THE RELATIONSHIP BETWEEN GANG MEMBERSHIP AND PSYCHOSOCIAL RISKS TO OFFENDING DESISTANCE IN A SAMPLE OF ADOLESCENT AND YOUNG ADULT MALES

Sally-Ann Ashton[1] and Maria Ioannou[2]

Corresponding author: Sally-Ann Ashton, Faculty of Health, Social Care & Medicine, Edge Hill University, St. Helen's Road, Ormskirk, L39 4QP. Email: Ashtons@edgehill.ac.uk

[1] Faculty of Health, Social Care & Medicine, Edge Hill University, UK

[2] International Research Centre for Investigative Psychology, School of Human and Health Sciences, University of Huddersfield, Huddersfield, UK

Abstract

A sample of 1047 males who reported either gang membership or co-offending at the baseline interview of the Pathways to Desistance Study was investigated over a four-year period during late adolescence. Direct binary logistic regressions were performed to investigate the impact of social and psychological variables on reported offending desistance. The models contained eight independent variables: Gang membership status, peer delinquent behavior and influence, resistance to peer influence, temperance, psychosocial maturity, exposure to violence, and substance use. The full models containing all predictors were statistically significant. Peer delinquency, exposure to violence, and substance use predicted desistance irrespective of age; the ability to control aggression and impulsivity was limited to adolescence. Lower peer antisocial behavior was a more consistent predictor for desistance than gang membership status.

Keywords

Desistance, juvenile gangs, substance use, exposure to violence, peer influence, aggression control

Gang Membership, Delinquent Peers and Desistance

There is no academic consensus for measuring or defining desistance (Brame, Bushway, & Paternoster, 2003; Lussier, McCuish, & Corrado, 2015). It is recognised that the desistance process includes changes in behaviors and attitudes (Weaver, 2014) and 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).

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, research has indicated that most gang members leave between one and two years after joining, indicating that membership is a dynamic risk factor (Bolden, 2012; Carson, Peterson & Esbensen, 2013; Decker, 1996; Decker & Lauritsen, 2002; Esbensen & Huizinga, 1993; Thornberry, Krohn, Lizotte, & Chard-Wierschem, 1993). Researchers using Pathways to Desistance Study data observed that recidivism rates were highest during the early phases of the study (Mulvey, Steinberg, Piquero, Besana, Fagan, Schubert, & Cauffman, 2010). Additionally, the Rochester Youth Development Study and Netherlands NSCR School Study found that in both cohorts 75% of members left the gang within the first year of joining (Weerman, Lovegrove, & Thornberry, 2015).

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). 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 et al., 2016). The authors also reported that the relationship became

less robust when taking confounding variables into account in more complex models and analysis of data. They concluded that future research should investigate the relationship between gang membership and other negative psychological and social risk factors. The relationship between gang membership, and other psychological/social risk factors to offending desistance is not straightforward (Obrien, Daffern, Chu, & Thomas, 2013) because membership and embededness is heterogenous (Bolden, 2012 and 2013; Pyrooz, Sweeten, & Piquero, 2013).

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 offenders, but not gang membership (Esbensen, Peterson, Taylor, & Freng, 2009); a further indication of the complex relationship between violence and gangs, which is often assumed. The authors also found a greater number of cumulative factors resulted in an individual joining a gang as opposed to committing violent crimes.

Other research using the Pathways to Desistance data supported the association between peer delinquency and antisocial behavior (Monahan & Piquero, 2009). This study demonstrated higher levels of both peer antisocial behavior and influence for persistent and offending variety 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 (Monahan, Steinberg, & Cauffman, 2009) found that the resistance only moderated peer antisocial behavior until the age of 20 years. Using data from multiple studies, researchers found that the ability to resist peer influence 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.

Using the first two waves of the Pathways to Desistance data, Walters (2016b) found that moral disengagement and offending behavior mediated the selection of delinquent peers. High correlation led the author to combine the peer antisocial influence and behavior scales, and it is not clear whether the two scales contributed equally to predicting recidivism. Resistance to peer influence was also not included 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 behavior 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 recognised 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 (Monahan, Steinberg, Cauffman, & Mulvey, 2013). One study of court referred juveniles in a community programme found that lower levels of anger and impulse control and empathy may be associated with recidivism (Balkin, Miller, Richard, Garcia, & Lancaster, 2011). Individuals with lower levels of self-control have been found to commit more crimes (DeLisi, 2001a, 2001b; Longshore & Turner, 1998) and are more likely to be

persistent offenders (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).

