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# Associations between Risky Lifestyles and Involvement in Violent Crime during Adolescence

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## ABSTRACT

Research shows that violent victimization and offending often overlap, and that both outcomes may be related to a risky lifestyle. The author therefore aimed to examine the associations between a risky lifestyle and the probability of being involved in violence as a victim only, offender only, or as a victim-offender, compared with being a total abstainer. In multinomial logistic regression models with data from a sample of adolescents ( $N = 490$ ), a risky lifestyle was related to a higher probability of crime involvement across all groups compared with total abstainers. However, the significance of specific indicators of a risky lifestyle varied across the different outcomes. Spending a lot of time in the city center at night and frequently being inebriated were related to a higher risk of being a victim only, whereas peer deviance increased the risk for being an offender only. Frequent exposure to criminogenic settings and often being inebriated were related to a higher risk of being a victim-offender. The results indicate that studies on crime involvement and lifestyle must consider each kind of involvement separately. However, not many girls were involved in violent crime as offenders only or victim-offenders, indicating that girls may have risky lifestyles without committing acts of violence.

## KEYWORDS

Adolescence; lifestyle; offending; routine activities; victimization; victim-offender overlap; violence

## Introduction

Although it has been argued that “neither victimization, nor offending can be understood without full consideration of the other” (Lauritsen & Laub, 2007, p. 56), research has traditionally focused on these phenomena separately. However, recent studies have paid more attention to the relationships between these phenomena by not only focusing on victims or offenders but also on those who are both victims and offenders (i.e., victim-offenders; e.g., Broidy, Daday, Crandall, Sklar, & Jost, 2006; Cops & Pleysier, 2014; Klevens, Duque, & Ramirez, 2002; Mustaine & Tewksbury, 2000; TenEyck & Barnes, 2017; Van Gelder, Averdijk, Eisner, & Ribaud, 2015). Although many victims are not offenders and vice versa, research shows strong support for the existence of an overlap between the two groups (Jennings, Piquero, & Reingle, 2012). Further, more holistic approaches that have simultaneously focused on victims only, offenders only and victim-offenders have shown that these groups are different. For instance, TenEyck and Barnes (2017) demonstrated that victims only, offenders only, victim-offenders, and total abstainers have different patterns of risk and protective factors. Similarly, Mustaine and Tewksbury (2000) found that differences in lifestyle are associated with belonging to different groups with regard to the degree of involvement in crime.

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Lifestyle is important for understanding which individuals are at higher risk of offending and victimization because differences in lifestyle lead to people being differentially exposed to risks and to the situations in which crime occurs (Hindelang, Gottfredson, & Garofalo, 1978; McNeeley, 2015). Drawing on the probabilistic nature of lifestyle-exposure theory (Pratt & Turanovic, 2016), the more time one spends in settings that are conducive to crime, the higher the risk for being involved in criminal activities, either as victims or offenders. Although previous research has examined aspects of lifestyle in relation to the victim-offender overlap (e.g., Mustaine & Tewksbury, 2000; TenEyck & Barnes, 2017), more knowledge is needed regarding the specific associations between lifestyle indicators and the risk for involvement in crime as either victims only, offenders only, or victim-offenders.

By using data from a sample of adolescents, the present study examines associations between lifestyle and offending, victimization and the victim-offender overlap, with these concepts viewed as representing different outcomes. More specifically, I explore the associations between a risky lifestyle and the probability of belonging to each of the groups involved in violent crime, as compared with having no involvement in this type of crime (i.e., total abstainers). By examining the different groups involved in violent crime, I also aim to examine whether the associations between specific lifestyle indicators vary across the different outcomes. Sex-specific analyses are also provided to examine within-sex relationships between lifestyle and crime involvement.

## Background

### *The relationship between victimization and offending*

In a review of the literature, Jennings et al. (2012) found that 31 of the 37 studies included strongly supported the existence of a victim-offender overlap. However, this conclusion is nothing new if we consider some early work conducted in the field of criminology that examined both the offender's and the victim's role in the crime incident (Von Hentig, 1948). The notion of the victim-offender overlap is primarily centered on the well-established finding that offenders are also likely to be victims of crime (Bjarnason, Sigurdardottir, & Thorlindsson, 1999; Deadman & MacDonald, 2004; Jensen & Brownfield, 1986). Further, victimization is usually better predicted by offending than vice versa (e.g., Pauwels & Svensson, 2011). This is logical because offenders should at least have some minimal level of motivation to commit a crime, which would then lead them to participate in situations where offenses occur. In these situations, offenders are exposed to other offenders' criminal inclinations, resulting in a higher risk for being victimized. On the other hand, victims who are not involved in offending may, to some degree, be victimized for reasons that are less strongly related to their own behavior, or simply as a result of bad luck. This means that as a group, victims only would be expected to differ from victim-offenders. Importantly, this is not to say that the victim-offender relationship should be interpreted in causal terms (i.e., that offending causes victimization). Although it was noted relatively early that homicide victims may play a part in their own victimization (Wolfgang, 1958), there is unlikely to be a strong and direct causal relationship between less serious forms of victimization and offending. In fact, research indicates that there may even be a reciprocal negative relationship between victimization and offending over time, thus adding further complexity to the discussion on causality (Ousey, Wilcox, & Fisher, 2011).

Research on the victim-offender overlap has focused on, for example, specific violent outcomes, such as intimate partner violence (Tillyer & Wright, 2014), and property crimes, such as vandalism (Tewksbury & Mustaine, 2000). However, the extent of the overlap varies; the overlap in relation to violent offenses is more salient by comparison with that found for property crime (Cops & Pleysier, 2014; Jennings et al., 2012). This is not surprising, as violent offenses require personal interaction, whereas property crimes can be perpetrated without such contact. The direct contact creates opportunities for both offending and victimization, and in these situations it is not necessary to be exclusively a victim or an offender; instead, some individuals may belong to both groups.

However, it is important to acknowledge that the overlap is far from perfect for either violence or theft offenses: many victims are not offenders and vice versa (e.g., Posick, 2013). The main point is rather that some individuals are both victims and offenders, and that this group of individuals tends to differ from offenders only and victims only (e.g., Broidy et al., 2006; Cops & Pleysier, 2014; Klevens et al., 2002; Mustaine & Tewksbury, 2000; TenEyck & Barnes, 2017). Although research indicates that there are also subgroups within the victim-offender group (Reid & Sullivan, 2012), and that there are different victimization and offending trajectories over time (Jennings, Higgins, Tewksbury, Gover, & Piquero, 2010), the strong evidence for the existence of the victim-offender overlap (Jennings et al., 2012) highlights the fact that victimization and offending are, to some extent, interrelated.

The need to treat victim-offenders as a separate group from victims only is also related to differences in the sex composition of the victim group. Men are usually overrepresented as victims of violence, but when controls are included for offending, these sex differences may be substantially smaller than anticipated (Jensen & Brownfield, 1986). Thus, male victims of violence are also offenders more often than female victims, although offending is related to victimization among both men and women (e.g., Turanovic, Reisig, & Pratt, 2015). For specific offenses, the categorization of victims only, offenders only, and victim-offenders may vary, but men are in general more involved in committing acts of violence. For instance, it has been demonstrated in regard to intimate partner violence that, although the victim-offender group may be equally large across the sexes, males are much more often offenders without being victims, while women who commit acts of intimate partner violence are much more often also victims of such violence compared with men (Muftić, Finn, & Marsh, 2015).

