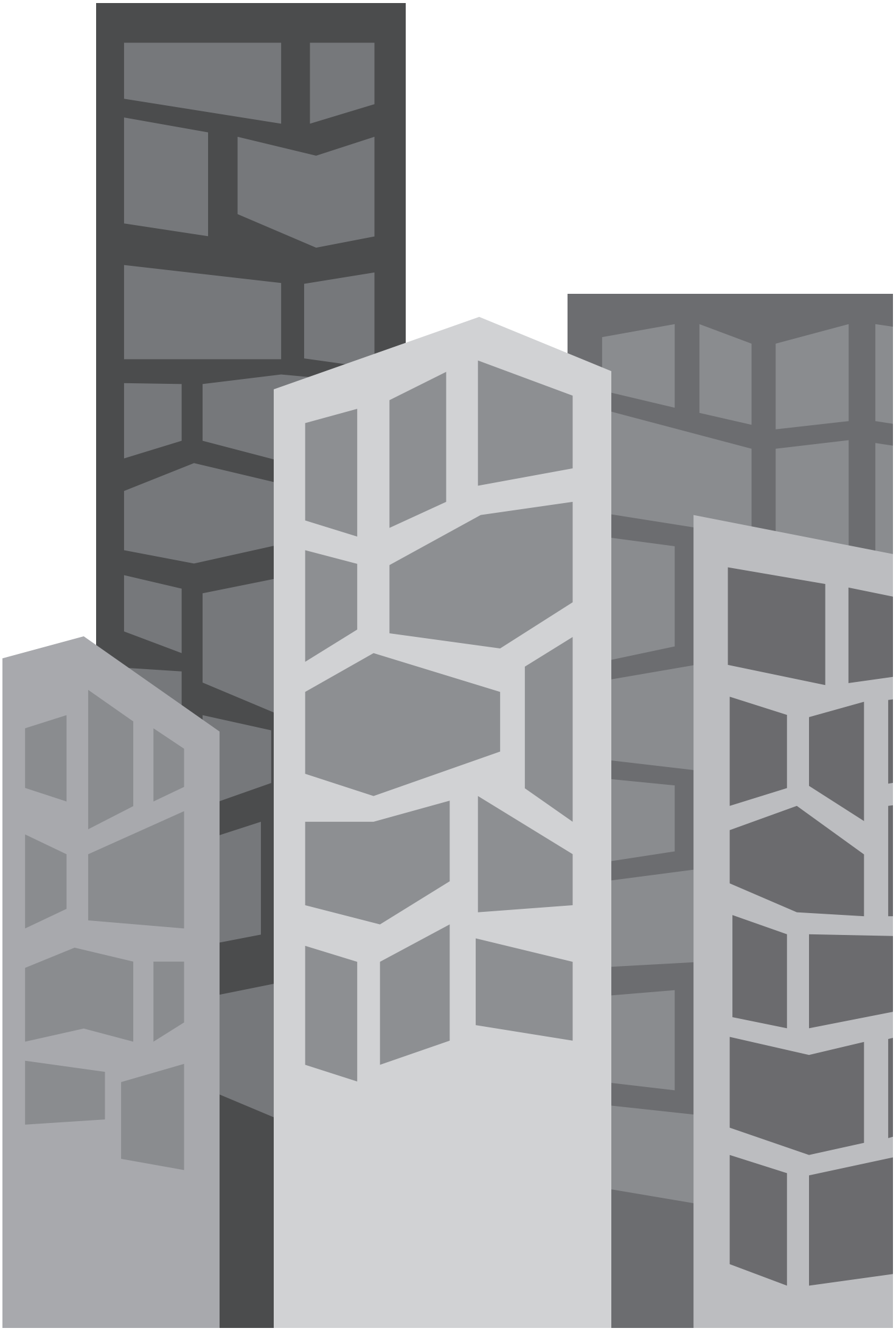

Chapter Two.

Explaining the Relationship

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Why is involvement in unstructured socializing related to adolescent delinquency?
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Explaining the Relationship

Deviant behavior may add excitement to an otherwise uneventful situation – James Hawdon

Research on lifestyles, leisure and routine activity patterns repeatedly showed that adolescents' involvement in certain activities leads to higher risks for involvement in delinquency (Anderson, 2013; Felson and Boba, 2010; Wikström et al., 2012a). Not many studies, however, have investigated the underlying processes in this relationship. The current study aims to empirically compare potential explanatory processes, focused on one particular leisure pattern that has often been associated with adolescent delinquency: Involvement in unstructured socializing.