Also relevant is that the majority of adolescent offenders desist after they reach adulthood (Laub & Sampson, 2001; Piquero, 2008; Sampson & Laub, 2003). Moffitt (1993) hypothesised two distinct trajectories of adolescent specific and life course persistent offenders, 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 Pathways to Desistance data (Sweeten, Piquero, Steinberg, 2013). The authors concluded that desistance was the result of cumulative and simultaneous changes that occur in early adulthood and demonstrated that peer influence and delinquency, gang embededness, and lower resistance to peer influence were strongly associated with recidivism.

Although traditionally self-control has been associated with a number of environmental factors (Buker, 2011; Gottfredson & Hirschi, 1990), researchers have more recently found that neuropsychological deficits are associated with low levels of control in children (Beaver, Wright, & Delisi, 2007). Psychosocial maturity typically increases for both crime desisters and recidivist as they age; however, some individuals have been found to continue to mature into their mid-twenties (Monahan et al., 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 behavior at an earlier age; thus, lower levels of psychosocial maturity during adolescence may be a longer-term predictor of recidivism. It has been posited 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).

Psychopathy

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). Others have made a distinction between primary and secondary psychopaths, concluding that Factor 2 traits (criminal versatility, impulsivity, antisocial behavior) are behavioral and therefore dynamic and more prone to change, but Factor 1 traits (shallow effect, superficial charm, manipulative behavior, 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 behaviors (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). Nevertheless, 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 behavior (American Psychiatric Association, 2013; Frick, Bodin, & Barry, 2000). A key distinction between behavioral 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 behaviors 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.

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 among gang members (Fagan, 1989; Gatti, Tremblay, Vitaro, & McDuff, 2005). However, 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). Other 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 Pathways to Desistance Study (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). Pathways to Desistance 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 the same 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 et al., 2016).

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 neighborhood 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, & Tibbetts, 2007). Violence, both within

and between gangs is well documented in research (Decker, 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 Pathways to Desistance data found exposure to violence to be a predictor (DeLisi, Piquero, & Cardwell, 2016).

Current Study

A key aim of the study is to investigate the impact of social and psychological risk factors reported in prior research (Ashton, 2019; Ashton, Ioannou, & Hammond, 2020) on offending desistance. Desistance was defined as no self-reported offenses 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 et al., 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. Four waves of data from 12 to 48 months were selected because the study focus was the transition from late adolescence to early adulthood with attention to identifying age specific risk factors to inform offending behavioral programs.

Sample and procedure

The sample of 1,047 was male, with 50.4% (*n* = 528) interviewed in Phoenix Arizona and 49.6% (*n* = 519) in Philadelphia. The largest ethnic/racialized group was African American (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. The age range for the first wave of analysis was 15 to 20 with a mean of 17.08 (Table 1).

The Pathways to Desistance study was initiated with baseline interviews being conducted between November 2000 and January 2003 and subsequent interviews every 6 months until 36 months and then every 12 months until 84 months after the baseline. The aim of the original study was to investigate 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 offense, and that they must have been found guilty of a serious offense. The procedure for the study is described by Mulvey and Shubert (2012) and Schubert et al. (2004).

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 behavior. *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 behavior (for example greater temperance and greater consideration for others).

The total scores for psychopathy were investigated using the *Youth Psychopathic Traits Inventory* (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 separately.

Peer delinquency investigated, using two scales: *The Peer Delinquent Behavior* measure (Thornberry, Lizotte, Krohn, Farnworth & Jang, 1994) encompasses the antisocial behavior 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). 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, (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. 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.

Analysis

Direct binary logistic regression was performed at four separate points over a four-year period 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 offense during the interview period and those who had no offending. The impact of gang membership status (current, prior and never), peer delinquent behavior 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

The appendix shows the correlation between variables. For the first 3 waves of analysis peer antisocial behavior, peer antisocial influence and all psychopathic traits had a moderate relationship; all other relationships were weak. At 48 months peer antisocial behavior and influence had a strong relationship, psychopathic traits had a moderate relationship, and all 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 behavior, resistance to peer influence, psychosocial maturity, three dimensions of psychopathy, exposure to violence, and substance use.

At 12 months 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 offenses. 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 4, five of the variables independent variables made a unique statistically significant contribution to the model. Respondents were more likely to report desistance with lower levels of exposure to violence, substance use, and peer antisocial behavior; and higher levels of impulse control. Those who had never been gang affiliated were also more likely to report offending desistance.

At 24 months 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 offenses. 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 4, four of the independent variables made a unique statistically significant contribution to the model. Respondents were more likely to report desistance with higher levels of exposure to violence, substance use and peer antisocial behavior; and lower levels of impulse control.