### ***Lifestyle-exposure theory and routine activities theory***

Two well-matched theoretical frameworks are relevant in the context of this study. Lifestyle-exposure theory explains why there are differences in criminogenic exposure among individuals, while routine activities theory describes what makes certain settings criminogenic. There are numerous studies linking the integrated lifestyle-routine activities theory to victimization and offending (for an overview see McNeeley, 2015), but less attention has been devoted to the victim-offender overlap. Although many theories and empirical studies may be of importance for understanding involvement in crime among victims only, offenders only and victim-offenders (e.g., Jennings et al., 2012; TenEyck & Barnes, 2017), lifestyle and routine activities are highly relevant due to their focus on the actual crime event or opportunity (i.e., the time and place at which both victimization and offending occur).

As founders of lifestyle-exposure theory, Hindelang et al. (1978) explained victimization by means of a model in which different lifestyles lead to differential exposure to criminogenic (or victimogenic) environments in which victimization is more likely to occur. The theory can be summarized as placing lifestyle at the center of explanations of victimization, as it argues that “different lifestyles are associated with differential risks of being in particular places, at particular times, under particular circumstances, and interacting with particular kinds of persons” (Meier & Miethe, 1993, p. 469). Lifestyle-exposure theory thus focuses on how lifestyles affect the risk or odds for becoming victimized, and it can therefore be viewed as a probabilistic theory (Pratt & Turanovic, 2016).

Cohen and Felson’s (1979) routine activities theory describes the circumstances that are required for crime events to occur: a motivated offender targets a suitable victim/object in the absence of capable guardians. In more recent versions of the theory, additional features that affect situations in which crime occurs have also been included. For instance, the presence of peers creates an audience that the offender may wish to impress or frighten, while handlers may hinder offenders from carrying out their actions (Felson & Boba, 2010). Another important extension of routine activities theory is its application to individual offending, in which a strong relationship has been shown between individual offending and involvement in unstructured activities (Osgood, Wilson, O’Malley, Bachman, & Johnston, 1996). Because the theory describes the elements required for a crime to occur, it is primarily a descriptive theory (Pratt & Turanovic, 2016).

### ***Previous research on lifestyle and routine activities***

Research has shown that shared lifestyle characteristics among victims and offenders partly explain the victim-offender association (Daday, Broidy, Crandall, & Sklar, 2005; Pizarro, Zgoba, & Jennings, 2011), although offending in itself remains a strong predictor of victimization in lifestyle research (Wittebrood & Nieuwbeerta, 1999). It is therefore not surprising that victims and offenders have been portrayed as one homogenous group (Singer, 1981). Nevertheless, Mustaine and Tewksbury (2000) argued that victims only, offenders only and victim-offenders are distinct groups, as in their study they found few lifestyle similarities between them. For example, they found that victim-offenders had higher scores on measures of a risky lifestyle than either victims only or offenders only. Further, using an extensive list of covariates, TenEyck and Barnes (2017) found a number of differences among total abstainers, victims only, offenders only, and victim-offenders, with the overall conclusion that victim-offenders are the group with the largest number of risk factors. Moreover, other researchers have found the victim-only group to have less risky lifestyles than the other groups (e.g., Broidy et al., 2006).

A risky lifestyle has also been found to be a better predictor of offending than victimization (Pauwels & Svensson, 2011), which further supports the notion that victims only may be more similar to those with no involvement in crime. Finally, the victim-offender group differs from those who are victims only; the latter group have routine activities that are more similar to those of the total abstainers (Klevens et al., 2002). More specifically, Klevens et al. (2002) found that victim-offenders visited more risky areas and consumed more alcohol than did victims only.

Although it has been argued that other factors, such as psychological variables (e.g., anxiety), are more important than lifestyle (Van Gelder et al., 2015), lifestyle itself is highly relevant due to its ability to provide a connection between individuals’ activities and their crime involvement.

Specific lifestyle indicators vary across studies, and this study focuses on a number of measures that have been shown to be related to victimization and offending in previous research: involvement in unstructured activities, peer deviance, and alcohol use. Unless stated otherwise, the studies described are based on samples of adolescents or young adults.

### ***Unstructured activities***

Being involved in unstructured activities, often without adult supervision and in the company of peers, is related to a higher risk of victimization (Averdijk & Bernasco, 2015; Maimon & Browning, 2012) and offending (Agnew & Petersen, 1989; Bernasco, Ruiters, Bruinsma, Pauwels, & Weerman, 2013; Osgood et al., 1996; Wikström, Oberwittler, Treiber, & Hardie, 2012). These findings are highly consistent with a lifestyle and routine activities approach, particularly when more recent theoretical developments are taken into account (see Felson & Boba, 2010), because they show that the convergence in space and time of certain activities, in the presence or absence of certain types of people, increases the risk for involvement in and exposure to crime. Osgood et al. (1996) for example, argued that “[t]he lack of structure leaves time available for deviance; the presence of peers makes it easier to participate in deviant acts and makes them more rewarding; and the absence of authority figures reduces the potential for social control responses to deviance” (p. 651). It is also plausible that involvement in unstructured activities exposes people to others with a similar (risky) lifestyle, which should in turn be associated with a higher risk for not only offending but also victimization.

### ***Peer deviance***

Because adolescents often commit crimes together with peers (Warr, 2002), having deviant peers may indicate that an individual is, to some degree, exposed to and involved in situations in which crimes are committed. Svensson and Oberwittler (2010) found that delinquent friends have a positive effect on offending and that this effect is stronger for those who spend more time in unstructured routine activities. Further, studies that have examined sex differences in peer delinquency have noted that the offending of both boys and girls is related to levels of delinquency among their peers (Weerman & Hoeve, 2012; Wikström & Butterworth, 2006). Peer deviance may also be important for the risk of becoming a victim, as victimization also often occurs in the company of peers (Averdijk & Bernasco, 2015). In a study that examined both victimization and offending (Posick, 2013), both outcomes were strongly predicted by peer deviance.

Research shows further that victims more often choose peers who are offenders compared with total abstainers, which has been proposed as a partial explanation of the increased risk for offending among victims (Rokven, Tolsma, Ruiters, & Kraaykamp, 2016). Nonetheless, adolescents who commit violent offenses cluster with similar others through a process of preference for similar others whereas victims cluster via a process of them being avoided by most peers (Turanovic & Young, 2016). Thus, peer relations may still differ substantially across victims and offenders.

