivism (Dowden & Brown, 2002) through the association of the user with marginalisation and embededness with other users and drug subcultures (Schroeder et al., 2007). Some studies have reported higher levels of substance use amongst gang members (Fagan, 1989; Gatti, Tremblay, Vitaro, & McDuff, 2005), longitudinal studies with samples of delinquent youth who are both gang and non-gang associated have found this relationship not to be consistent across all gangs or members and the relationship to be a complex one (Bjerregaard, 2010). Researchers found that there was an association between substance use and increased victimisation in a sample of urban youth (Pinchevsky, Fagan, & Wright,

2014). However, some research has indicated that drug use remains at the same rates for individuals pre and post gang involvement (Esbensen & Huizinga, 1993; Thornberry et al., 1993), suggesting a relationship between the individual and continued delinquency.

More broadly, substance use has been associated with a number of psychological risk factors. Chassin and colleagues using data from the PTDS (Chassin, Dmitrieva, Modecki, Steinberg, Cauffman, Piquero… Losoya, 2010) found a relationship between smoking marijuana and lower levels of psychosocial maturity, when compared to peers who did not use the drug. Research has also consistently indicated that substance use has a relationship to increased impulsivity (Colder & Chassin, 1997; Chassin et al., 2010; Feldstein Ewing, Filbey, Loughan, Chassin, & Piquero, 2015). Researchers using the PTDS data found that participants who desisted early in the study had lower levels of substance use than those who persisted (Monahan & Piquero, 2009). However, the additional finding of higher parental control for this group could be a confounding variable.

Another study using from the PTDS data explored the risk factors for a group who reported no criminal involvement between the baseline interview and final interview seven years later (Schubert, Mulvey, & Pitzer, 2016). Researchers found no significant differences in the social influence of peers or overall psychological development between a group of desisters and matched recidivists. The study was also inconclusive in its findings for relationship between substance misuse and desistance; with the authors suggesting that cessation of substance use may coexist with a decrease in delinquent peer groups (Schubert, Mulvey, & Pitzer, 2016).

Aims of Study

The primary aim of the present study was to investigate which psychological and social risk factors contributed to a model of desistance. Studies 2 and 4 of the present thesis indicated that significant variance was found for both social and psychological risk factors according to gang status and offending style. In light of age-related differences in the desistance process (Born, Chevalier, & Humblet, 1997), the present study investigated which of the risk factors contributed to reported offending desistance for each wave of data. Since 79.6% of the sample reported contemporaneously alone and with others (Table 3.2), it was decided not to include offending style as a predictor. The psychological risk factors that were tested in the model were: Psychopathy; psycho-social maturity; temperance; and resistance to peer influence. The social risk factors that were included were: Gang status (current, prior and never); peer antisocial influence; peer antisocial behaviour; exposure to violence; and substance use. A key question for the current research was understanding whether social or developmental risk factors should be targeted for future offending interventions, and whether the focus was different as the sample aged.

Method

Measures

The study investigated psychological development, by using the following measures: *Psychosocial Maturity Inventory* (Greenberger, Josselson, Knerr & Knerr, 1974); items in the PSMI are reverse coded so that higher scores indicate more responsible behaviour. *Resistance to Peer Influence* (Steinberg, 2000) measures the degree of autonomy that adolescents have when they are with their peers. Socio-emotional adjustment using the Temperance and Consideration of

Others scales from the *Weinberger Adjustment Inventory* (Weinberger & Schwartz, 1990). Temperance is a combined score of two separate scales: Impulse Control and Suppression of Aggression. Higher scores on each of the subscales indicates more positive behaviour (for example greater temperance and greater consideration for others).

The total scores for psychopathy were investigated using the *Youth Psychopathic Traits Inventory* (YPI; Andershed, Kerr, Stattin & Levander, 2002). For the purposes of the present study the three dimensions of psychopathy: Grandiose manipulative dimension, callous unemotional dimension, and impulsive irresponsible Dimension were reported.

The influence of peer delinquency was also investigated, using two scales. *The Peer Delinquent Behaviour* measure (Thornberry, Lizotte, Krohn, Farnworth & Jang, 1994) encompasses the antisocial behaviour and antisocial influence of peers. Finally, exposure to violence was investigated, using the *Exposure to Violence Inventory* (Selner-O'Hagan, Kindlon, Buka, Raudenbush & Earls, 1998). The present study used a combined total score for violence experienced as a victim and witnessed. Substance use was investigated using an existing substance abuse measure (Chassin, Rogosch & Barrera, 1991), which recorded the frequency of use of 10 different drug categories in the periods prior to each wave of data and provided a count of illegal items.

Gang membership was investigated using the *Gang Involvement* measure, (Elliot, 1990; Thornberry et al., 1994). For the purposes of the present study a variable for gang involvement during the recall period was created. For further details of all measures see the method section.

Study Design

The aim of the study was to investigate the impact of social and psychological risk factors that had been identified in the previous studies on reported desistance from crime. For the purposes of the present study desistance was defined as no self-reported offences during the period prior to each interview stage. This follows the empirical framework suggested by Bushway and collegues (Bushway, Piquero, Broidy, Cauffman, & Mazerolle, 2001) by focusing on the process of a change in offending frequencies over a period of time. It follows some of the recommendations by Farrington (2007), namely: the triangulation of self reported and official measures (Mulvey, Steinberg, Piquero, Besana, Fagan, Schubert, & Cauffman, 2010); measurement of risk factors; and repeated measures. The present study also adopted a developmental approach, as recommended by Mulvey and colleagues (Mulvey, Steinberg, Fagan, Cauffman, Piquero, Chassin, L., . . . Losoya, 2004). The sample was divided into those who reported offending and those did not for the individual waves of data. Each wave of data was considered separately in order to investigate the impact of risks for a single period of time and to explore whether the risk factors changed as the sample aged. The study omitted the baseline because the three psychopathic dimensions were not available for this wave of data. Study 3 of the present thesis indicated differences between the three for offending styles and gang status, and thus by association offending frequencies.

Data Analysis

Direct binary logistic regression was performed from months 6 to 84 in order to investigate the relationship between psychological and social risk factors to reported desistance from offending. The sample was divided into two

categories: those who reported an offence during the interview period and those who had no offending. The impact of gang membership status, peer delinquent behaviour and influence, resistance to peer influence, temperance, psychosocial maturity, the three psychopathic dimensions (grandiose manipulative; callous unemotional, and impulsive irresponsible), exposure to violence, and substance abuse on the likelihood of reporting desistance from offending were investigated.

Results

Month 6

Descriptive statistics

Descriptive statistics for all continuous variables for month 6 are presented in Table 5.1 and the descriptive statistics for categorical variables are presented in Table 5.2.

Table 5.1

Descriptive Statistics For Independent Variables at 6 Months

Variable	N	Min	Max	M	SD
Peer influence	965	1.00	5.00	1.59	0.77
Peer behaviour	947	1.00	5.00	2.06	0.88
Peer resistance	976	1.20	4.00	3.03	0.57
PSMI	976	1.10	4.00	3.04	0.45
Temperance	976	1.00	4.80	2.88	0.81
YPI 1	831	12.00	80.00	41.03	11.64
YPI 2	831	7.00	58.00	34.13	6.84
YPI 3	831	15.00	60.00	36.26	8.11
Exposure to viol.	979	0.00	10.00	1.58	1.99
Substance use	979	0.00	9.00	0.68	1.24

Table 5.2

Descriptive Statistics For Categorical Variables at 6 Months

Variable	Frequency	%
Desister	362	36.90
Persister	618	63.10
Never in a gang	695	71.00
Currently in a gang	149	15.20
Previously in a gang	135	13.80

Binary Logistic Regression results for 6 months, age range 14-20 years

Table 5.3 shows the correlation between variables. Peer influence and delinquent behaviour had a moderate relationship, as did the three psychopathic dimensions; all other relationships were weak. Direct Binary logistic regression was performed to assess the impact of psychological and social risk factors on desistance from offending. The model contained ten independent variables: gang status, peer influence, peer delinquent behaviour, resistance to peer influence, psychosocial maturity, three dimensions of psychopathy, exposure to violence, and substance use.

The full model containing all predictors was statistically significant χ^2 (12, N = 957) = 347.30, $p < .001$, indicating that the model was able to distinguish between participants who reported desistance from offending and those who reported committing offences. The model as a whole explained between 29% (Cox and Snell R square) and 39% (Nagelkerke R square) of the variance in desistance from offending, and correctly identified 73.9% of the cases. As shown in Table 5.4, four of the independent variables made a unique statistically significant contribution to the model.

The strongest predictor was temperance recording an odds ratio of 1.64 ($p < .001$). This indicated that respondents who had higher levels of suppression of aggression and impulse control were 1.64 times more likely to report desistance from offending than those who had lower levels of temperance, controlling for all other factors in the model. Participants with lower levels of peer delinquent behaviour compared to those with higher scores (OR = 0.68) were more likely to desist; those with less exposure to violence compared to those with higher exposure levels (OR = 0.54) were more likely to desist. Respondents with lower

levels of substance use (OR = 0.46) compared to those with higher usage were also more likely to stop offending.

The only psychological risk factor to contribute to the model was temperance. The ability to supress aggression and control impulse is static at any given point in a young person's development, but ultimately dynamic as they age and develop cognitively. The age range of 14 to 20 is within the developmental period, which was found by one study to extend to the mid-twenties (Monahan et al., 2013). Exposure to violence can be binary in that past experiences can have a lasting impact upon an individual; however, at the same time, leaving a gang has been shown to be associated with a reduction in violent experiences (Decker & Van Winkle, 1996; Van Winkle, 1996). That gang membership did not contribute to the model of desistance, could be explained by research that, when controlling for other factors, found gang involvement protected members from violent victimisation (Taylor et al., 2007). The two other contributions to the model were lower levels of substance use and antisocial peer behaviour; both risk factors are dynamic and this has the potential to inform the focus of offending interventions.

Table 5.3

Correlation Between Independent Variables at 6 Months

Variables	1	2	3	4	5	6	7	8	9	10
1. Peer influence	—									
2. Peer behaviour	.68***	—								
3. Peer resistance	-.13***	-.05	—							
4. PSMI	-.23***	-.17***	.30***	—						
5. Temperance	-.29***	-.31***	.19***	.31***	—					
6. YPI 1	.21***	.19***	-.09*	-.25***	-.44***	—				
7. YPI 2	.22***	.26***	-.02	-.26***	-.43***	.58***	—			
8. YPI 3	.34***	.32***	-.17***	-.35***	-.57***	.62***	.57***	—		
9. Expose to violence	.36***	.43***	-.02	-.10**	-.25***	.13***	.19***	.22***	—	
10. Substance	.35***	.29***	-.04	-.11**	-.24***	.13***	.14***	.28***	.37***	—

Statistical significance: *$p < .05$; **$p < .01$; ***$p < .001$

Table 5.4

Binary Logistic Regression Results For 6 Months

Variable	B	SE	*p*	OR	95% CI Lower	Upper
Gang never			.45			
Gang current	0.03	0.28	.93	1.03	0.59	1.79
Gang prior	-0.35	0.28	.22	0.71	0.41	1.23
Peer infl.	-0.11	0.18	.52	0.89	0.63	1.26
Peer behav.	-0.38	0.14	.01**	0.68	0.51	0.90
Peer resist.	0.09	0.16	.58	1.09	0.79	1.51
PSMI	-0.32	0.22	.15	0.73	0.47	1.12
Temperance	0.49	0.14	.000***	1.64	1.25	2.14
YPI 1	-0.01	0.01	.20	0.99	0.97	1.01
YPI 2	0.02	0.02	.23	1.02	0.99	1.06
YPI 3	0.01	0.02	.70	1.01	0.97	1.04
Exp. Viol.	-0.62	0.08	.000***	0.54	0.46	0.63
Substance	-0.77	0.16	.000***	0.46	0.34	0.63
Constant	0.28	1.18	.81	1.33		

Dependent variable: reported desistance from offending. OR = odds ratio. SE = standard error. 95% CI = confidence interval. YPI 1: Grandiose Manipulative dimension; YPI 2: Callous Unemotional dimension; YPI 3: Impulsive Irresponsible dimension.
Significance: * p<.05 ** p<.01 *** p<.001

Month 12

Descriptive statistics

Descriptive statistics for all continuous variables for month 12 are presented in Table 5.5 and the descriptive statistics for categorical variables are presented in Table 5.6.

Table 5.5

Descriptive Statistics For Independent Variables at 12 Months

Variable	N	Min	Max	M	SD
Peer influence	969	1.00	5.00	1.54	0.74
Peer behaviour	959	1.00	5.00	1.92	0.85
Peer resistance	973	1.10	4.00	3.10	0.59
PSMI	975	1.43	4.00	3.11	0.46
Temperance	975	1.07	5.00	3.01	0.81
YPI 1	975	20.00	80.00	39.84	11.35
YPI 2	975	17.00	55.00	33.40	6.49
YPI 3	975	15.00	60.00	35.38	8.25
Exposure to viol.	975	0.00	9.00	1.41	1.86
Substance use	975	0.00	9.00	0.64	1.15

Table 5.6

Descriptive Statistics For Categorical Variables at 12 Months

Variable	Frequency	%
Desister	423	43.4
Persister	551	56.6
Never in a gang	680	69.70
Currently in a gang	132	13.50
Previously in a gang	163	16.70

Binary logistic regression results for 12 months, age range 15-20 years

Table 5.7 shows the correlation between variables. A strong relationship was found between peer influence and peer delinquent behaviour. A moderate relationship was found between the three psychopathic dimensions; all other relationships were weak. Direct Binary logistic regression was performed to assess the impact of psychological and social risk factors on desistance from offending. The model contained ten independent variables: gang status, peer influence, peer delinquent behaviour, resistance to peer influence, psychosocial maturity, three dimensions of psychopathy, exposure to violence, and substance use.

The full model containing all predictors was statistically significant χ^2 (12, N =957) = 347.30 $p < .001$, indicating that the model was able to distinguish between participants who reported desistance from offending and those who reported committing offences. The model as a whole explained between 30% (Cox and Snell R square) and 41% (Nagelkerke R square) of the variance in desistance from offending, and correctly identified 75.3% of the cases. As shown in table 5.8, five of the variables made a unique statistically significant contribution to the model.

The strongest predictor was temperance recording an odds ratio of 1.33. Meaning that respondents who had higher levels of suppression of aggression and impulse control were 1.33 times more likely to report desistance from offending than those with lower scores, controlling for all other factors in the model. Participants who scored lower on the impulsive irresponsible dimension of psychopathy were more likely to desist from offending (OR = 0.96). Respondents with lower levels of exposure to violence (OR = 0.64) and less substance use (OR = 0.48) were more likely report that they had stopped offending; as were

respondents with lower peer delinquent behaviour (OR = 0.54, $p < .001$). Finally, prior (OR = 0.64) and current (OR = 0.57) gang members compared to those who had never been gang affiliated were less likely to report desistance from crime.

Higher temperance levels continued to be the strongest predictor of desistance, which is of little surprise given that the age range was 15-20 and so similar to the previous wave. The YPI impulsive irresponsible dimension may reflect similar characteristics to temperance in the sample. That lower levels of exposure to violence and substance use remained a part of the model remains significant for intervention design. In addition to lower levels of peer antisocial behaviour, gang membership status also contributed to the model. Suggesting that having not been gang affiliated can be a protective risk factor for desistance in groups of young people who offend.

Table 5.7
Correlation Between Independent Variables at 12 Months

Variables	1	2	3	4	5	6	7	8	9	10
1. Peer influence	—									
2. Peer behaviour	.72***	—								
3. Peer resistance	-.15***	-.08*	—							
4. PSMI	-.23***	-.19***	.35***	—						
5. Temperance	-.35***	-.40***	.21***	.41***	—					
6. YPI 1	.28***	.26***	-.15***	-.32***	-.46***	—				
7. YPI 2	.28***	.30***	-.13***	-.31***	-.42***	.58***	—			
8. YPI 3	.35***	.35***	-.20***	-.41***	-.60***	.65***	.54***	—		
9. Exposure to viol.	.33***	.44***	.02	-.08*	-.25***	.21***	.21***	.21***	—	
10. Substance	.33***	.30***	-.05	-.16***	-.27***	.15***	.18***	.29***	.29***	—

Statistical significance: *$p < .05$; **$p < .01$; ***$p < .001$

Table 5.8

Binary Logistic Regression Results For 12 Months

Variable	B	SE	*p*	OR	95% CI Lower	Upper
Gang never			.03*			
Gang current	-0.56	0.27	.04*	0.57	0.34	0.97
Gang prior	-0.45	0.22	.04*	0.64	0.42	0.98
Peer infl.	0.05	0.17	.80	1.05	0.75	1.47
Peer behav.	-0.61	0.15	.000***	0.54	0.41	0.73
Peer resist.	-0.00	0.14	1.00	1.00	0.75	1.32
PSMI	-0.19	0.21	.36	0.83	0.55	1.24
Temperance	0.28	0.13	.03*	1.33	1.03	1.71
YPI 1	0.00	0.01	.71	1.00	0.98	1.02
YPI 2	0.02	0.02	.33	1.02	0.98	1.05
YPI 3	-0.05	0.02	.00**	0.96	0.93	0.98
Exp. Viol.	-0.45	0.07	.000***	0.64	0.56	0.72
Substance	-0.74	0.13	.000***	0.48	0.37	0.62
Constant	2.37	1.09	.03	10.70		

Dependent variable: reported desistance from offending. OR = odds ratio. SE = standard error. 95% CI = confidence interval. YPI 1: Grandiose Manipulative dimension; YPI 2: Callous Unemotional dimension; YPI 3: Impulsive Irresponsible dimension.
Significance: * p<.05 ** p<.01 *** p<.001

Month 18

Descriptive statistics

Descriptive statistics for all continuous variables for month 18 are presented in Table 5.9 and the descriptive statistics for categorical variables are presented in Table 5.10.

