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Citation

Deuren, S. van, Diviak, T., & Blokland, A. A. J. (2024). Co-offending among outlaw motorcycle gang members: the role of social and geographical proximity. *Journal Of Criminal Justice*, 96. doi:10.1016/j.jcrimjus.2024.102340

Version: Publisher's Version

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Note: To cite this publication please use the final published version (if applicable).



Co-offending among outlaw motorcycle gang members: The role of social and geographical proximity

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ARTICLE INFO

Keywords:

Outlaw bikers
Organized crime
Co-offending
Criminal organization
Criminal network

ABSTRACT

Members of outlaw motorcycle gangs (OMCGs) have been shown to be disproportionately engaged in criminal behavior, including serious and organized crime. Fellow OMCG members have furthermore been found to facilitate this criminal behavior both indirectly, by providing a moral climate and opportunity structure conducive to crime, and directly, by acting as co-offenders. Although co-offending among OMCG members is prevalent, the driving factors in OMCG members' co-offender choice remain largely unknown. In the present study, we examine whether co-offending among OMCG members is best explained by social proximity, measured here as similarity in age and rank within the club, and shared club and chapter membership, or rather by geographical proximity, measure here as the distance (in kilometers) between chapters' clubhouses. To examine the driving factors of OMCG members' co-offending we apply the recently developed Poisson Quadratic Assignment Procedure regression on the officially registered co-offending data of a sample of 1096 members of four of the most notorious Dutch OMCGs. This study examines co-offending of OMCG members in general and for organized, violent and property crime in particular. The results show that in their choice of co-offenders, social rather than geographical proximity predicts the frequency of co-offending among OMCG members.

1. Introduction

While many crimes are found to include accomplices (e.g., Menechini & Calderoni, 2022; Reiss Jr, 1988; Van Mastrigt & Farrington, 2009), the processes by which offenders choose their co-offenders are still subject of debate. A key question in co-offending research is what the driving factors of co-offending among individuals are. To engage in co-offending, offenders must find suitable co-offenders with whom they can successfully commit a particular type of crime (Tremblay, 2017). Research suggests that the suitability of a co-offender increases when the level of similarity between individuals is high (*social proximity*) (Weerman, 2003). Given the risks involved in co-offending, offenders tend to choose co-offenders who share similar background characteristics (age, ethnicity) or are part of the same social group (gang membership) (Bright et al., 2023; Bright et al., 2024; Schaefer et al., 2014). Similarity between individuals can generate trust, which, in turn, mitigates the perceived risk of engaging in co-offending (Von Lampe & Ole Johansen, 2004; Weerman, 2003).

Social proximity by itself, however, does not fully explain the formation of co-offending ties. To be able to co-offend, a suitable co-offender must also be available in the locations and places that are frequented by individuals willing to co-offend (*geographical proximity*). Prior research shows that geographical proximity, that is the lack of physical distance between two individuals, such as closeness in living areas or in places visited, may not only increase the likelihood of forming co-offending ties (Coutinho et al., 2020; Felson, 2003; Nieto et al., 2022; Tayebi et al., 2018), but also enhance continued co-offending between individuals (Charette & Papachristos, 2017). Currently, most research into the drivers of co-offending tie formation – especially when it comes to gang research – has focused on either social or geographical proximity without combining the two mechanisms to determine which mechanism explains co-offending best.

The present study builds on and extends prior co-offending (gang) research by simultaneously focusing on the extent to which social and geographical proximity predict co-offending relationships. It does so by using police registered co-suspect data on individuals who were

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<https://doi.org/10.1016/j.jcrimjus.2024.102340>

Received 21 July 2024; Received in revised form 22 November 2024; Accepted 11 December 2024

Available online 27 December 2024

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members of Dutch outlaw motorcycle gangs (OMCGs). In the current study, social proximity is defined as similarity in age and formal rank within the club (i.e., the formal role a person has within the OMCG), and shared club and chapter membership (i.e., local divisions of the club), while the distance (in a straight line) in kilometers between the geo-locations of chapters' clubhouses is used as a proxy for geographical proximity.

In an effort to combat crime among OMCG members, in 2012 the Dutch government launched an integrated approach on the national and local level. Besides numerous large-scale police investigations, this integrated approach resulted in many OMCG-related events being banned and OMCG clubhouses being foreclosed (Van Ruitenburg, 2020). More recently, the Dutch civil court ruled that some OMCGs pose a serious threat to public order and issued civil bans against the Netherlands' most notorious OMCGs (Van Ruitenburg & Blokland, 2022). Here, we focus on the four Dutch OMCGs that were active between 2010 and 2015 but have been banned by the Dutch civil court between 2020 and 2022. We use police registered co-suspect data for the years 2010–2015 for the 1096 individuals identified as members of one of these four OMCGs during that period to examine the factors that influence co-offending tie formation among OMCG members. Doing so, we differentiate between four different types of crime: organized crime, property crime, violent crime, and other offenses. To control for the interdependence inherent in network data, we apply the recently developed Poisson Regression Quadratic Assignment Procedure (PRQAP) method (Krause, 2023).

The remainder of this article is organized as follows. First, literature on the characteristics of co-offending in general and for OMCG members in particular is reviewed. Following this, the data, methodology, and results of this study on co-offending among OMCG members are presented. In the conclusion, the results are discussed in the context of existing theoretical perspectives on co-offending and the implications of the current study in terms of research and policy are reviewed.

2. Theoretical perspectives on co-offender selection

Previous studies have shown that co-offending, generally defined as the act of committing crime together with one or more individuals, is a common characteristic of offenders' criminal behavior, particularly among youths, gangs, and other criminal groups (e.g., Bright et al., 2022; Meneghini & Calderoni, 2022; Papachristos, 2009; Reiss Jr & Farrington, 1991). The extent to which offenders engage in co-offending is a matter of both *preferences* and *opportunities* (Weerman, 2003). First, the preference of an offender to engage in co-offending is influenced by the individual's propensity to co-offend in general, and by the individual's material (monetary gain) and immaterial (social and psychological) needs in particular (Weerman, 2003). The willingness to co-offend is, however, also shaped by an individual's ability to find suitable co-offenders. The more someone has resources, knowledge, and contacts required to successfully commit a crime – collectively referred to as criminal capital – the more suitable that person is to others as a potential co-offender (Weerman, 2003).