## **Alcohol use**

Alcohol use is directly related to situations in which adolescent offending occurs (Bernasco et al., 2013). Felson and Staff (2004) have found that alcohol intoxication is related to offending, particularly with regard to offenses involving direct contact between the offender and the victim. In terms of victimization, individuals who are frequently inebriated have a higher probability of becoming victims of assault (Mustaine & Tewksbury, 2000). Although using a different measure of alcohol use, driving under the influence of alcohol, Daday et al. (2005) found that this is more common among victims than among offenders, indicating that alcohol use may be more important for explaining victimization than offending. It has also been shown that victims of assault with a weapon are likely to be involved in excessive drinking (Klevens et al., 2002), while Felson and Burchfield (2004) found a positive situational effect of drinking on physical victimization. Alcohol abuse is also a lifestyle factor that is associated with being a victim-offender (Mustaine & Tewksbury, 2000).

## **Measuring lifestyle**

The lifestyle features outlined previously are manifested in actions engaged in by oneself (e.g., inebriation) or by others (e.g., peer deviance). This is important because lifestyle is something individuals do. However, a large number of different operationalizations and measurements have been used to study lifestyle and routine activities (for an overview, see McNeeley, 2015), of which many have been criticized in previous research (e.g., Jensen & Brownfield, 1986; Mustaine & Tewksbury, 1997, 2000; Pratt & Turanovic, 2016). One general problem is the absence of a strict conceptual difference between, on the one hand, lifestyle and routine activities, and, on the other hand, the outcomes that are to be explained. Studies that use offending as a lifestyle variable to predict offending (e.g., Mustaine & Tewksbury, 2000) or studies that have found an association between a “delinquent lifestyle” (i.e., committing crimes) and victimization (Henson, Wilcox, Reyns, & Cullen, 2010; Lauritsen, Sampson, & Laub, 1991; Pizarro et al., 2011; Sampson & Lauritsen, 1990), are not particularly informative regarding the specific lifestyles of victims and offenders. Further, although indirect demographic indicators often remain statistically significant when the relationships between lifestyle and routine activities and crime involvement are examined (e.g., Henson et al., 2010; Sampson & Wooldredge, 1987), these indicators are indirect and have therefore been criticized (e.g., Jensen & Brownfield, 1986; Meier & Miethe, 1993). The main issue is that the use of these variables requires reliance on a substantial degree of generalization (Mustaine & Tewksbury, 1997, 2000). For instance, using sex as an indicator of lifestyle is based on the notion that men and women have different lifestyles, which does not allow for any level of intrasex variation.

## **The present study**

I aim to examine the relationships between risky lifestyles and three different outcomes, offending only, victimization only and the victim-offender overlap, in a sample of adolescents. Drawing on previous research (Mustaine & Tewksbury, 2000), I test four hypotheses. A risky lifestyle is associated with a higher probability of being only a victim of



violence (Hypothesis 1), only a violent offender (Hypothesis 2), and a violent victim-offender (Hypothesis 3). The specific lifestyle variables that increase the risk for being a victim only, offender only, and a victim-offender vary across the different outcomes in terms of their significance and magnitude (Hypothesis 4). I also test the hypotheses in sex-specific analyses.

## Method

### Data

The data are drawn from the third data collection wave of the Malmö Individual and Neighborhood Development Study. All children born in 1995 and living in Malmö in the fall of 2007 were eligible for inclusion in the original sample. The study required informed consent from the participants' guardians, which was obtained in 576 cases. Compared with the birth cohort as a whole, the sample is representative but with an underrepresentation of foreign-born adolescents and adolescents from economically disadvantaged neighborhoods. The study was approved by the regional ethics review board in Lund.

A total of 514 adolescents (89%) agreed to participate in the second wave, while 517 individuals (90%) participated in the third wave. All third-wave participants (16 years old), who both completed a questionnaire and took part in a space-time budget interview, were included in the sample for the present study. Individuals who only completed the questionnaire were excluded ( $n = 27$ ), resulting in a final sample size of 490 individuals. The data collection took place during the adolescents' first year in upper-secondary school, which started in the fall of 2011. The third wave was selected because, as noted in a recent similar study (TenEyck & Barnes, 2017), this is an age at which crime involvement peaks, and which is thus highly relevant for examining the associations between lifestyle and crime involvement.

### Research instruments

A space-time budget and a questionnaire were employed sequentially (approximately  $2 \times 45$  min) on the same occasion for each participant. The space-time budget (STB) is a structured individual interview methodology in which the interviewer asks the interviewees face-to-face about their whereabouts during the four days before the interview (for a review and description of the STB methodology, see Hoeben, Bernasco, Weerman, Pauwels, & Van Halem, 2014; Wikström et al., 2012). To provide a description of the interviewees' lives in terms of both weekday and weekend activities, each interview pertained to the last Friday and Saturday before the interview and the two weekdays (Monday–Thursday) leading up to the interview. Importantly, each day referred to in the interview started at 6 a.m. and finished at 6 a.m. the next day. Thus, interviewees who, for example, were out late on Saturday night (i.e., until Sunday morning) were able to report activities until Sunday at 6.00 a.m. For each hour of the four days included, the respondents were asked about where they were, what they were doing, and with whom they were doing it. The interviewer recorded the data in a structured form that can be described as a four-day diary for each respondent. The interviewer-led questionnaire contained items on lifestyle, offending and victimization.



The use of two different instruments offers a more holistic approach to measuring participants' lifestyles. The level of detail is higher in the STB as it produces hourly data and utilizes very specific categories. For instance, the STB allows for detailed categories of activities (e.g., cleaning), which should render more accurate answers because, when broader categories are utilized (e.g., household work), participants tend to report incorrectly as a result of misinterpreting the meaning of a given category (Schulz & Grunow, 2012). Further, the higher level of detail in the STB allows for the data to be aggregated into an overall amount of hours spent in certain types of situations, while the questionnaire data are based on the adolescents' own aggregations of how much time they spend in certain situations. Furthermore, systematic biases have been found when questionnaires with stylized items are compared with diaries (e.g., Kan, 2008).

However, because the STB only covers four days, it is not a reliable means of measuring very rare events, such as the prevalence of offending and victimization (Hoeben et al., 2014). The questionnaire, on the other hand, refers to an entire year which makes it much more likely to capture these rare events more accurately. The utilization of both questionnaire and diary data may thus compensate for the shortcomings of each method, and is in line with recommendations from previous research (Juster, Ono, & Stafford, 2003).

### ***Dependent variable***

The dependent variable is based on questionnaire items that refer to involvement in violence during Grade 9. Violent crimes were chosen because these offenses are most strongly linked to the victim-offender overlap (Jennings et al., 2012). More specifically, the dependent variable was constructed in relation to two items, examining violent victimization and violent offending respectively: (a) "Did anyone during 9th grade kick or hit you in a way that made you experience feelings of pain?" and (b) "Did you during 9th grade beat up or hit someone (for example, punch, stab, kick or headbutt someone)?" Although not encompassing exactly the same violent actions, both items refer to physical violence against a person and are the items that best correspond with each other in the questionnaire. The criteria for being defined as a victim only ( $n = 69$ ) were having been a victim of violence during Grade 9, while not having committed a violent offense during this period. The definition of offender only includes individuals who committed one or more violent offenses during Grade 9, while not being the victim of a violent crime during the same period ( $n = 25$ ). Victim-offenders were defined as participants who were both offenders and victims during Grade 9 ( $n = 33$ ). All other adolescents were defined as total abstainers ( $n = 324$ ), a term that, in this context, refers to individuals with no crime involvement as either offenders or victims (TenEyck & Barnes, 2017).