Table 5.9

Descriptive Statistics For Independent Variables at 18 Months

Variable	N	Min	Max	M	SD
Peer influence	940	1.00	5.00	1.54	0.74
Peer behaviour	931	1.00	5.00	1.85	0.82
Peer resistance	949	1.10	4.00	3.14	0.57
PSMI	949	1.10	4.00	3.14	0.48
Temperance	951	1.00	5.00	3.01	0.84
YPI 1	951	20	80.00	39.21	11.69
YPI 2	951	16	59.00	33.11	6.67
YPI 3	951	15	59.00	34.69	8.60
Exposure to viol.	951	0.00	9.00	1.30	1.79
Substance use	951	0.00	9.00	0.62	1.11

Table 5.10

Descriptive Statistics For Categorical Variables at 18 Months

Variable	Frequency	%
Desister	466	49.00
Persister	485	51.00
Never in a gang	652	68.60
Currently in a gang	114	12.00
Previously in a gang	185	19.50

Binary logistic regression results for 18 months, age range 15-21 years

Table 5.11 shows the correlation between variables. Peer influence and delinquent behaviour were found to have a moderate relationship, as were the psychopathy dimensions; all other variables had a weak relationship.

Direct Binary logistic regression was performed to assess the impact of psychological and social risk factors on desistance from offending. The model contained ten independent variables: gang status, peer influence, peer delinquent behaviour, resistance to peer influence, psychosocial maturity, three dimensions of psychopathy, exposure to violence, and substance use.

The full model containing all predictors was statistically significant χ^2 (12, N = 929) = 317.59, $p < .001$, indicating that the model was able to distinguish between participants who reported desistance from offending and those who reported committing offences. The model as a whole explained between 29% (Cox and Snell R square) and 39% (Nagelkerke R square) of the variance in desistance from offending, and correctly identified 74% of the cases. As shown in Table 5.12, six of the independent variables made a unique statistically significant contribution to the model. Participants with lower temperance levels were less likely to report desistance from offending than those who scored more highly, recording an odds ratio of 1.41. This indicated that respondents with higher levels of temperance were 1.41 times more likely to report desistance, controlling for all other factors in the model. Respondents with lower scores on the impulsive irresponsible psychopathy dimension were more likely that those with higher scores to desist from offending, recording an odds ratio of 0.97. This indicated that respondents with lower levels of impulsiveness and irresponsibility were 0.97 times more likely to desist compared to those who scored more highly, controlling for all other factors in the model. Participants who had lower scores for exposure

to violence (OR = 0.63) and substance use (OR = 0.55) were more likely to report desistance from offending than respondents with higher scores. Respondents who reported lower scores for peer delinquent behaviour were also more likely to report desistance than participants with more delinquent peers (OR = 0.72). Additionally, those who had never been in a gang affiliated were (OR = 0.66) more likely to report desistance than those who had previously been in a gang.

The risk factors were therefore similar to the previous two waves of data, as might be expected given only a slight increase in the age ranges. Unlike the previous wave, only prior gang membership contributed to the model, as a significant criminogenic risk factor. This could be explained by the other psychological and social characteristics that belonged to participants who identified as prior gang members, and casts further doubt upon the validity of gang status per se being considered as a criminogenic risk. Gang membership status is also fluid and inconsistent (Bolden, 2012 and 2013; Carson et al., 2013; Pyrooz et al. 2013).

Table 5.11
Correlation Between Independent Variables at 18 Months

Variables	1	2	3	4	5	6	7	8	9	10
1. Peer influence	—									
2. Peer behaviour	.69***	—								
3. Peer resistance	-.15***	-.04	—							
4. PSMI	-.22***	-.14***	.39***	—						
5. Temperance	-.32***	-.30***	.18***	.37***	—					
6. YPI 1	.29***	.25***	-.13***	-.32***	-.45***	—				
7. YPI 2	.29***	.27***	-.10***	-.34***	-.45***	.64***	—			
8. YPI 3	.32***	.27***	-.21***	-.43***	-.57***	.66***	.58***	—		
9. Exposure to viol.	.34***	.40***	.05	-.06	-.21***	.16***	.20***	.17***	—	
10. Substance	.30***	.30***	-.06	-.16***	-.25***	.24***	.15***	.26***	.28***	—

Statistical significance: *$p < .05$; **$p < .01$; ***$p < .001$

Table 5.12

Binary Logistic Regression Results For 18 Months

Variable	B	SE	*p*	OR	95% CI Lower	Upper
Gang never			.11			
Gang current	-0.26	0.26	.33	0.78	0.47	1.29
Gang prior	-0.41	0.21	.05*	0.66	0.44	0.99
Peer infl.	-0.18	0.16	.26	0.83	0.60	1.15
Peer behav.	-0.33	0.14	.02*	0.72	0.55	0.94
Peer resist.	0.28	0.15	.07	1.32	0.98	1.78
PSMI	0.09	0.20	.65	1.09	0.75	1.61
Temperance	0.34	0.12	.01**	1.41	1.11	1.78
YPI 1	-0.01	0.01	.20	0.99	0.97	1.01
YPI 2	0.03	0.02	.07	1.03	1.00	1.07
YPI 3	-0.03	0.01	.04*	0.97	0.95	1.00
Exp. Viol.	-0.47	0.06	.000***	0.63	0.56	0.71
Substance	-0.60	0.12	.000***	0.55	0.43	0.69
Constant	0.11	1.07	.92	1.11		

Dependent variable: reported desistance from offending. OR = odds ratio. SE = standard error. 95% CI = confidence interval. YPI 1: Grandiose Manipulative dimension; YPI 2: Callous Unemotional dimension; YPI 3: Impulsive Irresponsible dimension.
Significance: * p<.05 ** p<.01 *** p<.001

Month 24

Descriptive statistics

Descriptive statistics for all continuous variables for month 24 are presented in Table 5.13 and the descriptive statistics for categorical variables are presented in Table 5.14.

Table 5.13

Descriptive Statistics For Independent Variables at 24 Months

Variable	N	Min	Max	M	SD
Peer influence	946	1.00	5.00	1.53	0.77
Peer behaviour	940	1.00	5.00	1.81	0.83
Peer resistance	948	1.40	4.00	3.17	0.56
PSMI	948	1.20	4.00	3.12	0.49
Temperance	951	1.00	5.00	2.90	0.81
YPI 1	948	20.00	79.00	39.72	11.48
YPI 2	948	17.00	60.00	33.36	6.51
YPI 3	948	15.00	60.00	35.12	8.16
Exposure to viol.	951	0.00	10.00	1.07	1.70
Substance use	951	0.00	9.00	0.64	1.12

Table 5.14

Descriptive Statistics For Categorical Variables at 24 Months

Variable	Frequency	%
Desister	502	52.80
Persister	448	47.20
Never in a gang	641	67.50
Currently in a gang	110	11.60
Previously in a gang	198	20.90

Binary logistic regression results for 24 months, age range between 15 and 21 years

Table 5.15 shows the correlation between variables. Peer influence and delinquent behaviour were found to have a moderate relationship, as did the psychopathy dimensions; all other variables had a weak relationship. Direct Binary logistic regression was performed to assess the impact of psychological and social risk factors on desistance from offending. The model contained ten independent variables: gang status, peer influence, peer delinquent behaviour, resistance to peer influence, psychosocial maturity, three dimensions of psychopathy, exposure to violence, and substance use.

The full model containing all predictors was statistically significant χ^2 (12, N = 937) = 307.38, $p < .001$, indicating that the model was able to distinguish between participants who reported desistance from offending and those who reported committing offences. The model as a whole explained between 28% (Cox and Snell R square) and 37% (Nagelkerke R square) of the variance in desistance from offending, and correctly identified 73.7% of the cases. As shown in Table 5.16, four of the independent variables made a unique statistically significant contribution to the model. The strongest predictor was temperance recording an odds ratio of 1.54. This indicated that respondents who had higher levels of suppression of aggression and impulse control were 1.54 times more likely to report desistance from offending than those who had lower levels of temperance, controlling for all other factors in the model. Participants who had lower scores for exposure to violence (OR = 0.68) and substance use (OR = 0.50) were more likely to report desistance from offending than respondents with higher scores. Respondents who reported lower scores for peer delinquent behaviour

were also more likely to report desistance than participants with more delinquent peers (OR = 0.53).

The continuity of lower levels of substance use and exposure to violence alongside the social factor of lower levels of antisocial peer behaviour and the constant psychological protective factor of higher levels of temperance is notable.

Table 5.15

Correlation Between Independent Variables at 24 Months

Variables	1	2	3	4	5	6	7	8	9	10
1. Peer influence	—									
2. Peer behaviour	.72***	—								
3. Peer resistance	-.13***	-.07*	—							
4. PSMI	-.22***	-.17***	.38***	—						
5. Temperance	-.26***	-.27***	.12***	.35***	—					
6. YPI 1	.30***	.25***	-.15***	-.28***	-.40***	—				
7. YPI 2	.31***	.28***	-.11**	-.31***	-.39***	.63***	—			
8. YPI 3	.35***	.30***	-.19***	-.39***	-.56***	.64***	.59***	—		
9. Exposure to viol.	.36***	.42***	-.01	-.13***	-.19***	.18***	.22***	.20***	—	
10. Substance	.31***	.30***	-.02	-.18***	-.25***	.29***	.16***	.30***	.28***	—

Statistical significance: *$p < .05$; **$p < .01$; ***$p < .001$

Table 5.16

Binary Logistic Regression Results For 24 Months

Variable	B	SE	*p*	OR	95% CI Lower	Upper
Gang never			.25			
Gang current	0.04	0.27	.88	1.04	0.61	1.77
Gang prior	-0.31	0.20	.11	0.73	0.50	1.08
Peer infl.	-0.01	0.16	.95	0.99	0.73	1.34
Peer behav.	-0.64	0.14	.000***	0.53	0.40	0.69
Peer resist.	0.06	0.15	.69	1.06	0.79	1.43
PSMI	0.02	0.19	.92	1.02	0.70	1.48
Temperance	0.43	0.12	.000***	1.54	1.22	1.94
YPI 1	-0.01	0.01	.40	0.99	0.97	1.01
YPI 2	0.01	0.02	.56	1.01	0.98	1.04
YPI 3	-0.00	0.02	.89	1.00	0.97	1.03
Exp. Viol.	-0.38	0.06	.000***	0.68	0.61	0.77
Substance	-0.69	0.12	.000***	0.50	0.40	0.63
Constant	0.66	1.01	.51	1.93		

Dependent variable: reported desistance from offending. OR = odds ratio. SE = standard error. 95% CI = confidence interval. YPI 1: Grandiose Manipulative dimension; YPI 2: Callous Unemotional dimension; YPI 3: Impulsive Irresponsible dimension.
Significance: * p<.05 ** p<.01 *** p<.001

Month 30

Descriptive statistics

Descriptive statistics for all continuous variables for month 30 are presented in Table 5.17 and the descriptive statistics for categorical variables are presented in Table 5.18.

Table 5.17

Descriptive Statistics For Independent Variables at 30 Months

Variable	N	Min	Max	M	SD
Peer influence	938	1.00	5.00	1.45	0.70
Peer behaviour	929	1.00	5.00	1.72	0.77
Peer resistance	951	1.30	4.00	3.22	0.56
PSMI	951	1.00	4.00	3.16	0.49
Temperance	954	1.00	5.00	3.01	0.84
YPI 1	951	8.00	77.00	38.50	11.34
YPI 2	951	4.00	58.00	32.54	6.59
YPI 3	951	9.00	58.00	34.11	8.50
Exposure to viol.	954	0.00	9.00	1.06	1.61
Substance use	954	0.00	9.00	0.58	1.05

Table 5.18

Descriptive Statistics For Categorical Variables at 30 Months

Variable	Frequency	%
Desister	567	59.40
Persister	387	40.60
Never in a gang	642	67.50
Currently in a gang	104	9.90
Previously in a gang	205	19.60

Binary logistic regression results for 30 months, age range 16 to 22 years

Table 5.19 shows the correlation between variables. Peer influence and delinquent behaviour had a moderate relationship, as did the three psychopathic dimensions; all other relationships were weak. Direct Binary logistic regression was performed to assess the impact of psychological and social risk factors on desistance from offending. The model contained ten independent variables: gang status, peer influence, peer delinquent behaviour, resistance to peer influence, psychosocial maturity, three dimensions of psychopathy, exposure to violence, and substance use.

The full model containing all predictors was statistically significant χ^2 (12, N = 928) = 338.14, $p < .001$, indicating that the model was able to distinguish between participants who reported desistance from offending and those who reported committing offences. The model as a whole explained between 31% (Cox and Snell R square) and 41% (Nagelkerke R square) of the variance in desistance from offending, and correctly identified 75.9% of the cases.

As shown in Table 5.20, the strongest predictor was temperance recording an odds ratio of 1.45. This indicated that respondents who had higher levels of suppression of aggression and impulse control were 1.64 times more likely to report desistance from offending than those who had lower levels of temperance, controlling for all other factors in the model. Participants with lower levels exposure to violence compared to those with higher exposure (OR = 0.71) were more likely to desist; as were respondents who reported lower levels of substance use (OR = 0.50) compared to those with higher usage. Participants with lower levels of peer delinquency compared to those with higher scores (OR = 0.37) were also more likely to report no offences.

The risk factors contributing to the model were the same as the previous wave of data. The lower age range was the same for months 24 and 30 even though the higher age range was 22 years of age. However, there was little difference in the mean ages for each wave at 18.05 (*SD* = 1.16) and 18.53 (*SD* = 1.16) respectively (Table 2). This may explain the similarity in results.

Table 5.19

Correlation Between Independent variables at 30 Months

Variables	1	2	3	4	5	6	7	8	9	10
1. Peer influence	—									
2. Peer behaviour	.70***	—								
3. Peer resistance	-.11***	-.05	—							
4. PSMI	-.22***	-.20***	.37***	—						
5. Temperance	-.29***	-.34***	.19***	.42***	—					
6. YPI 1	.33***	.25***	-.12***	-.36***	-.45***	—				
7. YPI 2	.25***	.25***	-.06*	-.36***	-.46***	.65***	—			
8. YPI 3	.33***	.31***	-.22***	-.46***	-.60***	.67***	.60***	—		
9. Exposure to viol.	.28***	.39***	.00	-.05	-.23***	.17***	.15***	.18***	—	
10. Substance	.35***	.30***	-.03	-.12***	-.23***	.21***	.13***	.26***	.30***	—

Statistical significance: *$p < .05$; **$p < .01$; ***$p < .001$

Table 5.20

Binary Logistic Regression Results For 30 Months

Variable	B	SE	*p*	OR	95% CI Lower	Upper
Gang never			.28			
Gang current	-0.07	0.28	.81	0.93	0.54	1.62
Gang prior	-0.32	0.20	.11	0.73	0.49	1.08
Peer infl.	0.19	0.18	.29	1.20	0.85	1.70
Peer behav.	-1.01	0.16	.000***	0.37	0.27	0.50
Peer resist.	-0.11	0.16	.51	0.90	0.65	1.24
PSMI	0.02	0.20	.91	1.02	0.69	1.53
Temperance	0.37	0.13	.00**	1.45	1.13	1.87
YPI 1	0.02	0.01	.18	1.02	0.99	1.04
YPI 2	-0.02	0.02	.41	0.99	0.95	1.02
YPI 3	-0.02	0.02	.32	0.99	0.96	1.02
Exp. Viol.	-0.34	0.06	.000***	0.71	0.63	0.80
Substance	-0.70	0.12	.000***	0.50	0.40	0.63
Constant	2.28	1.10	.04*	9.77		

Dependent variable: reported desistance from offending. OR = odds ratio. SE = standard error. 95% CI = confidence interval. YPI 1: Grandiose Manipulative dimension; YPI 2: Callous Unemotional dimension; YPI 3: Impulsive Irresponsible dimension.
Significance: * p<.05 ** p<.01 *** p<.001

Month 36

Descriptive statistics

Descriptive statistics for all continuous variables for month 6 are presented in Table 5.21 and the descriptive statistics for categorical variables are presented in Table 5.22.

Table 5.21

Descriptive Statistics For Independent Variables at 36 Months

Variable	N	Min	Max	M	SD
Peer influence	929	1.00	5.00	1.44	0.66
Peer behaviour	919	1.00	4.85	1.68	0.76
Peer resistance	946	1.10	4.00	3.28	0.56
PSMI	946	1.90	4.00	3.19	0.45
Temperance	950	1.00	5.00	3.05	0.84
YPI 1	949	19.00	80.00	38.49	11.19
YPI 2	949	17.00	57.00	32.85	6.56
YPI 3	949	15.00	60.00	33.86	8.40
Exposure to viol.	950	0.00	10.00	0.97	1.58
Substance use	949	0.00	9.00	0.59	1.00

Table 5.22

Descriptive Statistics For Categorical Variables at 36 Months

Variable	Frequency	%
Desister	553	52.80
Persister	396	41.70
Never in a gang	636	67.20
Currently in a gang	95	10.00
Previously in a gang	216	22.80

Binary logistic regression results for 36 months, age range 17-22 years

Table 5.23 shows the correlation between variables. Peer influence and delinquent behaviour had a moderate relationship, as did the three psychopathic dimensions; all other relationships were weak. Direct Binary logistic regression was performed to assess the impact of psychological and social risk factors on desistance from offending. The model contained ten independent variables: gang status, peer influence, peer delinquent behaviour, resistance to peer influence, psychosocial maturity, three dimensions of psychopathy, exposure to violence, and substance use.