The suitability of co-offenders is also increased by the similarity between people – also referred to as homophily. Similarity between co-offenders provides for the initial level of trust needed to engage in co-offending (Von Lampe & Ole Johansen, 2004). The challenges of cooperation are especially pronounced in the context of illegal activities. Offenders constantly face risks, such as the potential for being cheated by their associates or being arrested by law enforcement agencies. To mitigate the risk associated with involvement in illegal activities, criminals heavily rely on partners who they can trust. Trustworthy partners are primarily sought within the confines of one's immediate social environment, including friends, family members or other social groups to which an individual belongs. Shared group membership generates familiarity and increases levels of interpersonal trust (Von Lampe & Ole Johansen, 2004). Empirical research indeed shows that individuals are more likely to engage in co-offending relationships if

they are a member of the same social group (Bright et al., 2023; Bright et al., 2024; Schaefer et al., 2014; Schwarzenbach & Jensen, 2024), suggesting that social proximity is a factor influencing the forging of co-offending ties. Nevertheless, the influence of social proximity on co-offending ties may differ by crime type. Although trust is a central element for co-offending in various criminal activities, given the level of risk, for instance in terms of criminal sanctions, trust may be especially important for more high-risk crime, such as serious and organized crime (Charette & Papachristos, 2017; Van de Bunt et al., 2007).

Second, opportunities for involvement in co-offending are important for the likelihood that offenders' co-offender preferences will actually lead to the joint commission of a crime (Weerman, 2003). Important features of the opportunity to co-offend are linked to the availability of and access to potential co-offenders. Offender convergence settings – places where potential offenders meet, exchange information, and form criminal collaborations (Felson, 2003) – play a pivotal role in the extent to which potential co-offenders are available to a person. Offender convergence settings typically refer to physical locations where potential co-offenders gather, such as certain cafes or bars (Felson, 2003). Regularly visiting such places increases exposure to potential co-offenders and, consequently, increases the likelihood of engaging in criminal activities together. Access to potential co-offenders is also influenced by the geographical proximity between offenders. It is commonly acknowledged that co-offender selection is restricted by spatial constraints: individuals tend to choose their co-offenders from the pool of individuals available within their immediate geographical environment (Sarnecki, 2001; Schaefer, 2012), and prefer to engage in co-offending relationships with those who are living in geographical areas that are not too far from each other (Charette & Papachristos, 2017; Schwarzenbach & Jensen, 2024). The influence of geographical proximity on co-offending tie formation may however vary by crime type. Empirical research emphasizes that when it comes to committing violent crime, individuals tend to travel shorter distances than those who are involved in property crime (Ackerman & Rossmo, 2015). This may be explained by offenders being more willing to travel longer distances for crimes with a financial gain but may also result from the finding that violent crime often involves individuals who know each other and thus occurs closer to the offenders' residence (Tita & Griffiths, 2005; Vandeviver et al., 2015). Suitability and availability may therefore represent a trade-off, in that offenders are willing to travel greater distances for more suitable co-offenders.

3. Prior research on co-offender selection among OMCG members

OMCGs are hybrid collectives showing both gang-like and organized crime group-like features (Von Lampe & Blokland, 2020). OMCGs typically consist of different local divisions – called chapters – that operate relatively autonomously of the overarching organization. OMCG chapters have their own clubhouse where members come together on a regular basis for members-only meetings and club nights (Landelijke Eenheid, 2014). As a whole, the outlaw biker subculture is characterized by its closed-off nature and its own norms and values (Wolf, 1991). Group solidarity is highly valued and members are expected to prioritize their club above everything else. This entails not only attending to private club meetings, parties, and funerals, but also supporting fellow club members when necessary, and maintaining silence about club-related matters in the presence of law enforcement agencies (Barker, 2014; Wolf, 1991).

OMCG members have been repeatedly associated with involvement in criminal behavior. Despite OMCG members' own claims to the contrary, their criminal behavior is often not limited to isolated or minor offenses, but often comprises multiple convictions, also for serious and violent crimes (Blokland et al., 2020; Klement, 2016; Morgan et al., 2020; van Deuren, Ballin, Kleemans, & Blokland, 2022). Public concern is especially triggered by the collective nature of OMCG members'

behavior (Van Ruitenburg, 2020). Available studies indeed support the notion that a large part of the OMCG offenses is committed with others: with co-offending rates among OMCG members across different countries ranging from 57 to 75 % (Bright et al., 2022; Mondani & Rostami, 2022; Van Deuren, Kleemans, & Blokland, 2022). The extent to which OMCG members are involved in co-offending differs by the type of crime. Co-offending among OMCG members seems especially prevalent when it comes to public order offenses, violence and intimidation, and more organized types of crime, such as drug crime (Bright et al., 2022; Mondani & Rostami, 2022).

Qualitative research suggests that OMCGs function as offender convergence settings where members meet and interact with potential co-offenders, for instance in clubhouses or during OMCG-related events, thereby increasing members' access to (criminal) contacts, information, and knowledge (Van Deuren, Kleemans, & Blokland, 2022). Shared chapter and club membership may also provide for the trust needed for prolonged criminal collaboration. Shared chapter and club membership are indeed found to be important factors in the formation of co-offending ties among OMCG members and OMCG members display a tendency to co-offend with other members of the same chapter or club (Mondani & Rostami, 2022). This finding however, appears to vary across different crime types (Bright et al., 2023). OMCG members are more likely to co-offend with a fellow club member in violent and public order offenses, while OMCG members are not found to be more likely to co-offend with fellow club members in serious and organized crime (Bright et al., 2023). Differences in co-offending patterns across clubs may indeed reflect the different types of crimes club members are involved in. Rostami and Mondani (2019) find that the co-offending network of the Red and White Crew, a support club affiliated to the Swedish Hells Angels, is more decentralized and chapter-based than that of the Swedish Hells Angels. This may partly result from the Red and White Crew predominantly being involved in street crime, whereas the Hells Angels engage more in complex, organized crimes. In sum, the tendency to co-offend with fellow club- or chapter members suggests that social proximity is important in forging co-offending relationship. The importance of chapter membership over club membership in this respect, may result from shared chapter membership combining social and geographical proximity. Findings on the extent to which the importance of social proximity is conditional on the type of crime are as yet inconclusive.

Although OMCG members tend to collaborate with members of their own club, existing research also finds co-offending relationships that cross club boundaries (Bright et al., 2022; Coutinho et al., 2020; Mondani & Rostami, 2022). A Swedish study shows that despite longstanding animosities between these clubs, even members of the Hells Angels MC and members of Bandidos MC are engaged in criminal collaboration, for instance, with regards to violence, theft, and drugs offenses (Mondani & Rostami, 2022). These latter findings suggest that, in addition to the particular chapter or club one is a member of, the entire OMCG subculture might function as a blueprint on which cross-cutting co-offending ties can be formed and maintained.