### ***Independent variables***

All independent variables measure various dimensions of risky lifestyles based on the descriptive nature of routine activities theory; the variables describe environments and circumstances in which it is likely that a motivated offender and a suitable target will

converge in the absence of capable guardians. While involvement in violent crime should not be the default outcome every time a person spends time in environments characterized by these circumstances, the more time a person spends in such environments, the higher the risk for being involved in violent crime. Thus this study, in line with lifestyle-exposure theory, assumes the existence of a probabilistic relationship between risky lifestyles and the outcomes studied.

The STB variable measuring exposure to criminogenic settings consists of the hours spent in unstructured activities while unsupervised, and in company of one or more peers, during the four days before the interview. Unstructured activities were defined as activities with no organized content, such as partying, visiting bars, hanging around, and socializing face to face. The time slot of 1 hr was employed to capture the more detailed variations of participation in criminogenic settings. For each participant, data from the four days in the STB were aggregated to a sum of the total number of hours spent exposed to criminogenic settings.

Two questionnaire items were used as indicators of being involved in risky behavior with friends at specific locations. First, the variable measuring time spent in unstructured activities is based on the item: “How often are you and your friends outside, in parks or playgrounds, without doing anything in particular but hanging around (e.g., talking to each other)?” Second, the variable measuring time spent in the city center at night is based on the item: “How often are you and your friends in the city center at night?” The participants selected among fixed response alternatives for these two items: “never/almost never,” “once or twice per week,” “several days (3–5 days per week),” or “all or almost all days per week (6–7 days per week)”. There was no reference period for these items because the respondents were asked to estimate their weekly exposure (in terms of days) at the time of their participation in the study.

The variable measuring peer deviance is an index of questionnaire items that measure deviance among the participants’ friends. Six items were included in the final index, encompassing different dimensions of deviance: truancy, inebriation, drug use, theft and shoplifting, and involvement in violent fights. The respondents were asked how often their friends are involved in these deviant behaviors: never (0), sometimes (1), every month (2), and every week (3) (variable range 0–18; Cronbach’s  $\alpha = .76$ ). There was no reference period for this item, either; the respondents were asked to estimate the amount of peer deviance at the time of their participation in the study. Finally, a questionnaire item was employed to measure inebriation: “How many times have you consumed alcohol to the extent that you have felt drunk during 9th grade?” with the response alternatives “once or twice,” “a few times (3–5 times),” “many times (6–10 times),” or “very many times (11 times or more).”

Age, occupation, and marital status have often been included as indicators of lifestyle in previous studies or as control variables. However, because the current sample comprised a birth cohort of adolescents, there is little variation in these variables. Therefore, only sex was included in this study to conduct sex-specific analyses.

### **Analytical approach**

The independent variables were categorized in three different groups: low, high, and very high (see Table 1). All variables, except exposure to criminogenic settings, were on an ordinal scale before the final categorization. This made categorization easy and less

**Table 1.** Descriptive statistics.

Variable name	Categories	Girls ( <i>n</i> = 224)		Boys ( <i>n</i> = 227)		Total ( <i>N</i> = 451)	
		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Violent crime involvement during Grade 9 (prevalence)	Total abstainers	187	83.5	137	60.4	324	71.8
	Involved	37	16.5	90	39.6	127	28.2
	Victim only	30	13.4	39	17.2	69	15.3
	Offender only	3	1.3	22	9.7	25	5.5
	Victim-offender	4	1.8	29	12.8	33	7.3
Exposure to criminogenic settings (hours during 4 days)	Low 0–3	116	51.8	119	52.4	235	52.1
	High 4–7	55	24.6	54	23.8	109	24.2
	Very high 8+	53	23.7	54	23.8	107	23.7
Unstructured activities (days per week)	Low 0–2	157	70.1	152	67.6	309	68.8
	High 3–5	58	25.9	56	24.9	114	25.4
	Very high 6+	9	4.0	17	7.6	26	5.8
City center at night (days per week)	Low 0	100	45.2	112	50.2	212	47.7
	High 1–2	92	41.6	92	41.3	184	41.4
	Very high 3+	29	13.1	19	8.5	48	10.8
Peer deviance (index, 0–17)	Low 0–3	141	62.9	112	50.2	253	56.6
	High 4–5	40	17.9	50	22.4	90	20.1
	Very high 6+	43	19.2	61	27.4	104	23.3
Inebriation (times inebriated during Grade 9)	Low 0–2	111	50.5	114	51.6	225	51
	High 3–10	66	30.0	55	24.9	121	27.4
	Very high 11+	43	19.5	52	23.5	95	21.5

arbitrary, as most of the categories were predefined in the questionnaire; however, some truncations were needed to avoid the creation of groups that were too small for the desired statistical analyses. The first category (low) consists of roughly half the distribution from the 50th percentile and below, and it thus constitutes the largest group in relation to each variable. The remaining half of the distribution consists of two groups. Individuals in the first of these groups represent those with a somewhat higher value than average, labeled high, while the second group represents individuals with the highest values, labeled very high. The only count variable, exposure to criminogenic settings, was also categorized as a result of its negative skewness (for an overview of the reasoning behind the variable categorization in this study, see Turner, Dobson, & Pocock, 2010). The final variables correlated to a varying extent, but no correlation was stronger than moderate.<sup>1</sup>

This study also tests hypotheses by comparing victims only, offenders only, and victim-offenders with total abstainers in multinomial logistic regression models.<sup>2</sup> Both unadjusted (bivariate) and adjusted (multivariate) models were specified.<sup>3</sup> The models thus first reflect the risk for being involved in crime for each independent variable separately and then in models that include controls for the effects of all the other independent variables. This approach was chosen to examine which specific lifestyle variables are of greatest importance for the probability of being involved in crime by comparison with total abstainers.

Importantly, offenders only and victim-offenders were almost exclusively boys (see Table 1). Thus, sex-specific models were specified. Although the sample size for these models is much reduced, they add important information by showing the effects of a risky lifestyle within each sex. Due to the low prevalence of offending among the girls, the sex-specific analysis among girls only consists of binary logistic regression models in which the risk for being a victim is assessed by comparing this group with total abstainers. Further, when examining boys only, the small sample size resulted in the need to dichotomize the variable unstructured activities (the high and very high categories were merged) due to large standard errors when included in its original form.

Respondents with missing data on the outcomes were omitted because the analyses aimed to differentiate individuals in terms of these outcomes (i.e., it was necessary to have complete data). The final sample includes 451 adolescents (50.3% boys, 49.7% girls). The excluded individuals ( $n = 39$ ; 51.3% boys, 48.7% girls) did not differ significantly from the included individuals in terms of the independent variables with the exception of the variable measuring unstructured activities.<sup>4</sup> Those with missing data on the independent variables were excluded using listwise deletion.

## Findings

Descriptive statistics are first presented briefly, and this is followed by the results relating to each hypothesis. Odds ratios in the tables show the probability of a certain outcome, by comparison with the total abstainers, when a participant belongs to a specific group (high or very high compared with low, and very high compared with high) on each independent variable.