The term 'unstructured socializing' was coined by Osgood et al. (1996). They proposed that activities with three key features are particularly associated with higher levels of deviancy: Activities with a lack of structure, where peers are present and where authority figures are absent. Unstructured socializing describes a situation that is characterized by these three conditions. Only if all of these three conditions are present, one can speak of 'unstructured socializing'. Osgood et al. (1996) found, with fixed effects panel models over five waves of data, that the routine activities they classified as 'unstructured socializing' (riding around in a car for fun, getting together with friends informally, going to parties, spending evenings out for fun and recreation) were each positively related to within-individual changes in at least three out of five types of deviant behavior (criminal behavior, heavy alcohol use, marijuana use, other drugs use and dangerous driving). Later empirical studies, cross-sectional as well as longitudinal, have confirmed the findings of Osgood and colleagues that individuals who spend more time in 'unstructured socializing' had higher delinquency rates (e.g., Bernburg and Thorlindsson, 2001; Haynie and Osgood, 2005; Maimon and Browning, 2010).

The establishment of a robust relationship between involvement in unstructured socializing and delinquency calls for a theoretical and empirical elaboration of the underlying processes for this relationship. Why do adolescents who spend a lot of their time unstructured socializing have an increased risk of becoming involved in delinquency? Or, to use popular terminology: Why does 'hanging around with peers' lead to more delinquency? A few scholars have suggested processes that might be at play (e.g., Agnew and Petersen, 1989; Mahoney and Stattin, 2000; Osgood et al., 1996; Siennick and Osgood, 2012), but we are unaware of any study that *empirically compared* relevant processes to explain the relationship.

The current study distinguishes and empirically investigates four possible processes to explain the relationship between involvement in unstructured socializing and delinquency and thereby integrates the unstructured socializing perspective with insights from social learning theory and other perspectives on peer influence. The study further looks into sequential effects that specify 'chains' of the proposed processes. Data were collected among 610 adolescents (age 11 to 20) in The Hague, the third largest city of the Netherlands, with a space-time budget interview and a questionnaire. The space-time budget interview was developed to map the hourly activities and whereabouts of adolescents (Wikström and Butterworth, 2006; Wikström et al., 2012a) and enabled an accurate operationalization of 'unstructured socializing'. The questionnaire obtained information about self-reported delinquency, perceived temptations and provocations, perceived peer pressure, moral attitudes and delinquency of peers. The research question we address is: *Which of the four processes* (exposure to opportunities for delinquency; exposure to group processes; increased tolerance toward delinquency; and exposure to delinquent peers) *contribute to explaining the relationship between involvement in unstructured socializing and adolescent delinquency?*

A particular problem in answering this question is the possibility of selection effects. If adolescents with a propensity to offend prefer unstructured socializing over other activities in the first place, we are not able to distinguish this selection from the influence of unstructured socializing on delinquency. To account for this, we conducted multilevel-path models that address differences *between* individuals, but also *within*-individual changes over time, which control for stable individual characteristics. The latter analysis provides a more stringent test.

Explanatory processes

The concept of 'unstructured socializing' has its roots in lifestyle theory (Hindelang, Gottfredson, and Garofalo, 1978) and routine activity theory (Cohen and Felson, 1979), which were designed to explain macro-level patterns of crime. Osgood et al. (1996) translated concepts from these theories (in particular routine activity theory) to an individual level. According to Osgood et al., presence of peers stimulates deviance because peers make deviancy *rewarding* by forming an approving audience and because peers make deviancy *easier* by serving as resources (for example by offering practical assistance as 'look-outs'). Absence of authority figures stimulates deviance, because it implies a lack of social control. Unstructured activities are more conducive to deviance than structured activities, because unstructured activities are not likely "to place (…) individuals in roles that make them responsible for social control" and because unstructured activities offer more opportunities for deviance, since less time is spent in "designated ways" (Osgood et al., 1996: 640-41).

The original formulation of the unstructured socializing-deviance relationship by Osgood et al. (1996) *implicitly suggests* two explanatory processes. First, Osgood and colleagues noted that unstructured activities leave time for involvement in deviant behavior (more than structured activities do) and that absence of authority figures reduces the risk of getting caught. We interpret both consequences of unstructured socializing as 'opportunity' processes. Second, Osgood and colleagues signaled that the presence of peers makes deviancy rewarding in terms of status and reputation, thereby offering situational inducements. We interpret this as a 'reinforcement' or group process. Apart from these two main processes that were implicitly assumed by Osgood et al. (1996), other explanatory processes are also possible. From the literature, we derive two other processes that may explain the association between exposure to unstructured socializing and adolescent delinquency: Increased tolerance toward delinquency and exposure to delinquent peers. All four processes will be addressed and elaborated theoretically in the remainder of this section.