Coutinho et al. (2020) furthermore find that members of different OMCGs who are active or resident in the same location are more likely to co-offend, suggesting that geographical proximity matters for OMCG co-offending tie formation. There are however, sound theoretical reasons to assume that the influence of geographical proximity on OMCG co-offending differs by type of crime. Most importantly, violent OMCG crime is often symbolic in nature and is used to safeguard the place of the member, and in his wake his chapter and club in the local OMCG hierarchy (Von Lampe & Blokland, 2020). Animosity between clubs is often a very local affair, and relations between local chapters do not readily reflect national interclub relations. For instrumental types of crime, such as property and organized crime, however, the geographical spread of chapters may actually provide a strategic advantage and increase members' criminal opportunities as co-offending with more distant members may open new illegitimate markets and sources (Coutinho

et al., 2020).

4. Current study

The current study aims to increase our theoretical and empirical understanding of co-offender selection among OMCG members by simultaneously addressing two distinct mechanisms that may drive co-offending: homophily and availability. Whereas shared club membership is taken to represent potential trust and homophily, geographic proximity of chapters' clubhouses is taken to signal convenience and availability. Shared chapter membership combines both homophily and availability, whereas the choice for fellow club members (outside one's chapter) versus non-fellow club members represents a balancing of both interests: chapters from the same club are typically located at some distance, whereas chapters from different clubs may be more geographically close yet lack the level of familiarity provided by shared club membership. Finally, the balancing of convenience and trust may be influenced by the conditions of the criminal behavior in question. Co-offending in complex and ongoing criminal enterprises requiring repeated interactions between offenders may require higher levels of trust than simple one-off crimes, even if this comes at the expense of convenience. More specifically, the current study will answer the following research questions:

- (1) To what extent is social proximity (shared club and shared chapter membership) associated with co-offending among OMCG members?
- (2) To what extent is geographical proximity (distances between chapters' club houses) associated with co-offending among OMCG members?
- (3) To what extent is the respective influence of social and geographic proximity on co-offending among OMCG members conditional on the type of crime?

Prior co-offending research in general and co-offending research among OMCG in particular leads us to formulate three hypotheses regarding the driving factors of co-offending selection among OMCG members that we aim to test in the current study. We predict that:

Hypothesis 1. OMCG members are more likely to engage in co-offending with members of the same club and the same chapter of the same club than with members of other clubs or other chapters of the same club.

Hypothesis 2. Regardless of the OMCG or the chapter individuals are a member of, OMCG members are more likely to engage in co-offending with OMCG members who are geographically close, than with OMCG members that are more distant.

Hypothesis 3. The relative importance of shared club and chapter membership and geographical distance for co-offending between OMCG members is conditional on the type of crime (i.e. organized crime, property crime, violent crime, and other offenses). Especially for organized crime, shared club and chapter membership may provide the trust needed for co-offending, while the geographical spread of chapters' clubhouses provides a strategical advantage, suggesting that social rather than geographical proximity is more important for instrumental crimes compared to symbolic crimes.

5. Data and method

5.1. Sample of OMCG members

The 1617 OMCG members in our sample were identified as such by a sworn-in police officer between 2010 and 2015. To prevent false positives, the police exercised restraint in registering individuals as OMCG members. Identification as OMCG member was based on individuals'

appearance (e.g., wearing club attire, tattoos), observed behavior (e.g., regularly attending closed club meetings and events), or personal statements. Registration as an OMCG member did not need to necessarily entail the individual was suspected of a crime at that point in time. See Blokland et al. (2020) for additional details on the construction of the sample.

5.2. Data on social proximity

Information on members’ age, formal rank, and club and chapter membership were used as *social proximity* measures in the current study. For each member in the sample the Dutch police registered the year of birth, the individual’s formal rank within the OMCG and the club and chapter of which the person was a member of. We distinguished between the following formal ranks: office bearers (e.g., presidents, vice-presidents, sergeant-at-arms, secretaries, treasurers, road-captains, and nomads), fully-patched members, and other club affiliates (e.g., prospects and hang-arounds) (see Table 1 for an overview of the descriptive statistics). Age and rank were used to construct social similarity as the absolute difference between each pair of co-offending actors on each of these attributes, while club and chapters membership were used to derive co-membership information.

For the present study, we focus only on the membership of the four Dutch OMCGs, that were active in the Netherlands between 2010 and 2015 and that, between 2020 and 2022, have been subjected to a civil ban: Hells Angels MC, Satudarah MC, No Surrender MC, and Bandidos MC. These are all OMCGs of which chapters are spread out across the whole of Netherlands (and beyond), and of which members have repeatedly been linked to serious and organized crime activities, such as extortion, arms dealing, and drug trafficking (Blokland et al., 2020). A total of 1096 individuals in the sample were registered as a member of one of the four banned Dutch OMCGs. These are also the clubs for which the information in our dataset on the locations of the chapters’ clubhouses is most complete. These members belonged to 139 different chapters in the Netherlands (see Table 1 for an overview of the descriptive statistics).

5.3. Data on geographical proximity

Based on police information on the addresses of chapters’ clubhouses, for the OMCG members in the sample the latitude and longitude of the location of their chapter’s clubhouse was extracted using www.gps-coordinaten.nl. We next calculated the distance (in a straight line) between locations of chapters’ clubhouses measured in *kilometers* using the R package *Geosphere* and used this distance as a proxy for geographical proximity. By using the geolocation of chapters’ clubhouses as a proxy for geographical proximity, each member of the same chapter inherently has the same geolocation coordinate. So, if two members of the same chapter are involved in co-offending, their distance measure is zero. Shared chapter membership thus combines both social and geographical proximity. By including shared chapter membership (dummy variable, yes = 1, no = 0) and geographical proximity (numerical variable) in one model, we introduce a two-part predictor so that geographical proximity reflects the influence of distance on co-

offending tie formation when members are co-offending *outside* their own chapter (i.e., co-offending between members of different clubs and different chapters. See Dziak & Henry, 2017, for a detailed discussion on using two-part predictors in regression models). For 23,3 % of the members, the location of their clubhouses was unknown to or at least not registered by the Dutch police, resulting in 254 OMCG members with missing coordinates. Cases of members for whom the location of their chapter’s clubhouse was unknown were not used for the PRQAP model estimation.

5.4. Data on co-offending

To analyze co-offending between OMCG members, we use co-suspect data taken from Dutch police registries. For each of the 1096 OMCG members in the initial sample, the available data refer to all criminal cases registered in either BVH or Summ-IT between 2010 and 2015 in which these members were recorded as one of the prime suspects during the final stage of the investigation.¹ For each criminal case, data on all additional prime suspects in the case were gathered, including whether these additional prime suspects were also known OMCG members, and if so, of which club and chapter they were a member of. Prime suspects differ from ordinary suspects in being the focus of the criminal investigation. Their legal status, however, remains that of ‘suspect’ and we have no way of ascertaining whether these prime suspects were eventually found guilty in a court of law. Still, following the terminology of prior research, we will speak of ‘co-offending’ and ‘co-offenders’ in the remainder of this article.

