Studying Situational Effects of Setting Characteristics: Research Examples from the Study of Peers, Activities, and Neighborhoods

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Abstract and Keywords

This chapter addresses methods to study situational influences of setting characteristics on adolescent offending. In particular, it describes data collection methods (space-time budget interviews, census data, community surveys, and systematic social observations) that enable precise measurement of what respondents do, with whom they undertake these activities, and in what kind of places (both the geographical area and the function of the location) they find themselves. Such data capture presence in and exposure to different kinds of settings during particular periods in time. This chapter illustrates the usefulness of these method for criminological research by summarizing the results of three sub-studies from the Study of Peers, Activities, and Neighborhoods (SPAN) conducted in the Netherlands. It first discusses the design of the SPAN data collection and the instruments that were used in it. It then reviews each study in turn by summarizing its theoretical motivation, data structure, and analytical strategy, and by describing the main findings it has generated.

Keywords: environmental criminology, data collection, SPAN project, Netherlands, criminological research

26.1 Introduction

To examine the validity and value of situational explanations of crime, methods that are traditionally employed to test etiological and ecological theories of crime are limited. Individual-level etiological theories in criminology are usually investigated with data on characteristics of *individuals* and changes in these individual characteristics. Such data have been collected in large-scale cohort panel studies employing multiple-item scales (see for an overview of such studies, e.g., Thornberry and Krohn, 2003), or longitudinal life course studies based on administrative data (see, e.g., Blokland and Nieuwbeerta, 2010). Ecological theories in criminology have been traditionally investigated with data on *geographical areas* like neighborhoods or cities, employing municipal statistics, community surveys, or systematic social observations (see Sampson and Raudenbush, 1999). However, empirical tests of situational theories in criminology need to include more detailed information. Not only do situational mechanisms operate at much smaller geographical levels than have traditionally been studied in criminology (see, e.g., Oberwittler and Wikström, 2009; Weisburd et al., 2009), they also change over time much more quickly. For this reason, attempts have been made recently to collect detailed data on situational characteristics on different moments in time and (p. 601) on differential individual exposure to crime-prone contexts (see, e.g., Wikström et al., 2012a).

It is often argued that empirical investigation of situational influences on crime should focus on (*behavioral) settings*. In its basic form, a setting can be defined as that part of the social and physical environment which individuals can perceive with their senses (Wikström, 2006). This definition built upon a more complex conception of behavioral settings as slices in time and space, consisting of both physical elements (what is present) and social elements (who is present). Behavior settings have conceptually developed within human ecology and are theorized to have standing patterns of behavior that affect the behavior of individuals within the setting (Barker, 1963, 1968; Barker et al., 1978). Behavior settings are the contexts in which opportunities may arise that are necessary for a crime to be committed.

Neighborhoods or schools are not true settings, because they are too large. A street block and a classroom can be settings because they are small enough to perceive with the senses when activities are taking place, and because they can have standing patterns of behavior (think of a classroom with a teacher and students; Barker, 1968; Taylor, 1987). Settings are variable; every change in who is present or in the role people have generates a new setting. A classroom where an adolescent is alone is different from the same classroom where he or she is with peers, which is different from the same classroom with a teacher present.

The Study of Peers, Activities, and Neighborhoods (SPAN) in the Netherlands has been designed to study and test situational explanations of crime and offending behavior, specifically situational action theory (Wikström 2006; 2014), routine activity theory (Cohen and Felson, 1979), and the routine activity theory of general deviance, also

referred to as the unstructured socializing perspective (Osgood et al., 1996). The SPAN study employed a combination of data collection methods that are particularly well suited to measure situational characteristics of behavioral settings. The most important method that was used in the SPAN study is the space-time budget (STB) interview.

The STB method was designed by Wikström and colleagues (Wikström and Butterworth, 2006; Wikström et al., 2012a; Wikström et al., 2012b) to capture the spatial activity patterns of young people and thereby to enable detailed operationalization of the behavior settings they are exposed to. The STB method offers a systematic way to question respondents about their hourly activities across four days prior to the interview; about the geographical and functional locations where these activities have taken place; about the people who were present; and about additional events that are relevant for criminological research (e.g., crime, victimization, and substance use). The STB method was modeled after the more commonly known time diaries, which have been applied to address research question in many different disciplines. For example, in sociology, time diaries have been applied to examine gender inequality in time spent on domestic work. In economics, time diaries have been used to make international comparisons of time spent on paid work relative to leisure (overviews of time diary applications are given by Fisher and Gershuny, 2013; Pentland et al., 1999). Within criminology, the application of (space)-time budget instruments is fairly new. Nevertheless, (p. 602) some scholars have incorporated similar methods to investigate crime or criminals. For example, Rengert and Wasilchick (1985) reconstructed " 'journeys-to-crime" by asking burglars to describe their activities and whereabouts on the day of their offense. Rossmo et al. (2012) applied data recorded by an electronic monitoring corrections program to examine the journeys-to-crime of reoffending parolees. Riley (1987) related data on activity patterns of teenagers, collected with time budgets about the Saturday prior to the interview, to their self-reported involvement in delinquency. And Lemieux and Felson (2012) calculated activity based victimization risks by combining national-level time use data with data on victimization from the US National Crime Victimization Survey. The space-time budget method as developed by Wikström is the first time diary method in criminology to collect data on spatial *and* temporal activity patterns on a large scale. The method has been used within data collection projects in England (PYS; PADS+), Sweden (MINDS), Slovenia (SPMAD), and the Netherlands (SPAN).

In the SPAN project, the information from the STB interviews was combined with data from a more traditional survey among adolescents (including self-reports about offending) and with information on neighborhoods and small geographic areas derived from census data, community surveys, and systematic social observations. Census data were drawn from publicly available databases from the Internet, such as the "Neighborhood Map" from Statistics Netherlands and the "Neighborhood Monitor" from the city of The Hague. A community survey was conducted among residents of 110 neighborhoods in The Hague, to measure ecological constructs like informal control and social trust. Systematic social observations were conducted in over 1,400 small geographical areas of 200 by 200

meters, to capture in detail the social and physical disorder, traffic, land use, and other characteristics of these areas.

The combination of data collection methods (space-time budget interviews, census data, community surveys, and systematic social observations) enables precise measurement of what respondents do, with whom they undertake these activities, and in what kind of places (both the geographical area and the function of the location) they find themselves. Together, these data capture presence in and exposure to different kinds of settings during particular periods in time.

In this chapter we will provide an illustration of the usefulness of these methods for criminological research, by summarizing the results of three studies from the SPAN project that were particularly focused on situational questions. After this introduction, we first discuss the design of the SPAN data collection and the instruments that were used in it. In each of the three sections that follow, we separately review a sub-study by summarizing its theoretical motivation, data structure, and analytical strategy, and by describing the main findings it has generated. Table 26.1 presents an overview and comparison of these three studies. The first two studies focus on the relation between unstructured socializing and self-reported delinquency of adolescents over a longer period (one year). Both studies specify the situational characteristics that increase the criminogeneity of unstructured socializing. The first study (Hoeben and Weerman, 2014) focused on functional locations of unstructured socializing and the amount of social control (guardianship as well as control exerted by place managers) that is (p. 603) connected to these locations; the second study (Hoeben, 2016) focused on the characteristics of the neighborhoods where adolescents spend time engaged in unstructured socializing. The third study (Bernasco et al., 2013) focused on situational features of time periods in which offenses occurred compared to situational features of time periods where no offenses occurred. We conclude this chapter with theoretical implications of our findings for understanding criminogenic behavior settings, with a summary of the gains and advantages of these methods to collect situational data, and we reflect on future possibilities to improve the measurement of situational characteristics.