Exposure to opportunities for delinquency

As mentioned, the *first process* to explain the unstructured socializing-delinquency relationship is that involvement in unstructured socializing exposes adolescents to opportunities for delinquency. Several empirical studies have associated opportunities with delinquency: Overviews are given by Miethe and Meier (1994), Pratt and Cullen (2005), and Spano and Freilich (2009). Osgood et al. (1996) argued, based on routine activity theory (Cohen and Felson, 1979; Felson and Boba, 2010) and Matza and Sykes' (1961) conception of subterranean values, that most adolescents are open to the idea of deviance and are thereby *motivated offenders*. In a situation of unstructured socializing, there are no adults present to supervise their behavior, so there are *no capable authority figures*[6]. Moreover, the unstructured nature of the activity enables involvement in delinquency (Osgood et al., 1996). In line with this reasoning, Wikström (2004; Wikström and Sampson, 2003: 125, 133-34) posited that a lifestyle in which youths spend a significant time 'informally socializing outside the home' and 'unsupervised by adults' is particularly prone to temptations ("perceived options to realize particular desires in an unlawful way") and provocations ("perceived attacks on the person's property, security or respect that generates anger or similar emotional states that may promote unlawful aggressive responses"). Both temptations and provocations imply more opportunities for crime.

Involvement in unstructured socializing has often been used as a proxy for the extent to which individuals encounter opportunities for delinquency or deviancy (e.g., Anderson and Hughes, 2009; Hay and Forrest, 2008; Osgood and Anderson, 2004), but we did not find any empirical studies that explicitly investigated the relationship between unstructured socializing and opportunities for delinquency.

6 We follow the terminology of Osgood et al. (1996: 640) by referring to 'authority figures'. They distantiate from the distinction between handlers, guardians and place managers (Felson, 1995) by generalizing these concepts to the concept of 'authority figure'. An authority figure is "someone whose role in a situation carries a responsibility for attempting to exert social control in response to deviance."

Exposure to group processes

The *second process* to explain the unstructured socializing-delinquency relationship is that involvement in unstructured socializing exposes adolescents to group processes such as delinquent reinforcement and peer influence toward conformity with their group. Osgood et al. (1996) theorized that present peers form an 'appreciative audience' for deviance and referred to the situational inducements-perspective of Briar and Piliavin (1965). Briar and Piliavin (1965: 36) considered delinquent acts to be "short-term situationally induced" by desires of adolescents (boys) to, for example, "portray courage in the presence of, or be loyal to peers (…) or simply to 'get kicks'." With the exception of the latter, these are social rewards provided by peers that may motivate an adolescent to engage in delinquent behavior.

Findings of experimental research by Dishion and colleagues (e.g., Dishion, Andrews, and Crosby, 1995; Dishion et al., 1996) are in line with these processes. They found that the conversation topics of dyads of thirteen to fourteen year-old boys were affected by their responses to each other: laughter in response to rule breaking topics was likely to evoke more rule breaking talk in delinquent dyads, whereas rule breaking talk was largely ignored in non-delinquent dyads. Although the immediate consequences of rule breaking reinforcement were restricted to *talk* in this experimental setting, laughter and other responses of peers may very well promote *behavior* in real life. Findings of these studies indeed indicated that 'deviancy training' (rule breaking topic followed by laugh) in these pre-existing friendship dyads was related to delinquent behavior (Dishion et al., 1996; Dishion et al., 1997), although these relations were longitudinally determined and not situational.

Conformity, or (perceived) pressure to behave in accordance with the rest of the group, may lead to delinquency even if the majority of a group of adolescents does not have delinquent intentions. Warr (1996) found that most group offenses were instigated by one peer. He argued that 'fear of ridicule' and 'loyalty' act as "magnifying mechanisms [that] transform the behavior of one (or a few) into the behavior of many" (Warr, 2002: 55). Similarly, psychologists argue that individuals comply to behavior they do not necessarily approve of, because of their 'need to be liked' and their 'tendency to avoid rejection' (Kiesler and Kiesler, 1969). Overviews of empirical studies on peer influence and conformity are given by Brechwald and Prinstein

(2011), Brown et al. (2008), and Hartup (2005). Brown, Clasen, and Eicher (1986) found that 'conformity dispositions' explained ten percent of the variance in self-reported misconduct and fourteen percent of the variance in antisocial behavior. Meldrum, Miller, and Flexon (2013) reported positive relationships between 'susceptibility to peer influence' and delinquency (controlled for prior delinquency), also when they used solely neutral, not antisocial, behavior items to operationalize susceptibility to peer influence.

Exposure to peer group processes may not only affect behavior in a short-term situational manner, but these processes may also have long-term influence on individuals' moral value system. The 'differential reinforcement' element of the social learning theory (Akers, 1998, 2001; Burgess and Akers, 1966) refers to an instrumental learning process where "voluntary actions of the individual," are conditioned through actual and anticipated rewards and punishments (Akers, 2001: 193). Responses from peers are considered to be social rewards that are, over repeated occasions, able to impel the adoption of delinquency-favoring attitudes. The influence of peer reinforcement on behavior can therefore extend beyond the immediate situation. Overviews on social learning theory support the differential reinforcement-deviance relationship (e.g., Akers, 1998: 107-26; Pratt et al., 2010). Also, the studies of Brezina and Piquero (2003) and Rebellon (2006) established that actual or anticipated social reinforcers precede substance use and delinquency in time.

