The Impact of Peer Groups and Routine Activities on the Victim-Offender Overlap: Evidence From a German Study on Youth Crime

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Abstract
Despite the substantive evidence on the victim-offender overlap from various national contexts, comprehensive examinations for Germany are lacking. This article provides insights into peer group-related correlates of the victim-offender overlap by specifically differentiating the roles of victims, offenders, and victim-offenders. The analysis examines risk factors for involvement in violence using a sample of 3,519 14- and 16-year-old students from a large crime study conducted in Germany. Applying multinomial logistic regression, the risk of being a victim-only, offender-only, or victim-offender is predicted by peer group characteristics such as frequency of meeting, group composition, delinquent norms, and routine activities with friends. The results show that proximity to friends and delinquent norms of peers significantly influence victimization, offending, and the victim-offender overlap. Regarding group composition, violent offending and being a victim-offender occurred more often in male-dominated mixed-gender friend groups, whereas victimization risk is not affected by group composition. Frequent alcohol consumption within the group is associated with victimization risk and the victim-offender overlap, whereas going out is associated with offending and the overlap. The findings underline that the peer context is not only of importance for explaining delinquency but also for unraveling victimization and the victim-offender overlap.

Keywords
victim-offender overlap, youth violence, routine activity, peer groups, norms

It is a well-documented fact that people are remarkably similar to their friends (McPherson et al., 2001; Rokven et al., 2017). The peer group poses a major context of socialization for adolescents (Schreck & Fisher, 2004; Vogel & Keith, 2015), leading to an alignment of attitudes and behavior

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among members of a (close) friend group. This congruence of one’s own and friends’ characteristics also applies to deviance: The influence of delinquent peers—in the form of their behavior, norms, and attitudes—is one of the most consistently identified factors for explaining youth crime and violence. A comprehensive amount of research certifies that peer delinquency ranks among the strongest and most prominent predictors of delinquency (Agnew, 1991; Bentrup, 2014; Haynie, 2002; Matsueda & Anderson, 1998; Pratt et al., 2010; Seddig, 2013; Warr, 2002).

Yet, peer group characteristics can not only be tied to offending but also to victimization (Schreck & Fisher, 2004; Schreck et al., 2004). Transferring such predictors of delinquency onto victimization risk seems obvious since there is undisputedly a strong association between victimization and offending—the victim-offender overlap—that is well established from a variety of studies (Berg & Felson, 2016; Jennings et al., 2012; Lauritsen et al., 1991; Ousey et al., 2011; Posick, 2013; Schreck et al., 2008; TenEyck & Barnes, 2018). It is therefore highly probable that victims will be characterized by a similar set of peer group influences as offenders. Examinations referring to ideas from other popular theories, particularly the lifestyle and routine activity approach, have already provided evidence that the same daily activities or lifestyles are influential for delinquency and victimization risk, thus explaining the overlap between both.

However, treating victims and offenders completely alike nevertheless has some pitfalls. Scholars have already argued that victims and victim-offenders should be viewed in a more nuanced way (Mustaine & Tewksbury, 2000; Skjærvø et al., 2017; TenEyck & Barnes, 2018; van Gelder et al., 2015). For instance, Mustaine and Tewksbury (2000) describe victims, offenders, and victim-offenders as three distinct groups with varying patterns of lifestyle measures. Furthermore, it has been demonstrated that victim-offenders are more similar to offenders regarding their activity profile, whereas victims-only are more similar to people abstaining from violence (Klevens et al., 2002). There is thus reason to assume that victim-offenders might be more similar to offenders than they are to victims. Accordingly, the nonoffending victims should be distinguishable from victim-offenders. Wang et al. (2018) find evidence that peer delinquency and activities are related to role differentiation between victims and offenders. Yet, empirical examinations of this topic are not saturated yet. In a forthcoming paper, Berg and Schreck (2021) point out that although role differentiation is an empirical reality, researchers have yet to provide substantive evidence on correlates that distinguish victims from offenders.

Hence, despite the profound evidence of peer groups’ influence on delinquency that can be transferred to victimization, two aspects remain widely obscured: How are the effects among people who are both—the victim-offenders—and how are the impacts on victimization when the delinquency is absent (the nonoffending victims)? The present article attempts to elucidate which peer group factors impact victimization and offending while differentiating the roles of victims-only, offenders-only, and victim-offenders within a sample of German urban adolescents. For this purpose, two theoretical frameworks are brought together to guide this manuscript: social learning theory (Akers, 2009; Sutherland, 1947) and lifestyle–routine activity theory (Cohen & Felson, 1979; Hindelang et al., 1978).

The Influence of Lifestyle and Routine Activities on Delinquency and Victimization

Offending, victimization, and their overlap have popularly been explained by mechanisms derived from routine activity theory (Cohen & Felson, 1979) and lifestyle exposure theory (Garofalo, 1987; Hindelang et al., 1978) which are usually merged into one theoretical framework (L-RAT; Engström, 2020). The routine activity approach describes crime as the situationally caused outcome of the convergence of three major elements: (a) a motivated offender, (b) a suitable target, and (c) the absence of capable guardians. The theory was later complemented by the concept of structured and unstructured socializing (Osgood et al., 1996). Accordingly, the theory argues that
deviant behavior is induced by the situational motivation, time spent with peers, the absence of authority figures, and a lack of structure during socializing. Time spent with peers increases the chances for delinquent acts because they are perceived to be easier and more rewarding when friends are present. Contrarily, the presence of authority figures alleviates the chances of deviant behavior by exerting social control. Furthermore, engaging in activities that take place in a monitored, organized setting (e.g., participating in a sports event, going to the movies) leaves less time available for delinquent behavior, and the attached social roles provide control, which also decreases the chances of engaging in delinquency. In contrast, unstructured and unsupervised activities (for instance, hanging around, going out [to parties], lingering outside at night) carry a higher criminogenic risk.

Activities and how time is spent are also associated with victimization. The lifestyle exposure theory describes how victimization risk depends on lifestyle and activities which regulate the exposure to situations that carry an elevated risk of becoming a target of crime. Particularly, a delinquent lifestyle is regarded as one of the main sources of victimization. Thus, criminogenic activities also entail a higher risk of victimization (Ousey et al., 2011) because, for example, people are more frequently placed in close proximity to other potential offenders. Therefore, the L-RAT framework considers victimization in probabilistic terms: The more one is exposed to criminogenic and risky situations, the greater is the probability of becoming victimized (Engström, 2020; Meier & Miethe, 1993).

Although the impact of lifestyles and routine activities on both offending and victimization has been comprehensively discussed and is well established in the literature (e.g., Engström, 2018; Klevens et al., 2002; Mustaine & Tewksbury, 2000; Pratt & Turanovic, 2015), there are, however, some limitations of explaining youth victimization through such concepts. Finkelhor and Asdigian (1996) argue that, for example, youths also get victimized without being involved in delinquency themselves. Particularly, the victimization of young children (e.g., through family members) or sexual victimization cannot be adequately explained solely by routine activity measures. The authors therefore suggest a modified, more general conceptualization that considers typical L-RAT concepts (e.g., guardianship, proximity to offenders) more as environmental factors rather than individual activities. The authors further reach beyond lifestyle theory by proposing so-called target congruence (Finkelhor & Asdigian, 1996, p. 6) as an explanatory concept for why some people carry a higher risk of victimization.

The Role of Peer Groups for Delinquency and Victimization

Besides the activities in which adolescents engage with their friends, the norms and attitudes of peers play a pivotal role as well. According to social learning approaches (Akers, 2009; Sutherland, 1947), delinquency is learned behavior. Affiliation with delinquent peers affects one’s own offending via a transmission of delinquent norms, attitudes, motives, or skills (Watts & McNulty, 2014). The role of norms and attitudes is hereby of particular importance: The theory states that an individual will choose crime as an action if the norms favoring deviance exceed those that reject violations of the law (Sutherland, 1947). Thus, whether the peers approve or disapprove of delinquency has an impact on an individual’s own attitudes and therefore behavior.