Here, we primarily focused on co-offending ties between members of the four banned OMCGs. The co-offending data included the number and nature of the criminal cases an OMCG member was a prime suspect and covered the period prior to the issuing of the civil bans. The co-offending data distinguished between 142 offense types. For the current study we merged these offense types into four crime categories: organized crime (e.g., drug- and weapon trafficking, money laundering, extortion, and human trafficking), property offenses (e.g., burglary, fraud, and theft), violent crime (e.g., threatening, assault, and murder), and a miscellaneous group of ‘other’ offenses (e.g., arson, environmental crime, and sex offenses). With regards to the violent crime category, it is important to note that animosity between clubs seems to be part and parcel of the outlaw biker subculture. Violent co-offending could therefore not only reflect collaboration but may also reflect conflict between members of different OMCGs, when members of different OMCGs involved in a violent brawl all end up being registered as prime suspects in the criminal case. The current data however do not allow us to disentangle the difference between violent collaboration and violent conflicts. Results with regard to violent crime should therefore be interpreted with due caution.

5.5. Analytic strategy

The co-offending dataset took the form of a two-mode network of prime suspects nested within criminal cases. This two-mode network was first transformed into a one-mode network with nodes representing individuals and ties between nodes corresponding to instances of co-offending. The ties are undirected and weighted, with the weights corresponding to the count of co-offenses between the two actors. In order to test our hypotheses, we conducted a series of Poisson Quadratic Assignment Procedure (PRQAP; Dekker et al., 2007; Krackhardt, 1988) regression models in R (R Core Team, 2024). PRQAP presents an instance of a recent extension of QAP models to Generalized Linear Models framework (Krause, 2023). Specifically, PRQAP models estimate

Table 1
Descriptive statistics for social proximity variables

Age		Members by chapter	
min.	16 years	min.	1
max.	69 years	max.	68
mean	41.9 years	mean	18,5
# members by rank		# members by club	
office bearers	310	Hells Angels MC	306
fully-patched members	344	Satudarah MC	518
other club affiliates	238	No Surrender MC	227
unknown	204	Bandidos MC	45

¹ Whereas BVH is used to record all types of daily police-citizen interactions, Summ-IT is used to document larger-scale police investigations concerning more serious crimes.

the effects of multiple predictors on an integer-valued outcome that represents counts (in our case, counts of co-offenses). Since using standard statistical inference to calculate standard errors and *p*-values is not valid for network data due to interdependence inherent in networks, QAP can be used instead for inference. Briefly, QAP takes the adjacency matrices in which network and other dyadic level data is stored and randomly permutes the row and column labels of the dependent variable matrix. Within each such permutation, a Poisson regression model is estimated using the QAP semi-partialing method (Dekker et al., 2007) which first residualises each predictor so that the predictors are uncorrelated. Repeating this process many times generates (in our case 5000 times for each predictor) a distribution of possible outcomes and coefficients which can then be compared to the observed regression coefficients. If the observed coefficients are extreme in this generated distribution, it suggests that the association between the independent and the dependent variable is unlikely to arise by random chance alone conditioning on the network structure and other variables included in the model.

6. Results

6.1. Social and geographic proximity

Together, the 1096 OMCG members in our sample were suspected of having co-offended in 1370 criminal cases between 2010 and 2015. In 23 (1,7 %) criminal cases, more than 50 co-offenders were registered as prime suspects. These 23 cases were excluded from further analyses, as they are likely to reflect police actions rather than clearly demarcated incidents of criminal collaboration, e.g. cases in which entire chapter or even the entire club membership was suspected of constituting a criminal organization. The final analysis sample thus pertains to 1347 criminal cases in which 1023 members of banned clubs were suspected of having committed a crime between 2010 and 2015. The majority of these criminal cases were related to organized crime ($n = 863$, 64,1 %), followed by property crime ($n = 162$, 12,0 %), violence ($n = 99$, 7,3 %), and other crimes ($n = 223$, 16,6 %). The 1347 criminal cases resulted in 37,801 co-offending ties, indicating that co-offenses sometimes involved more than one co-offender. Fig. 1 shows that of all criminal cases, 55,1 % involved at least one fellow club member, whereas another 38,5 % involved at least one fellow chapter member. In 35,3 % of the criminal cases, at least one OMCG member from a different club was involved. Note that the percentages depicted in Fig. 1 add up to more than 100 % due to the fact that criminal cases (co-offenses) contain multiple offenders and hence one criminal case may be in multiple categories at the same time.

Of all co-offending ties, 14,29 % was between members of the same club and same chapter, 42,42 % was between members of the same club, but of different chapters, and 43,29 % was between members of different

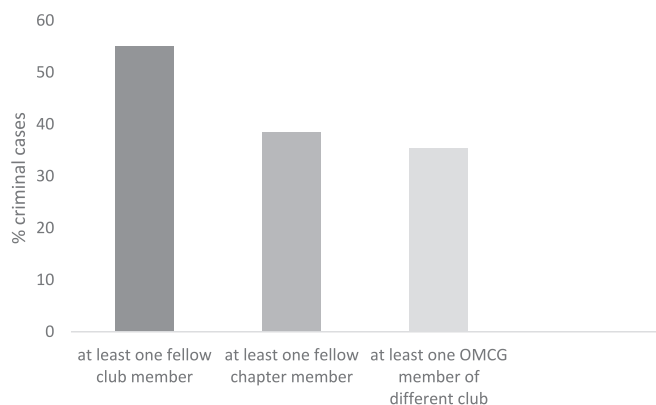


Fig. 1. the percentage of criminal cases involving fellow club and chapter members, and members of different banned clubs.

clubs (and therefore also of different chapters) (Fig. 2). The descriptive results indicate that OMCG members more often engage in co-offending with fellow club members than with non-fellow club members. Observed discrepancies between the percentages of co-offenses and the percentages of co-offending ties across levels of social proximity are caused by offenses committed more often with multiple co-offenders in a single incident. The results furthermore show that the extent to which OMCG members co-offend with members of different clubs and chapters varies by type of crime. For organized crime, OMCG members often tend to commit this type of crime with members of different chapters (38,2 %) and of different clubs (46,5 %). The majority of the violent co-offending ties are committed with members of different clubs (52,5 %) (Fig. 2).