In situations of unstructured socializing, adolescents may experience a positive balance of influences toward delinquency: Parents or other authority figures who are likely to reinforce conventional behavior are absent, whereas 'rewards' for delinquency are possible because of potential supportive responses to delinquent behavior from peers. Exposure to group processes in situations of unstructured socializing may have both short-term and long-term influences on delinquent behavior. Short-term influence occurs when the peer group acts as an 'appreciative audience' and thereby motivates the adolescent to conduct delinquency, or if pressure to conform promotes the participation in delinquent group activities. Long-term influence occurs when reinforcement processes change what the individual perceives as socially rewarding and acceptable behavior.

Empirical support for the association between unstructured socializing and susceptibility to group processes can be found in the study of Flannery, Williams, and Vazsonyi (1999). Their findings indicated that adolescents

who spent their after-school time with friends where adults were not present reported higher susceptibility to peer pressure on antisocial behavior compared to adolescents who spent most of their after-school time at home in presence of a parent or other adult. Steinberg (1986) reported similar results. Brown, Clasen, and Eicher (1986) reported an association between 'peer involvement' (how often respondents, for example, had gone to a party, a movie or concert with friends) and 'conformity dispositions', supporting the relationship between unstructured socializing and peer influence toward conformity as well as the relationship between unstructured socializing and delinquent reinforcement.

Increased tolerance toward delinquency

A *third process* to explain the unstructured socializing-delinquency relationship is that involvement in unstructured socializing increases adolescents' tolerance toward delinquency. This process differs from the process 'exposure to group processes', because it assumes private acceptance (also known as internalization) of attitudes that are acquired from peers, whereas the previous process principally concerns public compliance only; when individuals change their behavior to go along with the group (Kiesler and Kiesler, 1969). The relationship between attitudes and delinquency is found in numerous studies. Meta analyses reported that overall, delinquent adolescents score lower on disapproval of deviance than non-delinquent adolescents (Nelson, Smith, and Dodd, 1990; Stams et al., 2006).

Warr (2002: 65) argued that a group of adolescents may function as 'moral universe' that dictates norms that can be incongruous with conventional norms. A group of adolescents forms its own "ethical reality." During adolescence, young people come to realize that behavioral codes differ between social groups and they come to "appreciate the relativity of standards of conduct". Moral rules are no longer fixed, which may be interpreted as a "license to engage in any conduct." A group of adolescents is therefore able to create a moral code that overrules that of the conventional society, "granting legitimacy to otherwise illegitimate conduct" (Warr, 2002: 67).

Involvement in unstructured socializing may increase the likelihood that adolescents develop their own moral code that differs from the conventional moral code. Increased tolerance toward delinquent behavior is the outcome

of a social learning process, which is dependent on the balance of influences toward delinquency: "A person becomes delinquent because of an excess of definitions favorable to violation of law over definitions unfavorable to violation of law" (Sutherland, 1947: 6-8). This 'balance of influences' leans toward delinquency-favoring in settings of unstructured socializing, because people who are likely to reinforce the conventional moral code are absent (the authority figures) and people who are likely to reward a deviant moral code are present (the peers). Indirect evidence for the relationship between unstructured socializing and tolerance toward delinquency is given by the study of Wikström et al. (2010). They found a positive association between time spent awake unsupervised with peers and 'crime propensity', a composite score of morality (measured as disapproval of deviance) and self-control. Similar findings were presented in the studies of Pauwels and Svensson (2009; Svensson and Pauwels, 2010).

Exposure to delinquent peers

A *fourth process* to explain the unstructured socializing-delinquency relationship is that involvement in unstructured socializing exposes adolescents to delinquent peers. There is an overwhelming body of empirical literature that indicates a positive relationship between peer delinquency and delinquent behavior. Often cited works in this regard are the studies of Elliott, Huizinga, and Ageton (1985), Haynie (2001), Reed and Rose (1998) and Warr (2002).

Felson (2003) argued that certain settings, 'offender convergence settings', increase the chance to meet delinquent others to find potential co-offenders. These settings are very similar to situations of unstructured socializing. 'Offender convergence settings' include "1) likely co-offenders, 2) without outside interference, 3) with substantial time available to socialize, size each other up, get drunk, or whatever else leads them down the road of criminal cooperation" (Felson, 2003: 157). In a setting of unstructured socializing, no authority figures are present, which limits the chance of outside interference. The condition that "substantial time [should be] available to socialize" is closely in line with the description of an unstructured activity. This implies that a situation of unstructured socializing is a situation in which adolescents are likely to meet delinquent peers and potential co-offenders.

