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# Situational conditions and adolescent offending: Does the impact of unstructured socializing depend on its location?

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## Abstract

This study aims to identify the locations where unstructured socializing is related to adolescent offending. ‘Locations’ refer to private, semi-public and public spaces, which are further categorized into public entertainment, public transportation, other semi-public settings, streets, shopping centres and open spaces. Detailed longitudinal data, derived from space–time budget interviews among 615 respondents in the age range 11–20 years, about hourly activities and the whereabouts of adolescents are analysed. A random intercept panel model is used to control for selection effects that occur when crime-prone individuals prefer crime-conducive locations to other locations. Findings indicate that unstructured socializing is positively related to offending and that this relationship strongly depends on the location in which it occurs.

## Keywords

Adolescent offending, lifestyle, routine activities, unstructured socializing

## Introduction

Empirical studies have confirmed that individuals who spend more time in ‘unstructured socializing’ have higher delinquency rates (for example, Anderson and Hughes, 2009; Haynie and Osgood, 2005; Osgood and Anderson, 2004; Osgood et al., 1996). However, previous research has paid little attention to the *location* where unstructured socializing occurs. We do not know whether, for example, unstructured socializing on the street has

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the same impact on offending as unstructured socializing in other locations. This limits our understanding about when and why spending time with peers has an impact on adolescent offending.

The present study specifically investigates the role of the *location* in the association between unstructured socializing and adolescent offending. 'Location' does not refer to a geographical space. In the present study, 'location' refers to a distinction of places based on their function. The effect of unstructured socializing on offending is investigated for three categories of location: private, semi-public and public. These locations are further classified into public entertainment settings, public transportation, other semi-public settings, streets and squares, shopping centres and open spaces. The study builds on the unstructured socializing approach of Osgood, Wilson, O'Malley and colleagues (1996) and on the classification of 'responsibilities of places' of Felson (1995). To control for selection effects that occur if crime-prone individuals prefer to spend time in settings that do not require discipline or supervision, we use a random intercept panel model.

Data for the present study were collected with a *space-time budget interview*. This instrument was developed to assess the hourly activities and whereabouts of adolescents (Wikström and Butterworth, 2006; Wikström et al., 2012a) and it enables us to determine the exposure to unstructured socializing in different locations. With two-wave data from space-time budget interviews among 615 adolescents in The Hague (the Netherlands), we will investigate: (1) whether involvement in unstructured socializing is positively associated with offending and (2) whether the location where unstructured socializing takes place specifies this association.

## Theory

### *Unstructured socializing*

Osgood et al. (1996) coined the term 'unstructured socializing' in a paper in which they applied a routine activity approach to explaining individual behaviour. Both the routine activity theory (Cohen and Felson, 1979) and the lifestyle theory (Hindelang et al., 1978) focus on how routine behaviour exposes individuals to certain situations, which shapes the risk of becoming involved in crime (as victim or offender). The lifestyle theory puts more emphasis on personal antecedents that affect people's choices to engage in activities, for example, their age, gender and other demographics; (economic) constraints; role expectations; adaptations to constraints and role expectations; and social associations. The routine activity theory, on the other hand, has a macro-level perspective and emphasizes the role of everyday life and the convergence of people and situations (Maxfield, 1987). Osgood et al. (1996) apply the routine activity approach to individual behaviour by interpreting activities in everyday life as a source of exposure to crime-conducive situations. They assume that individuals who spend more time in crime-conducive activities have higher deviance rates. Adolescent activities that present opportunities for offending are, according to Osgood et al. (1996), activities that include: (1) the presence of peers, (2) lack of structured activity and (3) the absence of authority figures. The *presence of peers* stimulates offending because it makes offending easier

and more rewarding. Osgood et al. (1996) state that peers serve as resources in offending: they can function as 'back-ups' or 'look-outs' when adolescents get into fights or commit theft. Peers may also serve as an audience, and therefore make offending rewarding in terms of status and reputation. The *lack of structured activity* stimulates offending because it leaves time for deviant activity. According to Osgood et al. (1996: 641), 'greater structure means that more time will be spent in designated ways, and that this time will not be available for offending'. The *absence of authority figures* stimulates offending because it limits social control and reduces the chance of 'getting caught'. Osgood et al. (1996) use 'unstructured socializing' to refer to activities that incorporate these conditions.

### *The role of location: Responsibility of places*

To theorize the possible role of location in the association between unstructured socializing and adolescent offending, we build on Felson's (1995) classification of four kinds of responsibilities of places (which is, in turn, based on the distinction by Clarke, 1992, between formal, employee and natural surveillances). Felson (1995) distinguishes personal responsibility, assigned responsibility, diffuse job responsibility and general responsibility. *Personal responsibility* is the responsibility for places taken by those who own them or who are intimately related to the owners. Their incentive for reacting to crime is protecting their own property. *Assigned responsibility* for places is taken by employees who are assigned to take responsibility, for example, bouncers and receptionists. Their incentive to respond to crime is that they might be disciplined or even dismissed if something happens in the place under their watch. In the case of *diffuse job responsibility* (or 'non-assigned job responsibility'), the responsibility for a place is taken by employees who are not explicitly assigned to do so. The incentive to take non-assigned job responsibility is protecting a location with which one has a personal connection. *General responsibility* for a place is taken by incidental passers-by or bystanders whose presence discourages crime or who respond to illegal behaviour.<sup>1</sup> There is no obvious incentive to respond to crime.