At 36 months **t**he 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 offenses. 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, five of the independent variables made a unique statistically significant contribution to the model. Respondents were more likely to report desistance with higher levels of exposure to violence, substance use and peer antisocial behavior; and lower levels of impulse control. Prior and never gang members were also more likely to report desistance.

At 48 months 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 offenses. 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, three of the independent variables made a unique statistically significant contribution to the model. Respondents were more likely to report desistance with higher levels of exposure to violence, substance use and peer antisocial behavior. Lower levels of impulse and aggression control no longer contributed to the model.

Discussion

Although prior research had shown variance between the same psychological and social risks associated with current gang membership (Ashton et al., 2018), gang status was not a strong or consistent predictor for desistance. It is possible, however, that current gang membership would have played a more central role if desistance from violent offending was investigated separately (Dong & Krohn, 2016). This may be why lower levels of peer antisocial behavior contributed to the model, because antisocial behavior and influence are associated with persistent and varied offending patterns (Monahan & Piquero, 2009). As noted, the peer antisocial behavior and influence measures were highly correlated and prior research using the same data had combined the two scales, even though the authors noted that the weighting of the antisocial influence scale towards the participant's alcohol and drug use (Walters, 2016a). The present study suggests that isolating an individual from antisocial peers is an important strategy for offending desistance, irrespective of gang membership. They were also consistent across the study and in contrast to prior research suggest that the risk presented by peer delinquency is not limited to adolescent offending (Steinberg & Monahan, 2007). A

study using the same data set had also found a relationship between higher levels of resistance to peer influence and early desistance (Monahan et al., 2009). However, the authors noted that the absence of psychopathy and substance misuse, along with other social and psychological risk factors, could have impacted upon their models.

The present study accorded with prior research (Dowden & Brown, 2002) in that it found lower levels of substance use to be a predictor for desistance. However, unlike other research using the same dataset, there was no support for the coexistence of substance use and psychosocial maturity as predictors of desistance (Chassin et al., 2010). Findings 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. It also sheds further light on previous research that matched desisters from the first wave 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.

Psychopathy did not contribute to the model of desistance. 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 (Ashton, 2019). The 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 (Ashton et al., 2020; Gendreau et al., 1996). Specifically, the 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).

Earlier research reported that early desisters from offending had significantly higher levels of psychosocial maturity than recidivists during adolescence (Monahan, et al., 2013); this was not supported. In contrast, the strongest predictor for desistance for the first half of the study was higher levels of impulse and aggression control. The change at 48 months can be explained by the ageing of participants, accords with the adolescent-specific nature of lower temperance levels (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, 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 behavior (Gottfredson & Hirschi, 1990).

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. Further investigations into the

relationship between peer behavior and exposure to violence could inform interventions for young people who are not gang affiliated but who offend with other people.

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 at 48 months 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.

Policy Implications

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

The study 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 contributed to desistance. Lower peer antisocial behavior was a more consistent predictor for desistance than gang membership status.

Declaration of Conflicting Interests

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Appendix

[Correlation between independent variables here]

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Table 1
Sample Age

Wave	Mean Age	SD	Min	Max
12 months	17.08	1.17	15	20
24 months	18.05	1.16	16	21
36 months	19.04	1.16	17	22
48 months	20.06	1.16	18	23

Table 2

Descriptive Statistics For Independent Variables

Variable	12 M	12 SD	24 M	24 SD	36 M	36 SD	48 M	48 SD
Peer influence	1.54	0.74	1.53	0.77	1.44	0.66	1.48	0.72
Peer behaviour	1.92	0.85	1.81	0.83	1.68	0.76	1.79	0.82
Peer resistance	3.10	0.59	3.17	0.56	3.28	0.56	3.31	0.54
PSMI	3.11	0.46	3.12	0.49	3.19	0.45	3.22	0.45
Temperance	3.01	0.81	2.90	0.81	3.05	0.84	3.11	0.82
YPI 1	39.84	11.35	39.72	11.48	38.49	11.19	37.68	10.88
YPI 2	33.40	6.49	33.36	6.51	32.85	6.56	32.16	6.65
YPI 3	35.38	8.25	35.12	8.16	33.86	8.40	33.84	8.37
Exp. to viol.	1.41	1.86	1.07	1.70	0.97	1.58	3.31	0.54
Substance use	0.64	1.15	0.64	1.12	0.59	1.00	1.40	2.02