Table 26.1 Key Features of the Three SPAN Studies Discussed in This Chapter

	Study 1	**Study 2**	**Study 3**
Unit of analysis	Individual (N = 615)	Individual (N = 387)	Situation/Hour (N = 4,949 hours, 76 individuals)

Dependent variable	12-month delinquency (self-report)	12-month delinquency (self-report)	96 × 1 hour delinquency (self-report)
Independent variables	Unstructured socializing in: Private space Semipublic space Pub. entertainment Pub. transportation Other semipublic Public space Street Shopping center Open space	Unstructured socializing in neighborhoods characterized by high, medium, and low: Socioeconomic status Mobility Ethnic heterogeneity Family disruption Population density Structural density Collective efficacy Physical disorder	Presence of peers Presence of adults Public space Unstructured activity Alcohol use Cannabis use Carrying weapon
Data sources	STB, questionnaire	STB, questionnaire, community survey, systematic social observations, administrative data	STB
Publication	Hoeben and Weerman (2014)	Hoeben (2016)	Bernasco et al. (2013)

26.2 The SPAN Study

The Study of Peers, Activities, and Neighborhoods is a longitudinal panel study, spanning two waves of data collection, among several hundreds of adolescents (843 in the first wave, 616 in the second) in the city of The Hague and its neighboring suburbs. The Hague is the third largest city of the Netherlands, with 486,000 inhabitants in 2009, when the first wave of the study was completed. The city is the residence of the central government (p. 604) of the Netherlands, is situated at the North Sea coast, and is

ethnically mixed, with a large number of residents of Indonesian, Surinamese, Turkish, and Moroccan origin.

The first wave of the data collection with the questionnaire and space-time budget (STB) interviews took place between October 2008 and May 2009; the second wave took place between November 2010 and June 2011. Coordinators and research assistants supervised completion of the questionnaires and conducted space-time budget interviews during school hours in separate classrooms or in other undisturbed locations of the school (or, for one of the schools, in a room of a hotel nearby). After completion of both instruments, respondents received an incentive for their participation. Parents were informed about the study and could refuse participation in both waves. In general, participating adolescents were cooperative, and many of them indicated that they particularly liked the intensive STB interview because this really related to their personal, daily life.

26.2.1 Sample

Forty schools for secondary education were approached for the SPAN project, of which 10 schools (25%) agreed to participate. The main reasons to refuse participation were that schools already participated in other research, or that they had concerns about disturbing lessons.

The study was conducted among two cohorts of secondary school students. In the first wave of the data collection, all first graders (aged 12 and 13) and fourth graders (aged 15 and 16) of the participating schools were approached for interviews. In the second wave, most respondents of the younger cohort were in the third grade of secondary school (aged 14 and 15), while respondents from the older cohort were either in the sixth grade of the highest form of secondary education, in the first or second grade of follow-up education, were part time or full time working, or were jobless (aged 17 and 18).

In total, 843 respondents participated fully in the first wave of the study (completing both the questionnaire and the space-time budget interview). It was complicated to retrieve all respondents of the first wave two years later, because a substantial portion of the respondents had left the school they attended in the first wave. All schools were happy to participate again, and students who were still at the same school were contacted there. Respondents who left their original school were personally contacted by (mobile) phone, via Internet, or at their home address.

The total retrieval rate in the second wave is 73%; 616 respondents participated in the study for both waves. Analyses showed that boys and older respondents had relatively higher attrition rates between the waves; however, there was no significant difference in the average frequency of delinquency between those who exited the study and those who remained in the second wave. For many SPAN sub-studies (including the first two sub-studies in this chapter) only those respondents were incorporated who participated in both waves of the data collection. This sample of 616 respondents consists of 52.6% boys and 47.4% girls; 57.0% belong to the younger cohort (who were originally in the first grade), and 43.0% belong to the older cohort (originally fourth graders). The mean age was 14.4 (p. 605) years in the first wave and 16.5 years in the second. Although the majority are from native Dutch descent (55.0%), a relatively large portion come from ethnic minorities. The largest categories are adolescents from Turkish (9.2%), Moroccan (7.1%), and Surinamese descent (7.1%). Relatively many adolescents come from lower forms of secondary education: in the first wave of the study, 17.9% of the respondents were recruited in schools for “practice education,” the lowest level of secondary education, and 47.7% of the respondents were following lower vocational education, the most common form of secondary education. The remaining respondents were recruited at medium-level schools (10.5%) and at the highest, pre-academic, level of secondary education (23.8%). As the sample was drawn from a nonrandom selection of schools in The Hague, it is not representative of Dutch youth, but it is highly varied in terms of

ethnicity and education, with a focus on lower-educated youths from a highly urbanized region of the Netherlands. Due to this demographic variation, the sample is well suited to test situational theories of crime.

26.2.2 The Space-Time Budget Interview in SPAN

The space-time budget instrument that was employed in the SPAN study was developed by Wikström and other associated scholars of the Peterborough Adolescent Delinquency Study (PADS+; see Wikström et al., 2012a; Wikström et al., 2012b), building on a long tradition of time use measurement and travel research in geography and social sciences (see Hoeben et al., 2014 for an overview). The method consists of personal interviews in which a time diary approach is applied to collect data about the activities and whereabouts of adolescents. Such interviews are very detailed, and result in hourly data about *what* respondents did, *with whom* they were, and *where* the activity took place. Respondents were also asked to provide information about involvement in crime as an offender, witness, or victim during the exact hours that were covered by the space-time budget interview.

Respondents answered in their own words, and these answers were coded by the interviewer and immediately entered in a preformatted Excel file on a laptop. The Excel file consisted of four forms for each day, 24 rows for each hour of the day, and various columns for different dimensions of the activity and the setting. The first column in the STB form refers to *activity*, for example, “studying at school” or “playing soccer.” If more than one activity took place in an hour, interviewers asked the respondent what the main activity was. The second column of the form refers to the *function of the location* where the activity took place, for example, “home,” “at a friend’s house,” or “supermarket.” The third column refers to the *geographical location*. The geographical location is coded by using detailed maps that show small units (200 by 200 meters) in the research area. The fourth, fifth, and sixth columns of the STB form address *the people present in the setting*, specified in terms of their relation with the respondent. “Family” members include parents, siblings, or other family members. “Peers” include friends, classmates, teammates, or a partner. Also specified is whether one peer is present or two or more peers, and whether they are male, female, or a mixed group. “Others” include teachers, trainers, or parents of friends. Finally, the “extra incidents” columns of the STB form leave room to (p. 606) register *truancy, substance use* (alcohol and drugs), witnessing or involvement in *risky situations* (e.g., fights, provocations, police contact), *victimization* (by theft, vandalism, or violence), involvement as an *offender* (in theft, vandalism, or violence), or *weapon carrying*. These incidents are unlikely to occur every hour; therefore the interviewer asked about them at the end of coding each day. To prevent coding mistakes or typing errors, all completed forms were cleaned according to a strict protocol.