More generally, unstructured socializing may, compared to other leisure activities, be more likely to expose adolescents to peers with delinquent intentions. Previous studies suggested that involvement in *structured activities* such as team sports, performing arts or academic clubs stimulates association with *conventional* youth (Eccles et al., 2003; Mahoney and Stattin, 2000). Likewise, one might expect that involvement in *unstructured socializing* stimulates association with *delinquent* youth, which may contribute to future involvement in delinquency. Several studies provide empirical support for this association. Studies that reported positive correlations between unstructured socializing and deviant peers are, for example, the studies of Haynie and Osgood (2005), Stoolmiller (1994) and Svensson and Oberwittler (2010). Dishion, Andrews, and Crosby (1995) asked friendship dyads of boys (age 13-14) where they had met and reported a positive association between antisocial behavior of the dyad and 'met in neighborhood or in an unsupervised community setting' and a negative association between antisocial behavior of the dyad and 'met in school or some other organized activity'. Moreover, findings of Boman (2013) indicated mediation of the unstructured socializing-delinquency relationship by delinquent peers. He reported indirect effects of 'informal multiplexity' (frequency of time spent in unsupervised contexts with three identified friends) on 'crime proclivity' (self-reported crime) through friend deviance, but only during middle adolescence and emerging adulthood and not during late adolescence.

Sequence of processes

The discussed processes may succeed each other in time. For example, when individuals who are often engaged in unstructured socializing make new friends among the delinquent peers they associate with, which subsequently results in more perceived group pressure toward delinquency, which increases their involvement in delinquency. We refer to such a chain of processes as 'sequential effects' and incorporate three potential sequential effects in our theoretical model. The theoretical model is displayed in Figure 2.1.

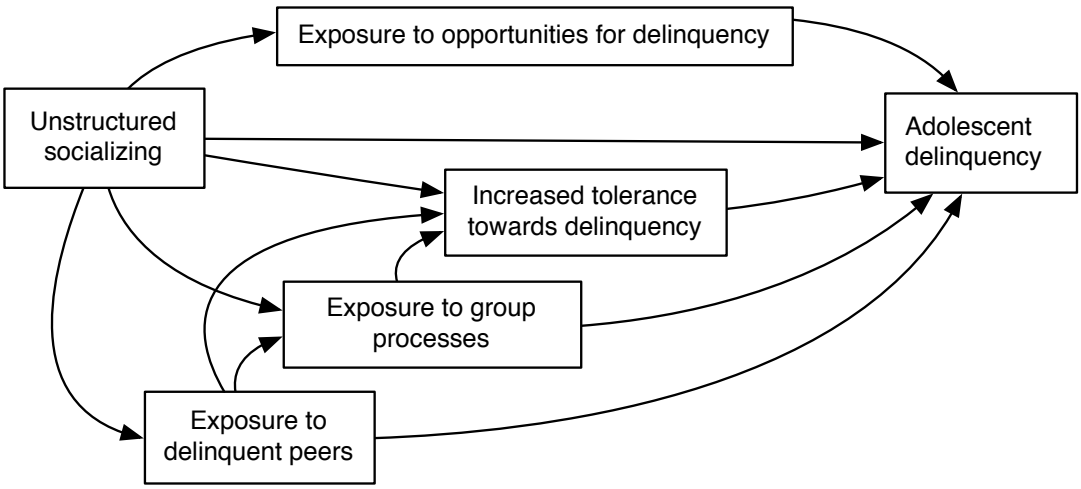

Figure 2.1. Theoretical model: Explaining processes for the relationship between unstructured socializing and adolescent delinquency

Social learning theory specifies several processes through which individuals learn behavior and two of the specified sequential effects may be particularly relevant in explaining the relationship between unstructured socializing and delinquency. First, Akers (2001: 197) argued that "differential association with conforming and nonconforming others" influences the attitudes of an individual and thereby his or her behavior (see also Akers et al., 1979). He thereby specified a causal chain in which (delinquent) associations affect individuals' (delinquent) attitudes and subsequently affect their delinquent behavior. Earlier empirical investigations did not provide strong evidence for this sequential effect: Megens and Weerman (2012) found that respondents' attitudes mediated the peer attitudes-respondents' delinquency relationship, but not the peer behavior-respondents' delinquency relationship. Similarly, Reed and Rose (1998) found that delinquent associations affected delinquent attitudes, but that this did not subsequently affected delinquent behavior. Reed and Rountree (1997) found mediation based on cross-sectional analyses, but not in analyses on lagged effects. Despite the current lack of evidence, it is worthwhile to explore this sequential effect because it has thus far not been studied in relation to unstructured socializing.