6.2. Co-offending networks across different crime types

We now turn to our analyses of the co-offending network. Descriptives for the different co-offending networks resulting from our differentiation on crime type are provided in Table 2. Table 2 shows that the organized crime co-offending network was by far the largest (747 nodes), followed by other offenses (340 nodes), property crime (169 nodes), and violent crime (168 nodes). The network cohesion is considerably low, with density ranging from 0.063 (total crime) to 0.001 (property crime), indicating that the co-offending networks are not well connected. On average, the co-offending networks for property (1.60) and violence (1.37) show the shortest path length between a given pair of nodes, while the longest distance (diameter) is seven 'steps' (organized crime and other offenses). For organized crime, on average, each OMCG member in the co-offending network is connected to 30 other members. Nevertheless, the average degree was relatively low for violent (3.02) and property crime (1.30).

6.3. Social and geographical proximity and co-offending: total offenses

Table 3 shows the results of the four PRQAP models that were ran to estimate general co-offending ties between OMCG members. Model 1 includes only age and rank differences. The results indicate that neither homophily on age or rank predict co-offending ties between members. Model 2 adds the association between same club and same chapter membership on co-offending tie formation. The positive significant coefficient of membership of the same club indicates that OMCG members are more likely to co-offend with fellow club members than with members of different OMCGs. Membership of the same chapter has the strongest positive association with co-offending tie formation between

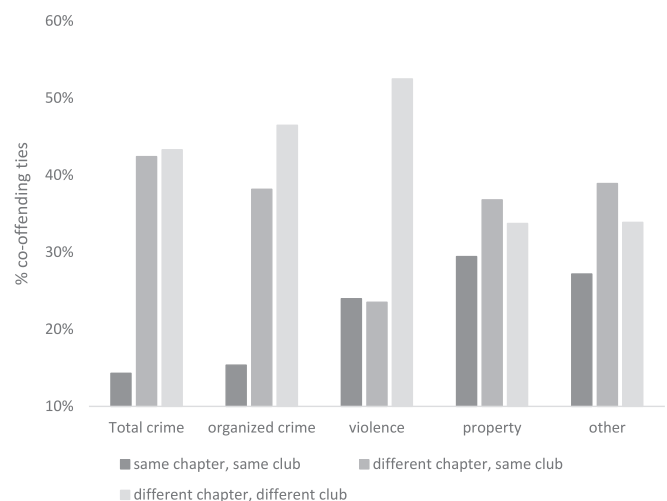


Fig. 2. the percentage of co-offending ties by level of social proximity differentiated by crime type.

Table 2
Descriptive results co-offending networks

	Total offenses	Organized crime	Property crime	Violent crime	Other offenses
# nodes	1096	747	169	168	340
density	0.063	0.028	0.001	0.003	0.009
centralization	0.414	0.216	0.020	0.041	0.096
avg geodesic distance	2.213	2.562	1.596	1.367	2.660
diameter	5	7	4	3	7
max	35	16	3	2	4
<i>avg degree</i>					
binary	68.980	30.995	1.297	3.018	9.373
weighted	111.880	46.401	1.363	3.104	10.985
<i>sd degree</i>					
binary	64.529	40.751	4.009	9.586	20.096
weighted	143.830	83.689	4.265	9.948	23.669

two OMCg members. These results indicate that when it comes to offending in general, OMCg members have a strong preference to co-offend with fellow chapter members over fellow club members, and with fellow club members over fellow outlaw bikers from different clubs.

In model 3 and 4, measures of geographical proximity – the distance in kilometers between the locations of chapters' clubhouses and the square root of this distance respectively – are added to assess their contribution net of social proximity. These models indicate that, once measures of social proximity are taken into account, geographic distance has some influence in forging co-offending ties. While geographical proximity is significantly positively associated with co-offending in model 4, the parameter for the squared rooted distance is large and negative. This result suggests that when OMCG members do co-offend outside their own chapter, co-offending is more likely between two OMCG members whose chapters are close by, rather than far away. The association with social proximity persists in the full model for both shared club and shared chapter membership, and indicates that social proximity has a stronger influence than geographical proximity for co-offender selection among OMCG members.

While not significant in model 1 and 2, the coefficients of age and rank differences are significant in model 3 and 4. For instance, when accounting for shared club and chapter membership, and geographical proximity, the significant negative coefficients of rank differences indicate that co-offending tie formation is less likely when the difference in rank between two OMCG members increases (model 3 and 4). As rank homophily signals social proximity even within the confines of membership of the same OMCG, these findings further corroborate the conclusion that social rather than geographic proximity underlies co-offending ties between OMCG members.²

6.4. Influence of social and geographical proximity on co-offending by crime type

Table 4 shows the results of the full PRQAP models that were run to estimate the association between social and geographical proximity and co-offending between OMCG members for each distinct type of crime (i. e., organized crime, property crime, violent crime, and other offenses). For all the distinct crime types, the coefficients for club and chapter homophily are significantly positive. This means that for organized crime, property crime, violent crime, and other offenses, OMCG

² We also estimated a model in which only the influence of geographical proximity on co-offending in general was estimated (see Appendix, [Table A1](#)). The results of this model are substantively similar to the results of models in which social and geographical proximity are both included and similarly suggest that when OMCg members co-offend outside their own chapter, they tend to do so with members whose chapters are close by.

Table 3
The influence of social and geographical proximity on co-offending (total crimes)

	Model 1			Model 2			Model 3			Model 4		
	Est.	Exp(b)	$\Pr(\leq b)$	$\Pr(\geq b)$	Est.	Exp(b)	$\Pr(\leq b)$	$\Pr(\geq b)$	Est.	Exp(b)	$\Pr(\leq b)$	$\Pr(\geq b)$
<i>Intercept</i>	-1.819	0.1621	*	*	-2.378	0.0927	*	*	-2.759	0.0634	*	*
<i>Social proximity</i>												
Age difference	-0.016	0.9843	0.2580	0.7420	-0.013	0.9874	0.3260	0.6740	-0.008	0.9922	0.0040	0.9960
Rank difference	-0.271	0.7625	0.0820	0.9180	-0.229	0.7952	0.1400	0.8600	-0.094	0.9104	0.0002	0.9998
Same club					0.775	2.1706	0.9860	0.0140	0.699	2.0109	1.0000	0.693
Same chapter					1.693	5.4389	1.0000	0.0000	1.976	7.2134	1.0000	1.144
<i>Geographical proximity</i>												
Distance									0.000	1.0001	0.9210	0.0790
Sqrt distance									0.000	1.0004	0.9986	0.0014
									-0.045	0.9561	0.0000	1.0000

^k Significance test for the intercept is not defined with prqap.