Moreover, delinquent peers might also influence the risk of becoming a victim of crime. In connection with what has been previously argued on L-RAT, there is reason to assume that delinquent peers do not serve as suitable guardians to protect from victimization. Scholars have argued that offenders rather pursue their own interests and are not willing to take risks on behalf of others by intervening in hazardous situations (Rokven et al., 2017; Schreck et al., 2004). Thus, whereas conforming peers might be able to provide protection from victimization by serving as capable guardians, delinquent peers are not. Associating with delinquent peers may also facilitate criminal
victimization through peers actively placing their friends in risky situations by introducing them to dangerous people (Reisig & Golladay, 2019). Moreover, it is possible that adolescent offenders use their own peers as targets so that individuals with delinquent and/or violent friends are at a higher risk of becoming a victim of violence—in this case by the hands of their own friends. For instance, Schreck and Fisher (2004) provide evidence that peer delinquency predicts violent victimization independently of controls like routine activities or family context. The authors conclude that association with delinquent friends enhances victimization risk reasoned by elevated exposure to offenders, deviant peers as uncapable guardians, and by functioning as their target of violence. Ousey et al. (2008) and Schreck et al. (2002) also attest a positive impact of delinquent peers on victimization. However, the role of peers in victimization must be considered in a more nuanced way. For instance, some scholars contradict the above argument and affirm that juvenile offenders rather target individuals to whom they have a larger social distance instead of people close to them (Sykes & Matza, 1957). Also, focusing on peers and their norms, there is reason to assume that delinquency-endorzing norms primarily affect a person’s offending rather than victimization since offending is a conscious act, whereas being a victim is not. As a consequence, the effects of crime-accepting norms of delinquent peers should mainly express themselves in offending behavior (Schreck et al., 2008).

A rather limited but currently emerging body of research focuses on the impact of peers on specifically the victim-offender overlap. A very recent paper by Walters (2020) investigates delinquent peer association as a mechanism responsible for the bidirectional relationship between victimization and offending. He hypothesizes that (a) violent offending brings youths into contact with other fellow offenders, which increases the risk of victimization, but also that (b) violent victimization brings people into contact with their perpetrators who serve as a role model and thus facilitate violent offending. Using data from the Pathways to Desistance Study, the author finds that peer delinquency mediates the temporal path from violent offending to violent victimization, which speaks for the assumption that offending attracts antisocial peers that elevate one’s risk of becoming a victim of violence. However, the opposite direction of victimization to offending was not mediated by the investigated explanators. Thus, delinquent peer association seems to mediate from offending to victimization but not from victimization to offending. DeCamp et al. (2018) identify different trajectories for victimization and offending and examine the overlap between these groups. They find a considerable overlap between high-level offenders and high-level victims and a strong impact of deviant friends on the risk of belonging to this group. Zimmerman et al. (2017) explore the causal relationship between victimization and subsequent offending and highlight the role of peers as victimizers. Their results show that victimization through the hands of peers increases the likelihood of future violent offending, whereas victimization by strangers did not. Chan (2019) identifies deviant peer influence as a significant risk factor for the joint occurrence of offending and victimization—this effect applies to both violent and nonviolent offending/victimization.

Rokven et al. (2017) do not explicitly examine the victim-offender overlap, but they analyze both victimization and offending and are therefore able to make comparisons. They find that close proximity to delinquent peers increases the chances of offending, whereas victimization risk is reduced by frequent interaction with these friends. However, they find victimization risk to be positively associated with friends’ victimization. A similar approach of investigating correlates of both offending and victimization was taken by Miller (2012). Key findings include that peers, gender, and age are the most consistent predictors of both offending and victimization among Hispanic adolescents. Conducting path analyses within a sample of 7- to 11-year-old children, Averdijk et al. (2016) find evidence that victimization by peers increases certain types of aggression that in turn impact the risk of becoming victimized again. Thus, peer victimization reinforces repeated peer victimization mediated through problem behavior. These studies underline that peer context is not only important for understanding delinquent behavior but also for determining the causes of victimization and the victim-offender overlap.
The Effects of Peer Group Composition

In connection with these peer norms, the structure of the group with respect to the gender ratio might play a decisive role as well. Generally, gender is one of the most prominent predictors of delinquency, with boys exhibiting higher levels of violence and criminal behavior (Moffitt et al., 2001). In comparison to males, females are characterized by stronger moral beliefs and are more likely to embrace norms unfavorable of delinquency so that they are less inclined to deviant behavior (Rebellon et al., 2016; Warr, 2002; Weerman & Hoeve, 2012). Males, on the other hand, are more likely to adapt crime-accepting norms, and masculine identity is said to emphasize criminogenic traits like risky behavior, competitiveness, and strength (Rebellon et al., 2016). Scholars have already made efforts to explain this “gender gap” in delinquency by peer group relations. For instance, Weerman and Hoeve (2012) have argued that females are possibly less exposed to delinquent peer influences because young individuals tend to befriend people of the same sex (Maccoby, 1988). Thus, members of mostly female groups are less exposed to crime-favoring norms. Therefore, in reference to social learning theory, a groups’ gender ratio can mold the transmission of norms and behavior among its members. In consequence, females in mixed-gender groups should show higher levels in delinquency than females with fewer male friends because they are more exposed to prodelinquent and proviolent norms conveyed by male peers. In other terms, a higher share of male peers in a friend group enhances the risk of violence and delinquency of the members, whereas a higher share of females decreases the risk.

Previous research related to such assumptions has already provided evidence that sex composition shapes group dynamics. For example, Peterson et al. (2001) investigate gangs and conclude that a group’s sex composition affects the norms and activities of its members. Weerman and Hoeve (2012) find that a higher share of females within a friend group is associated with less delinquency among girls, yet they cannot detect this effect for boys. However, other studies were able to demonstrate the crime-reducing effect of female friends for boys as well (e.g., Haynie et al., 2007; McCarthy et al., 2004), leading to the conclusion that having female friends is beneficial for reducing the risk of crime occurrence. Effects of sex composition on the transmission of deviant behavior can also be found beyond youth crime. For instance, Ouellet et al. (2019) applied the social learning approach to misconduct within police officer networks and found evidence that excessive use of force is contagious among police officers. It shows that a larger percentage of females within the group counteracts to this effect. In light of these previous findings, not only proximity to friends and the norms itself but also a gender effect in terms of group composition is worth looking into. Possible effects of group composition will therefore be further investigated in this study.

The Current Study

Although the effects of routine activities and social learning on offending and victimization have been widely addressed in the literature, some aspects still need further investigation. This particularly concerns placing the victim-offender overlap within the context of the peer group through an explicit role differentiation between victims, offenders, and victim-offenders to carve out factors that cause the association between both or that distinguish victims and offenders.

Accordingly, the present study examines how involvement in violence as either victim-only, offender-only, or victim-offender is explained by characteristics such as contact with the peer group, group composition, delinquent norms, and activities with peers. To investigate these questions, data from a study on youth crime conducted in Germany are used.

Based on the previously argued theoretical and empirical backdrop, the below hypotheses about the impact of proximity to peers (Hypothesis 1), delinquent peer norms (Hypothesis 2), group composition (Hypothesis 3), and routine activities with friends (Hypothesis 4) are derived.
Furthermore, as discussed earlier, there is profound evidence that victims and offenders share many similarities that create the overlap between both (Chan, 2019; Jennings et al., 2012; Mulford et al., 2018; Schreck & Stewart, 2012; Wang et al., 2018). Victimization can be traced back to features that are also responsible for offending. Thus, offenders have a higher risk of becoming victimized. Victimization while offending is absent (the “innocent victim”), however, probably emerges differently. For instance, Schreck and Berg (2021) argue that the nonoffender’s victimization is induced by the setting or situation and to a lesser extent by their own behavior. Also, as discussed earlier, previous empirical evidence has shown that victim-offenders rather emerge from the group of offenders than from victims. Thus, an additional hypothesis (Hypothesis 5) about the similarities between victims, offenders, and victim-offender is examined.