Respondents participated in a single space-time budget interview per wave, that took approximately one hour on average. During the interview they were asked to reconstruct their activities and whereabouts during four recent days. These four days always needed to incorporate one Saturday, one Friday, and two weekdays (the most recent weekday before the interview and the most recent weekday before that). If respondents were on holiday or ill during that day, they were questioned about another "regular" day, with a maximum of seven days before the interview. If that was not possible, the days were recorded but a note was made that these days were "abnormal."

To help respondents recall their activities and whereabouts, various strategies were used. Respondents were allowed to check their schedule book or mobile phone, and interviewers made reference to activities that were already reported by the respondent, or made references to memorable events, such as television shows or the weather. As a last resort, interviewers could ask respondents what they would normally do "at such a day" or "at that time of day." For more particulars of the STB method, see Wikström et al. (2012b) and Hoeben et al. (2014).

26.2.3 Self-Report Questionnaires

The SPAN *questionnaire* included validated scales measuring self-reported delinquency and substance use, as well as constructs like bonds with parents and school, parental monitoring, shame and guilt feelings, self-control, and perceived peer delinquency. The questionnaire was self-administered in groups of four adolescents, supervised by one research assistant during a school hour of about 45–50 minutes. This relatively intensive procedure ensured that adolescents were closely monitored, supported, and stimulated, and that any questions or concerns that they had about the questionnaire were addressed immediately. The questionnaire was based on the questionnaire of the PADS+ study (Peterborough Adolescent and Young Adult Development Study) of Wikström and colleagues (Wikström and Butterworth, 2006, Wikström et al., 2010; Wikström et al., 2012a). The items were translated, extended with additional measurements, and, when necessary, adjusted to the Dutch situation.

26.2.4 Community Survey

For the *community survey*, questionnaires were sent out to adult residents in 110 neighborhoods. The neighborhoods needed to contain enough respondents to provide valid (p. 607) information about its social ecological characteristics. This meant that parks and industrial areas with few residents were excluded from the survey. In total, 11,505 questionnaires were sent out to residents; 3,696 questionnaires were returned, of which 3,545 remained useful for analysis (after thorough data-cleaning on item response tendencies and missing values). The net response rate is thus 31%. On average, about 36 residents per neighborhood completed the survey. The survey measured constructs derived from various ecological perspectives, including the social disorganization theory

and broken windows theory, and measured constructs like collective efficacy, fear of crime, and (perceived) disorder and victimization. Respondents were asked to think of their “neighborhood” as an area within about five minutes walking distance from their home. The questionnaire closely followed the PADS+ community survey, with some items adjusted to the Dutch situation.

26.2.5 Systematic Social Observations

The systematic social observations were conducted by trained observers, who coded street segments within the small areas of 200 by 200 meters that were also used in the space-time budget interview. With the address closest to the centroid of the grid cell as starting point, a street segment of 100 meters in every third grid cell (1,422 of 4,561 grid cells) was observed and coded. The coding was aided with a structured observation list (partly based on the one from Sampson and Raudenbush, 1999) that took about ten minutes to complete. This observation form included 61 items concerning land use, physical disorder, social disorder, physical condition of buildings, signs of territoriality, traffic, formal and informal control, and guardianship.

26.2.5 Administrative Data

Additional statistical data on structural characteristics of neighborhoods were collected from publicly accessible online municipal databases and repositories. The data included neighborhood measurements of population density, ethnic composition, age composition, household composition (including percentage of single-parent families), mean income, average residential real estate value, residential mobility, and percentage of high-rise residential property.

26.3 Sub-study 1: Unstructured Socializing, Functional Locations, and Delinquency

The space-time budget method made it possible to investigate with greater detail than before how and where adolescents are spending their time. Several studies conducted (p. 608) with data from the SPAN study used these possibilities to test and specify the assumed association between delinquent behavior and spending time with peers (e.g., Hoeben and Weerman, 2014; 2016; Janssen et al., 2016; Janssen et al., 2017; McNeeley and Hoeben, 2017; Weerman et al., 2015). One sub-study from the SPAN study (Hoeben and Weerman, 2014) focused on the interplay between “unstructured socializing” (unstructured time with peers without the supervision of adults), and “functional locations” (the nature of the location, and whether it is public or private) in

understanding adolescent involvement in delinquent behavior. The main research question of this sub-study was, in which type of locations is adolescents' involvement in unstructured socializing associated with their delinquency?

26.3.1 Theory

The sub-study combined two theoretical approaches: the unstructured socializing perspective of Osgood and colleagues (1996) and the classification of "responsibilities of places" of Felson (1995).

The term "unstructured socializing" was introduced by Osgood et al. (1996) in a paper that aimed to develop a situational perspective on individual delinquency, building on the routine activity theory (Cohen and Felson, 1979) and the lifestyle theory (Hindelang et al. 1978). They argued that deviant acts are not always the result of criminal dispositions and often not planned ahead. Rather, these acts occur in the spur of the moment, out of boredom, in search of excitement, or to express toughness in front of peers. Osgood et al. (1996) assumed that adolescent activities that can be characterized as "unstructured socializing" are particularly rich in opportunities and situational inducements for deviance. Unstructured socializing is characterized by three elements: (1) the presence of peers, (2) lack of structured activity, and (3) the absence of authority figures. According to Osgood et al., the *presence of peers* can make delinquency easier and more rewarding. Peers may serve as resources in delinquency: they can function as "backups" or "lookouts" when adolescents get into fights or commit theft. Peers may also serve as an audience, and this makes delinquency rewarding in terms of status and reputation. The *lack of structured activity* stimulates delinquency because it leaves time for deviant activity when opportunities for them are encountered, and because in unstructured activities it is less likely that responsibilities for social control are conferred on one or more of the individuals present. The *absence of authority figures* stimulates delinquency because it limits social control and reduces the chance of "getting caught." When combined, these three elements provide the most opportunities and situational inducements for deviance, which means that adolescents who spend a lot of time in "unstructured socializing" in their daily life are expected to be involved in relatively more acts of deviance and delinquency.