The full model containing all predictors was statistically significant χ^2 (12, N = 914) = 309.37, $p < .001$, indicating that the model was able to distinguish between participants who reported desistance from offending and those who reported committing offences. The model as a whole explained between 29% (Cox and Snell R square) and 39% (Nagelkerke R square) of the variance in desistance from offending, and correctly identified 73.6% of the cases. As shown in Table 5.24, five of the independent variables made a unique statistically significant contribution to the model.

The strongest predictor was temperance recording an odds ratio of 1.30. This indicated that respondents who had higher levels of suppression of aggression and impulse control were 1.30 times more likely to report desistance from offending than those who had lower levels of temperance, controlling for all other factors in the model. Participants with lower levels of peer delinquency compared to those with higher scores (OR = 0.56) were more likely to desist; as were those with lower levels exposure to violence compared to those with higher exposure (OR = 0.70); and those who had lower levels of substance use (OR = 0.43) compared to those who reported higher usage were also more likely to

desist. Additionally, those who had never been gang affiliated were more likely to report desistance than those who had previously been in a gang (OR = 0.62).

Reflecting the core predictor variables of the previous waves of data, prior gang membership once again was found to be associated with lower levels of desistance, and never having been in a gang was found to be a protective risk factor.

Table 5.23

Correlation Between Independent Variables at 36 Months

Variables	1	2	3	4	5	6	7	8	9	10
1. Peer influence	—									
2. Peer behaviour	.69***	—								
3. Peer resistance	-.11**	-.03	—							
4. PSMI	-.16***	-.14***	.36***	—						
5. Temperance	-.29***	-.32***	.21***	.41***	—					
6. YPI 1	.26***	.30***	-.12***	-.32***	-.47***	—				
7. YPI 2	.25***	.29***	-10**	-.33***	-.46***	.69***	—			
8. YPI 3	.30***	.31***	-.24***	-.42***	-.62***	.66***	.59***	—		
9. Exposure to viol.	.35***	.40***	.01	-.06	-.22***	.15***	.16***	.16***	—	
10. Substance	.31***	.37***	.01	-.10**	-.24***	.18***	.18***	.24***	.28***	—

Statistical significance: *$p < .05$; **$p < .01$; ***$p < .001$

Table 5.24

Binary Logistic Regression Results For 36 Months

Variable	B	SE	*p*	OR	95% CI Lower	Upper
Gang never			.03*			
Gang current	-0.45	0.29	.12	0.64	0.36	1.13
Gang prior	-0.48	0.19	.01*	0.62	0.42	0.90
Peer infl.	-0.31	0.17	.08	0.74	0.52	1.03
Peer behav.	-0.58	0.16	.000***	0.56	0.41	0.76
Peer resist.	0.09	0.16	.57	1.09	0.80	1.49
PSMI	0.27	0.21	.21	1.31	0.86	1.98
Temperance	0.26	0.13	.05*	1.30	1.00	1.68
YPI 1	-0.01	0.01	.45	0.99	0.97	1.01
YPI 2	.000	0.02	.98	1.00	0.97	1.04
YPI 3	0.01	0.02	.42	1.01	0.98	1.04
Exp. Viol.	-0.36	0.06	.000***	0.70	0.61	0.79
Substance	-0.84	0.13	.000***	0.43	0.34	0.55
Constant	0.68	1.13	.54	1.98		

Dependent variable: reported desistance from offending. OR = odds ratio. SE = standard error. 95% CI = confidence interval. YPI 1: Grandiose Manipulative dimension; YPI 2: Callous Unemotional dimension; YPI 3: Impulsive Irresponsible dimension.
Significance: * p<.05 ** p<.01 *** p<.001

Month 48

Descriptive statistics

Descriptive statistics for all continuous variables for month 48 are presented in Table 5.25 and the descriptive statistics for categorical variables are presented in Table 5.26.

Table 5.25

Descriptive Statistics For Independent Variables at 48 Months

Variable	N	Min	Max	M	SD
Peer influence	926	1.00	5.00	1.48	0.72
Peer behaviour	923	1.00	5.00	1.79	0.82
Peer resistance	932	1.50	4.00	3.31	0.54
PSMI	932	1.67	4.00	3.22	0.45
Temperance	933	1.00	5.00	3.11	0.82
YPI 1	931	20.00	80.00	37.68	10.88
YPI 2	931	15.00	58.00	32.16	6.65
YPI 3	931	15.00	60.00	33.84	8.37
Exposure to viol.	932	1.50	4.00	3.31	0.54
Substance use	934	0.00	10.00	1.40	2.02

Table 5.26

Descriptive Statistics For Categorical Variables at 48 Months

Variable	Frequency	%
Desister	485	46.30
Persister	448	42.30
Never in a gang	609	65.30
Currently in a gang	88	9.40
Previously in a gang	236	25.30

Binary logistic regression results for 48 months, age range 18 to 23 years

Table 5.27 shows the correlation between variables. Peer influence and delinquent behaviour had a moderate relationship, as did the three psychopathic dimensions; all other relationships were weak. Direct Binary logistic regression was performed to assess the impact of psychological and social risk factors on desistance from offending. The model contained ten independent variables: gang status, peer influence, peer delinquent behaviour, resistance to peer influence, psychosocial maturity, three dimensions of psychopathy, exposure to violence, and substance use.

The full model containing all predictors was statistically significant χ^2 (12, N = 915) = 353.08, $p < .001$, indicating that the model was able to distinguish between participants who reported desistance from offending and those who reported committing offences. The model as a whole explained between 29% (Cox and Snell R square) and 39% (Nagelkerke R square) of the variance in desistance from offending, and correctly identified 73.6% of the cases. As shown in Table 5.28, three of the independent variables made a unique statistically significant contribution to the model.

The strongest predictor was exposure to violence recording an odds ratio of 0.76. This indicated that respondents who had lower levels of exposure to violence were 0.76 times more likely to report desistance from offending than those who had more exposure, controlling for all other factors in the model. Participants with lower levels of peer delinquent behaviour compared to those with higher scores (OR = 0.48) were more likely to desist; as were those with lower levels of substance use (OR = 0.54).

Three of the core predictors from previous waves, namely: exposure to violence, substance use, and antisocial peer behaviour remain; however, temperance no longer contributed to the model. This can be explained by the developmental and dynamic nature of the one psychological risk factor to have contributed to the desistance model. Additionally, the age range for this wave was 18 to 23 years, with a mean age of 20.06 (*SD* = 1.16).

Table 5.27

Correlation Between Independent Variables at 48 Months

Variables	1	2	3	4	5	6	7	8	9	10
1. Peer influence	—									
2. Peer behaviour	.75***	—								
3. Peer resistance	-.09**	-.03	—							
4. PSMI	-.12***	-.12***	.35***	—						
5. Temperance	-.31***	-.30***	.14***	.38***	—					
6. YPI 1	.22***	.22***	-.09**	-.30***	-.49***	—				
7. YPI 2	.22***	.20***	-.10**	-.29***	-.50***	.64***	—			
8. YPI 3	.28***	.23***	-.16***	-.38***	-.66***	.63***	.58***	—		
9. Exposure to viol.	.37***	.43***	.05	.01	-.23***	.14***	.13***	.15***	—	
10. Substance	.32***	.35***	.01	-.10**	-.26***	.19***	.15***	.23***	.29***	—

Statistical significance: *$p < .05$; **$p < .01$; ***$p < .001$

Table 5.28

Binary Logistic Regression Results For 48 months

Variable	B	SE	*p*	OR	95% CI Lower	Upper
Gang never			.36			
Gang current	-.46	.32	.16	.63	.34	1.19
Gang prior	-.07	.19	.73	.94	.64	1.37
Peer infl.	.16	.18	.36	1.18	.83	1.67
Peer behav.	-.73	.16	.000***	.48	.36	.66
Peer resist.	.14	.16	.38	1.16	.84	1.59
PSMI	-.19	.21	.38	.83	.55	1.26
Temperance	.26	.14	.06	1.30	.99	1.70
YPI 1	-.01	.01	.20	.99	.97	1.01
YPI 2	-.00	.02	.90	1.00	.97	1.03
YPI 3	-.00	.02	.89	1.00	.97	1.03
Exp. Viol.	-.27	.05	.000***	.76	.69	.84
Substance	-1.02	.13	.000***	.36	.28	.46
Constant	2.14	1.19	.07	8.47		

Dependent variable: reported desistance from offending. OR = odds ratio. SE = standard error. 95% CI = confidence interval. YPI 1: Grandiose Manipulative dimension; YPI 2: Callous Unemotional dimension; YPI 3: Impulsive Irresponsible dimension.
Significance: * p<.05 ** p<.01 *** p<.001

Month 60

Descriptive statistics

Descriptive statistics for all continuous variables for month 60 are presented in Table 5.29 and the descriptive statistics for categorical variables are presented in Table 5.30.

Table 5.29

Descriptive Statistics For Independent Variables at 60 Months

Variable	N	Min	Max	M	SD
Peer influence	914	1.00	5.00	1.50	0.71
Peer behaviour	911	1.00	5.00	1.77	0.80
Peer resistance	921	1.00	4.00	3.36	0.54
PSMI	921	1.70	4.00	3.27	0.44
Temperance	922	1.07	5.00	3.13	0.83
YPI 1	921	10.00	77.00	36.83	11.14
YPI 2	921	5.00	58.00	31.81	6.88
YPI 3	921	11.00	60.00	33.14	8.96
Exposure to viol.	922	0.00	10.00	1.30	1.90
Substance use	918	0.00	9.00	0.66	1.11

Table 5.30

Descriptive Statistics For Categorical Variables at 60 Months

Variable	Frequency	%
Desister	502	54.60
Persister	417	45.40
Never in a gang	603	65.40
Currently in a gang	76	8.20
Previously in a gang	922	26.40

Binary logistic regression results for 60 months, age range 18-24 years

Table 5.31 shows the correlation between variables. Peer influence and delinquent behaviour had a moderate relationship, as did the three psychopathic dimensions; all other relationships were weak. Direct Binary logistic regression was performed to assess the impact of psychological and social risk factors on desistance from offending. The model contained ten independent variables: gang status, peer influence, peer delinquent behaviour, resistance to peer influence, psychosocial maturity, three dimensions of psychopathy, exposure to violence, and substance use.

The full model containing all predictors was statistically significant χ^2 (12, N = 905) = 311.70, $p < .001$, indicating that the model was able to distinguish between participants who reported desistance from offending and those who reported committing offences. The model as a whole explained between 29% (Cox and Snell R square) and 39% (Nagelkerke R square) of the variance in desistance from offending, and correctly identified 74.7% of the cases.

As shown in Table 5.32, four of the independent variables made a unique statistically significant contribution to the model. The strongest predictor was exposure to violence recording an odds ratio of 0.69. This indicated that respondents who had lower levels of exposure to violence were 0.69 times more likely to report desistance from offending than those who had higher exposure, controlling for all other factors in the model. Participants with lower levels of substance use (OR = 0.50) were more likely to desist compared to those with higher usage. Participants with lower levels of peer delinquent influence (OR = 0.63) were more likely to report desistance from offending than those with higher scores. Additionally, those who had never been affiliated were more likely to desist than gang current gang members (OR = 0.50).

Exposure to violence and substance use continued from all previous waves of data to contribute to the model. The replacement of antisocial peer behaviour with peer influence indicates that lower levels of contact with antisocial peers continue to contribute to a model of desistance. Current gang membership also emerged in this wave; however, as noted gang status was not a constant predictor in the previous waves. It is perhaps notable that it appears during a later wave, when the sample had a mean age of 21.05 (*SD* = 1.16), because gang membership as a risk factor is often associated with adolescents rather than young adults. This should be taken into consideration when designing programmes for older gang members, not only youth who are affiliated.

Table 5.31

Correlation Between Independent Variables at 60 Months

Variables	1	2	3	4	5	6	7	8	9	10
1. Peer influence	—									
2. Peer behaviour	.75***	—								
3. Peer resistance	-.16***	-.09**	—							
4. PSMI	-.20***	-.17***	.42***	—						
5. Temperance	-.33***	-.34***	.22***	.40***	—					
6. YPI 1	.29***	.24***	-.10**	-.31***	-.47***	—				
7. YPI 2	.26***	.27***	-.13***	-.34***	-.47***	.65***	—			
8. YPI 3	.32***	.29***	-.22***	-.44***	-.64***	.68***	.60***	—		
9. Exposure to viol.	.40***	.46***	.06	-.07*	-.23***	.16***	.19***	.18***	—	
10. Substance	.36***	.35***	-.09**	-.14***	-.28***	.22***	.16***	.31***	.28***	—

Statistical significance: *$p < .05$; **$p < .01$; ***$p < .001$

Table 5.32

Binary Logistic Regression Results For 60 Months

Variable	B	SE	*p*	OR	95% CI Lower	Upper
Gang never			.08			
Gang current	-0.70	0.32	.03*	0.50	0.27	0.93
Gang prior	-0.15	0.19	.41	0.86	0.60	1.23
Peer infl.	-0.47	0.19	.01*	0.63	0.43	0.91
Peer behav.	-0.14	0.15	.36	0.87	0.64	1.17
Peer resist.	0.30	0.17	.07	1.35	0.97	1.88
PSMI	-0.51	0.23	.36	0.87	0.64	1.17
Temperance	0.26	0.13	.05	1.30	1.00	1.68
YPI 1	0.01	0.01	.32	1.01	0.99	1.03
YPI 2	-0.03	0.02	.13	0.97	0.94	1.01
YPI 3	-0.03	0.02	.09	0.98	0.95	1.00
Exp. Viol.	-0.38	0.06	.000***	0.69	0.62	0.77
Substance	-0.70	0.12	.000***	0.50	0.40	0.63
Constant	3.17	1.17	.01**	23.79		

Dependent variable: reported desistance from offending. OR = odds ratio. SE = standard error. 95% CI = confidence interval. YPI 1: Grandiose Manipulative dimension; YPI 2: Callous Unemotional dimension; YPI 3: Impulsive Irresponsible dimension.
Significance: * p<.05 ** p<.01 *** p<.001

Month 72

Descriptive statistics

Descriptive statistics for all continuous variables for month 72 are presented in Table 5.33 and the descriptive statistics for categorical variables are presented in Table 5.34.

Table 5.33

Descriptive Statistics For Independent Variables at 72 Months

Variable	N	Min	Max	M	SD
Peer influence	891	1.00	5.00	1.49	0.70
Peer behaviour	890	1.00	5.00	1.74	0.76
Peer resistance	901	1.20	4.00	3.40	0.53
PSMI	902	1.57	4.00	3.31	0.44
Temperance	905	1.00	5.00	3.19	0.85
YPI 1	903	20.00	73.00	35.89	10.71
YPI 2	903	16.00	59.00	31.69	6.78
YPI 3	903	15.00	60.00	32.98	8.82
Exposure to viol.	904	0.00	9.00	1.21	1.76
Substance use	896	0.00	8.00	0.64	1.00

Table 5.34

Descriptive Statistics For Categorical Variables at 72 Months

Variable	Frequency	%
Desister	505	56.20
Persister	393	43.80
Never in a gang	589	65.20
Currently in a gang	71	7.90
Previously in a gang	243	26.90

Binary logistic regression results for 72 months, age range 20 to 25 years

Table 5.35 shows the correlation between variables. Peer influence and delinquent behaviour had a moderate relationship, as did the three psychopathic dimensions; all other relationships were weak. Direct Binary logistic regression was performed to assess the impact of psychological and social risk factors on desistance from offending. The model contained ten independent variables: gang status, peer influence, peer delinquent behaviour, resistance to peer influence, psychosocial maturity, three dimensions of psychopathy, exposure to violence, and substance use.

The full model containing all predictors was statistically significant χ^2 (12, N = 881) = 360.26, $p < .001$, indicating that the model was able to distinguish between participants who reported desistance from offending and those who reported committing offences. The model as a whole explained between 34% (Cox and Snell R square) and 45% (Nagelkerke R square) of the variance in desistance from offending, and correctly identified 77.1% of the cases.

As shown in Table 5.36, four of the independent variables made a unique statistically significant contribution to the model. The strongest predictor was exposure to violence recording an odds ratio of 0.73. This indicated that respondents who had lower levels of exposure to violence were 0.73 times more likely to report desistance from offending than those who had higher exposure, controlling for all other factors in the model. Participants with lower levels of peer delinquent behaviour compared to those with higher scores (OR = 0.49) were more likely to desist; and those who had lower levels of substance use (OR = 0.46) compared to those with higher usage were also more likely to report desistance.

The appearance of the grandiose manipulative dimension of the YPI as a contributor to the model at this later wave, in notable in the design of interventions for young adults, because this could impact on an individual's ability to engage with a programme. Although gang membership did not make a significant contribution for this wave of data, antisocial peer behaviour did. These findings suggest that negative psychological, social and situational risk factors have a relationship to desistance.