**Hypothesis 1:** A higher frequency of meeting with peers increases the risk of both offending and victimization.

**Hypothesis 2:** Delinquent peer norms increase the risk of involvement in offending.

**Hypothesis 3:** Male-dominated groups carry a higher risk of offending, whereas the risk of violent offending is lower within female-dominated groups. Accordingly, the gender ratio is suspected to affect the risk of being a victim-offender as well but not the risk of victimization-only.

**Hypothesis 4:** Unstructured or risky activities (such as drinking, going out, or unsupervised hanging around with friends) increase the risk of being involved in offending and victimization.

**Hypothesis 5:** The set of risk factors detected for the group of victim-offenders will be more similar to the offenders’ profile than to the victims’ profile.

The present study is relevant in that it focuses particularly on people who are involved in violence as both victims and offenders. Comparing this specific group to people involved in either victimization-only or offending-only contributes to further revealing factors that are either unique for victimization or offending or create the association between both. By investigating the effects of peer group characteristics, this examination incorporates a fruitful theoretical perspective for analyzing specifically the victim-offender overlap. Moreover, a large share of the research on the victimization-offending association has been conducted within the U.S.-American context, and comprehensive evidence from Germany barely exists. Only few scholars have addressed this phenomenon at all (Entorf, 2013; Kay, 2017; Schindler, 2001; Willems & van Santen, 2018). Therefore, this article contributes to further disentangling the risk factors of the victim-offender overlap, on the one hand, and to enrichening the international body of research, on the other.

**Data and Methods**

**Study and Sample**

The data stem from the German crime study “Crime in the Modern City” (Boers et al., 2010), approved and funded by the German Research Foundation. The project aims at explaining and monitoring the emergence, development, and desistance of deviant and delinquent behavior throughout the phase of adolescence and emerging adulthood. The current article uses a cross-sectional data set from the study’s second wave in 2003 in the German city of Duisburg, containing two cohorts: participants were in the 8th or 10th grade (on average 14 and 16 years of age, respectively). Duisburg is representative of an industrialized, large city in Germany. The study aimed at a full sampling of all students in these grades in the city in order to provide a sample representative of German urban juveniles. Thus, the target population included the city’s 56 schools (overall 10,221 students), of which 39 agreed to participate in the study. A total amount of 6,488 8th- and 10th-grade students attended these 39 schools (3,763 in 8th grade and 2,725 in 10th grade) and form the study’s final target population. Interviews were carried out in schools during class via self-
administered questionnaires under the supervision of trained interviewers. Overall, 5,834 students answered the questionnaire, which resulted in a response rate of 89.9% (in the 39 schools with permission). After excluding 15 cases for quality reasons, the used data set contains 5,819 valid interviews (3,392 in 8th grade and 2,427 in 10th grade), yet not all of these cases could be included in the present analyses due to filtering processes in the questionnaire. Students who answered that they are not within a group of friends accordingly did not receive the questions about peer group characteristics. Thus, only those who reported having a steady peer group are included in the analysis. However, being in a stable friend group is typical among youths, and 76.6% (4,333 cases) of the sample report having a peer group. It shows that both victimization rates (21.2% vs. 16.2%, \( p = .0001 \)) and offending rates (20.9% vs. 13.8%, \( p = .0000 \)) are significantly higher among individuals with a steady friend group compared to those without a stable group of friends. This again highlights the importance of peer groups for explaining involvement in violence and the necessity to investigate the influence these factors have on both offending and victimization. Hence, the general sample for the present article consists of these 4,333 cases of German urban juveniles. Because the later applied logistic regression models are based on the listwise deletion of missing values, the final analytical sample contains 3,519 cases.

**Measures**

In the present analysis, the dependent variable is violence as either victim-only, offender-only, or both. The independent variables are features of the respondents’ peer group such as frequency of meeting, norms, group structure, and routine activities. Several controls are included to limit confounding. Descriptive information on all included variables is summarized in Table 1. All steps of data preparation and analysis are conducted using the software package Stata Version 14.1 (Stata-Corp, 2015).

**Dependent variable**

*Involvement in violence.* The measurement for violence is a self-developed instrument that covers offenses that are relevant in German penal law and is based on the Exposure to Violence Scale originally developed by Lösel (1975). Violent offending is a composite measure consisting of four offenses (*assault without a weapon, assault with a weapon, robbery including threat of violence, and violent bag snatching*). For each, the respondents were asked whether they have committed these offenses within the last 12 months preceding the interview. The generated variable informs whether someone has engaged in one or more of these violent offenses within the last year. Thus, the variable is dichotomous with the two outcomes (1) yes and (0) no.

Violent victimization includes three violent offenses that were summarized into an index: *assault without a weapon, robbery (with threat of violence), and assault with a weapon*. Again, the information whether someone has been a victim of one or more of these offenses within the last year is used and condensed into a binary variable reflecting victim experience.

Based on this information, four distinct groups were created by combining the information on victimization and offending: nonvictim and nonoffender (69.0%), victim-only (11.0%), offender-only (10.9%), and victim-offender (9.2%). These four groups serve as the dependent variable in the conducted multinomial logistic regression model.

**Independent variables**

*Frequency of meeting with peers.* The respondents were asked how often they meet with their friends outside of school on a 4-point Likert-type scale from *rarely* to *daily or almost daily*. Higher values represent a more frequent proximity to peers.
To measure the delinquency-approving norms of the peers, respondents were given 10 criminal offenses typically committed by youths (e.g., stealing a CD worth 15€ in a store, punching someone in the face with the fist, stealing a bike). For each item, the participants rated how harmless or harmful their peers would find it if the respondent committed this offense, each on a 5-point Likert-type scale from totally harmless to very bad. Thus, the measure for peer norms is a perceptual measure. All items correlate positively and strongly, and the scale shows an excellent internal consistency and scale reliability (Cronbach’s $\alpha = .93$; McDonald’s $\omega = .93$). Exploratory factor analysis confirms that the scale is unidimensional. Since higher values represent norms dismissive of delinquency, the items were reversed for easier interpretability so that the higher values reflect a stronger delinquency-accepting norm orientation of peers. The 10 items were then condensed into a mean index by adding up the values and dividing by the number of items while allowing missing values on single items.

Peer group structure. The respondents were further requested to describe the composition of their peer group with respect to gender ratio and predominance by choosing one of the following options: (1) we are exclusively boys, (2) we are exclusively girls, (3) we are a mixed group, boys and girls are on an equal footing, (4) we are a mixed group, but the boys are clearly in charge, and (5) we are a mixed group, but the girls are clearly in charge. A small amount of 19 cases were coded as missing due to implausibility.