According to Felson (1995), an important situational characteristic determining the amount of deterrence against crime is the type of responsibility for a location, which can differ between very clear and outspoken to diffuse and implicit. The strongest form of (p. 609) responsibility (personal responsibility) is responsibility taken by those who own a place or live there. Their incentive for reacting to crime is to protect their own property. Other, weaker forms of responsibility are responsibilities taken by employees who are explicitly assigned to look after a place (assigned responsibility) or who work at a place, but were not explicitly assigned to look after it (diffuse job responsibility). The weakest form of responsibility is taken by incidental passers-by or bystanders whose presence discourages crime or who may respond to illegal behavior but are not obliged to do so

(general responsibility). These categories of responsibility correspond with different categories of urban space (originally formulated by Newman, 1972). Felson argues that private places (like houses) are primarily looked over by people with personal responsibility. Semiprivate or semipublic places (e.g., shops, cinemas, bars) are mostly out of sight of the owners and usually monitored by both assigned and nonassigned employees and by people who have no particular relation to the place but happen to be there. Finally, public places (like streets and public parks) are mainly supervised by bystanders who do not have a particular incentive to intervene in acts of crime.

These two theoretical approaches led to the hypotheses that the extent to which adolescents spend time in unstructured socializing is associated with their involvement in delinquency, and that this relation is strongest for unstructured socializing in public places and least strong in private places.

26.3.2 Measurement and Analysis

The data that were collected with the space-time budget interviews were used to create very precise measurements of the number of hours that respondents had spent in *unstructured socializing* during four preceding days and specifically whether those hours were spent in private, semipublic, or public *locations*. For an hour to be counted as *unstructured socializing*, three conditions had to be met: one or more peers must have been present, no adult authority figure should have been around, and the respondent was involved in unstructured activity. The first two conditions were measured directly during the interview: for each hour respondents were asked whether peers and adults were around (and, with regard to the latter, whether these were parents, family members, or significant in other ways). The type of activity was measured in detail and later categorized as “unstructured” when these activities had no clear rules or agenda, for example, “hanging around” or “walking around without a destination.” The *location* of the time that was spent unstructured socializing was established by categorizing the answers on the question about the type (or function) of the location where the activity took place (for example, a house, a schoolyard, a shop).

Unstructured socializing in private spaces was indicated by the total number of hours spent in unstructured socializing in locations that are primarily observed by those with personal responsibility for the space, such as owners, family, and friends; in particular the respondent’s house or the houses of friends. *Unstructured socializing in public spaces* was indicated by the total number of hours spent in unstructured socializing in locations (p. 610) that are monitored solely by people with general responsibility, with three main subcategories: streets and squares, shopping centers, and open spaces. *Unstructured socializing in semipublic spaces* was indicated by the total number of hours spent in unstructured socializing in locations that are not private or public spaces, with three subcategories: public entertainment settings like bars and cinemas, public transportation settings like trains and trams, and other semipublic settings such as schools and clubs.

Involvement in delinquency was measured with an index composed of self-report questions from the SPAN questionnaire. The index comprised 20 items indicating how often the respondent committed various types of offenses in the preceding school year. The offenses ranged from minor offenses, like vandalism, kicking or hitting, stealing something small from a shop, to more serious offenses like injuring somebody, burglary, and robbery.

A multilevel analysis was employed to estimate *between person* as well as *within person* differences. 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. *Within person* analyses investigate whether an increase in involvement in unstructured socializing (in different locations) across the two waves for one person is associated with an increase in delinquency across the two waves for that same person, regardless of his or her initial participation in unstructured socializing or delinquency and regardless of other relevant differences in (stable) personal characteristics. In other words, within-person analyses result in a relatively conservative test that controls for selection effects (when relatively crime-prone individuals prefer unstructured socializing at certain locations). In the analysis, random intercept models were applied that included a between-person and a within-person parameter for each independent variable. 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 in the form of negative binomial regressions, because the dependent variable of involvement in delinquency was highly and positively skewed (see Allison, 2009, and Hoeben and Weerman, 2014, for more details about the statistical analyses).

26.3.3 Results

First of all, it appeared that the general amount of hours individual respondents spent in unstructured socializing was positively associated with their involvement in delinquency, in line with the individualized situational approach of Osgood and colleagues (1996). This association was found for both between-person and within-person parameters (albeit somewhat stronger for the first). It also appeared that this association was not equally strong in all types of locations. For example, increased involvement in unstructured socializing in *private spaces* across the waves for a particular respondent was not significantly associated with his or her involvement in delinquency (within-person). (p. 611) Also, the amount of unstructured socializing in shopping centers (a subcategory of public spaces) was not associated with delinquent behavior of individual adolescents. On the other hand, the strongest associations between individual involvement in unstructured socializing and delinquency were found for one subcategory of semipublic places, namely entertainment settings, and two subcategories of public places; in streets and in “open spaces” like parks and parking lots.

In general, these findings offered modest support for the hypotheses derived from Felson's classification of places (Felson, 1995). More importantly, it supported and specified the situational approach of Osgood and colleagues (1996). The amount of time that adolescents spend in unstructured socializing is not unconditionally related to their involvement in delinquency, but it depends strongly on the locations where they spend their time. In some, seemingly protective, locations, unstructured socializing does not increase the risks of becoming involved in delinquency. But there are also some quite specific types of locations where hanging out appears to be more risky. Spending a lot of time in unstructured socializing in these places is particularly related to relatively high levels of delinquency. This theory specification was only possible by using the kind of detailed data provided by the space-time budget interviews.

26.4 Sub-study 2: Unstructured Socializing, Neighborhood Characteristics, and Delinquency

Combining data from space-time budget interviews with data about neighborhoods and small areas makes it possible to determine the characteristics of the neighborhood where adolescents spend their time, and to investigate whether these neighborhood characteristics have an effect on delinquent behavior. The second sub-study from the SPAN study we address (Hoeben, 2016) used this combination of information. (See also Wikström et al., 2012a, for similar combinations of data). The main research goal was to examine whether characteristics of the neighborhoods where adolescents spend time engaged in unstructured socializing affected the relationship between unstructured socializing and delinquency.

26.4.1 Theory

This sub-study also combined several theoretical perspectives, in particular the unstructured socializing perspective described previously, social disorganization theory (e.g., Sampson et al., 1997; Shaw and McKay, 1942), broken windows theory (Wilson and Kelling, 1982), and the concept of "behavior settings" (Barker, 1968). According to the social disorganization perspective, rapid societal changes and urban population (p. 612) dynamics may lead to a "decay of existing social rules of behavior and institutions" (Thomas and Znaniecki, 1918–1920: 165), or an "inability of a community structure to realize the common values of its residents and maintain effective social controls" (Sampson and Groves, 1989: 777). Scholars within this perspective suggest that social disorganization processes occur frequently in neighborhoods with low socioeconomic status, high ethnic heterogeneity, high residential mobility (Shaw and McKay, 1942), high family disruption (Sampson, 1987), high population density, and structural density (Sampson and Groves, 1989). Contemporary perspectives within social disorganization theory emphasize "collective efficacy" as an indicator for processes of social disorganization (Sampson et al., 1997). Processes of social disorganization may lead to a "standing behavior pattern" (a concept from Barker's behavior settings perspective) in which residents will not interfere if someone violates rules, which is likely to result in relatively high crime levels. Additionally, disorganization also means less supervision and control over groups of adolescents who are hanging out in the neighborhoods. Adolescents who spend time in unstructured socializing in disorganized neighborhoods may feel that other behavior of them is expected than adolescents who hang out in organized neighborhoods, which makes it more likely that unstructured socializing in disorganized neighborhoods will result in delinquency.