Second, one of the statements of the social learning theory as formulated by Burgess and Akers (1966: 146) indicates that "criminal behavior is a function of norms which are discriminative for criminal behavior, the learning of which takes place when such behavior is more highly reinforced

than noncriminal behavior." Extrapolating this to the relationship between unstructured socializing and delinquency, this statement implies a sequential effect where involvement in unstructured socializing exposes adolescents to delinquent reinforcement, which affects their tolerance toward delinquency, which ultimately affects their involvement in delinquency.

Further, Reed and Rose (1998: 245) argued, based on the situational inducement perspective of Briar and Piliavin (1965), that adolescents with delinquent friends are more likely to become involved with delinquent behavior, "because they are more likely to find themselves in social situations that contain pressures to commit crime even in the absence of delinquent attitudes." They referred to this process as 'situational group pressure'. This process assumes a causal order in which delinquent behavior is directly affected by delinquent friends through group processes, without an intervening influence on attitudes. Precisely this causal chain was investigated for substance use by Reed and Rountree (1997), but they did not find evidence for it when using a longitudinal model. Trucco, Colder, and Wieczorek (2011), on the other hand, found an indirect effect between peer delinquency and initiation of alcohol use through perceived peer approval toward alcohol use (and peer approval can be interpreted as perceived group pressure). We believe that these subsequent processes may add to the explanation for the unstructured socializing-delinquency relationship.

In summary, we hypothesize, a) that involvement in unstructured socializing exposes adolescents to delinquent peers, which increases their tolerance toward delinquency, which results in delinquency, b) that involvement in unstructured socializing exposes adolescents to group processes, which increases their tolerance toward delinquency, which results in delinquency, and c) that involvement in unstructured socializing exposes adolescents to delinquent peers, which exposes them to group processes, which results in delinquency. The first and second proposed sequential effects refer to long-term effects of unstructured socializing on delinquency that persist beyond the immediate situation by affecting adolescents' moral value systems. The third proposed sequential effect refers to a short-term effect of unstructured socializing on delinquency that operates solely within a situation. Table 2.1 lists all hypotheses that will be addressed in the current study.

Table 2.1. Hypotheses

Main relationship	1	Involvement in unstructured socializing is positively related to adolescent delinquency.
Explanatory processes	2	Exposure to opportunities for delinquency partially mediates the relationship between unstructured socializing and delinquency.
	3	Exposure to group processes partially mediates the relationship between unstructured socializing and delinquency.
	4	Increasing tolerance toward delinquency partially mediates the relationship between unstructured socializing and delinquency.
	5	Exposure to delinquent peers partially mediates the relationship between unstructured socializing and delinquency.
Sequence of processes	6	Exposure to delinquent peers and subsequent tolerance toward delinquency partially mediate the relationship between unstructured socializing and delinquency.
	7	Exposure to group processes and subsequent tolerance toward delinquency partially mediate the relationship between unstructured socializing and delinquency.
	8	Exposure to delinquent peers and subsequent exposure to group processes partially mediate the relationship between unstructured socializing and delinquency.

Current study

A few studies investigated mediation of the unstructured socializing-delinquency relationship by variables representing the proposed processes (Agnew and Petersen, 1989; Bernburg and Thorlindsson, 2001; Boman, 2013; Hawdon, 1996; Hughes and Short, 2014). The current study improves upon these studies in several aspects.

First, the current study goes beyond these previous studies by investigating the proposed processes independent from each other to establish which processes are relevant and which not, and which of the relevant processes matter the most. In previous studies, the distinction between the processes is often not clear, mostly because several variables were added to the model simultaneously or because variables represented more than one of the proposed processes. Agnew and Petersen (1989), for example, simultaneously added several control variables to a model predicting delinquency with leisure variables (e.g., time spent in 'social activities' and 'hanging out'). These control variables included deviant beliefs and deviant friends, so it is not possible to distinguish between the indirect effects of these mediators based on their study. Also, their study does not enable distinguishing between mediator effects and spurious effects of confounding variables (influencing

both leisure and delinquency). Hawdon (1996) did something similar by simultaneously adding peer substance use and religiosity to a model that predicted marijuana use with routine activity patterns. Bernburg and Thorlindsson (2001) simultaneously added the variables 'deviant peers' and 'definitions favorable to offending' to models predicting property offending and violent behavior with unstructured peer interaction. Moreover, their variable 'deviant peers' was a combined index for delinquent behavior among friends and friends' perceived attitudes toward delinquent behavior, so in fact this one variable reflected three of the processes that are proposed in the current study (namely exposure to delinquent peers, exposure to group processes and increased tolerance toward delinquency). Hughes and Short (2014) studied the mediating role of 'signifying' in the relationship between routine activities (among which 'hanging in the streets', 'attending house or quarter parties' and 'riding around in cars') and fighting. The term 'signifying' referred to social (provocative) interactions aimed at gaining status and respecting or disrespecting others. We may classify 'signifying' as a reinforcement process, but it also has similarities to provocation, which represents 'exposure to opportunities' in the current study.