Table 1. Descriptive Statistics for the Study Variables.

| Study variables                        | Mean/% | SD  | Min. | Max. |
|----------------------------------------|--------|-----|------|------|
| Offending                              | 20.1%  |     |      |      |
| Violent victimization                  | 20.2%  |     |      |      |
| Involvement in violence                |        |     |      |      |
| Nonvictim and nonoffender              | 69.0%  |     |      |      |
| Victim only                            | 11.0%  |     |      |      |
| Offender only                          | 10.9%  |     |      |      |
| Victim-offender                        | 9.2%   |     |      |      |
| Frequency of meeting                   | 3.05   | 0.97| 1     | 4    |
| Delinquent peer norm                   | 2.02   | 0.71| 1     | 5    |
| Group structure                        |        |     |      |      |
| Boys only                              | 18.8%  |     |      |      |
| Girls only                             | 18.6%  |     |      |      |
| Mixed/equal                            | 55.7%  |     |      |      |
| Mixed/male dominated                   | 5.0%   |     |      |      |
| Mixed/female dominated                 | 2.0%   |     |      |      |
| Going to bars/discos                   | 2.37   | 1.39| 1     | 5    |
| Hanging around                         | 3.57   | 1.27| 1     | 5    |
| Drinking alcohol                       | 2.15   | 1.30| 1     | 5    |
| Gender                                 |        |     |      |      |
| Male                                   | 46.6%  |     |      |      |
| Female                                 | 53.4%  |     |      |      |
| Cohort                                 |        |     |      |      |
| Eighth grade (14 years)                | 56.8%  |     |      |      |
| 10th grade (16 years)                  | 43.2%  |     |      |      |
| Personal delinquent norm               | 2.16   | 0.81| 1     | 5    |
| Hedonistic value orientation           | 3.00   | 0.77| 1     | 5    |

Note. $N = 3,519$, SD = standard deviation; Min = minimum; Max = maximum.

Delinquent peer norm. To measure the delinquency-approving norms of the peers, respondents were given 10 criminal offenses typically committed by youths (e.g., stealing a CD worth 15€ in a store, punching someone in the face with the fist, stealing a bike). For each item, the participants rated how harmless or harmful their peers would find it if the respondent committed this offense, each on a 5-point Likert-type scale from totally harmless to very bad. Thus, the measure for peer norms is a perceptual measure. All items correlate positively and strongly, and the scale shows an excellent internal consistency and scale reliability (Cronbach’s $\alpha = .93$; McDonald’s $\omega = .93$). Exploratory factor analysis confirms that the scale is unidimensional. Since higher values represent norms dismissive of delinquency, the items were reversed for easier interpretability so that the higher values reflect a stronger delinquency-accepting norm orientation of peers. The 10 items were then condensed into a mean index by adding up the values and dividing by the number of items while allowing missing values on single items.
Unsupervised activities with peers. Activities with peers were measured by asking the respondents how much certain statements apply to their peer group, each on a 5-point Likert-type scale where higher values represent a higher frequency of the considered activity. The following activities were included in the analysis as single-item measurements: we visit bars, discotheques, and concerts together, we just meet and hang around, and when we are together, we drink a lot of alcohol.

Control variables

Gender. Gender is one of the most prominent explanators of delinquency and victimization and therefore included in the model as a control variable to adjust for gendered influences. The variable has two categories: female (53%) and male (47%).

Cohort. As mentioned earlier, the data set comprises two cohorts with a 2-year age difference. A dummy variable containing information on the cohort (8th or 10th grade, or 14 and 16 years of age on average, respectively) is included in the model to consider possible differences between the two age cohorts.

Personal delinquent norm. In order to not confound the peers’ norms (as reported by the respondent) with a respondent’s own delinquent norms, the model is controlled for an individual’s delinquency-accepting norms. The scale is the same as for measuring the peers’ delinquent norms and shows an excellent internal consistency and scale reliability as well (Cronbach’s $\alpha = .87$; McDonald’s $\omega = .88$). Again, all items correlate strongly, and exploratory factor analysis confirms a single underlying dimension; thus, the items are summarized into a mean index. Higher values on the generated mean index reflect a higher delinquent norm of the respondent.

Hedonistic value-orientation. Low self-control has shown to be (often strongly) associated with both victimization and offending and is regularly considered a control variable. Unfortunately, an established measurement of low self-control is not available in the data set. To assess this nonetheless in some way, a hedonistic value-orientation (see also Pöge, 2009; Seddig, 2013)—usually a common characteristic of people with low self-control and therefore a strong correlate—was included in the model as a proxy. The measurement consists of five items that reflect hedonistic values (I understand people who only do what they want to do, I don’t care about safety, I want to live an exciting life, my motto is enjoying life and living comfortably, life is easy, you can always get along somehow, and the meaning of life is fun and being able to buy whatever one likes), each answered on a 5-point Likert-type scale from does not apply to totally applies. All items correlate strongly and accordingly show a very good internal consistency and scale reliability (Cronbach’s $\alpha = .68$; McDonald’s $\omega = .69$). Exploratory factor analysis was conducted to confirm the unidimensionality of the scale. Accordingly, these items were condensed into a mean index.

Analytical Strategy

To investigate the effects of peer group characteristics on the victim and offender groups, a multinomial logistic regression model (henceforth: MLRM) is estimated that informs how a set of exogenous variables impacts the risk of an event to occur. MLRM is a common and appropriate technique to evaluate risk factors related to the victim-offender overlap and has been applied in several pertinent studies (e.g., Muftić et al., 2015; Mulford et al., 2018; Pyrooz et al., 2014). In this analysis, the group that is totally abstained from violence (nonvictims and nonoffenders) serves as the base outcome to which all other categories are referred to. In an additional step, the base outcome within the MLRM will be interchanged in order to appraise the specifics of victim-offenders compared to victims-only and offenders-only.
Table 2. Offending and Victimization Rates by Subgroups.

| Subgroups                     | Offending (%) | Victimization (%) |
|-------------------------------|---------------|-------------------|
| **Group structure**           |               |                   |
| Boys only                     | 22.8          | 21.9              |
| Girls only                    | 5.8           | 9.2               |
| Mixed/equal                   | 21.8          | 21.8              |
| Mixed/male dominated          | 46.3          | 36.6              |
| Mixed/female dominated        | 14.5          | 20.3              |
| **Gender**                    |               |                   |
| Female                        | 12.1          | 14.6              |
| Male                          | 29.1          | 26.6              |
| **Cohort**                    |               |                   |
| Eighth grade (14 years)       | 20.1          | 21.4              |
| 10th grade (16 years)         | 20.0          | 18.6              |

Note. N = 3,519.

Results

Descriptive Statistics

As can be seen in Table 1, victimization and offending rates are around 20% each. Table 2 shows that both the victimization and offending rates differ considerably between males and females in that more males are violent offenders but also experience violence as a victim more often. Moreover, a slightly decreasing tendency for victimization over age can be observed when comparing the two age cohorts. The group structure shows that female-only peer groups have the lowest victimization and offending rates. They are also lower for mixed groups with females in charge. The highest rates can be detected for mixed groups with boys in charge. Male-only groups and mixed groups with equal say for boys and girls show similar rates for offending and victimization. This underlines the assumption that the male gender is not only a risk factor (or female gender a protective factor, respectively) on the individual level but also at the peer group level.

Influences of Peer Group Characteristics on Victimization and Offending

Table 3 presents the results from the MLRM. The coefficients inform whether and how an independent variable influences the risk of being either a victim-only, offender-only, or victim-offender compared to no involvement in violence of any kind. The model has an acceptable explanatory power (pseudo $R^2 = 20.7\%$), and multicollinearity among the predictors appears to be unproblematic.

The frequency of meeting with friends shows a risk-facilitating impact on victimization-only and offending-only: With each additional point on the 4-point scale, the risk increases by 15% for being victimized and by 18% for being an offender. Although the effect on victim-offenders is of similar size (relative risk ratio [RRR] = 1.17, $p = .07$), it barely fails to reach the required level of statistical significance. The assumptions formulated in Hypothesis 1 can be supported for victims and offenders but not for victim-offenders.

Moreover, the norms of the peers mostly show the anticipated influences. As suspected in Hypothesis 2, also delinquent norms of the peers enhance the risk of being an offender or victim-offender. Yet, there is an approximately equally large effect for being a victim-only as well. This is not in line with the formulated hypothesis, which assumed no effect of delinquent peer norms on
victimization. The results suggest that peers’ delinquent norms impact victimization and offending risk equally.