According to broken windows theory, signs of disorder communicate to both residents of and visitors to a location that "no one cares" (Wilson and Kelling, 1982: 4). Signs like graffiti, broken bottles, or larger pieces of garbage that are spread out on the street show residents and visitors that littering and other inappropriate behavior is common in that area. These signs may be perceived as *cues* about standing behavior patterns for adolescents who are spending time in unstructured socializing in those areas, indicating that there is less need to conform to social norms and legal rules. Therefore, it can be expected that unstructured socializing is more strongly related to adolescent delinquency if it occurs in neighborhoods characterized by high levels of physical disorder than if it occurs in neighborhoods characterized by low levels of physical disorder.

26.4.2 Measurement and Analysis

The administrative neighborhood data, data derived from the community survey, and data from the systematic social observations were used to create measurements of characteristics of the neighborhoods where adolescents *spent their time* in unstructured socializing. The administrative neighborhood data were used to construct measures of

socioeconomic status, neighborhood mobility, ethnic heterogeneity, family disruption, population density, and structural density (for more details about these measurements, see Hoeben, 2016, and Bruinsma et al, 2013). The *socioeconomic status* measure was a composite score based on factor analysis from standardized measures of the residential property value, the unemployment rate, the percentage of low-income households, and the percentage of households that received welfare benefits. *Neighborhood mobility* was measured by the number of residents that moved into the neighborhood in a year (p. 613) plus the number of residents that moved out of the neighborhood, divided by the total number of residents. The *ethnic heterogeneity* measure expressed the likelihood that two residents selected at random from the neighborhood would have a different ethnic origin (based on the five most prevalent ethnic categories). *Family disruption* was indicated by the percentage of single-parent households in the neighborhood. *Population density* was the number of residents per square kilometer in the neighborhood, and *structural density* was indicated by the percentage of residential properties in high-rise buildings.

Data from the community surveys were used to construct a measure of *collective efficacy* in each neighborhood. This measure consisted of a summation of two standardized multiple-item scales, one that measured social trust among the neighbors and one that measured informal control. Similar to the original construct as proposed by Sampson and colleagues (1997), the scale for social trust consisted of five items describing the quality of neighborhood bonds (e.g., “Neighbors are willing to help other neighbors,” “The neighbors can be trusted”). The informal control scale consisted of six items indicating whether residents are willing and able to intervene in the neighborhood (e.g., “If a group of kids is skipping school and hanging around in the street, would your neighbors do something about it?” “Suppose your community center will be closed, would your neighbors organize something to keep it open?”). Both the alphas and lambdas of these scales were satisfactory, indicating that the scales had high internal reliability (coherence between items) and ecological reliability (coherence between neighborhood residents in answering).

The systematic social observation was used to obtain a measure of *physical disorder* in the neighborhood. Physical disorder was measured by trained observers using a checklist based on the instrument developed by Sampson and Raudenbush (1999; Raudenbush and Sampson, 1999). This checklist consisted of seven items about potential signs of physical disorder (e.g., dog feces, litter or broken glass, graffiti tags), using a dichotomous scale representing “observed” and “not observed.” The level of physical disorder at the measured street segments was aggregated to the neighborhood level by applying a refined version of the ecometric method (Hoeben et al., 2016b).

These measures were combined with the data from the space-time budget interviews to derive measures of the amount of time spent in unstructured socializing in different kinds of neighborhoods. The space-time budget data indicated that the 387 respondents who were included in this study spent time engaged in unstructured socializing in 118 different neighborhoods across the four space-time budget days during the first wave of

the data collection and in 135 neighborhoods during the second wave. Measures were created that expressed respondents' total number of hours spent in unstructured socializing in the 25% of neighborhoods with the highest score for each characteristic, in the 25% of neighborhoods with the lowest score, and in the 50% of neighborhoods with scores that were in between. Neighborhoods were classified as "disorganized" or "disordered" when they were in the least favorable quartile of scores on a relevant measure (the 25% of the neighborhoods with, for example, the lowest scores on socioeconomic status, or the highest scores on physical disorder), as "organized" or "ordered" when they were in the most favorable quartile (the 25% of the neighborhoods with, for example, (p. 614) the highest scores on socioeconomic status or the lowest scores on physical disorder), or as "average neighborhood" (the other 50% of the neighborhoods). This strategy was adopted for two reasons: (1) to avoid complicated nonhierarchical multilevel structures that arise because respondents spend time in more than one neighborhood and because respondents may overlap with other respondents in the neighborhoods they visit; (2) to enable comparison of the association between delinquency and the hours spent in unstructured socializing in disorganized and disordered neighborhoods with the association between delinquency and the hours spent in unstructured socializing in organized and ordered neighborhoods *for the same respondent*. The threshold of 25% was chosen arbitrarily; additional analyses with 10% measures showed substantially similar results.

Additionally, because it was assumed that neighborhood characteristics only affect unstructured socializing in the semipublic or public domain, hours were excluded if they took place in the respondents' homes or their friends' homes. Additional measures for *being outside of the residential neighborhood* were constructed that expressed the number of hours spent in unstructured socializing at locations more than one kilometer (0.62 miles) away from home (following Wiehe et al., 2008b).

In the analyses, negative binomial fixed effects panel models (time nested in persons) were estimated to examine the effects of the different measures about time spent engaged in unstructured socializing in particular neighborhoods on individual involvement in delinquency. Predictors were person-mean centered prior to analysis, and both person-means and deviations from person-means were entered into the models (as suggested by Allison, 2009). See Hoeben (2016), for more details about the statistical methods.

26.4.3 Results

A major descriptive result of this study was the finding that adolescents are often away from their residential neighborhood, in particular when they are spending their time in unstructured socializing. About half of the hours that the respondents from this study were awake were spent outside the residential neighborhood (as defined by Statistics Netherlands). Unstructured socializing occurred outside the residential neighborhood in 75% of the hours. More than half of the hours spent in unstructured socializing were

spent further than one kilometer (0.62 miles) away from the home address of the respondents. This finding implies that it is important to look at the actual neighborhoods where respondents spent their time (in unstructured socializing) in addition to their residential neighborhood.

The results from the fixed effect models that estimated effects of neighborhood characteristics (disorganization indicators as well as observations of disorder) showed that the unstructured socializing-delinquency relationship is particularly affected by collective efficacy in the neighborhood. An increase of about one hour in unstructured socializing, outside of the residential neighborhood, in the 25% of neighborhoods with (p. 615) the lowest levels of collective efficacy was associated with an increase in delinquency of 6.8%. On the other hand, increases in time in unstructured socializing, outside of the residential neighborhood, in the 25% of neighborhoods with the highest levels of collective efficacy was not associated with delinquency at all. Other neighborhood characteristics associated with social disorganization (such as ethnic heterogeneity, family disruption, and population density) did not affect the relationship between unstructured socializing and delinquency. Neither did the amount of physical disorder in the neighborhoods where respondents spend their time in unstructured socializing.