Table 1 summarizes the descriptive statistics. Of the final sample, 71.8% were total abstainers, 15.3% victims only, 5.5% offenders only, and 7.3% victim-offenders. There are some notable sex differences: boys are much more involved in crime as offenders only and as victim-offenders. In general, boys and girls have equally risky lifestyles although boys' peers are more deviant, which is not surprising given the sex differences in offending.

### ***A risky lifestyle is associated with a higher probability of being a victim of violence compared with being a total abstainer***

The first hypothesis was largely confirmed: a risky lifestyle was found to be associated with a higher probability of being a victim only compared with being a total abstainer. The unadjusted logistic regression analyses (Table 2) showed that individuals belonging to the high or very high categories on four of the five risky lifestyle variables examined in general have a higher probability of being victims only compared with those in the low category. More specifically, the odds ratios indicate that individuals who spent a great deal of time in criminogenic settings (very high) and in the city center at night (high), whose peers were very deviant (very high), and who reported a high or very high frequency of inebriation were two to three times as likely to be victims only. There were no significant differences when the very high group was compared with the high group on each variable, which indicates that there is no perfect linear association between the independent variables and the risk for being a victim only. Finally, involvement in unstructured activities did not significantly increase the risk for being a victim only.

In the second, adjusted model, spending a great deal of time in the city center at night (high) and frequency of inebriation (high) remained significant, indicating that these variables increased the probability of being a victim only compared with being an abstainer, even when controlling for all the lifestyle variables.

**Table 2.** Multinomial logistic regression models.

Variable		Model 1						Model 2 <sup>a</sup>					
		Victim only		Offender only		Victim-offenders		Victim only		Offender only		Victim-offenders	
		SE	OR	SE	OR	SE	OR	SE	OR	SE	OR	SE	OR
Exposure to criminogenic settings	High vs. low	0.33	1.41	0.51	1.68	0.52	1.87	0.36	1.23	0.59	1.17	0.56	1.15
	Very high vs. low	0.32	2.51**	0.50	2.54	0.44	5.99***	0.36	1.88	0.57	1.59	0.49	2.82*
	Very high vs. high	0.36	1.79	0.55	1.51	0.48	3.21*	0.39	1.53	0.60	1.36	0.51	2.44
Unstructured activities	High vs. low	0.33	0.80	0.45	1.84	0.39	1.81	0.37	0.53	0.51	1.29	0.45	1.20
	Very high vs. low	0.53	1.33	0.80	1.90	0.79	1.40	0.56	1.14	0.85	1.42	0.83	1.05
	Very high vs. high	0.59	1.66	0.83	1.03	0.81	0.78	0.62	2.17	0.88	1.10	0.87	0.88
City center at night	High vs. low	0.29	2.32**	0.50	0.88	0.40	2.25*	0.32	1.86*	0.55	0.53	0.45	1.15
	Very high vs. low	0.46	2.04	0.55	3.06*	0.62	2.04	0.51	1.49	0.65	1.19	0.69	.74
	Very high vs. high	0.44	0.88	0.60	3.49*	0.59	0.90	0.47	0.79	0.64	2.27	0.63	.64
Deviant peers	High vs. low	0.36	1.37	0.60	4.71**	0.47	2.75*	0.39	0.98	0.67	8.08**	0.53	1.22
	Very high vs. low	0.32	2.52**	0.55	9.52***	0.44	4.33***	0.39	1.55	0.69	16.11***	0.53	1.51
	Very high vs. high	0.40	1.84	0.50	2.02	0.47	1.57	0.43	1.60	0.56	2.00	0.52	1.23
Inebriation	High vs. low	0.32	2.65**	0.55	0.98	0.56	5.15**	0.35	2.11*	0.65	0.34	0.59	4.13*
	Very high vs. low	0.35	2.94**	0.48	2.37	0.54	11.39***	0.43	1.77	0.60	0.51	0.63	6.26**
	Very high vs. high	0.35	1.11	0.60	2.43	0.43	2.21	0.39	0.84	0.68	1.51	0.47	1.52

Note. Unadjusted (Model 1) and adjusted (Model 2) standard errors and odds ratios (ORs) for the associations between lifestyle variables and the risk for involvement in violence as a victim only, an offender only, or a victim-offender compared with being a total abstainer ( $N = 430$ ). Multivariate regression adjusting for all independent variables.

\* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ .

<sup>a</sup> $R^2 = .17$  (Cox & Snell),  $.21$  (Nagelkerke). Model  $\chi^2(30) = 80.33$ ,  $p \leq .001$ .

### ***A risky lifestyle is associated with a higher probability of being a violent offender compared with being a total abstainer***

The second hypothesis was also generally confirmed: a risky lifestyle was found to be associated with a higher probability of being an offender only by comparison with being a total abstainer. Statistically significant variables indicated that some lifestyle indicators were important in differentiating offenders only from total abstainers (see Table 2). Time spent in the city center (very high) produced a threefold increase in the probability of being an offender only compared with the low group. Peer deviance was also related to a higher probability of being an offender only, with the high group being more than four times as likely to be offenders only and the very high group being more than nine times as likely to be violent offenders only. However, exposure to criminogenic settings, unstructured activities, and inebriation were nonsignificant, indicating that not all risky lifestyle variables were related to a higher risk of being an offender only. The only statistically significant difference found when the very high category was compared with the high

category was for time spent in the city center at night, with individuals in the former group being more than three times as likely to be violent offenders only compared with the latter group.

In the adjusted model, time spent in the city center at night was no longer significantly associated with offending. However, there was a substantial increase in the size of the odds ratio for peer deviance: high peer deviance increased the risk of being an offender only more than eight times, while participants belonging to the very high group had a probability of offending that was 16 times as high.

### ***A risky lifestyle is associated with a higher probability of being a violent victim-offender compared with being a total abstainer***

The third hypothesis received strong confirmation. A risky lifestyle was associated with a higher probability of being a victim-offender by comparison with being a total abstainer. The unadjusted logistic regression analyses (Table 2) showed that exposure to criminogenic settings (very high) rendered a sixfold increase in the probability of being a victim-offender compared with the low category. Similarly, spending time in the city center at night (high) more than doubled the probability of being a victim-offender. Peer deviance (high and very high) rendered an almost three- and fourfold increased risk, respectively. The highest odds ratios, however, were found for inebriation, where belonging to the high group resulted in a fivefold increase in the probability of being a victim-offender, while the very high group was associated with a probability that was more than 11 times as high. Time spent in unstructured activities, however, was not significantly related to a change in the probability of being a victim-offender. When the very high group was compared with the high group, the only significant result was found for exposure to criminogenic settings, with individuals the very high group being more than three times as likely to be victim-offenders compared with individuals in the high group.

The adjusted logistic regression analysis showed that exposure to criminogenic settings remained significantly associated with being a victim-offender, although the odds ratio decreased to show a less than threefold increase in the probability of being a victim-offender for the very high group. Inebriation remained the strongest predictor, with individuals in the high group being more than four times as likely to be victim-offenders and the very high group being more than six times as likely to be victim-offenders.