Table 4

The influence of social and geographical proximity on co-offending by crime type

	Organized crime				Property crime				Violent crime				Other crime			
	Est.	Exp (b)	Pr (<=b)	Pr(>= b)	Est.	Exp (b)	Pr (<=b)	Pr(>= b)	Est.	Exp (b)	Pr (<=b)	Pr(>= b)	Est.	Exp (b)	Pr (<=b)	Pr(>= b)
<i>Intercept</i>	-2.855	0.058	*	*	-5.290	0.005	*	*	-5.424	0.004	*	*	-4.241	0.014	*	*
<i>Social proximity</i>																
Age difference	-0.008	0.993	0.042	0.958	-0.015	0.985	0.056	0.944	0.018	1.018	0.985	0.015	0.013	1.013	0.991	0.009
Rank difference	-0.112	0.894	0.007	0.993	-0.021	0.979	0.395	0.605	0.219	1.245	1.000	0.000	-0.100	0.905	0.038	0.962
Same club	0.637	1.891	1.000	0.000	0.699	2.012	1.000	0.000	0.252	1.287	0.953	0.047	1.087	2.964	1.000	0.000
Same chapter	1.340	3.819	1.000	0.000	1.029	2.798	1.000	0.000	1.525	4.595	1.000	0.000	1.351	3.863	1.000	0.000
<i>Geographical proximity</i>																
Distance	0.001	1.001	1.000	0.000	0.002	1.002	1.000	0.000	-0.001	0.999	0.006	0.994	0.001	1.001	1.000	0.000
Sqrt distance	-0.056	0.945	0.000	1.000	-0.149	0.862	0.000	1.000	-0.016	0.984	0.172	0.828	-0.095	0.910	0.000	1.000

* Significance test for the intercept is not defined with prqap.

members are more likely to be involved in co-offending with members from the same club, but especially with members of the same chapter. The association between shared chapter membership and co-offending is most apparent for violent crime. Shared club membership is also associated with a higher predicted number of co-offending ties in the violent co-offending network, but not that much once shared chapter membership is taken into account. The same holds true for organized crime: while fellow club members are still preferred over members of other OMCGs, the strongest association with co-offending in organized crime is with shared chapter membership.

Interestingly, the coefficient for rank difference is significantly positive for violent crime only. This indicates that for violent crime, co-offending tie formation is more likely between two OMCG members who have different ranks within the club. Rank difference for organized crime and other offenses is significantly negatively related to co-offending, which suggests homophily on rank is important for co-offending in these types of offenses.

As with overall crime, geographical proximity is slightly positively associated with tie formation between members, with the exception of violent co-offending. The square root of the distance however, is negatively related to co-offending for all crimes. This means that when it comes to offending outside members' own chapter, OMCG members tend to co-offend with other OMCG members who are geographically close, regardless of the OMCG or the chapter these OMCG members are a member of. Specifically, for violent offending instead of collaboration, this finding may also reflect the often-blurred distinction between perpetrators and victims in the case of violent clashes between multiple OMCG members. To the extent this is the case in our data, the results may be taken to suggest that violent clashes are most likely between members of chapters of different clubs that are in close proximity to each other.

Overall, when it comes to offending in general and for the different types of crime in particular, social proximity rather than geographical proximity is associated with co-offending between OMCG members. Being in the same chapter has by far the strongest association with co-offending between OMCG members, followed by being in the same club.

7. Discussion

Co-offending is a common characteristic of offenders' criminal behavior. Previous research has emphasized that homophily (social proximity) and availability (geographical proximity) are related to the likelihood of co-offending between offenders (Schaefer, 2012; Weerman, 2003). Thus far, a large body of research into co-offending tie formation – especially for gang research – has focused on either social or geographical proximity to determine which mechanism explains co-offending the best (Bright et al., 2023; Schaefer et al., 2014; Tayebi

et al., 2018). The aim of the current study was therefore to examine the driving factors of co-offender selection among OMCG members by studying social as well as geographical proximity. This study used a sample of 1096 police identified members of four notorious Dutch OMCGs that were eventually banned between 2020 and 2022 and applied the recently developed PRQAP regression to examine whether co-offending among OMCG members is better explained by social or rather by geographical proximity. Based on the findings of the current study, we conclude that social proximity underlies co-offending between OMCG members more so than geographical proximity does.

We found support for our first hypothesis, namely that OMCG members are more likely to engage in co-offending with fellow club and chapter members. Despite prior studies showing co-offending relationships crossing club boundaries (Bright et al., 2022; Coutinho et al., 2020), the results of the current study indicate that regardless of the type of crime under study, OMCG members prefer to co-offend with members of the same club and chapters of the same club rather than with non-fellow club members. This finding is in line with a prior study showing that, in general, OMCG members are more likely to co-offend with fellow club members (Bright et al., 2023). More specifically, in their decision to co-offend OMCG members are more likely to choose their co-offenders from the pool of individuals available within their immediate chapter. This finding could be reflecting the OMCG's decentralized and chapter-based structure when it comes to (co-) offending.

The findings of the study furthermore support the second hypothesis, namely that when OMCG members co-offend outside their own chapter, they are more likely to engage in co-offending with OMCG members whose chapters are geographically close, than with OMCG members whose chapters are more distant. Compared to social proximity, however, the influence of geographical proximity on co-offending among OMCG members is relatively small. Contradicting previous (youth) co-offending studies (Schaefer, 2012), co-offender selection among OMCG members therefore, seems predominantly restricted by social (homophily) rather than spatial (availability) constraints.

Although the influence of social proximity on co-offending among OMCG members differs by crime type, we expected that, because of the level of trust needed for prolonged and serious co-offending (Charette & Papachristos, 2017; Van de Bunt et al., 2007; Von Lampe & Ole Johansen, 2004), social proximity would be especially important for co-offending in organized crime offenses compared to violent, property, and other offenses (hypothesis 3). However, the influence of shared club membership on co-offending is most prominent for property crime and other offenses, while the influence of shared chapter membership is the largest for violent crime, followed by other offenses and organized crime. A possible explanation might be that besides trust, organized crime is typically more complex, requiring task differentiation based on

offenders' respective skill sets (Van de Bunt et al., 2007). Transnational drug trafficking, for instance, requires international contacts, means of transportation, and financial expertise to launder illicit gains. To the extent that requirements for organized crime go beyond the common skill set of OMCG members, co-offenders outside offenders' own club, or even outside the OMCG milieu may prove pivotal to the successful commission of organized crime. The results furthermore indicate that geographical proximity has some influence on co-offending tie formation among OMCG members, but not consistently across the different crime types (hypothesis 3).