In general, these findings are in line with recent elaborations of the social disorganization perspective (e.g., Sampson et al., 1997): That low levels of collective efficacy in a neighborhood condition the effect of unstructured socializing in that neighborhood on adolescents' delinquency may imply that residents exert control over visitors in their neighborhood. The findings did not offer support for the hypothesis derived from broken windows theory, nor did they confirm that structural neighborhood characteristics related to social disorganization are relevant for the unstructured socializing-delinquency relationship.

What is important to notice here is that the analyses of this study would not be possible without the combination of detailed data on time use (the space-time budget interviews) and detailed information about neighborhood characteristics (from the community surveys, administrative data, and systematic social observations). Moreover, using detailed geographical data about the whereabouts of adolescents revealed that an important part of their time is spent away from the residential neighborhood. This finding poses fundamental questions about the value of previous research within the ecological tradition in criminology that primarily focused on residential neighborhoods, and underscores the need for further empirical research on the situational causes of crime and delinquency.

26.5 Sub-study 3: Situational Causes of Offending

In sub-studies 1 and 2, situational variables (regarding the activities and whereabouts of adolescents) were related to a measure of delinquency *per year*. However, the space-time budget protocol also included a question about involvement in delinquency *per hour*. This measure makes it possible to investigate with even greater detail in which situations adolescents actually commit offenses and in which situations not. Again, this sub-study builds on the work of Wikström and colleagues, who used similar data in their analyses to test situational action theory (Wikström et al., 2010; Wikström et al., 2012a). In the third sub-study we address (Bernasco et al., 2013), the occurrence of an offense during a particular hour was related to the situational characteristics during that same hour, controlling for other situational characteristics and for offender characteristics.

(p. 616) 26.5.1 Theory

This sub-study built on various theories and empirical studies about situational influences on offending. The theories include the group process perspective developed by Warr (2002), routine activity theory (Cohen and Felson, 1979), the previously addressed unstructured socializing approach of Osgood and colleagues (Osgood et al., 1996), and the classification of “responsibilities of places” of Felson (1995). The authors hypothesized that seven situational elements increase the probability of offending by adolescents at a particular moment in time: (1) presence of peers, (2) absence of adult handlers, (3) being in public space, (4) unstructured activities, (5) alcohol use, (6) cannabis use, and (7) carrying weapons.

The supposed situational effect of peer presence was based on various situational group mechanisms as described by Warr (2002), including fear of ridicule, display of loyalty, and status seeking. These mechanisms are rooted in the need to be accepted and respected by other group members, a need that is particularly salient during adolescence. Each of these mechanisms is strongly facilitated by the actual presence of peers in potential offending situations. Offending particularly disarms ridicule, proves loyalty, and confirms or produces status in the physical presence of peers who are aware of the act. Presence of peers may also makes offending easier and more rewarding (Osgood et al., 1996). The act of offending can be intrinsically rewarding when peers act as an audience, and the physical presence of peers may also facilitate offending because it provides access to potential co-offenders. Further, presence of peers may increase the likelihood of crime because peers may be potential competitors and provoke offenses, and thus become suitable targets of violent crime.

The supposed situational effects of absent adult handlers and being in public space were based on routine activity approaches (Cohen and Felson, 1979; Felson, 1995; Osgood et al., 1996). According to the theory, a necessary requirement for crime is the convergence in time and place of a motivated offender and a suitable target in the absence of a capable guardian, place manager, or handler. A handler is someone who knows the potential offender, who has been granted authority over him or her, who has been given responsibility for his or her conduct, and who has developed an emotional attachment to him or her (Felson, 1995). Parents, teachers, and sports coaches are examples of handlers of young people, and absence of such adult handlers can be regarded as a situational cause of adolescent offending.

A place manager is a person who has responsibility for managing the cleanliness, orderliness, and safety of a place (Eck 1994; Eck and Madensen, in this volume). Public places are open to the general public, and there are usually no specific place managers responsible for these places. These features of public places increase the probability that an adolescent will be engaged in offending when in such a place.

The hypothesized situational effect of unstructured activities was based on the perspective of Osgood and colleagues (1996), as discussed previously in this chapter.

The supposed situational effects of alcohol and cannabis use on offending were based on the immediate disinhibiting and psychopharmacological effects of these substances. (p. 617) Alcohol use causes psychomotor and cognitive impairment, and it lowers self-control, which is theorized to be an inhibitor of crime. The temporary loss of self-control makes it more likely that small conflicts escalate into fights and that small opportunities for crime are reaped (Gottfredson and Hirschi, 1990). Cannabis distorts spatial and time perception and impairs cognitive and psychomotor performance, and might therefore be expected to facilitate offending. However, it is also possible that cannabis use reduces offending, because cannabis has a sedative effect as well.

Finally, the supposed effect of weapon carrying was simply based on empirical findings that carrying a weapon to school has been shown to be a risk factor for violence (DuRant et al., 1995; Resnick et al., 2004), which makes it a potential situational risk factor for offending. Carrying a weapon is likely an indicator of the willingness to use it if the need arises, and carrying a weapon may also create the opportunity to use it unpremeditatedly in unforeseen situations of conflict.

26.5.2 Measurement and Analysis

The units of analysis for this study were not the *respondents* who participated in the SPAN study, but the *hours* that were covered by the space-time budget interviews. Respondents reported on the 24 hours of four preceding days during this interview, and provided not only information about their main activities during these hours, their whereabouts, and their company, but also on whether they offended during those hours, whether they used alcohol or marijuana, and whether they carried a weapon. To analyze in which situations adolescents actually committed offenses, and in which situations they did not, the analysis focused on those respondents that self-reported that they offended at least once during the hours covered by the space-time budget interview. The analysis was limited to those hours that these 76 respondents were awake. This resulted in a total "sample size" of 4,949 hours.

The measure of *offending* during a particular hour was derived from the space-time budget interviews. Interviewers noted in a separate column of the space-time budget form in which hour respondents reported having committed an offense. The type of offense was also recorded. In total, 76 respondents reported 104 offenses; most of these were assaults (53 cases) and acts of vandalism (41 cases). A few of the offenses were property offenses (6 cases of thefts), traffic offenses, or other offenses (4 cases). Because of the relatively small number of offenses reported in the space-time budget interviews, all four offense-types were combined and analyzed as instances of generic offending.