The four categories of responsibility correspond to four categories of urban space (Newman, 1972), that is: private, semi-private, semi-public and public space, respectively. Felson (1995: 61) states that 'it stands to reason that private spaces are primarily looked over by those with personal responsibility'. He further notes that 'purely' public spaces are monitored solely by persons with general responsibility.<sup>2</sup> Felson (1995) finds semi-private and semi-public more difficult to classify, since they may be within distant vision of owners, but may also be monitored both by assigned and non-assigned employees *and* by people who have no particular relation to the place but happen to be there. We therefore treat unstructured socializing in semi-private and semi-public spaces as one category.

Felson (1995) states that one's tendency to intervene in a situation varies with the type of responsibility and that the order in which one may expect directness of the response is: personal responsibility (highest chance of direct intervention), assigned and non-assigned job responsibility, and general responsibility (lowest chance of direct intervention). Since these types of responsibility correspond to categories of urban space, the

directness of response to crime is inherent in the function of a location. For example, crimes that take place in private spaces are more likely to evoke a direct response than crimes that take place in public spaces. This differentiation in responsibility and directness of response explains differential discouragement of offending in functional spaces. It can also be expected to influence the association between unstructured socializing and adolescent offending. We expect unstructured socializing to be most strongly related to offending when it occurs in public spaces and least strongly related when it occurs in private spaces.

### *Specification of locations within private, semi-public and public spaces*

The presented classification of spaces (private, semi-public and public) can be classified further into public entertainment settings, public transportation, other semi-public settings, streets and squares, shopping centres and open spaces. Previous studies suggest that unstructured socializing is particularly related to offending when it occurs in those locations, and these studies provide additional theoretical arguments for the crime-conduciveness of those locations (Miller, 2013; Wikström and Butterworth, 2006; Wikström et al., 2010; Wikström et al., 2012a). *Public entertainment* settings incorporate spaces where substances (tobacco, alcohol or drugs) are available and that are usually more crowded than other locations. Those characteristics will evoke temptation and provocation, respectively (Wikström et al., 2010). Locations with a public entertainment function include pubs, fast food restaurants and clubs. *Public transportation* incorporates transportation by bus, train and underground. These locations may offer temptation in the form of elements that can be vandalized or graffitied. Public transportation may also provoke function-specific offences (as argued by Miller, 2013). *Other semi-public spaces* are, for example, schools, youth societies and sport clubs. *Streets* may offer temptation in the form of elements that can be demolished or graffitied. *Shopping centres* refers to both shopping malls and city shopping centres.<sup>3</sup> Shopping centres contain a lot of 'hot products': products that are concealable, removable, available, valuable, enjoyable and disposable (Clarke, 2002), which may tempt adolescents to steal. *Open spaces* are spaces that are further away from 'watching eyes' than the other public spaces, because they are characterized by a lack of buildings. Open spaces are, for example, public playing fields, parks and car parks. We expect unstructured socializing in public entertainment settings, public transportation or open spaces to be more strongly related to offending than unstructured socializing in 'other' semi-public spaces, streets or shopping centres.

### **Previous studies**

The association between involvement in *unstructured socializing* and offending is empirically confirmed in several studies. Osgood et al. (1996) were the first to demonstrate the association between delinquency and unstructured socializing.<sup>4</sup> Employing a fixed-effects analysis, their results suggested that the effect of unstructured socializing even holds with strong controls for between-person differences. Other studies that reported an association between unstructured socializing and offending are those of Anderson and Hughes (2009), Bernburg and Thorlindsson (2001), Haynie and Osgood

(2005), Maimon and Browning (2010), Osgood and Anderson (2004) and Vazsonyi et al. (2002).<sup>5</sup>

Interestingly, most of those studies did not explicitly operationalize unstructured socializing. The unstructured socializing approach explicitly defines three conditions of a situation in which time spent with peers is related to offending (presence of peers, absence of authority figures and lack of structured activity). Nevertheless, six of the seven studies did not measure these three conditions but assumed they are present in certain activities. For example, Osgood et al. (1996) included four unstructured activities in their analyses that are assumed to occur in the presence of peers and the absence of adults: 'riding around in a car for fun', 'getting together with friends informally', 'going to parties' and 'spending evenings out for fun and recreation'. Only Osgood and Anderson (2004) measured all three conditions with a single item: 'In an average week, how many hours do you spend hanging around with your current friends, not doing anything in particular, where no adults are present?'

The *locations* where unstructured socializing takes place have hardly been studied. A few studies have investigated *activity patterns* (not *unstructured socializing*) and found effects of the location where adolescents spent time on delinquency (Mahoney and Stattin, 2000; Messner and Blau, 1987; Miller, 2013; Svensson and Oberwittler, 2010; Thorlindsson and Bernburg, 2006). Other studies distinguished a few conditions of unstructured socializing (either with peers, without authority figures or in unstructured activity) and took into account the crime-conducive nature of spending time in *public spaces* (for example, Bernasco et al., 2013; Steketee, 2012; Weerman et al., 2013). The studies by Wikström et al. considered particular crime-conducive locations. Analysing *space-time budget data*, Wikström and Butterworth (2006) found that most offending by adolescents occurs when they spend time with other peers and when they spend time in public spaces, primarily in streets, parks or recreational areas. Wikström et al. (2010) found a significant relationship between the exposure to time spent unsupervised with peers in public entertainment settings and self-reported crimes. Wikström et al. (2012a) distinguished involvement in unstructured socializing in recreational settings (city centres and local centres) from involvement in unstructured socializing in outdoor public places (streets, parks and 'moving around').<sup>6</sup> They found that the crime rate per thousand hours is higher during unstructured socializing on the street than during unstructured socializing in parks or 'moving around', for both the city centre and local centres.