### ***The specific lifestyle variables that increase the risk for being a victim only, offender only, and a victim-offender vary across different outcomes***

A simple comparison of the unadjusted associations produced by the analyses showed that the relationships between the specific lifestyle variables and being a victim only, an offender only, or a victim-offender, were fairly similar across the groups. Two of the five variables increased the risk for all outcomes: time spent in the city center at night and peer deviance. Thus, membership of all three groups was predicted by the same variables to some extent, which runs counter to the study's fourth hypothesis. However, the results of the adjusted logistic regression analysis showed that the specific lifestyle variables that contributed to the final models were different across the three outcomes. The risk for being a victim only was mainly related to spending a lot of time in the city center at night (high), and to being

inebriated more often than most adolescents (high). For offending only, peer deviance (high and very high) was the main lifestyle variable that produced an increased level of risk by comparison with total abstainers. The risk for being a victim-offender was mainly linked to exposure to criminogenic settings (very high) and inebriation (high and very high). Although inebriation was significant in relation to being both a victim only and a victim-offender, the overall findings support the hypothesis in that they show differences in the relationships between specific lifestyle variables and the three outcomes.

**Lifestyle risk varies across sexes**

Sex-specific analyses revealed some notable deviations from the analyses based on the full sample. In the unadjusted model for boys only (Table 3), spending time in the city center at night became important, as membership of the very high group was now statistically significant, rendering an eightfold increase in the risk for being victims only. Another difference was found for inebriation: membership of the very high group was no longer significantly related to a higher risk for being a victim only. In the adjusted model, the only remaining significant association was that for the very high group on time spent in the city center at night.

**Table 3.** Multinomial logistic regression models.

Variable		Model 1						Model 2 <sup>a</sup>					
		Victim only		Offender only		Victim-offenders		Victim only		Offender only		Victim-offenders	
		SE	OR	SE	OR	SE	OR	SE	OR	SE	OR	SE	OR
Exposure to criminogenic settings	High vs. low	0.45	1.21	0.57	1.70	0.59	2.18	0.50	1.22	0.67	1.51	0.65	1.57
	Very high vs. low	0.45	2.43*	0.56	3.27*	0.52	9.60***	0.54	1.82	0.66	2.60	0.59	4.96**
	Very high vs. high	0.53	2.02	0.62	1.93	0.56	4.40**	0.59	1.49	0.70	1.72	0.60	3.16
Unstructured activities <sup>2</sup>	High vs. low	0.40	0.87	0.48	1.27	0.42	1.56	0.48	0.52	0.57	0.88	0.52	0.86
	High vs. low	0.41	2.33*	0.54	0.80	0.44	1.87	0.45	1.97	0.60	.65	0.52	1.09
	Very high vs. low	0.68	7.80**	0.74	5.67*	0.74	5.67**	0.73	6.57*	0.87	3.54	0.84	2.65
City center at night	High vs. low	0.41	2.33*	0.54	0.80	0.44	1.87	0.45	1.97	0.60	.65	0.52	1.09
	Very high vs. low	0.68	7.80**	0.74	5.67*	0.74	5.67**	0.73	6.57*	0.87	3.54	0.84	2.65
	Very high vs. high	0.66	3.35	0.80	7.07*	0.74	3.03	0.70	3.34	0.87	5.49*	0.81	2.42
Deviant peers	High vs. low	0.50	1.22	0.62	3.91*	0.54	1.96	0.55	0.95	0.70	6.39**	0.67	0.59
	Very high vs. low	0.43	2.84*	0.59	6.48**	0.49	3.89**	0.57	1.72	0.78	14.01***	0.64	0.77
	Very high vs. high	0.54	2.32	0.56	1.66	0.55	1.99	0.60	1.81	0.66	2.19	0.64	1.31
Inebriation	High vs. low	0.43	2.90*	0.62	1.04	0.69	10.37***	0.51	2.15	0.80	0.27	0.75	9.76**
	Very high vs. low	0.49	2.29	0.55	1.91	0.68	19.09***	0.64	1.07	0.76	0.34	0.79	13.29***
	Very high vs. high	0.52	0.79	0.71	1.84	0.50	1.84	0.58	0.50	0.82	1.25	0.55	1.36

Note. Unadjusted (Model 1) and adjusted (Model 2) standard errors and odds ratios (ORs) for the associations between lifestyle variables and the risk for involvement in violence as a victim only, an offender only or a victim-offender compared with being a total abstainer among boys only (n = 213). Multivariate regression adjusting for all independent variables. Dichotomized ("very high" was merged with "high") due to large standard errors when examining boys only with the original categorization.

\*p ≤ .05. \*\*p ≤ .01. \*\*\*p ≤ .001.

<sup>a</sup>R<sup>2</sup> = .28 (Cox & Snell), .32 (Nagelkerke). Model χ<sup>2</sup> (27) = 70.56, p ≤ .001.



For girls (Table 4), the unadjusted model showed that spending a lot of time (very high) in unstructured activities was related to a more than sevenfold increase in the risk for being a victim only. When the very high group was compared with the high group, the risk was even greater, indicating that for girls, being in the very high group is risky whereas being in the high group is not risky at all. This result was further strengthened because it was also found in the adjusted model.

The results were also different when boys were examined separately in relation to being an offender (Table 3). In the unadjusted model with boys only, exposure to criminogenic settings was significant, with the very high group being more than three times as likely to be offenders only. In the adjusted model, however, this relationship was no longer statistically significant. The main finding when examining boys only was instead that having a very high score on spending time in the city center at night remained statistically significant in the adjusted model, but only when compared with those in the high group. For victim-offenders among boys only, the results were fairly similar to those of the full sample in terms of the significance of the associations. However, the odds ratios were substantially larger in the boys-only model.

Finally, it should also be noted that the model for boys only performed better than the model for the full sample (Nagelkerke's  $R^2 = .32$  vs.  $.21$ ). Although the sample size is limited, the results indicate that a risky lifestyle produces a more powerful increase in the risk for being involved in crime among boys. By contrast, many girls seem to be able to have a risky lifestyle without becoming involved in violence.

## Discussion

This study has aimed to examine associations between lifestyle and offending only, victimization only and the victim-offender overlap by comparing them with total abstainers. The findings generally confirm the four hypotheses, because one or more of the

**Table 4.** Binary logistic regression models.

Variable		Model 1		Model 2	
		Victim only		Victim only	
		SE	OR	SE	OR
Exposure to criminogenic settings	High vs. low	0.51	1.83	0.56	1.33
	Very high vs. low	0.47	3.17*	0.55	2.00
	Very high vs. high	0.55	1.73	0.59	1.50
Unstructured activities	High vs. low	0.64	0.36	0.70	0.26
	Very high vs. low	0.71	7.56**	0.86	9.50**
	Very high vs. high	0.90	20.83***	1.03	36.20***
City center at night	High vs. low	0.43	2.35*	0.50	1.76
	Very high vs. low	0.81	0.72	0.92	0.48
	Very high vs. high	0.78	0.31	0.85	0.27
Deviant peers	High vs. low	0.52	1.45	0.58	1.02
	Very high vs. low	0.48	2.00	0.62	1.24
	Very high vs. high	0.60	1.38	0.70	1.22
Inebriation	High vs. low	0.49	2.91*	0.58	2.94
	Very high vs. low	0.52	4.21**	0.69	4.41*
	Very high vs. high	0.49	1.44	0.58	1.50

Note. Unadjusted (Model 1) and adjusted (Model 2) standard errors and odds ratios (ORs) for the associations between lifestyle variables and the risk for being involved in violence as a victim only compared with being a total abstainer among girls only ( $n = 210$ ; offenders only [ $n = 3$ ] and victim-offenders [ $n = 4$ ] were excluded from the analysis). Multivariate regression adjusting for all independent variables.