Table 5.35

Correlation Between Independent Variables at 72 Months

Variables	1	2	3	4	5	6	7	8	9	10
1. Peer influence	—									
2. Peer behaviour	.71***	—								
3. Peer resistance	-.10**	-.06	—							
4. PSMI	-.20***	-.19***	.39***	—						
5. Temperance	-.36	-.40***	.20***	.41***	—					
6. YPI 1	.23***	.22***	-.08*	-.30***	-.45***	—				
7. YPI 2	.21***	.26***	-.11**	-.33***	-.51***	.64***	—			
8. YPI 3	.37***	.34***	-.23***	-.45***	-.65***	.64***	.59***	—		
9. Exposure to viol.	.32***	.36***	.05	-.05	-.26***	.15***	.15***	.17***	—	
10. Substance	.38***	.35***	-.03	-.12***	-.27***	.16***	.13***	.29***	.27***	—

Statistical significance: *$p < .05$; **$p < .01$; ***$p < .001$

Table 5.36

Binary Logistic Regression Results For 72 Months

Variable	B	SE	*p*	OR	95% CI Lower	Upper
Gang never			.32			
Gang current	-0.43	0.36	.24	0.65	.32	1.32
Gang prior	0.14	0.20	.48	1.15	.78	1.71
Peer infl.	-0.13	0.19	.48	0.88	.61	1.26
Peer behav.	-0.71	0.16	.000***	0.49	.36	.68
Peer resist.	0.05	0.18	.79	1.05	.74	1.48
PSMI	-0.09	0.23	.71	0.92	.59	1.44
Temperance	0.24	0.14	.09	1.27	.96	1.68
YPI 1	-0.03	0.01	.01**	0.97	.95	.99
YPI 2	-0.01	0.02	.58	0.99	.96	1.03
YPI 3	0.01	0.02	.68	1.01	.98	1.04
Exp. Viol.	-0.31	0.06	.000***	0.73	.66	.82
Substance	-0.98	0.13	.000***	0.38	.30	.48
Constant	3.21	1.28	.01	24.85		

Dependent variable: reported desistance from offending. OR = odds ratio. SE = standard error. 95% CI = confidence interval. YPI 1: Grandiose Manipulative dimension; YPI 2: Callous Unemotional dimension; YPI 3: Impulsive Irresponsible dimension.
Significance: * p<.05 ** p<.01 *** p<.001

Month 84

Descriptive statistics

Descriptive statistics for all continuous variables for month 84 are presented in Table 5.37 and the descriptive statistics for categorical variables are presented in Table 5.38.

Table 5.37

Descriptive Statistics For Independent Variables at 84 Months

Variable	N	Min	Max	M	SD
Peer influence	858	1.00	5.00	1.43	0.65
Peer behaviour	854	1.00	5.00	1.66	0.72
Peer resistance	865	1.00	4.00	3.42	0.52
PSMI	865	1.20	4.00	3.28	0.42
Temperance	866	1.00	5.00	3.22	0.84
YPI 1	866	20.00	76.00	36.45	10.47
YPI 2	866	17.00	53.00	31.78	6.41
YPI 3	866	15.00	60.00	32.85	8.50
Exposure to viol.	860	0.00	9.00	0.63	1.13
Substance use	866	0.00	10.00	1.16	1.71

Table 5.38
Descriptive Statistics For Categorical Variables at 84 Months

Variable	Frequency	%
Desister	505	58.90
Persister	352	41.10
Never in a gang	561	64.80
Currently in a gang	62	7.20
Previously in a gang	243	28.10

Binary logistic regression results for 84 months, age range 20 to 26 years

Table 5.39 shows the correlation between variables. Peer influence and delinquent behaviour had a moderate relationship, as did the three psychopathic dimensions; all other relationships were weak. Direct Binary logistic regression was performed to assess the impact of psychological and social risk factors on desistance from offending. The model contained ten independent variables: gang status, peer influence, peer delinquent behaviour, resistance to peer influence, psychosocial maturity, three dimensions of psychopathy, exposure to violence, and substance use.

The full model containing all predictors was statistically significant χ^2 (12, N = 855) = 345.34, $p < .001$, indicating that the model was able to distinguish between participants who reported desistance from offending and those who reported committing offences. The model as a whole explained between 0.27 (Cox and Snell R square) and 0.36 (Nagelkerke R square) of the variance in desistance from offending, and correctly identified 75.6% of the cases.

As shown in Table 5.40, five of the independent variables made a unique statistically significant contribution to the model. The strongest predictor was exposure to violence recording an odds ratio of 0.73. This indicated that respondents who had lower levels of exposure to violence were 0.73 times more likely to report desistance from offending than those who had higher exposure, controlling for all other factors in the model. Participants with lower levels of peer delinquent behaviour compared to those with higher scores (OR = 0.70) were more likely to desist; and those who had lower levels of substance use (OR = 0.48) compared to those with higher usage were also more likely to report

desistance. Additionally, those who had never been affiliated with a gang were more likely to report desistance (OR = 0.33) than those currently in a gang.

The final wave revealed that exposure to violence and substance use contributed to the model for all waves, alongside at least one social risk factor of peer behaviour/influence. That current gang membership emerged again as a risk factor in this final wave is again noteworthy in regard to the planning of interventions for young adults. The age ranges for this wave were 20 to 26 years, with a mean age of 23.06 (*SD* = 1.17).

Table 5.39

Correlation Between Independent Variables at 84 Months

Variables	1	2	3	4	5	6	7	8	9	10
1. Peer influence	—									
2. Peer behaviour	.73***	—								
3. Peer resistance	-.13***	-.07*	—							
4. PSMI	-.15***	-.14***	.34***	—						
5. Temperance	-.32***	-.36***	.18***	.38***	—					
6. YPI 1	.25***	.24***	-.12***	-.33***	-.48***	—				
7. YPI 2	.20***	.23***	-.90**	-.32***	-.48***	.63***	—			
8. YPI 3	.29***	.27***	-.19***	-.49***	-.64***	.62***	.55***	—		
9. Exposure to viol.	.27***	.37***	-.00	-.02	-.24***	.10**	.18***	.19***	—	
10. Substance	.30***	.32***	-.06	-.16***	-.29***	.22***	.19***	.27***	.20***	—

Statistical significance: *$p < .05$; **$p < .01$; ***$p < .001$

Table 5.40

Binary Logistic Regression Results For 84 Months

Variable	B	SE	*p*	OR	95% CI Lower	Upper
Gang never			.00**			
Gang current	-1.10	0.34	.00**	0.33	0.17	0.65
Gang prior	-0.35	0.19	.07	0.71	0.49	1.03
Peer infl.	-0.26	0.19	.17	0.77	0.53	1.12
Peer behav.	-0.35	0.17	.05*	0.70	0.50	0.99
Peer resist.	0.03	0.17	.85	1.03	0.74	1.44
PSMI	-0.46	0.24	.06	0.63	0.39	1.02
Temperance	0.26	0.14	.07	0.71	0.49	1.03
YPI 1	-0.01	0.01	.45	0.99	0.97	1.01
YPI 2	-0.01	0.02	.46	0.99	0.95	1.02
YPI 3	-0.01	0.02	.69	0.99	0.97	1.02
Exp. Viol.	-0.31	0.06	.000***	0.73	0.65	0.82
Substance	-0.74	0.12	.000***	0.48	0.38	0.60
Constant	3.82	1.36	.01**	45.73		

Dependent variable: reported desistance from offending. OR = odds ratio. SE = standard error. 95% CI = confidence interval. YPI 1: Grandiose Manipulative dimension; YPI 2: Callous Unemotional dimension; YPI 3: Impulsive Irresponsible dimension.
Significance: * p<.05 ** p<.01 *** p<.001

Discussion

Present Study

The present study investigated the contribution of psychological and social risk factors to a model of desistance in a sample of juvenile offenders who have committed at least one felony offence. The psychological risk factors that were tested in the model were: Psychopathy; psycho-social maturity; temperance; and resistance to peer influence. The social risk factors that were included were: Gang status (current, prior and never); peer antisocial influence; peer antisocial behaviour; exposure to violence; and substance use. Using binary logistic regression, a key aim of the present study was to investigate whether both social and developmental risk factors contributed to a model of desistance. The study also sought to explore whether the relevant risks changed over the period of the study, as the sample aged.

Desistance Model

Gang status was not a strong predictor for desistance, only contributing to four of the models tested and inconsistently. At months 18 and 36 prior gang members were significantly less likely to desist, and at months 60 and 84 current gang members were significantly less likely to desist. These findings support prior research, which found that negative constructs and so offending behaviours do not necessarily change when an individual leaves the gang (Decker & Lauritsen, 2002; Pyrooz et al., 2010). It is possible, however, that current gang membership could have played a more central role if desistance from violent offending was investigated separately (Dong & Krohn, 2016). The contribution of prior gang membership could be explained by individuals being between gangs at those points in the study. Prior research has identified a strong relationship between

peer antisocial influence and behaviour, but has recognised the need for future research to understand the relationship of gang membership to other psychological and social risk factors (Pyrooz et al., 2016).

The peer antisocial behaviour and influence measures for the present study were highly correlated. Prior research on the same data as the present study had combined the two scales, even though authors noted a limitation in doing so on account of notable differences between the questions for each measure; most notably the weighting of the antisocial influence scale towards the participant's alcohol and drug use (Walters, 2016a). Peer antisocial behaviour contributed to nine out of ten of the models, and peer influence contributed to the only wave where behaviour failed to contribute, at month 60. The contribution of lower levels of peer antisocial behaviour to desistance supports previous research, which found higher levels of both influence and behaviour for persistent and also more varied offending (Monahan & Piquero, 2009). However, the present study did not find that peer delinquent behaviour was limited to adolescence (Steinberg & Monahan). The present study's findings accorded with those of a previous study, which found no direct relationship between deviant peer pressure and gang involvement (Alleyne & Wood, 2014). It is therefore worth considering whether influence or behaviour is investigated in respect to peer delinquency.

Although a psychological risk factor, resistance to peer influence is relevant to the role peer delinquency in desistance. In the present study it did not contribute to the desistance model for any of the waves. This finding does not accord with a prior study using the same dataset (Monahan et al., 2009), which found that participants with greater resistance to peer influence desisted sooner in the study than their peers. It is noteworthy that the present study found a strong

pattern of diminished resistance to peer influence for current gang members, but not for mixed-style offenders.

Previous research reported that early desisters from offending had significantly higher levels of psychosocial maturity than recidivists during adolescence (Monahan, et al., 2013). In the present study psychosocial maturity did not make a significant contribution to the model to the desistance model. It is possible that the age standard deviation affected the reported levels of maturity for desisters and persisters. However, as noted above resistance to peer influence, another developmental risk factor also failed to predict desisters in the sample.

In contrast, the strongest predictor for desistance for the first half of the study was temperance. However, for the last three waves of data, higher suppression of aggression and impulse control did not contribute to the model. This change can be explained by the ageing of participants; at month 60 the mean age of the sample was 21.05 years (*SD* = 1.16, range between 18 and 24). This accords with the adolescent-specific nature of lower temperance levels and the overall ability to control impulse and aggression with age (Cauffman & Stein, 2000; Monahan, et al., 2013).

The present study only partially supported the findings of Sweeten and colleagues (2013) who also found that peer delinquency and temperance made a contribution to age specific desistance. Using the same dataset as the present study, the authors also found that psychosocial maturity, gang membership, peer influence, and resistance to peer influence made significant contributions to desistance. The discrepancy in findings can be accounted for by the variety of variables that the authors (Sweeten et al., 2013) used in their research, which included attitudes, employment and marriage, in addition to psychological and social predictors. The findings of the present study did not support the suggestion

that self control is dependent upon moral decision making processes (Wikström & Treiber, 2007), but rather that it is an individual and age-specific trait that is associated with criminal behaviour (Gottfredson & Hirschi, 1990).

The callous unemotional dimension of psychopathy did not make a contribution to the model for any of the waves. The impulsive irresponsible dimension made a contribution at months 12 and the grandiose manipulative dimension contributed at month 72. There was therefore no consistent pattern for any of the YPI dimensions. These findings contrast prior research on the baseline data from the PTDS (Dhingra et al., 2015). Here, the authors found that both factor 1 and 2 were predictors of moral disengagement, which is associated with recidivism. There are two possible reasons for the discrepancy in findings: firstly, the previous study used a different measure for psychopathy, which was changed for later waves of data collection; secondly, the data from the baseline is atypical of later waves. The present findings are consistent with another study on gang re-engagement, which found that psychopathy was not a predictor for re-joining a gang (Boduszek et al., 2015). They also suggest that psychopathy should be treated as a dynamic risk factor (Gendreau et al., 1996). Specifically, this study did not support previous research, which has concluded that anti-social youth have higher levels of callous and unemotional traits than non-delinquent peers (Caputo et al., 1999; Silverthorne et al., 2001). Importantly, the findings from the present study indicated that psychopathy, a risk factor that has the potential to impact on an individual's engagement with desistance programmes, does not predict desistance.

Lower levels of exposure to violence predicted desistance for all waves of the present study. These findings accord with previous research, which found that gang membership alone does not predict victimisation (Katz et al., 2010) and that

the relationship between gangs and violence is not straightforward (Taylor et al., 2007). The findings indicate a relationship between offending and exposure to violence; one of only two risk factors that contributed to the model for the duration of the study. It is also noteworthy that lower levels of delinquent peer behaviour predicted desistance from crime, whereas gang membership did not consistently contribute to the model. Further investigations into the relationship between peer behaviour and exposure to violence could inform interventions for young people who are not gang affiliated but who offend with other people.

The present study accorded with previous research (Dowden & Brown, 2002) in that it found lower levels of substance use to be a predictor for desistance. However, unlike prior research using the same dataset, the present study did not find support for the coexistence of substance use and psychosocial maturity as predictors of desistance (Chassin et al., 2010). It did accord with other research that showed a relationship between drug use and impulsivity (Colder & Chassin, 1997; Chassin et al., 2010; Feldstein Ewing, et al., 2015); both factors contributed to the model. The present study also sheds further light on previous research that matched desisters from the first wave of same dataset to matched recidivists at the end of the study (Schubert et al., 2016). Those findings were inconclusive in regard to the relationship between substance use, psychological development, and the social influence of peers.

Limitations

Desistance in the current study was self-reported and was categorised as such for individual waves of the data. Since the pathway to desistance can be varied it is possible that some of the participants continued to offend at a later

period. The study is also limited in that it did not distinguish between income and violent offending.

Directions for Future Research

The change in predictor variables after month 48 is notable and warrants further investigation. After this point developmental risk factors may no longer contribute to the model and removing or replacing them with other criminogenic risk factors may inform interventions for post adolescent offenders. Given that exposure to violence was found to contribute to the model for all waves of the study, further research on violent offending desistance would also be warranted.

Conclusion

The present study has demonstrated that lower levels of peer delinquency, exposure to violence, and substance use predict desistance irrespective of age; and that the ability to control aggression and impulsivity during adolescence also contribute to desistance. That three of these variables are socially determined is hopeful for the design of offending programmes, and the understanding that some adolescents may require better coping mechanisms to control their temperance levels is important for understanding the pathway to desistance for youth.

Conclusion to Studies

Conclusion

Contribution to Knowledge

A key factor in determining the research design for the current thesis was to inform age-specific interventions for adolescents and young people who were affiliated to gangs. In recognition of this aim, the thesis investigated offending patterns and associated risk factors for a sample of convicted adolescent offenders at age-specific points in their development. Using a sample of young people who reported either gang membership or group offending at the baseline interview, the thesis sought to explore the relationship between individuals and delinquent groups, to offending and risk.

By differentiating between prior, current and never gang members the present thesis sought to directly investigate the relationship between gang membership and offending. A notable pattern of variance was found between current and never gang members for aggressive offending between the mean ages of 16.07 and 18.05 years. Overall there was a lack of variance between groups for offending frequencies; in particular, current gang members were only found to sell more drugs than their non-gang counterparts at the baseline interview. There was also a lack of homogeneity within each of the categories of gang status, which may account for the inconclusive findings for prior gang members; little variance was found between this group and either current or never gang members. There was consecutive and significant variance between current and never gang members for the use of illegal substances. Current gang members also reported significantly higher levels of drug use when compared to prior gang members on three non-consecutive occasions. These findings suggest that it is drug use rather than sales that differentiate between current gang members and non-gang adolescent and young adult offenders.

In order to explore the relationship between criminogenic risk and gang status, the research also investigated the psychological profiles and social risk factors of prior, current and never gang members. To inform interventions, risk factors were investigated at a single point in time, over a seven-year period rather than predicting individual trajectories. The research also added to the current literature by including prior gang membership status as a category. Although no patterns of variance were found for the offending frequencies of prior gang members, this group were found to retain significantly different risk factors, when compared to offenders who had never been gang affiliated. These included lower levels of psychosocial maturity, suppression of aggression, and impulsive irresponsible traits. Importantly, their levels of resistance to peer influence and consideration of others increased when they left the gang, and their total psychopathic traits decreased. Current gang members scored significantly higher for antisocial influence and behaviour and exposure to violence, when compared to those who had never been in a gang, and they had lower levels of resistance to peer influence. These findings indicate that both current and prior gang membership need to be taken into consideration when designing psychologically informed interventions for offenders.

The current research endorsed other studies in demonstrating that gang membership is a heterogenous experience (Klein & Maxson, 2006; Pyrooz, Sweeten, & Piquero, 2013), which suggests that generic gang interventions might not be effective. Gang members may be reluctant to reveal their affiliation because gang status can influence their management within the criminal justice system. It can therefore be difficult for practitioners to establish whether an individual under supervision is gang involved, and the extent to which membership of a delinquent group impacts upon their individual behaviour. Other

indicators of criminogenic risk could therefore inform the management of juvenile offenders. For this reason, the research investigated the offending styles of gang and non-gang members, in order to establish whether the sample corresponded to the typical adolescent trajectory from co to solo offending (Reiss & Farrington, 1991; Zimring, 1981). The findings revealed, not only that the offending style trajectory of current gang members was different to those who offend without membership of a group, but that offending style, irrespective of gang membership is a strong indicator of increased total offending. A major contribution of the present study was to demonstrate that contemporaneous mixed-style offending indicated higher levels of crime when compared to members of the sample who offended exclusively alone or in the company of others. Mixed-style offending can be more easily determined through either self-reporting or police records than the more ephemeral status of gang. In the present study, current gang members were found to follow a preferred trajectory of mixed-style offending for all but the final wave of the study. Mixed-style offenders were found to report significantly higher levels of total offending than both solo and mixed style offenders for ten out of eleven waves of data. This group were also found to consistently use significantly more illegal substances than those who were solo or co-offenders. In this respect the patterns of variance were higher for offending style rather than gang status.