The measures of the independent variables were also based on the space-time budget interviews. *Presence of peers* was derived from questions about the persons that were physically present in the setting during a particular hour. Persons that were personally known to the respondent and equal in status were counted as peers; this included friends and acquaintances (of both sexes), partners (girlfriend or boyfriend), and siblings (both sexes, only younger than 18 years of age). *Absence of adult handlers* was also derived from the indicators of who was present in a particular setting during a (p. 618) particular hour. Adult handlers included all family members who were 18 years old or older. These could be parents, stepparents, siblings, nephews, nieces, cousins, aunts, uncles, and grandparents. Adult handlers also included professional handlers and other adults who are personally known to the respondent: teachers, sports trainers, supervisors, peers' parents, adult neighbors, employers, adult colleagues, janitors, religious leaders, doctors, dentists, psychiatrists, barbers, professional caretakers, and homework counselors. The measure of *public space* was based on the question on the functional location in which respondents were present during one particular hour. Places were regarded as public when they were freely accessible to everyone. This included streets, squares, public parking places, bus stations, train stations, airports, parks, beaches, dunes, woodlands, public sports facilities, and recreation facilities, as well as malls and shopping strips. The presence in semipublic space was also measured, which included indoor and outdoor places that require some form of membership (e.g., school, sports club, and doctor's office) or payment for entry or service delivery (e.g., movie theater, football stadium, and

restaurant). The measure of *unstructured activity* was based on the space-time budget question about what respondents were doing during a particular hour. Activities were counted as unstructured if they included socializing as their main activity, for example, hanging around, having a break/pause during school, walking or biking around, visiting someone, socializing, talking (face to face), talking on the phone, emailing/chatting/texting, attending a birthday party or other party, and going out to a bar or club. *Use of alcohol* (beer, wine, or liquor), *use of cannabis* (marijuana or hash), and *carrying weapons* (knife or other sharp object usable as a weapon or other blunt object usable as a weapon) were all measured by a separate question during the space-time budget interview, and entered in a separate column in the computer form. Further, two temporal control variables were included in the analysis: whether an hour was during the evening or night, and whether an hour was during a weekday or the weekend.

In the analysis, fixed effects logit models were estimated to compare situations in which offenders committed crimes with situations in which they did not. Fixed effects analyses can be regarded as a multivariate analysis of repeated measures within the same person (or other unit of analysis). This method rules out any measured and unmeasured differences between individuals as potential confounds. The data of the two waves were pooled in a single analysis. Next to the fixed effect analyses, descriptive analyses were carried out to provide basic information about the situational characteristics of the hours in which an offense was reported.

26.5.3 Results

The descriptive analysis indicated that most of the reported offenses were committed in the presence of peers. Only 8 of the 104 offenses were committed alone, and no less than 87 of 104 were committed with two or more peers. Further, most offenses were committed with no adult handlers around (78 cases) and in public or semipublic space (60 and 36 cases). Enhanced rates of offending were found for all situational conditions that (p. 619) were analyzed: adolescent committed relatively more offenses during times spent with peers, in the absence of adult handlers, in unstructured activities, in public space, when under the influence of alcohol or cannabis, and while carrying a weapon.

The findings of the fixed effects logit analysis showed that most of the situational conditions also increase the likelihood of offending independently from each other and from the temporal control variables. The strongest effect was for being in public space, with an odds ratio around 10. This means that the odds of offending (the probability of offending divided by the probability of nonoffending) increased by a factor of 10 when respondents were in this situation.

Substantial effects (odds ratios of 2 to 4) were also found for presence of peers, absence of adult handlers, unstructured activities, and alcohol use. No significant effects were found for carrying a weapon or for cannabis use.

Overall, these findings offer strong support for the situational hypotheses derived from various theoretical perspectives. The effects on actual offending were surprisingly large, and this suggests that situational conditions are fundamental in understanding time fluctuations in offending among offenders. Restricting the analyses to offenders ruled out between-individual differences in exposure to certain conditions.

26.6 Conclusion

The three sub-studies of the SPAN project described in this chapter demonstrate the possibilities and usefulness of the employed methods to test situational explanations of adolescent offending. The methods, therefore, allow for specification of which behavior settings are particularly criminogenic. Space-time budget interviews provided data about the routine activities of young people, and combined this information with data about the precise circumstances under which these activities occurred, the locations where the activities took place, and the people who were present. This made it possible to test and expand various situational theories, in particular the individualized routine activities approach of Osgood et al. (1996) that emphasizes unstructured socializing as an important influence on delinquent behavior. The detailed information from the space-time budget interviews importantly improved the measurement of unstructured socializing, providing much more precision than previously employed survey items and scales. Moreover, it made it possible to determine how much time was spent in unstructured socializing in different circumstances, such as in private, semipublic, or public locations. These measurements enabled the researchers of the first sub-study to test hypotheses derived from the situational classification of “responsibilities of places” in the routine activity approach of Felson (1995), and to use the results to expand and specify the unstructured socializing perspective. Such focused analyses and elaboration of situational theories would be impossible without detailed data on activity patterns and whereabouts collected by methods such as the space-time budget interview.

(p. 620) The combination of detailed data on time use (derived from the space-time budget interviews) with information on neighborhood characteristics (derived from administrative data, community surveys, and systematic social observations) further expanded the possibilities to empirically explore situational theories. It enabled tests of hypotheses grounded in the social disorganization perspective (e.g., Sampson et al., 1997; Shaw and McKay, 1942) and in the broken windows theory (Wilson and Kelling, 1982). Combining these methods made it possible to determine how much time adolescents spent in what kind of geographical settings. This also allowed the study to distinguish between residential neighborhoods and the neighborhoods to which individuals are exposed in their daily life. The use of situational data collection methods made it possible to discover that the majority of adolescents’ unstructured socializing actually takes place

away from the residential neighborhood, and that the type of neighborhood where this activity takes place is relevant for adolescents' involvement in delinquency.

Finally, the methods used in the SPAN study made it possible to investigate in which situations offenses are actually committed (or in which situations people actually become victimized; see Averdijk and Bernasco, 2015). Such data can be used to test hypotheses about direct facilitators of crime, independent from personal characteristics of the perpetrator or victim. It can also be used to analyze crime trips or activity sequences (e.g., which activities precede criminal activity and which activities follow substance use). In the third sub-study, the precise measurements of situations and behavior during short periods of time (in our case one hour covered by the space-time budget interviews) showed that there are various situational determinants of crime with substantial effects on the chance that an offender commits an offense at a particular time. These insights would have been impossible without such precise measurements of the settings during the hours in which crime actually occurs.

26.6.1 Toward Specification of Criminogenic Behavior Settings

Building on the theoretical legacy of Barker (1968; Barker et al., 1978), Wikström argued that "it is possible that some types of behavior settings are more likely than others to create situations in which individuals may act unlawfully" (Wikström and Sampson, 2003: 125) and proposed further investigation of such criminogenic behavior settings. The space-time budget method that we described in this chapter was developed by Wikström specifically to capture such criminogenic behavior settings. In applying the space-time budget method, the three studies that are described in this chapter provide insight into the situational conditions that are related to higher risks for delinquent behavior. Thereby their results offer clues to which elements in behavior settings are specifically criminogenic.