Table 3

Descriptive Statistics For Categorical Variables

Variable	12 N	12 %	24 N	24 %	36 N	36 %	48 N	48 %
Desister	423	43.4	502	52.80	553	52.80	485	46.30
Persister	551	56.6	448	47.20	396	41.70	448	42.30
Never G	680	69.70	641	67.50	636	67.20	609	65.30
Current G	132	13.50	110	11.60	95	10.00	88	9.40
Prior G	163	16.70	198	20.90	216	22.80	236	25.30

Table 4

Binary Logistic Regression Results For 12 and 24 Months

Variable	**12 Months**	B	SE	*p*	OR	95% CI Lower	Upper	**24 Months**	B	SE	*p*	OR	95% CI Lower	Upper
Gang never				**.03***							.25			
Gang current		-0.56	0.27	**.04***	0.57	0.34	0.97		0.04	0.27	.88	1.04	0.61	1.77
Gang prior		-0.45	0.22	**.04***	0.64	0.42	0.98		-0.31	0.20	.11	0.73	0.50	1.08
Peer infl.		0.05	0.17	.80	1.05	0.75	1.47		-0.01	0.16	.95	0.99	0.73	1.34
Peer behav.		-0.61	0.15	**.000*****	0.54	0.41	0.73		-0.64	0.14	**.000*****	0.53	0.40	0.69
Peer resist.		-0.00	0.14	1.00	1.00	0.75	1.32		0.06	0.15	.69	1.06	0.79	1.43
PSMI		-0.19	0.21	.36	0.83	0.55	1.24		0.02	0.19	.92	1.02	0.70	1.48
Temperance		0.28	0.13	**.03***	1.33	1.03	1.71		0.43	0.12	**.000*****	1.54	1.22	1.94
YPI 1		0.00	0.01	.71	1.00	0.98	1.02		-0.01	0.01	.40	0.99	0.97	1.01
YPI 2		0.02	0.02	.33	1.02	0.98	1.05		0.01	0.02	.56	1.01	0.98	1.04
YPI 3		-0.05	0.02	**.00****	0.96	0.93	0.98		-0.00	0.02	.89	1.00	0.97	1.03
Exp. Viol.		-0.45	0.07	**.000*****	0.64	0.56	0.72		-0.38	0.06	**.000*****	0.68	0.61	0.77
Substance		-0.74	0.13	**.000*****	0.48	0.37	0.62		-0.69	0.12	**.000*****	0.50	0.40	0.63
Constant		2.37	1.09	.03	10.70				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

Table 5

Binary Logistic Regression Results For 36 and 48 Months

Variable	**36 Months**	B	SE	*p*	OR	95% CI Lower	Upper	**48 Months**	B	SE	*p*	OR	95% CI Lower	Upper
Gang never				**.03***							.36			
Gang current		-0.45	0.29	.12	0.64	0.36	1.13		-.46	.32	.16	.63	.34	1.19
Gang prior		-0.48	0.19	**.01***	0.62	0.42	0.90		-.07	.19	.73	.94	.64	1.37
Peer infl.		-0.31	0.17	.08	0.74	0.52	1.03		.16	.18	.36	1.18	.83	1.67
Peer behav.		-0.58	0.16	**.000*****	0.56	0.41	0.76		-.73	.16	**.000*****	.48	.36	.66
Peer resist.		0.09	0.16	.57	1.09	0.80	1.49		.14	.16	.38	1.16	.84	1.59
PSMI		0.27	0.21	.21	1.31	0.86	1.98		-.19	.21	.38	.83	.55	1.26
Temperance		0.26	0.13	**.05***	1.30	1.00	1.68		.26	.14	.06	1.30	.99	1.70
YPI 1		-0.01	0.01	.45	0.99	0.97	1.01		-.01	.01	.20	.99	.97	1.01
YPI 2		.000	0.02	.98	1.00	0.97	1.04		-.00	.02	.90	1.00	.97	1.03
YPI 3		0.01	0.02	.42	1.01	0.98	1.04		-.00	.02	.89	1.00	.97	1.03
Exp. Viol.		-0.36	0.06	**.000*****	0.70	0.61	0.79		-.27	.05	**.000*****	.76	.69	.84
Substance		-0.84	0.13	**.000*****	0.43	0.34	0.55		-1.02	.13	**.000*****	.36	.28	.46
Constant		0.68	1.13	.54	1.98				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

Appendix

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: *$p < .05$; **$p < .01$; ***$p < .001$

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: *$p < .05$; **$p < .01$; ***$p < .001$

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: *$p < .05$; **$p < .01$; ***$p < .001$

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: *$p < .05$; **$p < .01$; ***$p < .001$