## Present study

First and particularly, the present study contributes to the literature by examining in detail in which *locations* involvement in unstructured socializing is, and is not, related to offending. Different locations are distinguished explicitly. Secondly, the present study employs *space-time budget data* to get an adequate operationalization of unstructured socializing: a situation in which peers are present, authority figures are absent and there is a lack of structured activity. These space-time budget data are also used to precisely operationalize the locations where unstructured socializing occurs. Finally, the present study uses longitudinal data and two-level random intercept models to control for

time-stable individual characteristics that might generate spurious relationships between the involvement in unstructured socializing in different locations and offending.

Based on the theoretical considerations addressed earlier in this paper, the following hypotheses were formulated:

- H1. Involvement in unstructured socializing is positively associated with offending.
- H2. The location where unstructured socializing takes place specifies the relationship between unstructured socializing and offending, in the sense that:
  - H2A. Unstructured socializing in *private spaces* is less strongly related to offending than unstructured socializing in *semi-public or public spaces*.
  - H2B. Unstructured socializing in *public spaces* is more strongly related to offending than unstructured socializing in *semi-public or private spaces*.
  - H2C. Within the semi-public spaces, unstructured socializing in *public entertainment settings* and *public transportation* is more strongly related to offending than unstructured socializing in *other semi-public spaces*.
  - H2D. Within the public spaces, unstructured socializing in *open spaces* is more strongly related to offending than unstructured socializing in *streets or shopping centres*.

## Method

### Data

Data are used from the Study of Peers, Activities, and Neighbourhoods (SPAN) project. The SPAN project is designed to investigate associations between offending, individual characteristics, contextual influence and spatial activity patterns. In total, 40 secondary schools in the city of The Hague and its suburbs were approached and 10 schools agreed to participate in the study. Since the study is also aimed at exploring age differences in activity patterns and offending, it was conducted among 1st graders (aged approximately 12 and 13 years) and 4th graders (aged approximately 15 and 16 years). Of the 942 1st and 4th graders approached, 843 adolescents in the age range 11–17 years participated fully in the study in 2008–2009.

All 843 respondents were approached to participate in the study a second time in 2010–2011 (two years later) and 615 of them participated again. Therefore, the response rate for the second wave is 73 percent.<sup>7</sup> The drop-outs were generally older than the participants (respectively, 14.9 and 13.9 years in the first wave,  $T = 8.0$ ,  $p < .01$ ,  $r = 0.27$ ), they did *not* score higher on self-reported offending during the first wave than the participants (Mann-Whitney test:  $Z = -1.550$ ,  $p = .121$ ), but they *were* more involved in unstructured socializing during the first wave than the participants (respectively, median scores of 5.2 and 3.1,  $Z = -2.477$ ,  $p < .05$ ,  $r = -0.10$ ). This is owing to differences in unstructured socializing in public transportation; no differences were found for unstructured socializing in the other locations.

Only the respondents who participated in both waves were included in the analyses of the present study ( $N = 615$ ). The two-wave sample consists of 52.6 percent boys and 47.4 percent girls. Ages range from 11 to 17 years in the first wave and from 13 to 20 years in the second wave, with a mean age of 14.3 years in the first and 16.5 years in the second wave. Of the respondents, 57.3 percent belong to the youngest

cohort (the initial 1st graders) and 42.7 percent belong to the oldest cohort (the initial 4th graders). The data for both waves were collected over several months and, therefore, the time period between the waves is not exactly the same for every respondent. For almost all respondents (99.4 percent), the time lag between the two waves is between 1.6 and 2.6 years. Although the majority of the sample is of native Dutch descent, a relatively large portion of the sample comes from ethnic minorities (45 percent). Relatively many adolescents come from lower forms of secondary education; 17.9 percent of the respondents were recruited in schools offering 'practical education', the lowest level of secondary education, and 47.7 percent of the respondents were following preparatory education during the first wave of the study, which is the most common form of secondary education in the Netherlands. The remaining respondents were recruited at medium-level schools (10.5 percent) or at the highest level of secondary education (23.8 percent). Because the sample was drawn from a non-random selection of schools in The Hague, it is not a representative sample of Dutch youth, but it is highly varied in terms of ethnicity, with a focus on lower-educated youths from a highly urbanized region of the Netherlands.

## Measures

Two research instruments from the SPAN study were used in the present study: a *questionnaire* and a *space-time budget interview*. Both instruments are similar to the ones used in the Peterborough Adolescent and Young Adult Development Study conducted by Wikström et al. (Wikström and Butterworth, 2006; Wikström et al., 2010; Wikström et al., 2012a). These instruments were translated into Dutch and adapted slightly for the SPAN study.

The *questionnaire* was used to create an index of self-reported offending. Four respondents completed the questionnaire simultaneously. This took one school period of 45–50 minutes and was supervised by a research assistant.