Other predictors show heterogeneous effects between the victim and offender groups. Disparities can be observed regarding the peer group’s gender ratio and dominance. The reference category for all groups is mixed gender and equal say for boys and girls. Group composition does not affect victimization-only risk in any way—none of the observed effects is statistically significant. Regarding offenders-only, however, it shows that people in mixed/male-dominated groups have a higher risk of being violent offenders (RRR = 1.88). An even stronger effect of a mixed/male-dominated group can be observed for being both a victim and an offender (RRR = 2.34). Additionally, we find that individuals in peer groups consisting of only girls have a lower risk of being victim-offenders (RRR = 0.45). This indicates that male dominance in friend groups elevates the risk of violent activities and experiences. Yet, one limitation shall be mentioned right away. One may criticize that this effect might just be traced back to delinquent boys, whereas the girls in the same group are conforming. Thus, the findings would merely be the regular gendered effect of violence on the individual level. To address this potential shortcoming, the model was estimated for girls and boys separately (without Table). Among girls, peer group composition neither has a statistically significant effect on the risk of being a victim-only nor on being an offender-only. Yet, girls that are in female-only peer groups have a significantly lower risk of being victim-offenders (RRR = 0.39, p < .001) than girls in mixed groups.

Similar substantive results apply to boys as well. Again, no statistically significant effects can be found for victims-only. Yet, boys in a mixed/male-dominated peer group have an 86% higher risk of being offenders-only (RRR = 1.86, p = .026) and a 121% higher risk (RRR = 2.21, p = .021) of being a victim-offender than boys in mixed/equal groups. Thus, the results indicate that not only male gender per se is a risk factor for violence, but male dominance in mixed friend groups increases the chances of violent offending regardless of an individual’s gender. In other terms, female

### Table 3. Involvement in Violence Regressed on Peer Group Characteristics, Routine Activities, and Controls.

| Independent variables | Victim Only | Offender Only | Victim-offender |
|-----------------------|-------------|---------------|----------------|
| Frequency of meeting  | 1.15**      | 1.18*         | 1.17           |
| Delinquent peer norm  | 1.58***     | 1.43***       | 1.51***        |
| Group structure       |             |               |                |
| Boys only             | 0.80        | 0.99          | 0.93           |
| Girls only            | 0.83        | 0.86          | 0.45*          |
| Mixed/male dominated  | 1.40        | 1.88**        | 2.34***        |
| Mixed/female dominated| 1.09        | 0.65          | 1.75           |
| Going to bars/discos  | 0.97        | 1.22***       | 1.29***        |
| Hanging around        | 1.03        | 1.08          | 0.96           |
| Drinking alcohol      | 1.18***     | 1.06          | 1.26**         |
| Gender (reference: female) |   |               |                |
| Male                  | 1.75***     | 2.26***       | 2.23***        |
| Cohort (reference: Eighth grade) | |               |                |
| 10th grade            | 0.66**      | 0.67***       | 0.52**         |
| Personal delinquent norm | 0.85      | 1.85***       | 1.54***        |
| Hedonistic value orientation | 1.00 | 1.32**       | 1.44***        |

Note. N = 3,519. Reference category: Nonvictims and nonoffenders. χ²(33) = 815.52. R² (Cragg and Uhler) = .207. RRR = relative risk ratio; RSE = clustered robust standard error.

*p ≤ .05. ***p ≤ .01. ****p ≤ .001.
presence in peer groups lowers the risk of violent offending. Hence, Hypothesis 3 can be supported. It must be kept in mind, however, that the lack of statistically significant effects on being a victim-only might be caused by small case numbers.6

Furthermore, differences in the association with routine activities can be observed. For victimization-only, only drinking a lot of alcohol with friends has a risk-increasing impact (RRR = 1.18). With each one-unit increase of the measurement, the risk of being a victim-only increases by 18%. For violent offending-only, going to bars or discotheques has a facilitating impact (RRR = 1.22). Also, strong impacts of going to bars/discotheques and of alcohol consumption exist for the risk of being a victim-offender. Thus, Hypothesis 4 can partially be supported since statistically significant effects cannot be observed for all activities and the influences diverge between victims, offenders, and victim-offenders. However, we can speak of a general risk-facilitating impact of unstructured activities, which may diverge when considering particular activities in detail.

Lastly, also the control variables have significant impacts on victimization and offending, particularly on offenders-only and victims-offenders. Males are more likely to be victimized than females—their risk of being a victim-only is 75% higher than for females. The risk of being an offender-only or a victimized offender is even higher: Males are more than twice as likely to belong to these groups compared to females (RRR = 2.26 and RRR = 2.23, respectively). The older cohort shows lower levels of victimization and offending. From 14 to 16 years of age, the risk of becoming a victim, an offender, or both approximately diminishes by 33%–48%, whereby the reduction is largest for victim-offenders. As expected, delinquent norms of the respondents strongly increase the chances for offending (RRR = 1.85 for offenders-only and RRR = 1.54 for victim-offenders) but not for victimization-only. This confirms the assumption that personal delinquent norms primarily affect an individual’s violent behavior, but they do not impact the victimization risk when offending is absent. A hedonistic value-orientation also shows to increase the risk of being an offender-only (RRR = 1.32) or a victim-offender (RRR = 1.44), yet it is not associated with victimization-only.

Finally, to secure these results against unmeasured confounding, e-values for the statistically significant effects were assessed (Linden et al., 2019; see Table A1 in the Appendix).7 Overall, it shows that the found results are widely robust against bias caused by important omitted predictors.

Comparing Victim-Offenders to Victims and Offenders

At first glance, in Table 3, it seems as if the group of victim-offenders is more similar to the offenders-only than to the victims-only with regard to their set of relevant predictors. To assess whether there are substantial differences between victim-offenders compared to victims-only and offenders-only, Table 4 shows selected results from the estimated MLRM when (a) victimization-only and (b) offending-only are set as base outcomes.8 Only the coefficients of interest are presented in Table 4, that is, victim-offenders compared to victims-only and victim-offenders compared to offenders-only. If predictors were statistically significant here, this would indicate relevant distinctions of victim-offenders compared to victims and offenders, respectively.

Regarding peer group characteristics, it shows that only few relevant differences exist between victim-offenders compared to victims-only and offenders-only. Victim-offenders go out more often with their friends than individuals who report only victimization (RRR = 1.33). Compared to offenders-only, victim-offenders are characterized by a lower level of casually hanging around without particular purpose (RRR = 0.88) but a higher level of alcohol consumption (RRR = 1.18). All other peer group characteristics have no effect. Thus, victim-offenders are not distinct from victims or offenders concerning the peer group characteristics, yet they differ regarding their activities with friends.

Personal characteristics seem to demarcate victim-offenders from victims that do not offend. Victim-offenders have a stronger delinquent norm orientation as well as a stronger hedonistic value-
orientation than victims-only. However, victim-offenders are not different from offenders-only regarding these aspects.

Hypothesis 5 can therefore only partially be confirmed: The impacts of the peer group characteristics and activities do not clearly support that victim-offenders are more similar to offenders than they are to victims (or more disparate from victims than from offenders, respectively). Yet, it shows that victim-offenders and offenders-only are not different regarding their norm and value-orientations, whereas victim-offenders and victims-only can be clearly distinguished by these characteristics.