Not only do mixed style offenders commit significantly more offences than solo and co-offenders, but their psychological profiles and social risk factors are different. Table 4.57 indicated that similar patterns of significant variances were found for mixed style offenders as current gang members. A major difference was resistance to peer influence; mixed-style offenders did not show a pattern of significantly lower resistance compared to single offending styles;

however, current gang members were found to be significantly and consistently lower than those who were not in a gang. Mixed-style offenders demonstrated higher levels of delinquent associates, psychopathic traits, and lower levels of impulse control. These factors could explain the higher levels of violent offending that mixed-style offenders were found to report, notably before the age of around 20 years. Impulse and aggression control are developmental and so dynamic, and a focus on these specific traits has the potential to inform youth offending intervention more broadly, not only for gang members.

The final study was a direct response to a call for researchers to investigate the relationship between gang membership and negative psychological risk factors to desistance (Pyrooz, Turanovic, Decker, & Wu, 2016). Its major contribution was to identify that the only consistent psychological risk to contribute to a model of desistance was higher levels of temperance and this was age-specific between the months 6 and 36, when the sample had a mean age range of between 16.59 and 19.04. The other three factors to predict desistance were social: lower levels of exposure to violence, substance use, and delinquent peer behaviour contributed to the desistance model consistently over the duration of the study.

Interactional Theory

The category of prior gang membership, in addition to current gang member, was included in the research design in order to further inform Interactional Theory (Thornberry, Krohn, Lizotte, & Chard-Wierschem, 1993). In regard to offending, the research found support for the enhancement model of gang membership (Curry et al., 2014; Pyrooz et al., 2014; Tita & Ridgeway, 2007), which purports that already delinquent youth join a gang, but membership enhances their offending behaviour. However, the lack of significant variance

between prior gang members and the other two groups who were investigated, and the enhanced offending of mixed style offenders irrespective of gang membership suggests that the Invariance Hypothesis of Gang Membership may be a better fit (Pyrooz & Decker, 2013). This model purports that although gang membership in itself is not inherently criminalising, the onset is associated with an increase in delinquent behaviour. Although membership of a delinquent group could in itself enhance delinquency, it is also possible that an individual who exhibits antisocial traits could be attracted to the gang.

The findings from the investigation of psychological and social risk factors help to explain the relationship between the individual and his group to offending. Social risk factors of exposure to violence, peer delinquency and lower levels of resistance to peer influence were increased for current gang members, when compared to those who had left the gang. In particular temperance (impulse control and suppression of aggression) increased for people who left their gang, and there were patterns of a decrease in the impulsive irresponsible and callous unemotional dimensions of psychopathy. Whereas social risk factors can be explained by membership of a delinquent group, temperance can be seen as a dynamic risk factor which increases as an adolescent matures (Steinberg & Cauffman, 1996; Monahan, Steinberg, Cauffman & Mulvey, 2013). Although it is possible that leaving the gang enables an individual to control their aggression and impulsivity, it is also possible that as these characteristics naturally developed, membership of a group that exhibited lower levels of this behaviour became less appealing. Equally, although psychopathy is seen to be a relatively fixed trait (Larsson, Tuvblad, Rijsdijk, Andersher, Grann, & Lichtenstein, 2007), the current research found a pattern of significant variance between current and

prior gang members, through to early adulthood, suggesting that it was either developmentally or socially dynamic (Gendreau, Little, & Goggin, 1996).

As noted, the majority of gang members reported mixed style offending. Irrespective of gang status this group demonstrated higher criminogenic risks than those who offended either alone or with others. It may therefore be possible that the more prolific and versatile offenders are drawn to gangs because of the associated criminal opportunities. The only key difference between the findings for gang members and mixed style offenders was that the latter did not show a pattern of significant variance for lower levels of resistance to peer influence. For this reason, Pyrooz and Decker's (2013) proposed Invariance Hypothesis of Gang Membership was found to be a better fit for the current research overall, because gang membership may offer increased offending opportunities but is not in itself inherently criminalising. This finding has important implications for the design and implementation of treatment programmes.

Implications for Intervention Programmes

Four categories of gang intervention exist: prevention programmes, which target younger children; intervention programmes, which utilise surveillance and increased access to services for gang members; suppression programmes, which use enforcement and policing to deter gang activities; community intervention; and a comprehensive model that utilises aspects from all four categories (Howell, 2010). The current research was concerned with risk factors for young people who were already in the criminal justice system, rather than prevention. It is worth noting, however, that the increased antisocial behaviour and influence of peers for both gang members and mixed style offenders, could impact on any early attempt to prevent young people offending. This is because as young people develop

socially, the influence of delinquent group membership whether stable or temporary, may well be stronger than a prior prevention strategy. For those who are already involved, programmes focus on removing an individual from the gang, with the assumption that this will ultimately lead to desistance from offending (Braga, Hureau, & Papachristos, 2014; Esbensen, Petersen, Taylor, & Osgood, 2012 and 2014; Howell, 2010; Spergel, Wa, & Sosa, 2014). Results from the present study highlight a number of potential problems with this approach.

As noted, findings the present research concurred with previous research on the heterogeneous nature of gangs (Curry, Decker, & Pyrooz, 2014). Prior gang members continued to offend, even after leaving the gang. Finally, the analysis of gang contact data demonstrated that as the sample aged, the gang became less influential in terms of contact and importance. These findings are important for two reasons: First, they question the validity of focusing on gang membership for interventions. Second, even if gang membership is treated as the principal criminogenic risk for offenders who are affiliated, the findings suggest that as some individuals approached early adulthood, the effectiveness of such a tactic would be reduced. This observation was supported by the age specific variance found between gang and non-gang members for aggressive offending; a pattern of significant variance for this offending category was limited to the first 24 months of the study, when the sample had mean ages of 16.07 to 18.05.

With a view to informing targeted and age-specific interventions for group offenders, Studies 2 and 4 investigated psychological criminogenic risk factors according to gang status and offending style. When gang members were compared to those who had never been affiliated, they were found in general to be less psychosocially mature, have lower levels of impulse control and the ability to suppress aggression, less consideration of others, and lower future outlook. These

characteristics were reflected by their psychopathic traits, which were generally higher than those of both prior and never gang members. Similar patterns were found for mixed style offenders, with the exception of future outlook. Current gang members scored significantly lower than those who had never been gang affiliated for all waves of data. However, mixed style offenders were not consistently lower in their future orientation than their co and solo counterparts. Again, this difference could be explained by a more constant negative influence for gang members rather than those who would appear to have a degree of control or choice over their offending style. Any intervention for offenders who report either mixed style offending or gang membership need to take account of the associated negative psychological risk factors. Psychopathic traits have the potential to impact upon an individual's ability to empathise with victims, and for an individual's ability to manipulate the reported outcomes and impact of a programme that they attend. Heightened aggressiveness and the inability to supress impulse are factors that may override any behaviour programmes, and attention should be given to providing coping mechanisms for advent of a volatile situation. Gang members in particular also demonstrated significantly lower levels of resistance to peer influence. This finding in addition to their increased exposure to antisocial peers and influence also needs to be addressed in any group-offending programme, if it is to be effective post intervention.

Offending interventions ultimately aim to encourage an individual towards desistance. Given that recent studies have suggested that gang members continue to offend after leaving their gang (Ashton, Ioannou, & Hammond, 2018; Pyrooz, Turanovic, Decker, & Wu, 2016), the present thesis investigated which of the above psychological and social risk factor predicted reported desistance. The results from Study 5 found that gang membership was not a strong predictor of

desistance; however, risk factors that were shown to have been significantly higher for this group, namely lower levels of: temperance, exposure to violence, substance misuse, and peer delinquent behaviour were found to predict desistance for the sample. An inability to control impulse is associated with increased group offending (Hirschi & Gottfredson, 2000; Gottfredson & Hirschi, 1990; McGloin, Sullivan, Piquero & Bacon, 2008) and aggression is highly associated with increased offending (Goldweber, Dmitrieva, Cauffman, Piquero & Steinberg, 2011). At the month 48 interview the sample had a mean age of 20.06 years (*SD* = 1.16) and temperance no longer contributed to the model. This finding suggests that as psychological development occurs, social risk factors are the strongest predictors of recidivism or desistance. It is also essential to take account of lower temperance levels when designing interventions for those who are in their late adolescence.

Informed by academic research, the National Gang Center share a range of age and risk specific interventions on their website along with a status indicating whether the programme has been evaluated for impact (National Gang Center, 2018). The majority of interventions concentrate on trauma and violence reduction; however, one programme linked to the Juvenile Drug Court, concentrates on substance use. The present research supported the need for interventions relating to violence, both in terms of victimisation and also controlling aggressive behaviour. The present research suggests that substance use should be given greater attention in offending programmes and interventions, for both gang and mixed-style offenders. This is because of the required income or an exchange of services in order to acquire the substance, and also because of contact with dealers. Adolescent drug use has also been found to impact on cognitive development, which may in turn impact on an individual in later life (Battistella,

Fornari, Annoni, Chtioui, Dao, Fabritius, ... & Giroud, 2014; Chassin, Dmitrieva, Modecki, Steinberg, Cauffman, Piquero… Losoya, 2010). This could explain why some risk factors remain heightened for prior gang members. Results from the current thesis indicated lower levels of suppression of aggression and psychosocial maturity for this group.

Impact on Policy and Practice

Gang membership is traditionally viewed as a criminogenic risk factor because it normalises antisocial attitudes and behaviour and provides access to a co-offending network (Hall, Thornberry, & Lizotte, 2006; Thornberry, Krohn, Lizotte, Smith, & Tobin, 2003). It is therefore typically assumed that gang members offend as part of a group, and that membership of an established delinquent group is a risk factor above and beyond temporary co-offending networks (Bendixen, Endresen, & Olweus, 2006). Anti-gang strategies typically focus on combating drug sales and violent crime (Home Office, 2016; Howell, 2010). However, the present thesis found that exposure to violence and substance use rather than the selling of drugs and violent offending should be targeted for intervention, irrespective of gang membership.

Although there is often an assumed association between drug sales and gang membership (Esbensen, Guyot, Westad, & Houmoller, 2002; Howell, Egley, Tita, & Griffiths, 2007), the present study demonstrated a of variance for drug sales between gang members and those who had been previously or never been in a gang. This finding supports prior research that found gang members continued to sell drugs after leaving the gang (Barnes, Beaver, & Miller, 2010; Bjerregaard & Lizotte, 1995; Bolden, 2012; Carson, Peterson, & Esbensen, 2013; Gatti, Tremblay, Vitaro, & McDuff, 2005). Since standard deviations for the selling of

marijuana and other drugs were high for all participants who engaged in these activities, irrespective of gang status, the findings suggest a degree of individuality in regard to the selling of drugs within groups of gang members, prior gang members and those who have no affiliation. This suggests that rather than being identified as a generic risk factor, individuals should be assessed for level of risk.

The findings for the relationship between gang membership and drug use were different to drug sales. The majority of gang members in the sample reported sharing drugs as part of their gang, suggesting that this was a stable part of their culture. This was supported by the significant variance for drug use, which was found between current gang members and those who had never been in a gang, confirming findings from previous studies (Esbensen & Huizinga, 1993; Hall, Thornberry, & Lizotte, 2006; Thornberry, Krohn, Lizotte, Smith, & Tobin, 2003; Zhang, Welte, & Wieczorek, 1999). The findings for prior gang members were inconclusive. However, mixed style offenders were also found to use more illegal substances than either their solo of co-offending counterparts, suggesting that this risk factor should be targeted more generally by policy and practice. There are also ramifications for an increasing shift in North America and Europe to decriminalise the personal use of cannabis/marijuana (Volkow, Baler, Compton, & Weiss, 2014), on account of the relationship between drug use and lower levels of psychosocial maturity (Chassin, Dmitrieva, Modecki, Steinberg, Cauffman, Piquero… Losoya, 2010) and between substance misuse and increased impulsivity (Colder & Chassin, 1997; Chassin et al., 2010; Feldstein Ewing, Filbey, Loughan, Chassin, & Piquero, 2015).

Significant differences were found between the aggressive offending frequencies for gang members and those who had never been in a gang, and for

mixed style offenders when compared to solo and co-offenders. For gang members this was when the sample had a range of mean ages between 16.07 and 18.05 years, with additional significant variance was found when the mean ages were 19.04 and 21.05. Mixed style offenders demonstrated variance for the same age ranges. These findings again may suggest an age-specific variation and that violent offending is consistently a higher risk factor for more prolific adolescent offenders, rather than those in their early adulthood. Therefore, violent offending is a greater risk factor for gang members under the age of 21 years. However, it should be noted that within-group differences were often considerable, as illustrated by the high standard deviations. These observations are consistent with the lack of homogeneity of gang characteristics and also a decrease of the importance of the gang and its members as the sample aged. Since higher temperance levels contributed to a model of desistance between the mean ages of 16.59 and 19.04, the present findings suggest that anti-offending policies for young people under the age of 20 years should take account of this developmental risk factor. Failure to do so, could effectively criminalise a young person who has not yet developed psychosocially. This finding may contribute to explaining the age-crime curve effect (Farrington, Loeber, & Joliffe, 2008; Gottfredson & Hirschi, 1990; McNeill & Maruna, 2007; Moffitt, 1993; Warr, 2002).

Findings from the present study also suggest that exposure to violence was a higher risk factor for gang members and mixed style offenders. Strategies to support young people away from criminal groups need to take account of this factor and the associated trauma, not only for gang members but for mixed style offenders. Lower levels of exposure to violence, and substance use alongside lower levels of delinquent peer behaviour were all found to consistently contribute to a model of desistance for the current cohort, from adolescence to early

adulthood. These risk factors are dynamic and could be targeted. All three factors, however, challenge the premise of early interventions because they are dynamic risk factors and because peer influence increases for adolescents (Warr, 2002). Furthermore, that current gang membership was associated with decreased levels of resistance to peer influence, is pertinent when considering the effectiveness of early interventions.

The sample for the present study consisted of juveniles who had been convicted of a serious offence and yet considerable variance was found in their psychological profiles and social risk factors, depending on gang status and offending style. These findings suggest that psychological, offending and social risk assessments should be utilised when working with adolescent and young adult offenders.

Limitations

With a view to informing the development of interventions for juvenile offenders, a decision was also made to retain outliers in the data. As a consequence of this, the unevenly distributed data restricted the range of possible analyses. The sample had high percentages of Hispanic and African American participants and the results may, therefore, not be applicable to other cultural and racialised groups. Female participants were also removed from the sample on account of differences that were found in an evaluation of a comprehensive anti-gang programme (Esbensen, & Deschenes, 1998). The results are therefore not transferable to female offenders.

Furthermore, the sampling, which consisted of male juveniles who had been adjudicated for at least one felony offence, enabled the investigation of criminogenic risk factors for a group of young who outwardly could be

categorised as a single problematic collective. Consequentially, the findings may of less use to those who work with general samples of youth, the majority of whom have never committed a serious offence. The sampling may also explain the number of small effect sizes that were found in the first four studies. The only exception to patterns of small effect sizes for offending and risk were for mixed style offenders: antisocial peer influence and behaviour, exposure to violence, and substance use. The results therefore were limited in terms of informing gang risk and interventions. However, equally they highlight the risk presented by those who are flexible in their offending style.

The focus of the present study was gang membership and its relationship to offending and risk. However, as noted throughout the research, gang membership is not a consistent or homogenous experience. Not only do gangs differ but the experiences of those who are members can vary within a gang, making it difficult to extrapolate the findings of any gang-focused research. In the present study the amount of contact and importance of the gang changed as the sample aged and variance was found between the characteristics of the gangs who were sampled in, for example, the sharing of money and drugs.

These observations lead to a further limitation which is that the sample was from two US counties: Maricopa County, Arizona and Philadelphia County, Pennsylvania. Even within the United States of America a lack of uniformity has been noted amongst gangs (Curry, Decker, & Pyrooz, 2014). Internationally, there are further differences in terms of the sample demographics and also offending; firearms for example are less accessible in countries where they are illegal. Such differences were identified by the Eurogang Project, but nevertheless researchers have concluded that international gang interventions should be informed by investigations into the US-based gangs (Klein, Kerner, Maxson, & Weitekamp,

2001). The present thesis investigated psychological and social risk factors, many of which are developmentally determined and applicable across different cultures. It is worth noting that similarities have been reported, more widely in studies of youth who co-offend (Carrington, & Van Mastrigt, 2013).

Further Research

The Pathways to Desistance sample consists of individuals who, at the time of the baseline interview, had committed a serious felony offence. The present thesis sought to explore the relationship between group offending, an individual's offending frequency and related the psychological and social risk factors. In conclusion, the findings from the five studies presented in this thesis have demonstrated that the offending frequencies of gang members are not consistently significantly different from those who are not affiliated to a gang. However, with interventions in mind, a number of significant psychological and social risk factors were found to be higher for those who were gang involved. Importantly, those who report adaptability in their style of offending also present higher risk factors than either exclusively solo or co-offenders. These findings have implications for risk assessment and for the design of interventions for delinquent youth. They also suggest that age and psychological development should be factored in to any offending behaviour programme, so that an intervention can have maximum effect. The next stage for any future research would be to use these findings to design and test an intervention for youth who display antisocial attitudes and behaviours. Additionally, designing measures that are psychologically informed to support the work of non-clinician practitioners could greatly enhance the supervision and rehabilitation of youth who offend.