The dependent variable of self-reported *total offending frequency* comprises 20 items from the questionnaire. The items indicate how often the respondent committed various types of offences in the preceding school year. Example items are 'stole something from a shop' and 'kicked or hit somebody who was injured as a result'. The alpha of the scale is 0.90 in the first wave and 0.85 in the second wave. The answering codes that were used for each item were 'never' (score 0), 'once' (score 1), 'twice' (score 2), '3–5 times' (score 3), '6–10 times' (score 4) and 'more than 10 times' (score 5).

The *space-time budget interview* asked the respondents about their hourly activities and whereabouts in the four days preceding the interview, including Friday, Saturday and the two most recent weekdays. For every hour, the respondents were asked about the nature of their main activity, the geographical location and the functional location (for example, home, school, street) of this activity and who the respondent was with during the activity, specified as different members of 'family', 'peers' and 'other people'. The space-time budget interviews were conducted individually, in a face-to face interview with each respondent. Although the space-time budget method is relatively new, time use research is a well-developed area in the social sciences (Harvey and Pentland, 2002; Wikström et al., 2012b).

To explore the validity of the measures on activities, we analysed the correspondence between the hourly activities reported in the space–time budget interviews and the activity patterns reported in the questionnaires about the time spent on the street, in parks or in playing fields and the time spent with friends at youth centres and (sport) societies. Two checks for inconsistency between the questionnaire and the space–time budget interviews were conducted. We first studied the number of respondents who reported being involved ‘(almost) daily’ in certain activities but did not report any hours involved in corresponding activities during the four space–time budget days. Of the respondents involved ‘(almost) daily’ in time spent with peers *on the streets and in parks*, 88 percent reported at least one hour involved in corresponding activities in the space–time budget interview in wave 1 and 87 percent reported at least one hour in wave 2. Of the respondents involved ‘(almost) daily’ in time spent with peers *at youth centres and societies*, 75 percent reported at least one hour of corresponding activities in the space–time budget interview of wave 1 and 87 percent reported at least one hour in wave 2. As a second check for inconsistency, we conducted Pearson correlations between the questionnaire and the space–time budget measures. Correlations between the measures expressing ‘time with peers on the streets and in parks’ were 0.435 in wave 1 and 0.428 in wave 2. Correlations between the measures expressing ‘time with peers at youth centres and societies’ were 0.377 for wave 1 and 0.439 for wave 2. Although the validity of space–time budget methods needs to be further explored, we felt that the correspondence between the questionnaire and the space–time budget measures is sufficient, especially when taking into account the fact that the space–time budget interview records only four days and uses different units from those of the questionnaire.

The collected data were used to create variables regarding the number of hours that the respondents had spent in *unstructured socializing* and regarding the *locations* in which they had spent these hours. Since we make the assumption that the activities during the space–time budget interviews represent the respondents’ normal routines, non-typical days were excluded from the analysis. Days were classified as ‘non-typical’ when a respondent was ill that day or had a day off school.<sup>8</sup>

*Involvement in unstructured socializing* is the total number of hours per individual (for all four days covered by the space–time budget interviews) spent in ‘unsupervised unstructured peer-oriented activity’. Detailed information about every hour in the space–time budget interview enabled us to accurately scrutinize whether each condition of ‘unstructured socializing’ was present. The variable ‘*involvement in unstructured socializing*’ incorporates only the hours in which one or more peers were present and in which no adult family member or other significant adult was present. Further, we included only the hours in which a respondent was involved in unstructured activity, defined as ‘activities in which there are no rules or only (unwritten) rules that can be easily broken by every individual who is involved in the activity’ (for example, ‘hanging around’ or ‘walking around without a destination’). A list of all activities that are defined as ‘unstructured’ is available on request from the authors. We used a broad definition of ‘unstructured activity’ to avoid excluding activities that might be both structured and unstructured. For example, in a situation where a group of adolescents goes from one friend to another, ‘transport’ can function as an unstructured activity. As a robustness check, all analyses were also conducted with an unstructured socializing variable that was operationalized with a more narrow

definition of 'unstructured activity' (only the activities of 'hanging around', 'walking or biking around without a goal', 'socializing', 'talking', 'going out', 'socializing and having a drink' and combinations of socializing). The analyses with this alternative unstructured socializing variable showed substantially similar results.

Several variables specify the *locations* in which unstructured socializing took place. A list of locations per category is available on request from the authors. *Unstructured socializing in private spaces* is the total number of hours spent in unstructured socializing in locations that are primarily observed by those with personal responsibility, such as owners, family and friends (for example, the respondent's house or houses of friends). *Unstructured socializing in semi-public spaces* is the total number of hours spent in unstructured socializing in locations that are not private or public spaces. Semi-public spaces are divided into *public entertainment*, *public transportation* and *other semi-public settings* (such as school and clubs). *Unstructured socializing in public spaces* is the total number of hours spent in unstructured socializing in locations that are monitored solely by people with general responsibility. Public spaces are divided into *streets and squares*, *shopping centres* and *open spaces*.