**Discussion**

Although the victim-offender overlap has received much attention in recent years, there are still efforts to make in describing the association’s sources and understanding its etiology (Berg & Mulford, 2020). The present study contributes to the international body of research by examining a so far understudied population—German adolescents—for which comprehensive empirical evidence on the victimization-offending association is lacking. Using a large sample of 14- and 16-year-old juveniles, the present article scrutinized two main research objects: examining peer group characteristics as sources of the victim-offender overlap and role differentiation in order to identify predictors that are either joint or unique for offending or victimization. The data support that proximity to friends and delinquency-accepting norms of peers significantly predicted victimization, offending, and the overlap between both. The analysis further revealed that violent offending and being a victim-offender occurred more often in male-dominated and mixed-gender friend groups compared to mixed groups with equal sayings for girls and boys. However, the risk of being a nonoffending victim is not affected. This speaks for group composition being a risk factor (or protective factor) for active involvement in violence, yet not for being solely a target of violence.

| Table 4. Comparison of Victim-Offenders to Victims and Offenders. |
|---------------------------------------------------------------|
| **Independent variables**                                      | **Victim-Offender** | **Victim-Offender** |
|                                                               | (Reference Category: Victim Only) | (Reference Category: Offender Only) |
|                                                               | RRR | RSE | RRR | RSE |
| Frequency of meeting                                         | 1.01 | .10 | 0.99 | 0.11 |
| Delinquent peer norm                                         | 0.95 | .14 | 1.05 | 0.13 |
| Group structure (reference: mixed/equal)                     |     |     |     |     |
| Boys only                                                    | 1.17 | .29 | 0.94 | 0.18 |
| Girls only                                                   | 0.54 | .27 | 0.52 | 0.20 |
| Mixed/male dominated                                         | 1.68 | .46 | 1.25 | 0.31 |
| Mixed/female dominated                                       | 1.61 | .97 | 2.69 | 1.77 |
| Going to bars/discos                                         | 1.33*** | .10 | 1.05 | 0.06 |
| Hanging around                                               | 0.93 | .05 | 0.88* | 0.06 |
| Drinking alcohol                                             | 1.07 | .08 | 1.18* | 0.09 |
| Gender (reference: female)                                   |     |     |     |     |
| Male                                                         | 1.27 | .24 | 0.99 | 0.15 |
| Cohort (reference: eighth grade)                             |     |     |     |     |
| 10th grade                                                   | 0.78 | .16 | 0.77 | 0.14 |
| Personal delinquent norm                                     | 1.81*** | .31 | 0.83 | 0.09 |
| Hedonistic value orientation                                 | 1.44** | .18 | 1.09 | 0.13 |

Note. \(N = 3,519\). Not all comparisons in the model displayed. \(\chi^2(33) = 815.52\). \(R^2\) (Cragg and Uhler) = .207. RRR = relative risk ratio; RSE = clustered robust standard error.

*p ≤ .05. **p ≤ .01. ***p ≤ .001.
Furthermore, routine activities with friends impact the risk of victimization and offending, yet the specific activities differ between roles. Drinking alcohol and going out with friends are activities that clearly distinguish victim-offenders from offenders-only or victims-only, respectively. It shows that victim-offenders can be best explained by the investigated characteristics, and they have the broadest set of risk factors. However, this examination cannot provide clear evidence for victim-offenders being remarkably more similar to offenders than they are to victims regarding peer group characteristics. Yet, it shows that certain personal characteristics distinguish between victims and offenders, with offenders and victim-offenders having stronger prodelinquent and hedonistic attitudes than nonoffending victims.

There are some limitations associated with the analyses. First, only violent victimization was considered. There are, however, other forms of criminal victimization that are relevant in a juvenile’s life, such as theft, bullying, or having personal property destroyed. It would be of interest to investigate whether and how associations with delinquent peers shape the victimization risk of such nonviolent offenses. Regarding methodological issues, it has been shown that particularly the variables indicating group composition sometimes suffered from a lack of statistical significance despite having a substantial effect size. This is most likely due to small cell numbers for certain variables. Thus, we cannot assuredly reject the impact of certain group compositions since we were lacking statistical power at some points. Expanding the sample size could help in eliminating this constraint. Another drawback includes that the victim-offender overlap is operationalized as a discrete outcome. This means that individuals who have at least one victimization or offending incident are coded as victims or offenders, respectively. However, it is reasonable to treat the overlap as a continuous variable to differentiate between victim-offenders that are characterized by more offending than victimization and vice versa. Also, regarding the victims-only category, we cannot account for distinctions between individuals who experienced only one victimization incident compared to those who experienced many inflictions. Yet, assessing the victim-offender overlap as a continuum is beyond the scope of the present article. Refining the operationalization of the victim-offender overlap is without doubt a recommendation for prospective investigations.

Another crucial limitation concerns the data collection. First, only the peers’ delinquent norms were investigated and not their factual delinquent behavior. Warr and Stafford (1991) have argued that it is not only important what peers think but especially what they do. Thus, only the dimension of what peers think is covered in this analysis and treated synonymously with their behavior. It needs to be further investigated how the victim-offender overlap might be affected by what peers effectively do. Second, information about peer groups was gathered through the respondent him- or herself. This is somewhat questionable because individuals might project their own behavior and attitudes onto their friends. This problem of projection bias has frequently been discussed in criminology (Boman et al., 2011; Boman & Ward, 2014; Rebellon & Modecki, 2014). I consider the bias only to some extent problematic in this case due to the following reasons. (1) The respondent’s own attitude (as measured with the exact same scale as the peers’ attitudes) was included as a control variable. Both variables are highly correlated, yet not perfectly, and variance inflation showed no complications. The impact of peers’ delinquent norms naturally decreases when controlling for a person’s own attitude, but still, a meaningful effect remains. (2) Recent evidence has demonstrated that projection bias does not completely explain the effect of peer influence so that perceived peer delinquency still has a demonstrable effect on adolescents’ offending (Walters, 2019). Yet, that study has so far demonstrated this for factual peer delinquency only and not for peer norms as used in this study. (3) The delinquency-accepting norms of peers are only one investigated variable in an array of peer group characteristics where all other variables are unaffected by this bias. Even if the measurement of peers’ norms was troublesome, there are still other important dimensions
that are investigated in this analysis. Still, it would certainly be desirable to eliminate this potential same-source bias by obtaining information directly from one’s friends, such as practiced in the U.S.-American National Longitudinal Study of Adolescent to Adult Health. However, such a procedure is necessarily tied to immense financial and administrative costs and was not feasible in this study.

Finally, it must be noted that the current study cannot provide any certain implications about whether the found impacts occur because of socialization or selection. So far, only the socialization perspective has been considered. It must be kept in mind, however, that also peer selection is a possible mechanism. Young deviants befriend other law-breaking youths (“birds of a feather flock together”; Glueck & Glueck, 1950), which might also apply to victimization (Turanovic & Young, 2016). Moreover, interactional effects comprising both, as theorized by Thornberry (1987), are conceivable. Further and more profound research is required to assess how the interactional conjunction of socialization and selection connects to the victimization-offending association.

Overall, this article highlights that the peer group context is not only relevant for explaining offending and victimization separately, but it also holds potential for explaining the overlap between both. However, differentiating roles revealed that some characteristics—such as group composition, certain activities, or personal norms and values—seem to facilitate rather one than the other. Although such approaches of role differentiation have been applied before (e.g., van Gelder et al., 2015), there is still a need for further evidence to support the claim that there are correlates that can indubitably distinguish between victims and offenders (Berg & Schreck, 2021). Thus, even though the evidence from the present analysis certainly contributes to the (international) body of research on the victim-offender overlap, it concomitantly implies that the potential for enhancing theoretical and empirical knowledge on the victimization-offending association is nowhere near exhausted yet.