Researchers have also suggested that a combination of quantitative and qualitative research would enhance our understanding of youth gangs (Hughes, 2005; Wood, 2014). In particular future research into how an individual sees their role within a gang could be investigated by adopting a narrative role analysis (Ioannou, 2006; Ioannou, Canter, & Youngs, 2017; Youngs & Canter, 2012). This approach has the potential to explain the differences that were reported in studies 1 and 3 of the present thesis between crime categories (Ioannou, Canter, Youngs, & Synnott, 2015) and has been found to work successfully with young offenders (Ioannou, Synnott, Lowe, Tzani-Pepelasi, 2018).

Finally, an analysis and comparison of the female data from the current set could further enhance interventions that are targeted for young women who offend and those who are gang involved.

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APPENDICES

Appendix A: Ethics Form

THE UNIVERSITY OF HUDDERSFIELD
School of Human and Health Sciences – School Research Ethics Panel

OUTLINE OF PROPOSAL
Please complete and return via email to:
Kirsty Thomson SREP Administrator: hhs_srep@hud.ac.uk

Name of applicant: Sally-Ann Ashton

Title of study: The relationship of static and dynamic risk factors to desistance from offending in a sample of youth involved in co-offending and gang membership.

Department: International Research Centre for Investigative Psychology Date sent: 4 February 16

Issue	Please provide sufficient detail for SREP to assess strategies used to address ethical issues in the research proposal
Researcher(s) details	Sally-Ann Ashton (u1472192)
Supervisor details	Dr Maria Ioannou
Aim / objectives	**To investigate the impact of group offending in the form of gang membership and co-offending on desistance from crime.** Using an existing longitudinal data set from the Pathways to Desistance Research Project. The Pathways to Desistance study was initiated between November 2000 and January 2003 with the aim of investigating the transition from adolescence to adulthood for young offenders who were drawn from courts in Maricopa County, Arizona or Philadelphia County, Pennsylvania. Criteria for involvement in the study stipulated that participants should be at least 14 years old and under 18 years old when they committed their first offence; and that they must have been found guilty of a serious offence. Data for the entire sample will be interrogated to investigate patterns of co-offending amongst the cohort. This will establish if the data fits with other studies on co-offending that have established a relationship between age and a decline in activity or a shift to solo offending (Anderson & Felson, 2010; Reiss & Farrington, 1991); and that offenders are more likely to engage in certain kinds of offences with others (Van Mastrigt & Farrington, 2009). The proposed research will then focus on the data associated with 175 participants who identified themselves as members of gangs during the baseline interview and will explore desistance over a five-year period. Existing

	publications focusing on this particular material include a study on gang embeddedness that compared gang members, leaders and non-gang affiliated criminal youth with particular references to psychopathy, psychosocial maturity, self-esteem and offending histories (Pyrooz, Sweeten, & Piquero, 2013). A paper on self-definitions of gang membership (Bjerregaard, 2002) found that self-identifying gang members were more likely to be involved in a wide range of delinquent behaviour when compared to non-gang members as a result of their networks. And papers on desistance from gang membership (Melde & Esbensen, 2013; Pyrooz, Decker & Webb, 2010). There are no existing studies relating directly to these data that consider the impact of offending with others. Research that considered the wider criminal styles of all offenders within the dataset did identify two separate trajectories that emerged from adolescent co-offending with peers: those who committed crimes alone, and those who displayed a mixed style (Goldweber et al., 2011). The proposed research will investigate the phenomenon of co-offending both as part of a gang and with non-gang affiliated peers. It will explore the types of offences that are committed with others and whether this changes over the period of the study. The results of this research will inform youth intervention programmes both for gangs and young people who co-offend.
Brief overview of research methodology	The proposed research will use inferential statistics to explore the variables associated with gang membership, co-offending and desistance over the seven-year period of the study. It will compare the offending histories and desistance between gang members, and non gang affiliated youth who commit offences with co-offenders to see if there are any significant differences. It will investigate the following variables: demographics, family background, ethnic background, offending histories, education, socio-economic status, community involvement, peer influence, moral thinking, substance abuse, alcoholism and psychological assessments of participants. 1. Psychological constructs: psychopathy, personality, psychosocial maturity, socio-emotional development (Weinberger Adjustment Inventory); 2. Acculturation; 3. Religion; 4. Attitudes: moral disengagement; procedural Justice; personal and social rewards and costs of crime; 5. Relationships: friendships; romantic relationships; 6. Substance abuse; 7. Gang membership; 8. Peer delinquency; 9. Exposure to violence; 10. Age; 11. Neighbourhood conditions; 12. Offence history at baseline; 13. Self reported offending follow-up; 14. Offending style (alone or co-offending).
Study Start & End Date	Start Date: October 2015 End Date: 2018

Permissions for study	Not applicable. The data is available to researchers.
Access to participants	The data has already been collected.
Confidentiality	All data has been anonymised. Information regarding the project and the data is available to the public and researchers respectively.
Anonymity	All data has already been anonymised. Part 2: All data will be anonymised by allocating a number. The number will then be added to the consent forms, which will be held in a secure place. This will be in case any of the participants wish to withdraw from the study.
Data Storage	N/A; data is publicly available.
Psychological support for participants	
Researcher safety / support (attach complete University Risk Analysis and Management form)	N/A No identifiable risks
Identify any potential conflicts of interest	None
Please supply copies of all relevant supporting documentation electronically. If this is not available electronically, please provide explanation and supply hard copy	
Information sheet	N/A
Consent form	N/A
Letters	N/A
Questionnaire	N/A
Interview guide	N/A
Dissemination of results	The results of the analysis will form the core of my PhD thesis. The findings will be disseminated through academic conferences; to practitioners and through peer-reviewed academic journals.
Other issues	None
Where application is to be made to NHS Research Ethics Committee / External Agencies	N/A
All documentation has been read by supervisor (where applicable)	Please confirm. This proposal will not be considered unless the supervisor has submitted a report confirming that (s)he has read all documents and supports their submission to SREP

All documentation must be submitted to the SREP administrator. All proposals will be reviewed by two members of SREP.
If you have any queries relating to the completion of this form or any other queries relating to SREP's consideration of this proposal, please contact the SREP administrator (Kirsty Thomson) in the first instance – hhs_srep@hud.ac.uk

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Weerman, F. M. (2003). Co-offending as Social Exchange. Explaining Characteristics of co-offending. *British Journal of Criminology*, *43*(2), 398-416.

Appendix B: Measures

Self-Reported Offending

Elliot, D. S. (1990). National Youth Survey. Institute of Behavioral Science. University of Colorado.

Delbert S. Elliott, David Huizinga, and Scott Menard (1989) Multiple Problem Youth: Delinquency, Substance Use, and Mental Health Problems(New York: Springer-Verlag).

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Instructions and Items

The variable names listed in this codebook section were changed during the study; participants were asked how many times in each month of the recall period they had committed the offence.

1. Did you purposely destroyed or damaged property that did not belong to you? How many times have you done this in the past 6/12 months? Thinking about the last time, was anyone with you at that time?

2. Purposely set fire to a house, building, car, or vacant lot? How many times have you done this in the past 6/12 months? Thinking about the last time, was anyone with you at that time?

3. Did you enter or break into a building to steal something? How many times have you done this in the past 6/12 months? Thinking about the last time, was anyone with you at that time?

4. Did you steal something from a store? How many times have you done this in the past 6/12 months? Thinking about the last time, was anyone with you at that time?

5. Did you buy, receive, or sell something that you knew was stolen?
How many times have you done this in the past 6/12 months? Thinking about the last time, was anyone with you at that time?

6. Did you use checks or credit cards illegally? How many times have you done this in the past 6/12 months? Thinking about the last time, was anyone with you at that time?

7. Did you steal a car or motorcycle to keep or sell? How many times have you done this in the past 6/12 months? Thinking about the last time, was anyone with you at that time?

8. Did you sell marijuana? How many times have you done this in the past 6/12 months? Thinking about the last time, was anyone with you at that time?

9. Did you sell other illegal drugs (cocaine, crack, heroine)? How many times have you done this in the past 6/12 months? Thinking about the last time, was anyone with you at that time?

10. Did you carjack someone? How many times have you done this in the past 6/12 months? Thinking about the last time, was anyone with you at that time? Did you have a gun the last time you did this?

11. Did you drive while you were drunk or high? How many times have you done this in the past 6/12 months? Thinking about the last time, was anyone with you at that time?

12. Did you get paid by someone for having sexual relationship with them? How many times have you done this in the past 6/12 months? Thinking about the last time, was anyone with you at that time?

12. Did you force someone to have sex with you? How many times have you done this in the past 6/12 months? Thinking about the last time, was anyone with you at that time? Did you have a gun the last time you did this? [Responses to this question were masked by the researchers and not available]

13. Did you kill someone? How many times have you done this in the past 6/12 months? Thinking about the last time, was anyone with you at that time? Did you have a gun the last time you did this? [Responses to this question were masked by the researchers and not available]

14. Did you shoot at someone? How many times have you done this in the past 6/12 months? Thinking about the last time, was anyone with you at that time?

15. Did you shoot AT someone where you were the one who pulled the trigger? How many times have you done this in the past 6/12 months? Thinking about the last time, was anyone with you at that time?

16. Did you take something from another person by force, using a weapon? How many times have you done this in the past 6/12 months? Thinking about the last time, was anyone with you at that time? Did you have a gun the last time you did this?

17. Did you take something from another person by force, without a weapon? How many times have you done this in the past 6/12 months? Thinking about the last time, was anyone with you at that time?

18. Did you beat up or physically attack someone so badly that they probably needed a doctor? How many times have you done this in the past 6/12 months? Thinking about the last time, was anyone with you at that time?

19. Did you get in a fight? How many times have you done this in the past 6/12 months? Thinking about the last time, was anyone with you at that time?

20. Did you beat up, threaten, or physically attack someone as part of a gang? How many times have you done this in the past 6/12 months? Thinking about the last time, was anyone with you at that time? Did you have a gun the last time you did this?

21. Did you carry a gun? How many times have you done this in the past 6/12 months? Thinking about the last time, was anyone with you at that time?

22. Did you break into a car to steal from it? How many times have you done this in the past 6/12 months? Thinking about the last time, was anyone with you at that time?

23. Did you go joyriding? How many times have you done this in the past 6/12 months? Thinking about the last time, was anyone with you at that time?

Gang Measure

Thornberry, T.P., Lizotte, A.J., Krohn, M.D., Farnworth, M. & Jang, S.J. (1994). Delinquent peers, beliefs, and delinquent behavior: A longitudinal test of interactional theory. Criminology, 32: 47-83.

Esbensen, F.A. and Huizinga, D. (1993). Gangs, Drugs, and Delinquency in a Survey of Urban Youth. Criminology, 31(4): 565-89.

Instructions and Items

1. Last time, you mentioned that you were a member of a gang. Are you still a member of that gang? Yes or No

If yes, skipped to item.

If no....

2. Unique identifier for the gang the subject belonged to during the last recall period

3. When did you leave that gang?

4. Recall period month (S#M#) the subject left the gang from the last recall period

5. Why did you leave? Open-ended interview item - not in SPSS.

6. Name of the gang?

7. Did you join a gang, or have you been a member of a gang at any time over the past 6/12 months? Yes or No

If no, skipped to item.

If yes….

8. What is the name of this gang?

Unique identifier for the gang the subject belonged to during the recall period. This gang is the focus of all follow-up questions (e.g., members, colors, rules, etc.)

9. How many members are in this gang?

10. What is the age of the oldest gang member?

11. Does your gang have any colors? Yes or No

12. Does your gang have any rules? Yes or No

13. Does your gang share money? Yes of No

14. Does your gang share drugs? Yes or No

15. Does your gang have punishments for breaking the rules? Yes or No

16. In the past 6/12 months, how often did you have contact with this gang?

Daily

2 times per week

1 time per week

Less than weekly, more than monthly 1 time per month

Less than monthly

17. Are you still a member of this gang/posse? Yes or No

If no....

18. When did you leave this gang?

19. Recall period month (S#M#) the subject left the gang they belonged to during the recall period

20. Why did you leave? Open-ended interview item - not in SPSS.

If yes...

21. What is/was your position in the gang/posse?

Leader

Not a leader, but one of the top people

A member

Something else. Specify "Other" position in gang/posse?

22. How important is the gang/posse to you?

Not at all important

A little bit

Moderately

Quite a bit

Extremely

23. How many of your friends are NOT members of the gang/posse?

None - all are members

A few are not members

Half are not members

Most are not members

All - none are members

Substance Use

Chassin, L., Rogosch, F., and Barrera, M. (1991). Substance use and symptomatology among adolescent children of alcoholics. Journal of Abnormal Psychology, 100(4), 449-463.

DeLucia, C., Belz, A., and Chassin, L. (2001). Do adolescent symptomatology and family environment vary over time with fluctuations in paternal alcohol impairment? Developmental Psychology, 37(2), 207-216.

Instructions and Items

Which of the following drugs have you used in the past 6/12 months? How often have you used the drug in the past 6/12 months?

Marijuana/hashish

Sedatives/tranquilizers (valium, xanax, etc.)

Stimulants/amphetamines (diet pills, methamphetamine,etc.)

Cocaine

Opiates

Ecstasy

Hallucinogens (acid, LSD, etc.)

Inhalants (glue, paint, etc.)

Amyl nitrate/poppers/odorizers

Other (specify)

Future Outlook

Scheier, M. F. & Carver, C. S. (1985). Optimism, coping and health: Assessment and implications of generalized outcome expectations. Health Psychology, 4, 219-247.

Strathman, A., Gleicher, F., Boninger, D., & Edwards, C. S. (1994). The consideration of future consequences: Weighing immediate and distant outcomes of behavior. Journal of Personality and Social Psychology, 66, 742-752.

Zimbardo, P. G. (1990). The Stratford Time Perspective Inventory. Stratford, CA: Stratford University.

Instructions and Items

Select the choice that is most true to you: (1) Never True, (2) Rarely True, (3) Often True, (4) Always True

1. I will keep working at difficult, boring tasks if I know they will help me get ahead later.

2. I think about how things might be in the future.

3. I make lists of things to do.

4. Before making a decision, I weigh the good vs. the bad.

5. I will give up my happiness now so that I can get what I want in the future.

6. I would rather save my money for a rainy day than spend it now on something fun.

7. I can see my life 10 years from now.

8. I usually think about the consequences before I do something.

Items not included in the syntax:

I live each day as if it's my last.

I tend to get caught up in the excitement of the moment.

The future is very vague and uncertain to me.

I make decisions on the spur of the moment.

I can't really plan for the future because things change so much. I always seem to be doing things at the last minute.

I don't plan, I take each day as it is.

Weinberger Adjustment Inventory (Socio-Emotional Development)

Dahlberg, L. L., Toal, S. B., & Behrens, C. B. (Eds.). (1998). *Measuring violence-related attitudes, beliefs, and behaviors among youths: A compendium of assessment tools*. Atlanta, GA: Division of Violence Prevention, National Center for Injury Prevention and Control, Centers for Disease Control and Prevention.

Weinberger, D.A., and Schwartz, G.E. (1990). Distress and restraint as superordinate dimensions of self-reported adjustment: a typological perspective. Journal of Personality, 58(2), 381-417.

Instructions and Items

The measure asks participants to rank how much their behaviour in the past six months matches a series of statements. Higher scores on each of the subscales delineated below indicate more positive behaviour.

(1) False
(2) Somewhat False
(3) Not Sure
(4) Somewhat True
(5) True

1. Doing things to help other people is more important to me than almost anything else.
2. I'm the kind of person who will try anything once, even if it's not that safe.
3. I should try harder to control myself when I'm having fun.
4. I do things that are against the law more often than most people.

5. I often go out of my way to do things for other people.

6. People who get me angry better watch out.

7. I think about other people's feelings before I do something they might not like.

8. I do things without giving them enough thought.

9. When I have the chance, I take things I want that don't really belong to me.

10. If someone tries to hurt me, I make sure I get even with them.

11. I enjoy doing things for other people, even when I don't receive anything in return.

12. I become "wild and crazy" and do things other people might not like.

13. I do things that are really not fair to people I don't care about.

14. I will cheat on something if I know no one will find out.

15. When I'm doing something for fun (for example, partying, acting silly), I tend to get carried away and go too far.

16. I make sure that doing what I want will not cause problems for other people.

17. I break laws and rules I don't agree with.

18. I like to do new and different things that many people would consider weird or not really safe.

19. Before I do something, I think about how it will affect the people around me.

20. If someone does something I really don't like, I yell at them about it.

21. People can depend on me to do what I know I should.

22. I lose my temper and "let people have it" when I'm angry.

23. I do things that I know really aren't right.

24. I say the first thing that comes into my mind without thinking enough about it.

25. I pick on people I don't like.

26. I try very hard not to hurt other people's feelings.

27. I stop and think things through before I act.

28. I say something mean to someone who has upset me.

29. I make sure I stay out of trouble.

30. When someone tries to start a fight with me, I fight back

Resistance to Peer Influence

Steinberg, L. 2000. Resistance to peer influence. Unpublished. Retreived from: http://pathwaysstudy.pitt.edu

Instructions and Items

For each question, decide which sort of person you are most like. Then decide if that is sort of true or really true for you.

(1) Some people go along with their friends just to keep their friends happy OR (2) Other people refuse to go along with what their friends want to do, even though they know it will make their friends unhappy.