<sup>a</sup> $R^2 = .14$  (Cox & Snell),  $.24$  (Nagelkerke). Model  $\chi^2(10) = 30.43$ ,  $p \leq .001$ .

\* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ .

lifestyle variables were related to all three outcomes of crime involvement. It can thus be concluded that a risky lifestyle is related to a higher probability of being a victim of violence only compared with being a total abstainer. A risky lifestyle is also related to a higher probability of being an offender only and a victim-offender compared with being a total abstainer, particularly among boys. As expected on the basis of the fourth hypothesis, the specific indicators of a risky lifestyle that are statistically significant vary across the outcomes examined in multivariate models. Finally, girls are not greatly involved in crime as offenders only or as victim-offenders, indicating that girls may have risky lifestyles without committing acts of violence. However, among boys, a risky lifestyle is generally related to a greater risk of crime involvement by comparison with the mixed-sex sample.

The findings confirm the rationale underlying the ideas proposed by lifestyle-exposure theory (Hindelang et al., 1978). Risky lifestyles are associated with a higher probability of being a victim only, an offender only, and of being a victim-offender than of being a total abstainer. This finding is consistent with previous research; victims and offenders are often found to be similar in many respects (Broidy et al., 2006; Pizarro et al., 2011; Singer, 1981). At least one lifestyle variable had a significant association with the outcomes as compared with total abstainers, supporting the conclusion that a risky lifestyle is related to both victimization and offending (e.g., Posick, 2013).

However, and also in line with previous research (Mustaine & Tewksbury, 2000), the findings show that different lifestyle variables are differentially related to the three different outcomes. The support found for differences in the way lifestyle is associated with different outcomes is important. If research on victims does not focus on victim-offenders as a group with unique characteristics, findings may be heavily biased by the presence of the latter group (i.e., exaggerating the effect of a risky lifestyle on victimization). This is important because many studies do not focus on these groups as dependent variables, but instead use offending as an independent variable intended to measure a “delinquent lifestyle,” which should in turn affect victimization (e.g., Henson et al., 2010; Lauritsen et al., 1991; Sampson & Lauritsen, 1990). If no distinction is made between victims only and victim-offenders, and if it is generally assumed that offending precedes victimization, there is a risk of portraying violent victims as leading risky lifestyles, which may in turn lead to blaming them for becoming victimized. Further, as has been discussed by Bjarnason et al. (1999) in a study on violent victimization, interpretations in terms of causal relationships between offending and victimization must be made with caution, as some of these associations may exist by chance. This is important because interpretations of victimological research findings have historically involved a risk for blaming the victims for having precipitated the actions of offenders (e.g., Wolfgang, 1958). In the present study, there is no intention to ascribe blame to the victims, regardless of whether individuals are victims only or victim-offenders.

In relation to the specific outcomes studied, the most interesting results were found when all variables were included in the same model. For victimization only, spending a lot of time in the city center at night and often being inebriated significantly increased the probability of being a victim only by comparison with total abstainers. This finding may indicate that spending a lot of time in the city center at night increases the exposure to motivated offenders (e.g., other adolescents) in the absence of capable guardians. Further, the finding of a connection between victimization only and inebriation was expected because victimization only is often associated with various kinds of alcohol use (Averdijk & Bernasco, 2015; Daday

et al., 2005; Felson & Burchfield, 2004; Klevens et al., 2002; Mustaine & Tewksbury, 2000). Inebriation may increase the probability of being a victim only as a result of increased vulnerability when inebriated (e.g., due to being less able to defend oneself, and simply spending time in environments with larger numbers of motivated offenders. Finally, the probability of being a victim only compared with an abstainer was not associated with particularly large odds ratios. This indicates that although a risky lifestyle is related to a higher risk for victimization only, this risk is not extreme in any sense compared with that of total abstainers. These findings thus provide some support for previous research showing that victims only are actually more like the population of total abstainers than are victim-offenders (Kleuens et al., 2002) and that they lead less risky lifestyles than offenders and victim-offenders (Broidy et al., 2006; Mustaine & Tewksbury, 2000).

The main result for offending only was the strong association found between peer deviance and the probability of being an offender only. This finding is not surprising considering the vast amount of research linking peer deviance to individuals' own deviance (e.g., Svensson & Oberwittler, 2010; Warr, 2002; Weerman & Hoeve, 2012; Wikström & Butterworth, 2006). Offenses during adolescence usually involve peers (Warr, 2002), as deviant peers may exert a direct influence on the behavior engaged in by the individual, either through pressure or by facilitating certain offenses that require more than one person.

The main result for victim-offenders was that frequency of inebriation was related to a very high probability of being a victim-offender. The finding that alcohol use of various kinds is related to victimization and offending confirms results presented in previous research (Bernasco et al., 2013; Daday et al., 2005; Felson & Burchfield, 2004; Felson & Staff, 2010; Mustaine & Tewksbury, 2000). The strong relationship between inebriation and specifically being a victim-offender may be explained by this group's possible involvement in violent behavior that occurs in situations in which people are intoxicated. These situations may, for instance, involve violent fights in which the same individual may be both a victim and an offender. Spending a lot of time in criminogenic settings was also related to a higher probability of being a victim-offender. This relationship indicates that unstructured activities together with peers in the absence of adult supervision (i.e., the operationalization of "criminogenic exposure") enable adolescents to commit acts of violence, but also make them more exposed to others' violent behavior.

Moreover, when the associations between lifestyle and crime involvement were examined in sex-specific analyses, some relationships emerged that are worth discussing. In terms of victimization only, spending a lot of time in the city center at night remained significant in the adjusted analysis focused on boys. For girls, being involved in unstructured activities and inebriation remained significant in the adjusted analysis. Thus, it seems that the risk for victimization only is related to different lifestyle patterns across the sexes. Further, the impact of lifestyle on the risk for being an offender only and a victim-offender was in general greater among boys by comparison with the full sample. This is not surprising because the differences between boys and girls in the lifestyle variables were not very large, whereas the sex differences in the offender-only and victim-offender groups were substantial. Thus, when examining boys only, this resulted in the analyses including fewer individuals with a risky lifestyle who were not involved in crime. In turn, this resulted in a stronger association between a risky lifestyle and the risk for being an offender only and a victim-offender. In other words, risky lifestyles may have a greater

impact on boys than on girls because girls can have a risky lifestyle without becoming involved in violent crime. This is in line with other studies that show that demographic variables, and sex in particular, cannot be ruled out (e.g., Henson et al., 2010; Sampson & Wooldredge, 1987).