Integrating the results from the three discussed studies with insights from routine activity theory (Cohen and Felson, 1979), the unstructured socializing perspective (Osgood et al., 1996), and results from earlier studies, we can name three categories of (p. 621) social and physical "behavior objects" that (potentially) contribute to a criminogenic setting (i.e., a setting conducive of adolescent delinquent behavior). First, the *peers who are present* have an important impact on adolescents' behavior (sub-study 3; Bernasco et al., 2013; Weerman et al., 2015) and can provide immediate stimulation and facilitation of delinquency (as audience, instigators, reinforcers, provokers, and/or co-offenders). They can also contribute to deviance-conducive settings by shaping standing behavior patterns in which deviant talk and deviant acts are tolerated or even encouraged (Dishion et al., 1996; Osgood et al., 1996; Warr, 1996). Studies suggest that the gender composition of the group and the size of the group also affect individual delinquency, such that mixed-gender groups (Lam et al., 2014; Peterson et al., 2001) and larger groups (McGloin and Thomas, 2016) are more likely to contribute to criminogenic settings. Further, it appears that peers contribute to type-specific deviance conducive

settings: unstructured socializing with vandalizing friends increases adolescents' risk for engaging in vandalism, and unstructured socializing with stealing, substance-using, and violent friends increase adolescents' risk for engaging in those respective behaviors (Hoeben et al., 2016a).

Second, the *people who are present but not actively participating* in the activity are potential sources of social control and supervision (e.g., Levine et al., 2011; for a literature review on guardianship see Hollis-Peel et al., 2011). Their effect on adolescents' delinquency is illustrated by the findings on functional location and neighborhood collective efficacy (first and second sub-study). Unstructured socializing is more strongly related to delinquency if it occurs in locations where other people generally do not feel responsible (Eck, 1994; Felson, 1995; Hoeben and Weerman, 2014) and in neighborhoods where residents feel unable or unwilling to interfere when rules are broken (Hoeben, 2016; Sampson et al., 1997). People who are present but not actively participating in the activity may also form targets or provokers of delinquency. One explanation for the finding that the unstructured socializing-delinquency relationship is amplified in public entertainment settings is that such locations are generally crowded with drunk and therefore inconsiderate people, which potentially evokes aggression (e.g., Graham et al., 2000).

Third, *attributes in the physical environment* have been theorized to offer targets for delinquent behavior (such as "hot products" in shopping centers, Clarke, 2002), to form cues that inappropriate behavior is tolerated (such as physical disorder; Keizer et al., 2008; Wilson and Kelling, 1982), or to facilitate delinquency in other ways (such as available alcoholic beverages in public entertainment settings that may evoke aggression and other inappropriate behaviors). Findings of the described SPAN studies do not indicate that physical disorder in the area strengthens the unstructured socializing-delinquency relationship (sub-study 2), nor do they indicate that unstructured socializing is particularly criminogenic in shopping centers (sub-study 1), nor that the presence of weapons increases risks for offending (sub-study 3). On the other hand, sub-study 3 (Bernasco et al., 2013) showed that alcohol use more than doubled the odds for delinquency, implying that alcoholic beverages are physical objects that, when available, can function as crime-conducive objects in settings. Given the central role that physical objects play in (p. 622) the behavior settings theory, as well as in the literature on situational crime prevention, future research is warranted to explore the criminogeneity of specific physical objects.

26.6.2 Recommendations for Further Research

Despite the promising potential of the concept of criminogenic behavior settings for theoretical development in criminology, research into situational conditions for crime and delinquency is still in its infancy. Much remains unclear about features that make behavior settings particularly criminogenic. For example, further research is necessary to determine why the presence of peers is a crime-conducive factor. Observational studies

have suggested that provocation and “signifying” are important processes at play (Anderson, 1999; Short and Strodtbeck, 1965), quantitative studies have pointed at instigation (Warr, 1996; McGloin and Nguyen, 2012), and prior experimental research has established the presence of positive reinforcement (Dishion et al., 1996) and imitation (Bot et al., 2007; Larsen et al., 2010). Warr (2002) and emphasized the roles of status, loyalty, and fear of ridicule as important motives for adolescents to respond to pressure from peers to engage in delinquency and substance use. Future research needs to further scrutinize these, and perhaps other, group processes.

Also in need of further examination is the actual role of place managers. Despite persistent findings that crime concentrates in particular facilities (e.g., Eck et al., 2007; Felson, 1987), we do not know much about the role of place managers. It is possible that deterrent effects are not even explained with the presence of place managers, but that they are inherent to specific functional locations and standing behavior patterns at those locations.

Finally, research is needed to explore underlying processes in the relationship between criminogenic behavior settings and delinquency. Hoeben and Weerman (2016) attempted to disentangle such processes for the relationship between unstructured socializing and delinquency. Although exposure to opportunities for delinquency was of relevance, they found that long-term processes were important as well, in particular exposure to delinquent peers and adoption of attitudes favorable to delinquency. It would be interesting to examine underlying processes of the relationship between delinquency and more narrowly defined criminogenic behavior settings (e.g., unstructured socializing in low-collective-efficacy neighborhoods, or unstructured socializing in specific group settings), to see whether “opportunities” processes would gain in relative importance.

26.6.3 Limitations of the Methods

Of course, there are various limitations to the methods that were used in the SPAN study (see Hoeben et al., 2014 for a more expansive list regarding limitations to the space-time budget method). One important issue is that the four days that are covered in the (p. 623) space-time budget interviews represent a sample out of the lives of the respondents. It is uncertain to which extent these four days are representative, and various biases may occur. The most important one is seasonal influence and weather circumstances that can affect the activities of people in important ways.

Another limitation of the space-time budget interview is that crime is a rare event: not every person is involved in crime and for those who are, it is not a daily activity. This implies that data from these interviews may exclude much interpersonal variation, unless the sample is very large.

A third important limitation of the space-time budget interview is that the time unit of one hour may not be specific enough to establish the duration of activities that have a shorter time slot. Crimes usually unfold much more quickly than over the course of an hour, and the situations and settings in which they occur may also shift during one hour. The use of one-hour time slots may be less problematic if a researcher wants to get an overall indication of time use patterns of people. However, to really capture events and their situational determinants, these units are limited in precision.

Related limitations are relevant for the ecological measurements that can be combined with the space-time budget interviews. Seasonal and temporal influences may influence the neighborhood characteristics as reported by respondents of a community survey, and they may also bias data about social and physical disorder collected with systematic social observations. The neighborhood is probably a unit of analysis that is too large to really capture setting characteristics and situational influences on the behavior of adolescents (see also Weisburd et al., 2009). The areas of 200 by 200 meters, covered by the systematic social observations, seem to be more appropriate, but they may also represent a set of settings and locations that is too large. The exact spot where the observation was done within the grid cell of 200 by 200 meters may not be the setting that was relevant during a particular hour covered by the space-time budget interview. It is also possible that a condition that was relevant for the respondent during the hours that they spent their time in a certain setting was absent at the moment of observation.

26.6.4 Concluding Remarks

Despite these limitations, it is obvious that information from space-time budget interviews, combined with data on neighborhoods and small areas, strongly enhances the study of situational correlates of crime and criminal behavior. The current limitations of these methods might be mitigated in future research by zooming in on shorter time spans and even smaller areas and locations. Promising improvements in this regard are attempts to conduct time use research and space-time budget methodologies with the aid of smartphones and GPS tracking devices (e.g., Browning et al., 2014; Solymosi and Bowers, in this volume; Sonck and Fernee, 2013; Wiehe et al., 2008a). These and similar innovations may further improve the measurement of (criminogenic) behavior settings and thereby help us to capture the situational context of crime.

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