### Analytical strategy

To investigate the association between unstructured socializing, locations and adolescent offending, we used multilevel analyses to estimate *within-person* as well as *between-person* differences. The *within-person* analyses are used to control for selection effects – effects that occur when crime-prone individuals prefer settings that do not require discipline or supervision to other settings. *Within-person* analyses investigate whether an increase in involvement in unstructured socializing (in different locations) over time for one person is associated with an increase in offending for the same person, regardless of his or her initial participation in unstructured socializing or offending and regardless of other relevant differences in (stable) personal characteristics. In addition, the *between-person* analyses investigate whether person A, who is more involved in unstructured socializing (in different locations) than person B, is also more involved in offending than person B.

Since our data include two observations per respondent (two observations within a person over time), we estimated a random intercept model instead of a random slope model.<sup>9</sup> We added two parameters to the random intercept model for each independent variable: a between-person parameter and a within-person parameter. The between-person parameter is computed by averaging the scores on the independent variables across both observations for each respondent. The within-person parameter is computed by subtracting the between-person score from the score on each observation.

The random intercept models were executed by employing negative binomial regression, since the dependent variable 'offending' is highly positively skewed and violates basic assumptions of OLS regression.<sup>10</sup> No transformations were made to the dependent or independent variables. Multicollinearity diagnostic tests were performed on cross-sectional versions of each model by estimating variation inflation factors (VIF). None of the VIF values was higher than 1.16, indicating that no model is characterized by multicollinearity. Wald tests were applied to examine differences between the parameters in

the models. 'Age' was included in the model as a control, because it is known to be related to both offending (for example, Hirschi and Gottfredson, 1983) and involvement in unstructured socializing (for example, Osgood et al., 1996).<sup>11</sup>

## Findings

### *Descriptives*

Table 1 offers descriptive information about offending, involvement in unstructured socializing and the locations where unstructured socializing takes place. The findings show that a majority of the respondents were involved in at least one offence during the preceding school year (approximately 70 percent) and at least one hour of unstructured socializing during the four space–time budget days (approximately 80 percent). The mean number of hours spent on unstructured socializing per individual during the four days of the space–time budget interview (96 hours in total) is approximately 5.3 for the first wave and approximately 6.0 for the second wave. Unstructured socializing occurs most often in public spaces (2.8 hours in wave 1 and 2.1 hours in wave 2) and least often in private spaces (0.7 hours in wave 1 and 1.6 hours in wave 2). From the three categories of semi-public spaces, unstructured socializing occurs for most of the hours in public transportation in wave 1 (0.8 hours) and in public entertainment in wave 2 (1.3 hours). Among the three categories of public spaces, unstructured socializing occurs for most hours on the street (1.77 and 1.26 hours in waves 1 and 2, respectively).

Involvement in offending decreased from wave 1 to wave 2, whereas involvement in unstructured socializing increased. The increase in involvement in unstructured socializing is location specific: unstructured socializing in private spaces, public entertainment and shopping centres increases, whereas unstructured socializing in other locations decreases or remains the same. These findings indicate that there are age-specific preferences for the locations where adolescents meet their peers.

### *Unstructured socializing, location and offending*

Table 2 shows the results of three random intercept models. To simplify interpretation of the findings, we report the incidence rate ratios (IRRs) instead of the regular coefficients.<sup>12</sup> Model 1 in Table 2 investigates the relationship between involvement in *unstructured socializing* and offending. Models 2 and 3 specify this relationship for the *locations* where unstructured socializing takes place. In Model 2, the involvement in unstructured socializing is specified for the three main categories: private, semi-public and public spaces. Model 3 further categorizes the semi-public spaces into public entertainment, public transportation and other semi-public spaces, and the public spaces into streets, shopping centres and open spaces.

Model 1 incorporates the effect of involvement in unstructured socializing, which appears to be significant for both the within-person and the between-person variable. The within-person effect can be interpreted as follows: an increase of *one hour* in involvement in unstructured socializing between the two waves is associated with an increase of

**Table 1.** Descriptives of offending, unstructured socializing and the locations where unstructured socializing occurs.

	Percentage of individuals involved in offending and unstructured socializing (N = 615)		Mean score on offending Mean number of hours involved in unstructured socializing per individual (N = 96 per individual)				Wilcoxon signed-rank test Z
	Wave 1	Wave 2	Wave 1		Wave 2		
			Mean	SD	Mean	SD	
Offending	71.5	64.9	5.958	9.452	4.810	7.929	-3.254**
Unstructured socializing	78.5	78.0	5.300	6.036	6.061	6.533	2.583*
Private space	19.2	35.4	0.712	1.997	1.587	3.221	7.015**
Semi-public space	49.6	52.0	1.751	2.579	2.318	3.514	2.958**
Public entertainment	16.4	28.8	0.557	1.609	1.309	2.899	6.228**
Public transportation	29.3	28.0	0.781	1.531	0.711	1.437	-0.964
Other semi-public	19.5	13.5	0.413	1.161	0.298	1.093	-2.186*
Public space	61.3	57.9	2.820	4.220	2.134	3.259	-3.799**
Streets	44.6	40.3	1.768	3.372	1.255	2.506	-3.744**
Shopping centre	16.4	22.0	0.395	1.135	0.595	1.478	2.981**
Open spaces	18.9	11.5	0.656	1.906	0.284	1.133	-4.276**

\*p < .05; \*\*p < .01.

approximately 2.7 percent in the offending-variable *for the same person* (IRR = 1.027,  $p < .01$ ). The between-person effect can be interpreted as follows: the score on offending is approximately 10.0 percent higher for person A, who is on average *one hour* more involved in unstructured socializing compared with person B (IRR = 1.100,  $p < .01$ ). It is important to note that these percentages express changes in offending for each *extra hour* of unstructured socializing, which implies that the total effects may be stronger than they seem. To illustrate this: an increase of *two* hours in unstructured socializing is associated with an increase of ( $2 \times 2.7$ ) 5.4 percent in offending *within* a person and with an increase of ( $2 \times 10$ ) 20.0 percent in offending *between* persons. The *between-person effect* is clearly bigger than the *within-person effect*. This finding implies that the underlying factors (individual characteristics that differ between persons) explain the bigger part of the relationship between unstructured socializing and offending, but that the relationship still remains when controlled for these factors.