Finally, the current study also found that for violent crime, co-offending is more likely between OMCG members who have a different rank within the club. This finding could result from lower ranked members trying to impress or prove themselves to higher rank members, but also from violent (co-)offending crime being steered by the formal club hierarchy, or a combination of the two. Prior empirical research already showed that while OMCG members may engage in profitable crimes as independent criminal entrepreneurs, violent crimes, such as retaliatory violence towards rivals OMCGs, appear to fall under the directions of the club's office bearers (Van Deuren, Kleemans, & Blokland, 2022). Although the nature of the data does not allow for uncovering the underlying mechanisms, this finding at least indicates that members with different ranks are involved in violent co-offending, suggesting that violence is more of a club affair compared to other types of crime, such as organized crime and property offenses.

Several noteworthy limitations are associated with the data used for this study. First, information regarding OMCG-membership and co-offending was based on police register data. Police register data only provide information on those crimes that become known to the police and in which one or more suspects are identified. To the extent that offending OMCG members succeed in remaining undetected or effectively prevent their crimes from being reported to the police, the co-offending data used for the present study underestimate the actual level of (co-)offending among OMCG members. Police register data also in part reflect prioritization by the police. In the period from 2010 and 2015, significant policy changes occurred, including the start of the Dutch integrated approach to OMCGs in 2012 which likely influenced the composition of the data. The Dutch integrated approach to OMCGs included a strong focus on gathering information on serious and organized crime that could bolster a civil ban. While this focus could have led to a decrease in the dark figure of crime for OMCG members, this same focus may have led the police to include as many OMCG members as possible in each criminal case, especially those affiliated to the most notorious Dutch OMCGs, as main suspects. To the extent that the involvement of OMCG members in (co-)offending could not be substantiated in court, the current study might have overestimated the extent to which members of banned OMCGs are involved in co-offending in general and co-offending in organized crime in particular. As noted above, although being registered with others as main suspects in a particular violent criminal case may indicate criminal collaboration, it may also capture violent confrontations between members of rival clubs.

Second, the Netherlands is a small country with many OMCGs and chapters of OMCGs. The number of chapters rapidly increased in the 2010 and 2015 period. For instance, from 2011 to 2016, Satudarah MC expanded from nine chapters to 36 chapters, whereas chapters of Hells Angels MC increased from eight to eighteen in the Netherlands (Blokland et al., 2017). It is therefore possible that there was too little

variation in the distance between chapters' clubhouses, resulting in a relatively small influence of geographical proximity on co-offending between members of banned Dutch OMCGs. Future research could benefit from extending our approach to other, in some cases, larger countries, such as Australia, Denmark, and Germany. Related to this limitation, in this study the distance in kilometers between chapters' clubhouses was used as a proxy for geographical proximity. While chapter members can be expected to live in the vicinity of their chapter's club house, a more accurate proxy of geographical proximity, would be using members' home locations to estimate the driving factors of co-offending among OMCG members. Due to a lack of information on individual members' home addresses in the current data set, we have to leave this to be considered in future research. Similarly, co-offending takes place not only in social and geographical space, but also in time. By aggregating the data across multiple years, the time dimension got lost in our analyses. As Bright et al. (2023; 2024) show, if the information about the time of each co-offending event is available, it enables even more fine-grained and insightful analyses. For co-offending among Dutch OMCG members, this remains an avenue to be explored in future research.

Finally, while common practice in analyzing co-offending networks, using one-mode projections (actor-actor networks) of two-mode data (actor-offense networks) may lead to highly dense and transitive clusters in the projected network resulting from a co-offense including large numbers of co-offenders (Nieto et al., 2022). In order to account for that, we used PRQAP models that condition on the network structure including its degree distribution and triad census. For time-stamped or time-ordered data, which we unfortunately did have at our disposal, an even more promising approach may be the use of the recently developed Relational Hyper Event Models (RHEM) that have also been introduced to the study of co-offending networks. The RHEM utilize the data in its actors-events structure and thus it does not rely on projection, circumventing its adverse effects (Bright et al., 2023). While RHEM have been applied to co-offending between OMCG members, future research using these models might seek to also include geographical data.

The current study enriches theoretical and empirical knowledge regarding the driving factors of co-offending among OMCG members by showing that social and geographical proximity play a role in co-offending selection among OMCG members. Compared to social proximity, the influence of geographical proximity on co-offending among OMCG members is considerably weaker, suggesting that same club and same chapter membership guide co-offending among OMCG members above and beyond geographical proximity. This study focused on members of four Dutch OMCGs that were banned by civil law measures between 2020 and 2022. Valuable next steps in OMCG co-offending research is to estimate the disruptive effects of the civil bans on Dutch OMCG members' co-offending networks and to examine whether the civil bans have altered the driving factors of co-offending selection among OMCG members for different types of crime.

CRediT authorship contribution statement

Sjoukje van Deuren: Writing – review & editing, Writing – original draft, Visualization, Formal analysis, Conceptualization. **Tomáš Diviák:** Writing – review & editing, Methodology, Formal analysis. **Arjan Blokland:** Writing – review & editing, Visualization, Conceptualization.

Appendix A. Appendix

Table A1
The influence of geographical proximity on co-offending (total crimes).

	Model 1				Model 2				Model 3			
	Est.	Exp(b)	Pr(≤b)	Pr(≥ b)	Est.	Exp(b)	Pr(≤b)	Pr(≥ b)	Est.	Exp(b)	Pr(≤b)	Pr(≥ b)
Intercept	−1.792	0.167	0	1	−0.804	0.447	*	*	−0.572	0.564	*	*
Age difference									−0.011	0.989	0	1
Rank difference									−0.119	0.888	0	1
Geographical proximity												
Distance	−0.001	0.999	0	1	0.002	1.002	1	0	0.002	1.002	1	0
Sqrt distance					−0.119	0.888	0	1	−0.118	0.888	0	1

* Significance test for the intercept is not defined with prqap.

References

Ackerman, J. M., & Rossmo, D. K. (2015). How far to travel? A multilevel analysis of the residence-to-crime distance. *Journal of Quantitative Criminology*, 31(2), 237–262. <https://doi.org/10.1007/s10940-014-9232-7>

Barker, T. (2014). *Biker gangs and transnational organized crime*. Routledge.

Blokland, A., Van Der Leest, W., & Soudijn, M. (2017). *Profielen van Nederlandse Outlawbikers en Nederlandse Outlawbikerclubs*. Politie & Wetenschap, Apeldoorn. Universiteit Leiden.

Blokland, A., Van Der Leest, W., & Soudijn, M. (2020). Officially registered criminal careers of members of Dutch outlaw motorcycle gangs and their support clubs. *Deviant Behavior*, 41(11), 1393–1412.

Bright, D., Lerner, J., Sadewo, G. R. P., & Whelan, C. (2024). Offence versatility among co-offenders: A dynamic network analysis. *Social Networks*, 78, 1–11.

Bright, D., Sadewo, G., Cubitt, T. I., Dowling, C., & Morgan, A. (2022). Co-offending networks among members of outlaw motorcycle gangs across types of crime. *Trends in Organized Crime*, 1–23.