A second contribution of the current study beyond previous work is that the current study expands the set of explaining processes. First, it explicitly distinguishes two *additional* processes that have not been empirically studied before in the unstructured socializing-delinquency relationship (group processes and opportunity), and second, it considers potential *sequential* effects that may be relevant in explaining the relationship between unstructured socializing and delinquency. Previous studies concerned only one or two of the proposed processes, which were most often delinquent peers or delinquent attitudes. Boman (2013) and Hawdon (1996) considered the mediating effects of friend deviance and peer substance use, respectively. Agnew and Petersen (1989) and Bernburg and Thorlindsson (2001) considered the effects of beliefs and deviant friends. The 'signifying' concept in Hughes and Short (2014) and the deviant peers measure from Bernburg and Thorlindsson (2001) also have similarities to group processes, but they are not explicitly studied as such. We do not know of studies that have explicitly investigated whether 'opportunity' mediates the unstructured socializing-delinquency relationship, nor of studies that studied sequential effects of the proposed processes in explaining the unstructured socializing-delinquency relationship.

Our research also improves *methodologically* on previous research by using longitudinal data, whereas most previous studies relied on cross-sectional data (Agnew and Petersen, 1989; Bernburg and Thorlindsson, 2001; Hawdon, 1996; Hughes and Short, 2014, the study of Boman, 2013 is an exception). Cross-sectional data does not enable fixed effects analyses and, therefore, the studies were unable to control for possible selection effects of adolescents with a delinquency tendency choosing unstructured leisure patterns. The current study estimates multilevel-path models that enable examination of differences between individuals as well as within-individual changes over time.

A second methodological improvement is that we use a more sophisticated measure of unstructured socializing, based on time diary data. None of the previous studies on this topic applied time diary methods to operationalize unstructured socializing. Most studies on the unstructured socializing-delinquency relationship investigated the association between several activities and deviancy (e.g., Osgood et al., 1996). Other studies used standardized questions asking, for example, 'how often, in an average week, do you spend hanging around with friends in absence of adults' (e.g., Bernburg and Thorlindsson, 2001; Osgood and Anderson, 2004). However, studies on time use methods found that individuals underreport leisure activities when they are questioned about these activities over longer periods of time (Niemi, 1993; Robinson and Godbey, 1999). Recall problems, subjective interpretations of activities and difficulties with estimating episode lengths across the day may result in distorted accounts of individuals' general activity patterns (Juster, Ono, and Stafford, 2003; Robinson, 1999). This underlines the relevance of time diary data for the operationalization of activity patterns.

Finally, the current study tests whether its findings are consistent across different types of delinquency: A general measure of delinquency, violence, theft and vandalism. There are indications that involvement in unstructured socializing is not associated with all kinds of delinquency. Müller, Eisner, and Ribeaud (2013) found, for example, that involvement in unstructured socializing longitudinally predicted shoplifting and vandalism, but not assault (see also Miller, 2013). Whereas other studies found that involvement in unstructured socializing was related to all studied types of delinquency, such as property delinquency, substance use (alcohol and marijuana) and violence (e.g., Anderson and Hughes, 2009).

Data and methods

Data

Data were used from the Study of Peers, Activities and Neighborhoods (SPAN), conducted by the Netherlands Institute for the Study of Crime and Law Enforcement (NSCR). For the data collection, forty secondary schools were approached in the city of The Hague and its suburbs (the Netherlands). Ten schools agreed to participate and all of their first graders (similar to the seventh grade in the United States, students were approximately 12 to 13 years old) and fourth graders (similar to the tenth grade in the United States, students were approximately 15 to 16 years old) were asked to join the study. The main reason for nonparticipation of schools was that they participated in other research projects and were hesitant to disturb the lessons any further (Bernasco et al., 2013b: 905). Of the 942 students invited to participate in the study, 843 adolescents aged 11-17 participated fully in the study in 2008-2009. These 843 respondents were approached to join the study a second time in 2010-2011 (two years later) and 615 of them agreed to do that. The response rate for the second wave in proportion to the first wave was therefore 73 percent. The main reason for attrition was a lack of time or willingness to participate. Dropouts were generally older than participants and were more often involved in unstructured socializing and theft. They were slightly more tolerant toward substance use and offending than the participants, reported more delinquency of their friends and less parental monitoring. Dropouts and participants did not differ significantly in self-reported violence, vandalism or general delinquency (results of Mann-Whitney tests, see also Chapter 5, which appeared as Hoeben and Weerman, 2014).