The results of Model 2 indicate that the *within-person effects* of unstructured socializing on offending do not apply for all locations. More specifically: changes in involvement in unstructured socializing between the two waves are associated with changes in offending only when unstructured socializing takes place in public spaces and, to a lesser extent, in semi-public spaces. Unstructured socializing in public spaces accounts for a 4.5 percent

**Table 2.** Random intercept (two-level) negative binomial models. Offending regressed on unstructured socializing in general and specified for locations, controlled for age.

	Model 1 N = 613		Model 2 N = 615		Model 3 N = 615	
	IRR	SE	IRR	SE	IRR	SE
<i>Within-person effects</i>						
Unstructured socializing	1.027**	0.006				
Private space			0.988	0.013	0.986	0.013
Semi-public space			1.030*	0.012		
Public entertainment					1.036*	0.015
Public transportation					1.038	0.025
Other semi-public					0.998	0.032
Public space			1.045**	0.009		
Streets					1.051**	0.012
Shopping centre					1.000	0.031
Open spaces					1.050*	0.020
<i>Between-person effects</i>						
Unstructured socializing	1.100**	0.008				
Private space			1.137**	0.020	1.138**	0.021
Semi-public space			1.077**	0.017		
Public entertainment					1.051*	0.023
Public transportation					1.144**	0.038
Other semi-public					1.110*	0.048
Public space			1.096**	0.014		
Streets					1.096**	0.017
Shopping centre					0.998	0.040
Open spaces					1.169**	0.037
Age	0.809**	0.028	0.835**	0.031	0.843**	0.032
Age dummy (1 = youngest cohort)	0.031**	0.023	0.043**	0.033	0.037**	0.029
Age*Age dummy	1.257**	0.060	1.237**	0.061	1.247**	0.061
Constant	16.395**	10.104	9.661**	6.318	8.441**	5.521

\* $p < .05$ ; \*\* $p < .01$ .

increase in the offending variable (IRR = 1.045,  $p < .01$ ) and unstructured socializing in semi-public spaces accounts for a 3.0 percent increase in the offending variable (IRR = 1.030,  $p < .05$ ). As in the previous model, it is important to note that these effects express changes in offending for each *extra hour* of unstructured socializing. Results of Wald tests indicate that the association between offending and unstructured socializing in private spaces is significantly weaker than the association between offending and unstructured socializing in semi-public spaces ( $\chi^2 = 5.06$ ,  $p < .05$ ) and public spaces ( $\chi^2 = 10.88$ ,  $p < .01$ ). The associations between offending and unstructured socializing in public and semi-public spaces do not differ significantly ( $\chi^2 = 0.92$ ,  $p > .05$ ).

The results of Model 2 indicate that the *between-person effects* of unstructured socializing on offending apply for all locations. Findings from Wald tests indicate that the

association of offending with unstructured socializing in private spaces is stronger than the association of offending with unstructured socializing in semi-public spaces ( $\chi^2 = 4.20, p < .05$ ). The other *between-person* associations in Model 2 do not differ significantly from each other (private–public,  $\chi^2 = 2.29, p > .05$ ; semi-public–public,  $\chi^2 = 0.66, p > .05$ ). These findings imply that individuals who are more involved in unstructured socializing are more likely to participate in offending than individuals who are less involved in unstructured socializing, regardless of the location where the unstructured socializing takes place. Nevertheless, once the relationship is controlled for individual characteristics that might influence both involvement in unstructured socializing and offending, only the effect of unstructured socializing in public and semi-public spaces remains.

Model 3 represents a more detailed analysis of unstructured socializing in six categories of semi-public and public spaces. The results of this model indicate that an increase of one hour in involvement in unstructured socializing between the two waves is associated with an increase in the offending variable only when these hours of unstructured socializing take place in public entertainment, on the street or in open spaces. It then accounts *per extra hour* of unstructured socializing for increases of 3.6 percent, 5.1 percent and 5.0 percent, respectively, in the offending variable (public entertainment, IRR = 1.036,  $p < .05$ ; streets, IRR = 1.051,  $p < .01$ ; open spaces, IRR = 1.050,  $p < .05$ ). However, findings from Wald tests indicate no significant differences in the associations between offending and unstructured socializing in the six categories ( $\chi^2$ 's vary from 0.00 to 2.49, no significance level is smaller than .115). The *between-person* effects on offending apply for unstructured socializing in all six categories of semi-public and public spaces except for shopping centres. Findings from the Wald tests indicate that the association between offending and unstructured socializing is significantly weaker in public entertainment settings compared with public transportation ( $\chi^2 = 4.35, p < .05$ ) and open spaces ( $\chi^2 = 7.28, p < .01$ ). The association between offending and unstructured socializing in shopping centres is significantly weaker compared with open spaces ( $\chi^2 = 9.71, p < .01$ ), public transportation ( $\chi^2 = 5.70, p < .05$ ) and streets ( $\chi^2 = 4.65, p < .05$ ). The other between-person associations in Model 3 do not differ significantly from each other ( $\chi^2$ 's vary from 0.07 to 3.29, no significance level is smaller than .070).