Appendix

Table A1. E-Values for the Statistically Significant ($p < .05$) Independent Variables.

| Independent variables | Victim Only | | Offender Only | | Victim-offender | |
|-----------------------|-------------|-----------------|-------------|-----------------|-----------------|
|                       | RRR E       | RRR E           | RRR E       |                 |                 |
| Frequency of meeting  | 1.15 1.58   | 1.18 1.65       | —           | —               |                 |
| Delinquent peer norm  | 1.58 2.53   | 1.43 2.22       | 1.51 2.38   |                 |                 |
| Group structure       |             |                 |             |                 |                 |
| Boys only             | —           | —               | —           | —               | —               |
| Girls only            | —           | —               | —           | —               | —               |
| Mixed/male dominated  | —           | 1.88 3.17       | 2.34 4.11   |                 |                 |
| Mixed/female dominated| —           | —               | —           | —               | —               |
| Going to bars/discos  | —           | 1.22 1.74       | 1.29 1.89   |                 |                 |
| Hanging around        | —           | —               | —           | —               | —               |
| Drinking alcohol      | 1.18 1.64   | —               | —           | 1.26 1.82       |                 |
| Controls              |             |                 |             |                 |                 |
| Gender                | 1.75 2.90   | 2.26 3.96       | 2.23 3.89   |                 |                 |
| Cohort                | 0.66 2.41   | 0.67 2.36       | 0.52 3.29   |                 |                 |
| Personal delinquent norm | —       | 1.85 3.11       | 1.54 2.45   |                 |                 |
| Hedonistic value orientation | —       | 1.32 1.97       | 1.44 2.23   |                 |                 |

Note. RRR = Relative risk ratio; E = e-value.
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Notes
1. Implausible answers refer to males reporting to be in a female-only group and vice versa. Yet, these answers must not necessarily be incorrect: It is possible that individuals who are the only male/female person in an otherwise exclusively female/male peer group consider their group as female-only/male-only rather than mixed. However, since it cannot be determined with certainty whether these answers are inconsistent or interpreted as stated before, these few cases were excluded from the analysis.

2. The questionnaire does not differentiate between sex and gender. Thus, the respondent’s self-reported information on sex is treated as gender.

3. The model was built up stepwise—first model: controls only, second model: controls + peer group characteristics, and third model: (full model) controls + peer group characteristics + activities. The predictors’ influences do not relevantly differ between these steps. Therefore, due to parsimony, only the full model is presented.

4. The overall model fit is assessed using Cragg and Uhler’s pseudo $R^2$. However, scholars argue that some indicators (e.g., McFadden’s or Nagelkerkes/Cragg and Uhler’s pseudo $R^2$) underestimate the “true” $R^2$ of the regression model and recommend the use of McKelvey and Zavoina’s partial $R^2$ instead (Langer, 2016). This indicator further allows to determine the fit for each comparison in the multinomial logistic regression model. McKelvey and Zavoina’s partial $R^2$ indicators demonstrate that belonging to the group of victim-offenders is best explained by the predictors (39.3%), whereas victimization-only is explained the least (10.1%). Belonging to the group of offenders-only is explained by 32.6%.

5. Variance inflation factors (VIFs) were considered to monitor possible concerns regarding multicollinearity. In the present model, the VIFs are only slightly elevated and range between 1.04 and 2.34. Values of this magnitude are considered unproblematic (Hair et al., 2010).

6. All categorical independent predictors were checked for their cell number sizes via cross-tabulation with the outcome variable to examine whether insufficient sample size impairs the model’s stability. In this case, this issue concerns solely the peer group composition: Since females are less involved in violence than males, the categories “mixed, female-dominated” and “girls only” have partially very limited cell sizes with the dependent, categorical variable. This is probably also the reason why the observed effects are not
statistically significant at this point—the statistical power is insufficient to corroborate the found impact. To examine the magnitude of this issue, those two groups (girls only and mixed/female-dominated) were excluded from the analysis, and the model was estimated with only the remaining three groups with sufficient cell sizes. Although the model is now based on over 700 fewer cases due to listwise deletion of missing values, it shows that the same substantive results can be obtained—all effects maintain their direction, size, and level of statistical significance. Therefore, the two categories were kept in the model to (1) not ignore that many cases in the analysis, (2) because these excluded cases would not be random (i.e., only females), and (3) to be able to gain general information of the groups’ impact on the victim-offender overlap in this specific sample. However, the lack of statistical significance nevertheless implies that we cannot and should not derive too much meaning from these coefficients.

7. Calculating e-values is a sensitivity analysis technique that allows an examination of how robust a found association is against potential unmeasured confounding. The e-value is defined as the minimum strength of an association (here: relative risk ratio) an unobserved confounding variable would need to have with both the explanator and the outcome to fully explain away the found influence (Dong et al., 2019; VanderWeele & Ding, 2017). Most of the effects require a confounders’ risk ratio of 2 or more, which is very high—especially considering that the effect of gender (usually the strongest explanator of victimization/offending) is already around 2 in this analysis. Finding a confounding variable with a much stronger association than gender seems unlikely. Yet, some of the effects could potentially be explained away by unmeasured effects around 1.5 to 2.0, which cannot be fully precluded. However, since an array of controls is included in the model, the results can be considered widely robust against unmeasured confounding.

8. Thus, the results presented in Table 4 are based on the same model as in Table 3—the base outcomes are merely interchanged in order to be able to assess whether differences between (a) victim-offenders and victims-only and (b) victim-offenders and offenders-only are statistically significant. For reasons of parsimony, the other comparisons (e.g., nonvictims and nonoffenders compared to these reference categories) are not displayed.

References

Agnew, R. (1991). The interactive effect of peer variables on delinquency. *Criminology, 29*(1), 47–72. https://doi.org/10.1111/j.1745-9125.1991.tb01058.x

Akers, R. L. (2009). *Social learning and social structure. A general theory of crime and deviance*. Transaction Publishers.

Averdijk, M., Malti, T., Eisein, M., Ribeaud, D., & Farrington, D. P. (2016). A vicious cycle of peer victimization? Problem behavior mediates stability in peer victimization over time. *Journal of Developmental and Life-Course Criminology, 2*, 162–181. https://doi.org/10.1007/s40865-016-0024-7

Bentrup, C. (2014). *Lernprozesse und Jugenddelinquenz: Eine Längsschnittanalyse delinquenten Handelns aus lerntheoretischer Perspektive* [Learning processes and juvenile delinquency: A longitudinal analysis of delinquent behavior from a social learning perspective]. Waxmann.

Berg, M. T., & Felson, R. B. (2016). Why are offenders victimized so often? In C. A. Cuevas & C. M. Rennison (Eds.), *The Wiley handbook on the psychology of violence* (pp. 49–65). John Wiley.

Berg, M. T., & Mulford, C. F. (2020). Reappraising and redirecting research on the victim-offender overlap. *Trauma, Violence, & Abuse, 21*(1), 16–30. https://doi.org/10.1177/1524838017735925

Berg, M. T., & Schreck, C. J. (2021). The meaning of the victim-offender overlap for criminological theory and crime prevention policy. Advance online publication. https://www.researchgate.net/publication/351035215_The_Meaning_of_the_Victim-Offender_Overlap_for_Criminological_Theory_and_Crime_Prevention_Policy

Boers, K., Reinecke, J., Seddig, D., & Mariotti, L. (2010). Explaining the development of adolescent violent delinquency. *European Journal of Criminology, 7*, 499–520. https://doi.org/10.1177/1477370810376572
Boman, J. H., Stogner, J. M., Miller, B. L., Griffin, O. H., & Krohn, M. D. (2011). On the operational validity of perceptual peer delinquency: Exploring projection and elements contained in perceptions. *Journal of Research in Crime and Delinquency, 49*(4), 601–621. https://doi.org/10.1177/0022427811419367

Boman, J. H., & Ward, J. T. (2014). Beyond projection: Specifying the types of peer delinquency misperception at the item and scale levels. *Deviant Behavior, 35*(7), 555–580. https://doi.org/10.1080/01639625.2013.863098