Furthermore, the variations across the associations between the specific lifestyle variables and the outcomes also raise some questions regarding the measurement of a risky lifestyle. There were significant associations between the variable based on STB data (criminogenic exposure) and the risk for being a victim-offender, while the other similar, but questionnaire-based, indicator (unstructured activities) did not produce the same associations. Because it has been argued that diary data are more reliable than data from questionnaires based on stylized items (Kan, 2008), there may be good reason to consider the diary methodology. A diary approach (e.g., STB) may also better accommodate the situational view of lifestyle, as proposed in previous research (Svensson & Pauwels, 2010), because the STB is designed to measure situations (Wikström & Butterworth, 2006; Wikström et al., 2012). Further, including variables from both diaries and questionnaires may better cover different dimensions of lifestyle, that is, the hybrid approach suggested by Juster et al. (2003). Such a mixed approach may constitute a means of moving forward toward more accurate measurements (see Kan & Pudney, 2008).

In a more general sense, the present study supports the existence of a victim-offender overlap, which is in line with much previous research (e.g., Cops & Pleysier, 2014; Jennings et al., 2012; Mustaine & Tewksbury, 2000; Van Gelder et al., 2015). There were actually more victim-offenders than offenders only in the present sample, indicating that a large proportion of violent offenders are also victims, which also confirms findings from previous research (Deadman & MacDonald, 2004). Moreover, the proportion of individuals found in each group supports previous findings regarding smaller sex differences in victimization when offending is controlled for (Jensen & Brownfield, 1986). The proportion of girls who were victims only was fairly similar to the corresponding proportion among the boys, whereas the proportion of participants who were victim-offenders differed substantially between girls and boys. Although it had a small sample size, the present study thus shows the need to study the victim-offender overlap in sex-specific analyses because, at least with regard to violent outcomes, the overlap may in fact be much more relevant among boys.

This study has a number of limitations. First, the small number of female offenders in the sample makes it impossible to draw conclusions regarding the impact of lifestyle on female violent offending, other than highlighting the fact that many female adolescents seem to have a risky lifestyle without committing violent offenses. Moreover, because the sex-specific models were based on a small subsample, these analyses were less robust, and generalizations to populations of adolescent boys are therefore not advisable without caution.

Further, the results say nothing about when the participants were involved in criminal events; one may have a risky lifestyle and be greatly involved in crime, but the offenses may not take place while involved in activities defined as risky. One solution to this issue would be to employ measures of lifestyle and crime involvement as they are manifested concurrently in different situations. However, involvement in violence may not be an everyday feature of most people's lives. Thus, if the purpose was to examine the prevalence and frequency of crime involvement, the diary methodology, for example, would need to

cover more than the four days of the STB. However, if one is simply interested in a description of the situational circumstances of crime events, the STB in its current form does constitute a viable methodology (e.g., Averdijk & Bernasco, 2015; Bernasco et al., 2013; Wikström et al., 2012). In addition, having different reference periods for the variables examined may also be an issue, because lifestyles may change during adolescence. The dependent variables in this study refer to crime involvement during Grade 9, whereas the exposure variables, with the exception of inebriation, refer to assessments made at the time of the interview.

The present study does not include some of the many potentially relevant variables that may affect crime involvement. Individual characteristics were not included, such as low self-control, which has been shown to be related to offending (e.g., Gottfredson & Hirschi, 1990; Posick, 2013), victimization (e.g., Posick, 2013; Schreck, Stewart, & Fisher, 2006; Schreck, Wright, & Miller, 2002), and the victim-offender overlap (Van Gelder et al., 2015). However, self-control and lifestyle are not incompatible concepts, as research shows that they may be conjointly important for explaining both victimization, at least among female offenders (Stewart, Elifson, & Sterk, 2004), and offending (e.g., Wikström et al., 2012). Another omitted factor that may affect the results is the cultural setting in which the research was carried out. Nevertheless, lifestyle should still affect exposure to opportunities for crime involvement regardless of social and cultural context, and thus play a part in such involvement.

Although research on lifestyle is useful for crime prevention (McNeeley, 2015), this fairly limited study points to a need for further research rather than to any specific prevention initiatives. However, as regard the associations between specific lifestyle variables and the different outcomes, adolescents (primarily boys) who are frequently inebriated are at higher risk of being involved in crime as victim-offenders. Thus, it is important to consider alcohol policies and also to make situations in which adolescents become inebriated safer, perhaps by ensuring that capable guardians are present. Because boys seem to be greatly overrepresented as both offenders and victim-offenders, the behavior of this group may require specific prevention strategies that focus on male norms regarding involvement in violence.

## Conclusion

Overall, the present study demonstrates that a risky lifestyle is associated with a higher risk of being a victim only, an offender only, and a victim-offender, compared with being a total abstainer. It can thus be concluded that theories focusing on lifestyle and routine activities are useful for explaining different aspects of violent crime involvement. However, the specific lifestyle variables that are significantly related to crime involvement vary across the groups studied. In essence, it can be concluded that the differences among victims only, offenders only, and victim-offenders emphasize the need to study these outcomes separately. The finding that girls are not greatly involved in crime as offenders only or as victim-offenders indicate that they may have risky lifestyles without committing acts of violence. While not surprising, this finding is important because it stresses the need to always consider sex differences in research on violence.

The most evident policy implication of this study is that prevention strategies aimed at reducing violence need to target boys specifically. Furthermore, the strategies should also take into account the links between inebriation and crime involvement, as inebriation is

the variable studied that may be most directly connected to policy (e.g., through policies that control access to alcohol and policies that regulate locations in which adolescents are often inebriated). However, the main conclusions of the study are not in regard to policy, but rather they encourage further research on lifestyle and crime involvement to address the present study's limitations. Among other things, it would require the development of methods that measure the situations in which lifestyle is manifested and crimes are committed. The very low prevalence of violent offending among girls, despite many of them having a risky lifestyle, also needs to be further examined, preferably using larger samples that may capture more variation in violent offending among girls.

## Notes

- 1 The correlations between the independent variables were low to moderate, which is to be expected because it is common for different items that measure similar phenomena not to correspond to a particularly high degree (see e.g., Schulz & Grunow, 2012). Correlations of .30 and higher: peer deviance by inebriation ( $\rho = .50, p \leq .01$ ), exposure to criminogenic settings by inebriation ( $\rho = .36, p \leq .01$ ), exposure to criminogenic settings by peer deviance ( $\rho = .30, p \leq .01$ ), city center at night by inebriation ( $\rho = .35, p \leq .01$ ), and city center at night by peer deviance ( $\rho = .30, p \leq .01$ ).
- 2 The statistics software used was IBM SPSS version 24.
- 3 Collinearity analyses using the approach suggested by Menard (2002) revealed no indications of multicollinearity in any of the multivariate regression models.
- 4 The proportion of individuals in each category among those excluded on the variable unstructured activities: low = 87.2%, high = 7.7%, and very high = 5.1%.

## Disclosure statement

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