## Discussion and conclusion

The main aim of the present study was to identify in what locations unstructured socializing is, and is not, related to individual involvement in offending. We built on a body of research suggesting that involvement in unstructured socializing is strongly related to adolescent offending (Anderson and Hughes, 2009; Haynie and Osgood, 2005; Osgood and Anderson, 2004; Osgood et al., 1996; Vazsonyi et al., 2002). We further hypothesized that the crime-conduciveness of a location resides in the extent of responsibility for that location, based on Felson's (1995) distinction between personal responsibility, assigned responsibility, diffuse job responsibility and general responsibility for private, semi-private, semi-public and public spaces, respectively. We used detailed data, derived from space–time budget interviews among 615 respondents in The Hague, the Netherlands, about the hourly activities and whereabouts of adolescents.

Overall, three important findings emerged. First, a majority of the respondents in this study are involved in unstructured socializing. Nearly 80 percent of the respondents participated for at least one hour in these activities during the four days covered by the space-time budget interview. Second, involvement in unstructured socializing is positively associated with offending. The association remains when controlled for stable individual characteristics. This is in line with our first hypothesis based on previous studies, in particular on the work by Osgood et al. (1996). Third, the location where adolescents spent their time in unstructured socializing specifies the relationship between unstructured socializing and offending. Unstructured socializing in semi-public and public spaces is related more strongly to offending than unstructured socializing in private spaces. This is in line with our Hypothesis 2A, which was based on Felson's approach to responsibilities of spaces (Felson, 1995). In contrast to our Hypothesis 2B, unstructured socializing in public spaces is not related more strongly to offending than unstructured socializing in semi-public spaces. Hypotheses 2C and 2D state, respectively, that 'unstructured socializing in public entertainment settings and public transportation is more strongly related to offending than unstructured socializing in other semi-public spaces' and that 'unstructured socializing in open spaces is more strongly related to offending than unstructured socializing in streets or shopping centres'. Once controlled for stable individual differences, unstructured socializing is significantly related to offending only when it occurs in public entertainment settings, on the streets and in open spaces. This is in line with Hypothesis 2C and partly in line with Hypothesis 2D (unstructured socializing in open spaces and on the streets seems similarly strongly related to offending). However, the findings of the Wald tests did not show significant differences between the categories. This is not in line with Hypotheses 2C and 2D.

The present study has limitations. The first and most basic limitation is that the space-time budget interviews, from which our independent variables are derived, cover only four days in the week preceding the interview. The assumption that those days are representative of the entire year leaves room for measurement error. Most evident is the possibility of seasonal influences. It is likely that respondents' activity patterns vary with the weather, especially when these activities occur outside. The first wave of the data collection took place between October and March and covered autumn, winter and spring. The second wave took place between November and June and therefore covered winter, spring and the start of summer. Although the four days limit the representation of daily activities, the space-time budget method seems to have less risk of retrospective bias than asking respondents 'how many hours in the past week were spent in certain activities', as previous studies did (Anderson and Hughes, 2009; Haynie and Osgood, 2005; Maimon and Browning, 2010; Osgood and Anderson, 2004; Osgood et al., 1996). In addition, we use the space-time budget method mainly to test etiological theories and not to describe (inter)national activity patterns among adolescents. A possible second limitation of the study is that some of the respondents from the first wave did not participate in the second wave (27 percent). The drop-outs were generally older than the participants and differed from them with regard to *unstructured socializing*, but no selection bias was found for self-reported offending. We have no reasons to believe that this somewhat selective drop-out biased our results, other than providing a relatively conservative test of the effect of

unstructured socializing on offending. A third limitation is that, although we based our classification of locations on Felson's approach, we did not directly analyse the assumed mechanisms underlying the location–offending association. We therefore do not know to what extent this offers a valid explanation for the relationship. Other explanations are possible: Miller (2013) argues that the level of criminality of activity settings is determined by the presence of targets and facilitators. Situational action theory argues that the causal mechanisms of a setting relevant to engagement in crime are temptations, provocations and deterrence (Wikström, 2004, 2005).

Despite these limitations, our findings strongly suggest that the association between exposure to unstructured socializing and involvement in offending depends on the location in which unstructured socializing occurs. The present study, therefore, indicates that the unstructured socializing perspective of Osgood et al. (1996) may be extended with a fourth condition: whether an activity occurs in a semi-public or public space and, more specifically, whether it occurs in public entertainment settings, on the street or in open spaces. More research is necessary to support this extension.