Bright, D., Sadewo, G. R. P., Lerner, J., Cubitt, T., Dowling, C., & Morgan, A. (2023). Investigating the dynamics of outlaw motorcycle gang co-offending networks: The utility of relational hyper event models. *Journal of Quantitative Criminology*, 1–43.

Charette, Y., & Papachristos, A. V. (2017). The network dynamics of co-offending careers. *Social Networks*, 51, 3–13.

Coutinho, J. A., Diviák, T., Bright, D., & Koskinen, J. (2020). Multilevel determinants of collaboration between organised criminal groups. *Social Networks*, 63, 56–69.

Dekker, D., Krackhardt, D., & Snijders, T. A. (2007). Sensitivity of MRQAP tests to collinearity and autocorrelation conditions. *Psychometrika*, 72, 563–581.

van Deuren, S., Ballin, Hirsch, Kleemans, E. R., & Blokland, A. A. J. (2022). The Dutch judicial approach to various types of co-offending among members of outlaw motorcycle gangs. *Trends in Organized Crime*, 1–21.

Dziak, J. J., & Henry, K. L. (2017). Two-part predictors in regression models. *Multivariate Behavioral Research*, 52(5), 551–561. <https://doi.org/10.1080/00273171.2017.1333404>

Felson, M. (2003). The process of co-offending. *Crime Prevention Studies*, 16, 149–168.

Klement, C. (2016). Outlaw biker affiliations and criminal involvement. *European Journal of Criminology*, 13(4), 453–472.

Krackhardt, D. (1988). Predicting with networks: Nonparametric multiple regression analysis of dyadic data. *Social Networks*, 10(4), 359–381.

Krause, R. W. (2023, 4th - 10th September). QAPCSS - a New Method for Analyzing Cognitive Social Structures. 7th European Conference on Social Networks. Ljubljana, Slovenia.

Landelijke Eenheid. (2014). *Outlawbikers in Nederland*. Woerden. DLIO.

Meneghini, C., & Calderoni, F. (2022). Co-offending and criminal careers in organized crime. *Journal of Developmental and Life-Course Criminology*, 8(3), 337–364.

Mondani, H., & Rostami, A. (2022). Criminal nomads: The role of multiple memberships in the criminal collaboration network between hells angels MC and Bandidos MC. *Global Crime*, 23(2), 193–215.

Morgan, A., Dowling, C., & Voce, I. (2020). Australian outlaw motorcycle gang involvement in violent and organised crime. *Trends and Issues in Crime and Criminal Justice*, 586, 1–18.

Nieto, A., Davies, T., & Borrión, H. (2022). “Offending with the accomplices of my accomplices”: Evidence and implications regarding triadic closure in co-offending networks. *Social Networks*, 70, 325–333.

Papachristos, A. V. (2009). Murder by structure: Dominance relations and the social structure of gang homicide. *American Journal of Sociology*, 115(1), 74–128.

R Core Team. R: A language and environment for statistical computing. [Computer software]. R Foundation for Statistical Computing. <https://www.R-project.org/>.

Reiss, A. J., Jr. (1988). Co-offending and criminal careers. *Crime and Justice*, 10, 117–170.

Reiss, A. J., Jr., & Farrington, D. P. (1991). Advancing knowledge about co-offending: Results from a prospective longitudinal survey of London males. *Journal of Criminology Law & Criminology*, 82, 360.

Rostami, A., & Mondani, H. (2019). Organizing on two wheels: Uncovering the organizational patterns of hells angels MC in Sweden. *Trends in Organized Crime*, 22, 34–50.

Sarnecki, J. (2001). *Delinquent Networks: Youth Co-Offending in Stockholm*. Cambridge University Press.

Schaefer, D. R. (2012). Youth co-offending networks: An investigation of social and spatial effects. *Social Networks*, 34(1), 141–149.

Schaefer, D. R., Rodriguez, N., & Decker, S. H. (2014). The role of neighborhood context in youth co-offending. *Criminology*, 52(1), 117–139.

Schwarzenbach, A., & Jensen, M. (2024). Extremists of a feather flock together? Community structures, transitivity, and patterns of homophily in the US Islamist co-offending network. *PLoS ONE*, 19(6), Article e0298273.

Tayebi, M. A., Shahir, H. Y., Glasser, U., & Brantingham, P. L. (2018). *Spatial Patterns of Offender Groups* (pp. 13–18).

Tita, G., & Griffiths, E. (2005). Traveling to violence: The case for a mobility-based spatial typology of homicide. *Journal of Research in Crime and Delinquency*, 42(3), 275–308. <https://doi.org/10.1177/0022427804270051>

Tremblay, P. (2017). Searching for suitable co-offenders. In *Routine Activity and Rational Choice* (pp. 17–36). Routledge.

Van de Bunt, H. G., Kleemans, E. R., De Poot, C., Bokhorst, R., Huikeshoven, M., Kouwenberg, R., ... Staring, R. (2007). *Georganiseerde Criminaliteit in Nederland*.

Van Deuren, S., Kleemans, E., & Blokland, A. (2022). Outlaw motorcycle gangs and their members’ crime: Examining the social organization of crime and its relationship to formal club hierarchy. *European Journal of Criminology*, 19(6), 1461–1482.

Van Mastrigt, S. B., & Farrington, D. P. (2009). Co-offending, age, gender and crime type: Implications for criminal justice policy. *The British Journal of Criminology*, 49(4), 552–573.

Van Ruitenburg, T. (2020). *Raising Moral Barriers: An Empirical Study on the Dutch Approach to Outlaw Motorcycle Gangs*.

Van Ruitenburg, T., & Blokland, A. (2022). The Dutch approach to outlaw motorcycle gangs. *Trends and Issues in Crime and Criminal Justice*, 655, 1–15.

Vandeviver, C., Van Daele, S., & Vander Beken, T. (2015). What makes long crime trips worth taking? Balancing costs and benefits in Burglars’ journey to crime. *British Journal of Criminology*, 55(2), 399–420.

Von Lampe, K., & Blokland, A. (2020). Outlaw motorcycle clubs and organized crime. *Crime and Justice*, 49(1), 521–578.

Von Lampe, K., & Ole Johansen, P. (2004). Organized crime and trust: On the conceptualization and empirical relevance of trust in the context of criminal networks. *Global Crime*, 6(2), 159–184.

Weerman, F. M. (2003). Co-offending as social exchange. Explaining characteristics of co-offending. *British Journal of Criminology*, 43(2), 398–416.

Wolf, D. (1991). *The Rebels: A Brotherhood of Outlaw Bikers*. Toronto. University of Toronto.