Chan, H. C. (2019). Exploring the overlap between victimization and offending among Hong Kong adolescents. *Journal of Criminal Justice, 61*, 72–80. https://doi.org/10.1016/j.jcrim-jus.2019.03.003

Cohen, L. E., & Felson, M. (1979). Social change and crime rate trends: A routine activity approach. *American Sociological Review, 44*(4), 588–608. https://doi.org/10.2307/2094589

DeCamp, W., Zaykowski, H., & Lunn, B. (2018). Victim–offender trajectories: Explaining propensity differences from childhood to adulthood through risk and protective factors. *British Journal of Criminology, 58*(3), 667–688. https://doi.org/10.1093/bjc/azx052

Dong, B., Morrison, C. N., Branas, C. C., Richmond, T. S., & Wiebe, D. J. (2019). As violence unfolds: A space–time study of situational triggers of violent victimization among urban youth. *Journal of Quantitative Criminology, 99*(2), 397. https://doi.org/10.1007/s10940-019-09419-8

Engström, A. (2018). Associations between risky lifestyles and involvement in violent crime during adolescence. *Victims & Offenders, 12*(2), 1–23. https://doi.org/10.1080/15564886.2018.1503984

Engström, A. (2020). Conceptualizing lifestyle and routine activities in the early 21st century: A systematic review of self-report measures in studies on direct-contact offenses in young populations. *Crime & Delinquency, 3*(3), 001128720937640. https://doi.org/10.1177/001128720937640

Entorf, H. (2013). *Criminal victims, victimized criminals, or both? A deeper look at the victim-offender overlap* (IZA Discussion Paper No. 7686). Bonn.

Finkelhor, D., & Asdigian, N. L. (1996). Risk factors for youth victimization: Beyond a lifestyles/routine activities theory approach. *Violence & Victims, 11*(1), 3–19. https://doi.org/10.1891/0886-6708.11.1.3

Garofalo, J. (1987). Reassessing the lifestyle model of criminal victimization. In M. R. Gottfredson & T. Hirschi (Eds.), *Positive criminology* (pp. 23–42). Sage.

Glueck, S., & Glueck, E. (1950). *Unraveling juvenile delinquency*. The Commonwealth Fund.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate data analysis* (7th ed.). Pearson Prentice Hall.

Haynie, D. L. (2002). Friendship networks and delinquency: The relative nature of peer delinquency. *Journal of Quantitative Criminology, 18*(2), 99–134. https://doi.org/10.1023/A:1015227414929

Haynie, D. L., Steffensmeier, D., & Bell, K. E. (2007). Gender and serious violence: Untangling the role of friendship sex composition and peer violence. *Youth Violence and Juvenile Justice, 5*(3), 235–253. https://doi.org/10.1177/1541204007300358

Hindelang, M. J., Gottfredson, M. R., & Garofalo, J. (1978). *Victims of personal crime: An empirical foundation for a theory of personal victimization*. Ballinger Publisher Company.

Jennings, W. G., Piquero, A. R., & Reingle, J. M. (2012). On the overlap between victimization and offending: A review of the literature. *Aggression and Violent Behavior, 17*(1), 16–26. https://doi.org/10.1016/j.avb.2011.09.003

Kay, R. (2017). *Der offending-victimization-overlap: Viktimisierte Täter und delinquente Opfer? [The offending-victimization-overlap: Victimized offenders and delinquent victims?]*. wvb Wissenschaftlicher Verlag.

Kleven, J., Duque, L. F., & Ramirez, C. (2002). The victim-perpetrator overlap and routine activities: Results from a cross-sectional study in Bogotá, Colombia. *Journal of Interpersonal Violence, 17*(2), 206–216. https://doi.org/10.1177/088626050217002006

Langer, W. (2016, June 10). *The assessment of fit in the class of logistic regression models: A pathway out of the jungle of Pseudo-R’s using Stata* [Paper presentation]. Meeting of the German Stata User Group at GESIS, Cologne, Germany. https://www.stata.com/meeting/germany16/slides/de16_langer.pdf
Sykes, G. M., & Matza, D. (1957). Techniques of neutralization: A theory of delinquency. *American Sociological Review, 22*(6), 664. https://doi.org/10.2307/2089195

TenEyck, M., & Barnes, J. C. (2018). Exploring the social and individual differences among victims, offenders, victim-offenders, and total abstainers. *Victims & Offenders, 13*(1), 1–18. https://doi.org/10.1080/15564886.2016.1268985

Thornberry, T. P. (1987). Toward an interactional theory of delinquency. *Criminology, 25*(4), 863–892. https://doi.org/10.1111/j.1745-9125.1987.tb00823.x

Turanovic, J. J., & Young, J. T. N. (2016). Violent offending and victimization in adolescence: Social network mechanisms and homophily. *Criminology, 54*(3), 487–519. https://doi.org/10.1111/1745-9125.12112

VanderWeele, T. J., & Ding, P. (2017). Sensitivity analysis in observational research: Introducing the E-Value. *Annals of Internal Medicine, 167*(4), 268–274. https://doi.org/10.7326/M16-2607

van Gelder, J.-L., Averdijk, M., Eisner, M., & Ribeaud, D. (2015). Unpacking the victim-offender overlap: On role differentiation and socio-psychological characteristics. *Journal of Quantitative Criminology, 31*(4), 653–675. https://doi.org/10.1007/s10940-014-9244-3

Vogel, M., & Keith, S. (2015). Vicarious peer victimization and adolescent violence: Unpacking the effects of social learning, general strain, and peer group selection. *Deviant Behavior, 36*(10), 834–852. http://doi.org/10.1080/01639625.2014.977187

Walters, G. D. (2019). Peer influence or projection bias? Predicting respondent delinquency with perceptual measures of peer delinquency in 22 samples. *Journal of Adolescence, 70*, 1–12. https://doi.org/10.1016/j.adolescence.2018.11.001

Walters, G. D. (2020). Mediating the victim–offender overlap with delinquent peer associations: A preliminary test of the person proximity hypothesis. *Criminal Justice Studies, 33*(4), 297–315. https://doi.org/10.1080/1478601X.2020.1711752

Wang, X., Cheon, H., & Beckman, L. (2018). Assessing the violent offending and violent victimization overlap among a sample of Chinese youth and young adults. *Criminal Justice and Behavior, 22*. https://doi.org/10.1177/0093854818806024

Warr, M. (2002). *Companions in crime: The social aspects of criminal conduct: Cambridge studies in criminology*. Cambridge University Press. http://doi.org/10.1017/CBO9780511803956

Warr, M., & Stafford, M. (1991). The influence of delinquent peers: What they think or what they do? *Criminology, 29*(4), 851–866. https://doi.org/10.1111/j.1745-9125.1991.tb01090.x

Watts, S. J., & McNulty, T. L. (2014). Delinquent peers and offending: Integrating social learning and biosocial theory. *Youth Violence and Juvenile Justice, 13*(2), 190–206. https://doi.org/10.1177/1541204014523797

Weerman, F. M., & Hoeve, M. (2012). Peers and delinquency among girls and boys: Are sex differences in delinquency explained by peer factors? *European Journal of Criminology, 9*(3), 228–244. https://doi.org/10.1177/1477370811435736

Willems, D., & van Santen, E. (2018). Opfer gleich Täter? Junge Menschen in Deutschland und Erfahrungen körperlicher Gewalt [Victims identical to offenders? Young people in Germany and experiences of physical violence]. *Monatsschrift für Kriminologie und Strafrechtsreform, 101*(1), 46–61. https://doi.org/10.1515/mkr-2018-101014

Zimmerman, G. M., Farrell, C., & Posick, C. (2017). Does the strength of the victim-offender overlap depend on the relationship between the victim and perpetrator? *Journal of Criminal Justice, 48*, 21–29. https://doi.org/10.1016/j.jcrimjus.2016.11.003

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