Our findings may lead to other research questions as well. Firstly, it would be interesting to study the role of social disorganization and disorder within neighbourhoods, because the present study indicates strong effects of unstructured socializing on the street and in open spaces. This area is not undeveloped; Maimon and Browning (2010) have already made an effort to integrate disorganization theory with the unstructured socializing perspective. Secondly, future studies could clarify which characteristics affect adolescents' exposure to unstructured socializing (in different functional locations) and to what extent peer pressures play a role in this regard. Our findings indicate that adolescents who are more often involved in unstructured socializing are more likely to be involved in offending and that between-person differences explain the bigger part of this relation. These findings imply the presence of selection effects. A third issue that needs to be addressed in the future is that of the interaction effects between individual characteristics and exposure to unstructured socializing in different functional spaces. Situational action theory (Wikström, 2004, 2005) posits that some individuals are more vulnerable than others to exposure to certain settings because of morality and self-control. The effect of unstructured socializing in, for example, open spaces may therefore be more problematic for adolescents with low self-control than for adolescents with high self-control. Fourthly, future studies could further elaborate the set of relevant conditions under which time spent with peers is related to adolescent offending. Fifthly, future studies could clarify the mechanisms through which peers and these locations interact in their influence on adolescents' offending.

Studies on unstructured socializing contribute to our knowledge about adolescents' exposure to criminogenic settings and they improve our understanding about peer processes in their relationship to adolescent offending. The idea that solely 'time spent with peers' may lead to adolescent offending is clearly out of date. The effect of time spent with peers is dependent on the conditions under which it occurs, as confirmed in several prior studies (for example, Weerman et al., 2013). The present study adds another situational condition to the list of conditions defined by unstructured socializing, namely, the location where these activities take place.

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## Notes

1. The distinction between guardians, handlers and place managers is considered to be beyond the scope of this study.
2. The police, of course, also monitor public spaces. We leave the police out of our classification since they have responsibility for public spaces as well as for the other spaces.
3. In contrast to other countries, large shopping malls are rare in the Netherlands. It is far more likely for adolescents to spend time in a city shopping centre than in a shopping mall. Because both locations contain the same temptation (the presence of expensive consumer goods), we refer to them as 'shopping centres'.
4. Earlier studies had already confirmed associations between delinquency on the one hand and one or more of the components of unstructured socializing (time spent with peers, time spent unsupervised or time spent in unstructured leisure activities) on the other hand (for example, Agnew and Petersen, 1989; Riley, 1987).
5. A number of studies consider a similar association, namely the effect of a risky lifestyle on offending. In these studies, participation in unstructured activities is viewed as an integral part of a risky lifestyle, as are consuming alcohol and involvement with delinquent peers (for example, Svensson and Pauwels, 2010; Wikström and Svensson, 2008).
6. Both studies (Wikström et al., 2010; Wikström et al., 2012a) also study the effect of exposure to areas with low collective efficacy. The division of areas into low, medium or high collective efficacy is considered to be beyond the scope of this study.
7. The reasons for attrition varied for the 227 drop-outs: 65 percent refused because they did not have time and/or were not willing to participate; for 11 percent contact approaches were given up after numerous attempts, 5 percent could not be reached at all because we could not find their contact information; in 9 percent of the cases, the parents of the respondent refused participation; and 10 percent exited for other reasons. One respondent did participate, but was later excluded from the analyses because half of the interview (the space–time budget part) went missing owing to technical difficulties.
8. The exclusion of non-typical days is not expected to bias the results, because they are rare. During the first wave, 2.5 percent of the space–time budget days were non-typical. During the second wave, 3.6 percent of the space–time budget days were non-typical. To control for the exclusion of the non-typical days, we divided the sum score of the individuals by the number of hours that were included and then multiplied the score by 100.
9. With only two observations per respondent, it is not possible to separately identify random slope variance from residual variance, as conducted in a random slope model. It is,

however, possible to conduct random intercept models. Even though two-wave panel analyses are somewhat restricted compared with three-wave (or more) panel analyses, they still enable the researcher to separate the between-person effects from the within-person effects because they enable the study of *change* within a person. Cross-sectional analyses are useful for studying the between-person effects but not for studying the within-person effects.

10. We did not use Tobit regression, even though Osgood et al. (2002) argue in favour of Tobit since they consider 'offending' to be a variable censored at zero. The reason for choosing negative binomial regression over Tobit regression was that multilevel regression is not possible with Tobit regression, whereas it is possible with negative binomial regression. As a robustness check, we conducted cross-sectional analyses with both Tobit and negative binomial models. The results were very similar.
11. The well-known age-crime curve predicts a positive effect of age on offending before the age of approximately 16 and a negative effect of age on offending afterwards (Hirschi and Gottfredson, 1983). To control for this curvilinear relation, we added three variables to the model: age, expressing the effect of age on offending over time; an age dummy, expressing whether a respondent was 14 years or younger at the first observation ( $0 \geq 14$ ,  $1 = \leq 14$ ); and an interaction term of 'age' and 'age dummy', expressing whether the age effect on offending differs for the two age cohorts (the youngest cohort was 14 or younger during the first observation and the oldest cohort was older than 14 during the first observation). Findings indicate a negative age effect on offending for the oldest cohort and no age effect on offending for the youngest cohort. Given the ample time lag between the two waves, we consider our data insufficient for studying the complete age-crime curve and we therefore consider further questions regarding the role of age beyond the scope of our research.
12. IRRs report the exponentiated coefficients ( $e^b$ ) instead of the regular coefficients  $b$ . In negative binomial models, exponentiated coefficients have the same interpretation as IRRs. The regular coefficient is calculated with  $\ln(\text{IRR})$ .

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