(1) Sort of True OR (2) Really True

(1) Some people think it's more important to be an individual than to fit in with the crowd OR (2) Other people think it is more important to fit in with the crowd than to stand out as an individual.

(1) Sort of True OR (2) Really True

(1) For some people, it's pretty easy for their friends to get them to change their mind OR (2) For other people, it's pretty hard for their friends to get them to change their mind.

(1) Sort of True OR (2) Really True

(1) Some people would do something that they knew was wrong just to stay on their friends' good side OR (2) Other people would not do something they knew was wrong just to stay on their friends' good side.

(1) Sort of True OR (2) Really True

(1) Some people hide their true opinion from their friends if they think their friends will make fun of them because of it OR (2) Other people will say their true opinion in front of their friends, even if they know their friends will make fun of them because of it.

(1) Sort of True OR (2) Really True

(1) Some people will not break the law just because their friends say that they would OR (2) Other people would break the law if their friends said that they would do it.

(1) Sort of True OR (2) Really True

(1) Some people change the way they act so much when they are with their friends that they wonder who they "really are" OR (2) Other people act the same way when they are alone as they do when they are with their friends.

(1) Sort of True OR (2) Really True

(1)Some people take more risks when they are with their friends than they do when they are alone OR (2) Other people act just as risky when they are alone as when they are with their friends.

(1) Sort of True OR (2) Really True

(1) Some people say things they don't really believe because they think it will make their friends respect them more OR (2) Other people would not say things they didn't really believe just to get their friends to respect them more.

(1) Sort of True OR (2) Really True

(1) Some people think it's better to be an individual even if people will be angry at you for going against the crowd OR (2) Other people think it's better to go along with the crowd than to make people angry at you.

(1) Sort of True OR (2) Really True

Youth Psychopathic Traits Index

Andershed, H., Kerr, M., Stattin, H., & Levander, S. (2002). Psychopathic traits in non-referred youths: A new assessment tool. In E. Blauuw & L. Sheridan (Eds.), Psychopaths: Current International Perspectives (pp. 131-158). The Hague: Elsevier.

Instructions and Items

Answer each statement as you most often feel and think.

1. (1) Does not apply at all
2. (2) Does not apply well
3. (3) Applies fairly well
4. (4) Applies very well

Subscales

YPI - Dishonest charm

It's easy for me to charm and seduce others to get what I want from them. I have the ability to con people by using my charm and smile.

When someone asks me something, I usually have a quick answer that sounds believable, even if I've just made it up.

Pretty often I act charming and nice, even with people I don't like, in order to get what I want.

When I need to, I use my smile and my charm to use others.

YPI - Grandiosity

I'm better than everyone on almost everything.

I have talents that go far beyond other people's.

The world would be a better place if I were in charge.

I'm more important and valuable than other people.

I am destined to become a well-known, important and influential person.

YPI - Lying

It's fun to make up stories and try to get people to believe them. Sometimes I lie for no reason, other than because it's fun. Sometimes I find myself lying without any particular reason.

I like to spice up and exaggerate when I tell about something. I've often gotten into trouble because I've lied too much.

YPI - Manipulation

I can make people believe almost anything.

I am good at getting people to believe in me when I make something up.

It's easy for me to manipulate people.

To get people to do what I want, I often find it efficient to con them.

It has happened that I've taken advantage of (used) someone in order to get what I want.

YPI - Remorselessness

I have the ability not to feel guilt and regret about things that I think other people would feel guilty about.

I seldom regret things I do, even if other people feel that they are wrong.

When someone finds out about something that I've done wrong, I feel more angry than guilty.

To feel guilty and remorseful about things you have done that have hurt other people is a sign of weakness.

To feel guilt and regret when you have done something wrong is a waste of time.

YPI - Unemotionality

I usually feel calm when other people are scared.

To be nervous and worried is a sign of weakness.

What scares others usually doesn't scare me.

I don't understand how people can be touched enough to cry by looking at things on TV or movie.

I don't let my feelings affect me as much as other people's feelings seem to affect them.

YPI - Callousness

I think that crying is a sign of weakness, even if no one sees you.

When other people have problems, it is often their own fault, therefore, one should not help them.

It's important to me not to hurt other people's feelings. {Reverse coded}

I often become sad or moved by watching sad things on TV or film. {Reverse coded}

I usually become sad when I see other people crying or being sad. {Reverse coded}

YPI - Thrill Seeking

I like to be where exciting things happen.

I get bored quickly when there is too little change.

I like to do things just for the thrill of it.

I get bored quickly be doing the same thing over and over.

I like to do exciting and dangerous things, even if it is forbidden or illegal.

YPI - Impulsiveness

I prefer to spend my money right away rather than save it.

I consider myself as a pretty impulsive person.

It often happens that I talk first and think later.

If I get the chance to do something fun, I do it no matter what I had been doing before. It often happens that I do things without thinking ahead.

YPI - Irresponsibility

I have probably skipped school or work more than most other people.

If I won a lot of money in the lottery I would quit school or work and just do things that are fun. I have often been late to work or classes in school.

It has happened several times that I've borrowed something and then lost it.

I often don't/didn't have my school or work assignments done on time.

Dimensions

YPI - Grandiose-Manipulative Dimension

It's easy for me to charm and seduce others to get what I want from them. It's fun to make up stories and try to get people to believe them.

I'm better than everyone on almost everything.

I can make people believe almost anything.

I have the ability to con people by using my charm and smile.

I am good at getting people to believe in me when I make something up.

I have talents that go far beyond other people's.

It's easy for me to manipulate people.

Sometimes I lie for no reason, other than because it's fun.

When someone asks me something, I usually have a quick answer that sounds believable, even if I've just made it up.

The world would be a better place if I were in charge.

To get people to do what I want, I often find it efficient to con them.

Pretty often I act charming and nice, even with people I don't like, in order to get what I want. I'm more important and valuable than other people.

When I need to, I use my smile and my charm to use others.

I am destined to become a well-known, important and influential person.

Sometimes I find myself lying without any particular reason.

It has happened that I've taken advantage of (used) someone in order to get what I want.

I like to spice up and exaggerate when I tell about something.

I've often gotten into trouble because I've lied too much.

YPI - Callous-Unemotional Dimension

I usually feel calm when other people are scared.

I have the ability not to feel guilt and regret about things that I think other people would feel guilty about.

I think that crying is a sign of weakness, even if no one sees you.

When other people have problems, it is often their own fault, therefore, one should not help them.

I seldom regret things I do, even if other people feel that they are wrong. It's important to me not to hurt other people's feelings. [Reverse coded] To be nervous and worried is a sign of weakness.

When someone finds out about something that I've done wrong, I feel more angry than guilty.

I often become sad or moved by watching sad things on TV or film. [Reverse coded]

What scares others usually doesn't scare me.

I don't understand how people can be touched enough to cry by looking at things on TV or movie.

To feel guilty and remorseful about things you have done that have hurt other people is a sign of weakness.

I don't let my feelings affect me as much as other people's feelings seem to affect them. To feel guilt and regret when you have done something wrong is a waste of time.

I usually become sad when I see other people crying or being sad. {Reverse coded}

YPI - Impulsive-Irresponsible Dimension

I like to be where exciting things happen.

I prefer to spend my money right away rather than save it.

I get bored quickly when there is too little change.

I have probably skipped school or work more than most other people.

I consider myself as a pretty impulsive person.

If I won a lot of money in the lottery I would quit school or work and just do things that are fun. I have often been late to work or classes in school.

It often happens that I talk first and think later.

I like to do things just for the thrill of it.

If I get the chance to do something fun, I do it no matter what I had been doing before.

I get bored quickly be doing the same thing over and over.

It often happens that I do things without thinking ahead.

It has happened several times that I've borrowed something and then lost it.

I often don't/didn't have my school or work assignments done on time.

I like to do exciting and dangerous things, even if it is forbidden or illegal.

Peer Antisocial Behavior

Thornberry, T.P., Lizotte, A.J., Krohn, M.D., Farnworth, M. & Jang, S.J. (1994). Delinquent peers, beliefs, and delinquent behavior: A longitudinal test of interactional theory. Criminology, 32: 47-83.

Menard, S. and Elliott, D. S. (1996). Prediction of adult success using stepwise logistic regression analysis. A report prepared for the MacArthur Foundation by the MacArthur Chicago-Denver Neighborhood Project.

Instructions and Items

During the past 6/12 months:

How many of your friends have purposely damaged or destroyed property that did not belong to them?

How many of your friends have hit or threatened to hit someone?

How many of your friends have sold drugs?

How many of your friends have gotten drunk once in a while?

How many of your friends have carried a knife?

How many of your friends have carried a gun?

Peer Antisocial Influence

Thornberry, T.P., Lizotte, A.J., Krohn, M.D., Farnworth, M. & Jang, S.J. (1994). Delinquent peers, beliefs, and delinquent behavior: A longitudinal test of interactional theory. Criminology, 32: 47-83.

Menard, S. and Elliott, D. S. (1996). Prediction of adult success using stepwise logistic regression analysis. A report prepared for the MacArthur Foundation by the MacArthur Chicago-Denver Neighborhood Project.

Instructions and Items

During the past 6/12 months:

How many of your friends have suggested that you should go out drinking with them?

How many of your friends have suggested or claimed that you have to get drunk to have a good time?

How many of your friends have suggested or claimed that you have to be high on drugs to have a good time?

How many of your friends have suggested that you should sell drugs?

How many of your friends have suggested that you should steal something?

How many of your friends have suggested that you should hit or beat someone up?

How many of your friends have suggested that you should carry a weapon?

Exposure to Violence

Selner-Ohagan, M., Kindlon, D., Buka, S., Raudenbush, S., and Earls, F. (1998). Assessing exposure to violence in urban youth. Journal of child Psychology and Psychiatry and allied Disciplines, 39(2), 215-224.

Instructions and Items

Indicate if you have experienced the following events. Respond: Yes or No. If participant responds “Yes”, how many times has this happened.

Victim

1.In the past 6/12 months, have you been chased where you thought you might be seriously hurt?

Earlier you said you had been chased where you thought you could seriously get hurt.
How many times has this happened?

2. In the past 6/12 months, have you been beaten up, mugged, or seriously threatened by another person?

Earlier you said you had been beaten up, mugged, or seriously threatened by another person. How many times has this happened?

3. In the past 6/12 months, have you been raped, had someone attempt to rape you or been sexually attacked in some other way?

Earlier you said you had been raped, had someone attempt to rape you or been sexually attacked in some other way.

Present but no data:

Has this happened more than one time? Yes or No

How is the person that did this related to the subject?

(1) Family member

(2) Friend/acquaintance

(3) Stranger Where did this happen?

(1) At home

(2) At school

(3) In his/her neighborhood

(4) Other: Specify "other" location.

Witnessed

1. In the past 6/12 months, have you been attacked with a weapon, like a knife, box cutter, or bat?

Earlier you said you had been attacked with a weapon, like a knife, box cutter, or bat. How many times has this happened?

2. In the past 6/12 months, have you been shot at?

Earlier you said you had been shot at. How many times has this happened?

3. In the past 6/12 months, have you been shot?

Earlier you said you had been shot. How many times has this happened?

4. In the past 6/12 months, have you seen anyone get chased where you thought they could be seriously hurt?

Earlier you said you had seen someone get chased where you thought they could be seriously hurt. How many times has this happened?

5. In the past 6/12 months, have you seen anyone else get beaten up, mugged, or seriously threatened by another person?

Earlier you said you had seen someone get beaten up, mugged, or seriously threatened by another person. How many times has this happened?

6. In the past 6/12 months, have you seen someone else being raped, an attempt made to rape someone, or any other type of sexual attack?

Earlier you said you had seen someone being raped, an attempt made to rape someone, or any other type of sexual attack. How many times has this happened?

7. In the past 6/12 months, have you seen someone else get attacked with a weapon, like a knife, box cutter, bat, chain, or broken bottle?

Earlier you said you had seen someone attacked with a weapon, like a knife, box cutter, bat, chain, or broken bottle. How many times has this happened?

8. In the past 6/12 months, have you seen someone else get shot at? Earlier you said you had seen someone else get shot at.
How many times has this happened?

9. In the past 6/12 months, have you seen someone else get shot?

Earlier you said you had seen someone else get shot. How many times has this happened?

10. In the past 6/12 months, have you seen someone else get killed as a result of violence, like being shot, stabbed, or beaten to death?

Earlier you said you had seen someone get killed as a result of violence, like being shot, stabbed, or beaten to death. How many times has this happened?

Additional Violence/Death Items

1. Has anyone close to you tried to kill him/herself in the past 6/12 months?

How many people close to you have tried to kill themselves?

2. Have you tried to kill yourself in the past N months?

Earlier you said you had tried to kill yourself. How many times has this happened?

3. In the past 6/12 months, has anyone close to you died?
How many people close to you have died in the past 6/12 months?
How many people close to you have died in the past 6/12 months - truncated to 4:

Biofather died during recall period; Biomother died during recall period; Biological sister died during recall period; Biological brother died during recall period; Biological grandmother died during recall period; Biological grandfather died during recall period; Stepfather died during recall period; Stepmother died during recall period; Stepsister died during recall period; Stepbrother died during recall period; Adoptive father died during recall period; Adoptive mother died during recall period; Adoptive sister died during recall period; Adoptive brother

died during recall period; Wife died during recall period; Husband died during recall period; Son died during recall period; Daughter died during recall period; Aunt died during recall period; Uncle died during recall period; Female cousin died during recall period; Male cousin died during recall period; Nephew died during recall period; Niece died during recall period; Live in BFGF died during recall period Female friend died during recall period; Male friend died during recall period; Boyfriend died during recall period; Girlfriend died during recall period; Male roommate died during recall period; Female roommate died during recall period; Professional relationship died during recall period; Foster mother died during recall period; Foster father died during recall period; Foster brother died during recall period; Foster sister died during recall period; Mother of child died during recall period; Father of child died during recall period; Stepson died during recall period; Step daughter died during recall period; Fiancé died during recall period ; Other relative died during recall period; Other died during recall period.

4. In the past 6/12 months, have you found a dead body?

5. In the past 6/12 months, have you been in any other kind of situation that hasn't already been mentioned where you were frightened or thought that you or someone else would get hurt very badly or die?

6. Suicide Calendar

Attempted suicide month 1 to 6/12 Yes or No

Total number of months subject attempted suicide.

Appendix C: Patterns of Significant Results For Studies 1 to 4

Study 1

Patterns of significant variance for current gang members scoring significantly higher than never gang members for offending

Month	Mean Age	Total + Drugs	Total - Drugs	Income +	Income -	Aggress.
Base	16.07	* (M)	*** (S)		** (S)	*** (S)
6	16.59		* (S)			*** (S)
12	17.08		** (S)		** (S)	*** (S)
18	17.55		** (S)		* (S)	* (S)
24	18.05					* (S)
30	18.52					
36	19.04		* (S)			
48	20.06		* (S)			
60	21.05					** (S)
72	22.06	* (S)				
84	23.06					

Significance: * p<.05 ** p<.01 *** p<.001
Hedges' g: S = small effect size; M = medium effect size; L = large effect size

Patterns of significant variance for current gang members scoring significantly higher than prior gang members for offending

Month	Mean Age	Total + Drugs	Total - Drugs	Income +	Income -	Aggress.
Base	16.07					
6	16.59		* (S)			*** (S)
12	17.08					
18	17.55					
24	18.05					
30	18.52					
36	19.04		* (S)			
48	20.06					
60	21.05					
72	22.06					
84	23.06					

Significance: * p<.05 ** p<.01 *** p<.001
Hedges' g: S = small effect size; M = medium effect size; L = large effect size

Patterns of significant variance for current gang members scoring significantly higher than never gang members for drugs

Month	Mean Age	Marijuana	Other drugs	Substance Use
Base	16.07	* (S)		*** (S)
6	16.59			*** (S)
12	17.08			** (S)
18	17.55			** (S)
24	18.05			** (S)
30	18.52			
36	19.04			
48	20.06			** (S)
60	21.05			* (S)
72	22.06			** (S)
84	23.06			

Significance: * p<.05 ** p<.01 *** p<.001
Hedges' g: S = small effect size; M = medium effect size; L = large effect size

Patterns of significant variance for current gang members scoring significantly higher than prior gang members for drugs

Month	Mean Age	Marijuana	Other drugs	Substance Use
Base	16.07			*** (S)
6	16.59			
12	17.08			
18	17.55			
24	18.05			** (S)
30	18.52			
36	19.04			
48	20.06			** (S)
60	21.05			
72	22.06			
84	23.06			

Significance: * p<.05 ** p<.01 *** p<.001
Hedges' g: S = small effect size; M = medium effect size; L = large effect size

Study 2

Patterns of statistically significant variance for future orientation

Month	Mean Age	Gang < Never	Gang < Prior	Prior < Never
Base	16.07	** (S)	** (S)	
6	16.59	*** (S)		
12	17.08	* (S)		
18	17.55	*** (S)	*** (S)	*** (S)
24	18.05	*** (S)	*** (S)	
30	18.52	* (S)		
36	19.04	** (S)	** (S)	
48	20.06	** (S)	** (S)	** (S)
60	21.05	** (S)		
72	22.06	* (S)		
84	23.06	** (S)		

Significance: * p<.05 ** p<.01 *** p<.001
Hedges' g: S = small effect size; M = medium effect size; L = large effect size

Patterns of statistically significant variance for temperance

Month	Mean Age	Gang < Never	Gang < Prior	Prior < Never
Base	16.07	*** (M)	*** (M)	*** (M)
6	16.59	*** (S)		
12	17.08	*** (S)	*** (S)	*** (S)
18	17.55	*** (S)	*** (S)	*** (S)
24	18.05	*** (S)	*** (S)	*** (S)
30	18.52	*** (S)	*** (S)	*** (S)
36	19.04	*** (S)	*** (S)	
48	20.06	*** (S)	*** (S)	
60	21.05	*** (S)	*** (S)	*** (S)
72	22.06	*** (S)	*** (S)	*** (S)
84	23.06	*** (S)		*** (S)

Significance: * p<.05 ** p<.01 *** p<.001
Hedges' g: S = small effect size; M = medium effect size; L = large effect size

Patterns of statistically significant variance for consideration of others

Month	Mean Age	Gang < Never	Gang < Prior	Prior < Never
Base	16.07	** (S)	** (S)	
6	16.59	** (S)	** (S)	
12	17.08			
18	17.55	* (S)	* (S)	
24	18.05	*** (S)	*** (S)	
30	18.52	** (S)		
36	19.04	* (S)		
48	20.06			
60	21.05			
72	22.06			
84	23.06	* (S)		

Significance: * p<.05 ** p<.01 *** p<.001
Hedges' g: S = small effect size; M = medium effect size; L = large effect size

Patterns of statistically significant variance for PSMI

Month	Mean Age	Gang < Never	Gang < Prior	Prior < Never
Base	16.07	*** (S)		
6	16.59	*** (S)		*** (S)
12	17.08	*** (S)	*** (S)	*** (S)
18	17.55	*** (S)	*** (S)	
24	18.05	*** (S)	*** (S)	*** (S)
30	18.52	*** (S)	*** (S)	*** (S)
36	19.04	*** (S)	*** (S)	*** (S)
48	20.06	** (S)		
60	21.05	*** (S)		
72	22.06			
84	23.06	*** (S)		*** (S)

Significance: * p<.05 ** p<.01 *** p<.001
Hedges' g: S = small effect size; M = medium effect size; L = large effect size

Patterns of statistically significant variance for resistance to peer influence

Month	Mean Age	Gang < Never	Gang < Prior	Prior < Never
Base	16.07	*** (S)		
6	16.59	** (S)	*** (S)	
12	17.08	** (S)		
18	17.55	*** (S)	*** (S)	
24	18.05	*** (S)	*** (S)	
30	18.52	*** (S)	*** (S)	
36	19.04	*** (S)	*** (S)	
48	20.06	** (S)		
60	21.05	** (S)	** (S)	
72	22.06			* (S)
84	23.06			* (S)

Significance: * p<.05 ** p<.01 *** p<.001
Hedges' g: S = small effect size; M = medium effect size; L = large effect size

Patterns of statistically significant variance for psychopathy total

Month	Mean Age	Gang > Never	Gang > Prior	Prior > Never
Base	16.07	*** (M)		*** (M)
6	16.59	** (S)		
12	17.08	** (S)	** (S)	
18	17.55	*** (S)	** (S)	
24	18.05	*** (S)	*** (S)	
30	18.52	*** (S)	*** (S)	
36	19.04	*** (S)	*** (S)	
48	20.06	*** (S)	*** (S)	
60	21.05	*** (S)	*** (S)	
72	22.06	*** (S)	*** (S)	
84	23.06	*** (S)	*** (S)	

Significance: * p<.05 ** p<.01 *** p<.001
Hedges' g: S = small effect size; M = medium effect size; L = large effect size

Patterns of significant variance for current gang members scoring significantly higher than never gang members for the psychopathic dimensions

Month	Mean Age	Grandiose Manipulative	Callous Unemotional	Impulsive Irresponsible
6	16.59		*** (S)	*** (S)
12	17.08		*** (S)	*** (S)
18	17.55		** (S)	*** (S)
24	18.05	** (S)	*** (S)	*** (M)
30	18.52		*** (S)	*** (S)
36	19.04	** (S)	*** (S)	*** (S)
48	20.06		*** (S)	*** (S)
60	21.05	** (S)	*** (S)	*** (S)
72	22.06	** (S)	*** (S)	*** (S)
84	23.06	*** (S)	*** (S)	*** (S)

Significance: * p<.05 ** p<.01 *** p<.001
Hedges' g: S = small effect size; M = medium effect size; L = large effect size

Patterns of significant variance for current gang members scoring significantly higher than prior gang members for the psychopathic dimensions

Month	Mean Age	Grandiose Manipulative	Callous Unemotional	Impulsive Irresponsible
6	16.59			*** (S)
12	17.08		*** (S)	*** (S)
18	17.55	* (S)	** (S)	*** (S)
24	18.05		*** (S)	*** (M)
30	18.52		*** (S)	*** (S)
36	19.04	** (S)	*** (S)	*** (S)
48	20.06		*** (S)	*** (S)
60	21.05	** (S)	*** (S)	*** (S)
72	22.06	** (S)	*** (S)	*** (S)
84	23.06	*** (S)	*** (S)	*** (S)

Significance: * p<.05 ** p<.01 *** p<.001
Hedges' g: S = small effect size; M = medium effect size; L = large effect size

Patterns of significant variance for prior gang members scoring significantly higher than never gang members for the psychopathic dimensions

Month	Mean Age	Grandiose Manipulative	Callous Unemotional	Impulsive Irresponsible
6	16.59			
12	17.08			
18	17.55			*** (S)
24	18.05		*** (S)	
30	18.52		*** (S)	*** (S)
36	19.04			
48	20.06			
60	21.05		*** (S)	*** (S)
72	22.06			*** (S)
84	23.06		*** (S)	*** (S)

Significance: * p<.05 ** p<.01 *** p<.001
Hedges' g: S = small effect size; M = medium effect size; L = large effect size

Patterns of statistically significant variance for peer antisocial behaviour

Month	Mean Age	Gang > Never	Gang > Prior	Prior > Never
Base	16.07	*** (M)	*** (M)	*** (M)
6	16.59	*** (S)	*** (S)	*** (S)
12	17.08	*** (M)	*** (M)	
18	17.55	*** (S)	*** (S)	
24	18.05	*** (S)	*** (S)	
30	18.52	*** (S)	*** (S)	
36	19.04	** (S)		
48	20.06	*** (S)	*** (S)	
60	21.05	** (S)	** (S)	
72	22.06	** (S)		** (S)
84	23.06			

Significance: * p<.05 ** p<.01 *** p<.001
Hedges' g: S = small effect size; M = medium effect size; L = large effect size

Patterns of statistically significant variance for peer antisocial influence

Month	Mean Age	Gang > Never	Gang > Prior	Prior > Never
Base	16.07	*** (S)		
6	16.59	*** (S)	*** (S)	*** (S)
12	17.08	*** (S)	*** (S)	
18	17.55	*** (S)	*** (S)	*** (S)
24	18.05	*** (S)	*** (S)	
30	18.52	** (S)	** (S)	
36	19.04	** (S)	** (S)	
48	20.06	** (S)	** (S)	
60	21.05	** (S)	** (S)	
72	22.06	** (S)		
84	23.06			

Significance: * p<.05 ** p<.01 *** p<.001
Hedges' g: S = small effect size; M = medium effect size; L = large effect size

Patterns of statistically significant variance for exposure to violence

Month	Mean Age	Gang > Never	Gang > Prior	Prior > Never
Base	16.07	*** (M)	*** (M)	
6	16.59	*** (M)	*** (M)	
12	17.08	** (S)	**(S)	
18	17.55	* (S)	* (S)	
24	18.05	** (S)	** (S)	
30	18.52	*** (S)	*** (S)	
36	19.04	** (S)	** (S)	
48	20.06	** (S)	** (S)	
60	21.05	*** (S)	*** (S)	
72	22.06	*** (S)	*** (S)	
84	23.06	** (S)		

Significance: * p<.05 ** p<.01 *** p<.001
Hedges' g: S = small effect size; M = medium effect size; L = large effect size

Study 3

Patterns of significant variance for mixed style offenders scoring significantly higher than solo offenders for offending frequencies

Month	Mean Age	Total	Income	Aggress.
Base	16.07		*** (S)	*** (S)
6	16.59	*** (S)		*** (S)
12	17.08	*** (M)		*** (M)
18	17.55	*** (M)		
24	18.05	* (S)		*** (S)
30	18.52	*** (M)		
36	19.04	*** (M)		
48	20.06	* (S)		* (S)
60	21.05	*** (L)		
72	22.06	*** (L)		
84	23.06	*** (L)		

Significance: * p<.05 ** p<.01 *** p<.001
Hedges' g: S = small effect size; M = medium effect size; L = large effect size

Patterns of significant variance for mixed style offenders scoring significantly higher than co offenders for offending frequencies

Month	Mean Age	Total	Income	Aggress.
Base	16.07	* (S)	*** (S)	*** (S)
6	16.59	*** (S)		*** (S)
12	17.08	*** (M)		*** (M)
18	17.55	*** (M)		
24	18.05			
30	18.52	*** (M)		
36	19.04	*** (M)		
48	20.06	* (S)		
60	21.05	*** (L)		
72	22.06	*** (L)		
84	23.06	*** (L)	*** (M)	

Significance: * p<.05 ** p<.01 *** p<.001
Hedges' g: S = small effect size; M = medium effect size; L = large effect size

Patterns of significant variance for co-offenders scoring significantly higher than solo offenders for offending frequencies

Month	Mean Age	Total	Income	Aggress.
Base	16.07			
6	16.59			
12	17.08	*** (M)		
18	17.55			
24	18.05			
30	18.52			
36	19.04			
48	20.06			
60	21.05			
72	22.06			
84	23.06			

Significance: * p<.05 ** p<.01 *** p<.001
Hedges' g: S = small effect size; M = medium effect size; L = large effect size

Patterns of statistically significant variance for substance use

Month	Mean Age	Mixed > Solo	Mixed > Co	Co > Solo
Base	16.07			
6	16.59	*** (M)	*** (M)	*** (M)
12	17.08	*** (M)	*** (M)	*** (M)
18	17.55	*** (M)	*** (M)	
24	18.05	*** (M)	*** (M)	
30	18.52	*** (M)	*** (M)	
36	19.04	*** (M)	*** (M)	
48	20.06	*** (M)	*** (M)	
60	21.05	*** (M)	*** (M)	
72	22.06	*** (M)	*** (M)	
84	23.06	*** (M)	*** (M)	

Significance: * p<.05 ** p<.01 *** p<.001
Hedges' g: S = small effect size; M = medium effect size; L = large effect size

Study 4

Patterns of statistically significant variance for future orientation

Month	Mean Age	Mixed < Solo	Mixed < Co	Co < Solo
Base	16.07			
6	16.59			
12	17.08	*** (S)	*** (S)	
18	17.55			
24	18.05			
30	18.52	* (S)	* (S)	
36	19.04	** (S)	** (S)	
48	20.06			
60	21.05			
72	22.06			
84	23.06			

Significance: * p<.05 ** p<.01 *** p<.001
Hedges' g: S = small effect size; M = medium effect size; L = large effect size

Patterns of statistically significant variance for temperance

Month	Mean Age	Mixed < Solo	Mixed < Co	Co < Solo
Base	16.07		* (S)	
6	16.59	*** (S)	*** (S)	
12	17.08	*** (S)	*** (S)	
18	17.55	*** (M)	*** (M)	
24	18.05	*** (M)	*** (M)	
30	18.52	*** (M)	*** (M)	
36	19.04	*** (L)	*** (L)	
48	20.06	*** (M)	*** (M)	
60	21.05	*** (S)	*** (S)	
72	22.06	* (S)		
84	23.06	*** (S)	*** (S)	

Significance: * p<.05 ** p<.01 *** p<.001
Hedges' g: S = small effect size; M = medium effect size; L = large effect size

Patterns of statistically significant variance for consideration of others

Month	Mean Age	Mixed < Solo	Mixed < Co	Co < Solo
Base	16.07			
6	16.59			
12	17.08	*** (S)	*** (S)	
18	17.55			
24	18.05			
30	18.52	* (S)	* (S)	
36	19.04	* (S)	* (S)	
48	20.06			
60	21.05			
72	22.06			
84	23.06			

Significance: * p<.05 ** p<.01 *** p<.001
Hedges' g: S = small effect size; M = medium effect size; L = large effect size

Patterns of statistically significant variance for PSMI

Month	Mean Age	Mixed < Solo	Mixed < Co	Solo < Co
Base	16.07			* (S)
6	16.59	* (S)		
12	17.08			
18	17.55	** (S)	** (S)	
24	18.05	*** (S)	*** (S)	
30	18.52			
36	19.04	* (S)	* (S)	
48	20.06			
60	21.05			
72	22.06			
84	23.06			

Significance: * p<.05 ** p<.01 *** p<.001
Hedges' g: S = small effect size; M = medium effect size; L = large effect size

Patterns of statistically significant variance for resistance to peer influence

Month	Mean Age	Mixed < Solo	Mixed < Co	Co < Solo
Base	16.07			
6	16.59			
12	17.08			
18	17.55			
24	18.05			
30	18.52			
36	19.04			
48	20.06		* (S)	
60	21.05			
72	22.06			
84	23.06			

Significance: * p<.05 ** p<.01 *** p<.001
Hedges' g: S = small effect size; M = medium effect size; L = large effect size

Patterns of statistically significant variance for psychopathy total

Month	Mean Age	Mixed > Solo	Mixed > Co	Co > Solo
Base	16.07		*** (S)	
6	16.59	*** (S)	*** (S)	
12	17.08	*** (S)	*** (S)	
18	17.55	*** (S)	*** (S)	
24	18.05	*** (S)	** (S)	
30	18.52	** (S)	** (S)	
36	19.04	*** (M)	*** (M)	
48	20.06	** (S)	** (S)	
60	21.05	** (S)	** (S)	
72	22.06	* (S)		
84	23.06	** (S)	** (S)	

Significance: * p<.05 ** p<.01 *** p<.001
Hedges' g: S = small effect size; M = medium effect size; L = large effect size

Patterns of significant variance for mixed style offenders scoring significantly higher than solo for the psychopathic dimensions

Month	Mean Age	Grandiose Manipulative	Callous Unemotional	Impulsive Irresponsible
6	16.59		*** (S)	*** (S)
12	17.08	* (S)	*** (S)	*** (S)
18	17.55	** (S)	** (S)	*** (S)
24	18.05	** (S)	** (S)	** (S)
30	18.52	** (S)	* (S)	** (S)
36	19.04	*** (S)	*** (S)	*** (M)
48	20.06		** (S)	*** (S)
60	21.05		** (S)	*** (S)
72	22.06	* (S)	* (S)	
84	23.06	* (S)	** (S)	** (S)

Significance: * p<.05 ** p<.01 *** p<.001
Hedges' g: S = small effect size; M = medium effect size; L = large effect size

Patterns of significant variance for mixed style offenders scoring significantly higher than co-offenders for the psychopathic dimensions

Month	Mean Age	Grandiose Manipulative	Callous Unemotional	Impulsive Irresponsible
6	16.59		*** (S)	*** (S)
12	17.08		*** (S)	*** (S)
18	17.55	** (S)	** (S)	*** (S)
24	18.05	** (S)	** (S)	** (S)
30	18.52			** (S)
36	19.04	*** (S)	*** (S)	*** (M)
48	20.06		** (S)	*** (S)
60	21.05		** (S)	*** (S)
72	22.06			
84	23.06		** (S)	** (S)

Significance: * p<.05 ** p<.01 *** p<.001
Hedges' g: S = small effect size; M = medium effect size; L = large effect size

Patterns of statistically significant variance for peer antisocial behaviour

Month	Mean Age	Mixed > Solo	Mixed > Co	Co > Solo
Base	16.07		** (S)	
6	16.59	*** (L)	*** (L)	
12	17.08	*** (L)	*** (L)	
18	17.55	*** (L)	*** (L)	*** (L)
24	18.05	*** (M)	*** (M)	
30	18.52	*** (M)	*** (M)	
36	19.04	*** (L)	*** (L)	
48	20.06	*** (L)	*** (L)	
60	21.05	*** (L)	*** (L)	
72	22.06	** (S)	** (S)	
84	23.06	*** (M)	*** (M)	

Significance: * p<.05 ** p<.01 *** p<.001
Hedges' g: S = small effect size; M = medium effect size; L = large effect size

Patterns of statistically significant variance for peer antisocial influence

Month	Mean Age	Mixed > Solo	Mixed > Co	Co > Solo
Base	16.07			
6	16.59	*** (M)	*** (M)	*** (M)
12	17.08	*** (M)	*** (M)	*** (M)
18	17.55	*** (M)	*** (M)	
24	18.05	*** (S)	*** (S)	
30	18.52	*** (M)	*** (M)	
36	19.04	*** (M)	*** (M)	*** (M)
48	20.06	*** (M)	*** (M)	
60	21.05	*** (L)		
72	22.06	** (S)	** (S)	
84	23.06	*** (M)	*** (M)	

Significance: * p<.05 ** p<.01 *** p<.001
Hedges' g: S = small effect size; M = medium effect size; L = large effect size

Patterns of statistically significant variance for exposure to violence

Month	Mean Age	Mixed > Solo	Mixed > Co	Co > Solo
Base	16.07		*** (S)	
6	16.59	*** (L)	*** (L)	*** (L)
12	17.08	*** (L)	*** (L)	
18	17.55	*** (L)	*** (L)	*** (L)
24	18.05	*** (L)	*** (L)	
30	18.52	*** (M)	*** (M)	
36	19.04	*** (M)	*** (M)	
48	20.06	*** (M)	*** (M)	
60	21.05	*** (M)	*** (M)	
72	22.06	*** (M)	*** (M)	
84	23.06	*** (S)		

Significance: * p<.05 ** p<.01 *** p<.001
Hedges' g: S = small effect size; M = medium effect size; L = large effect size