Analyses were conducted with data from respondents who participated fully in both waves. Deletion of respondents with missing information for ethnicity and unstructured socializing resulted in a sample size of 610. The sample consisted of 52.6 percent boys and 47.4 percent girls, 56.7 percent belonged to the youngest age cohort (the initial first graders) and 43.3 percent belonged to the oldest age cohort (the initial fourth graders). The mean age was 14.4 in the first and 16.5 in the second wave. Both waves covered several months, the time-lag between the waves fell between 1.6 and 2.6 years for almost all respondents (99.4 percent). Most of the respondents had a highly

urbanized background: At the time of the first interview, 93.6 percent lived in 'very strongly urban' neighborhoods (≥ 2500 addresses per squared kilometer) or 'strongly urban' neighborhoods (1500 to 2500 addresses per squared kilometer), following the classification of Statistics Netherlands. The majority of the sample was from native Dutch descent, but a relatively large portion of the sample had an ethnic minority background (44.6 percent). Also, a relative large portion of the respondents followed lower forms of secondary education. For more information on the SPAN sample and data collection, see the Chapter 1 or publications of Bernasco et al. (2013b) and Weerman et al. (2013).

Measurement

The current study used a questionnaire and a *space-time budget interview*. Both instruments were similar to the ones used in the Peterborough Adolescent and Young Adult Development Study of Wikström et al. (2012a); except that the instruments were translated to Dutch and that the SPAN instruments incorporated some additional measures on, for example, peer- and parental influence. The questionnaire was used to construct scales for self-reported delinquency, variables that represent the proposed explaining processes and the control variables 'parental monitoring' and 'self-control'. Other demographic information (on, for example, ethnic background, age and gender) was noted in a separate document prior to the interview. Research assistants supervised four respondents simultaneously while they completed the questionnaire. This intensive procedure resulted in very low rates of item non-response (with a maximum of 2 percent).

During the *space-time budget interview*, which was used to create a measure for 'involvement in unstructured socializing', respondents were asked about their hourly activities and whereabouts in four days preceding the interview, including Friday, Saturday and the two most recent week days. For every hour, the respondents were asked about the nature of their main activity, the geographical location and the functional location (e.g., home, school, street) of this activity and who the respondent was with, specified as 'family', 'peers' and 'other people'. The space-time budget interviews were individual, face-to-face interviews with each respondent (for a further discussion of the method, see Chapter 3, which appeared as Hoeben et al., 2014, or Wikström,

Treiber and Hardie, 2012c). Non-typical days (when a respondent was ill that day or had a day off at school) were excluded from the analyses, because the current study assumed that the activities during the space-time budget interviews represented respondents' normal routines. Individual sum scores were corrected for the exclusion of the non-typical days.

The validity of the space-time budget data has been explored in previous studies by comparing information obtained from the interviews to information obtained with the questionnaires. Bernasco et al. (2013b) report correlations of .64 and .73 for alcohol measures and correlations of .57 and .63 for cannabis use measures for the two SPAN waves of data collection, respectively. Hoeben and Weerman (2014, Chapter 5) report correlations of .44 and .43 for 'time spent with peers on the streets and in parks' and correlations of .38 and .44 for 'time spent with peers at youth centers and societies' for the two SPAN waves of data collection, respectively. Although the validity of the space-time budget method needs further attention, we felt that the correspondence between the questionnaire and space-time budget measures was sufficient, especially when taking into account that the space-time budget interview recorded only four days and used different units than the questionnaire.

Measures

Self-reported measures of four types of delinquency were included in the analyses: Violence, theft, vandalism and a 'general' measure that incorporated a variety of offenses. Respondents were asked how often they were involved in several types of delinquency in the preceding school year: Never (value 0); once (value 1); twice (value 2); three to five times (value 3); six to ten times (value 4); more than ten times (value 5). The final measures were constructed by summing the items while retaining the values of the original categories. The *violence*-construct incorporated three items on whether the respondent had threatened someone; kicked or hit someone on the street; and whether he or she injured someone by kicking or hitting. *Theft* was measured with seven items asking whether the respondent had broken into a house to steal something; broken into a car to steal something; broken in elsewhere to steal something; had stolen from someone covertly; had stolen something worth more than five euro (6.85 USD) from a shop; had stolen a bicycle; or

had stolen a moped or scooter. The *vandalism*-construct incorporated two items on whether respondents had defaced walls, doors or other objects with paint, pen or spray paint and on whether they had destroyed or damaged things such as bicycles, bus stops, street lights or something else. The *general delinquency* measure was an index of the respondents' delinquency across twenty types of delinquency, among which the items from the separate measures (violence, theft and vandalism) and eight additional items on whether respondents had stolen worth less than five euro (6.85 USD) from a shop; set fire to something; had bought stolen goods; had robbed someone; sold soft drugs; sold hard drugs; carried a weapon; and whether they had used a weapon. All four delinquency variables were treated as count variables with negative binomial distributions. Descriptive statistics on all variables are given in Table 2.2. Results from principal components analyses and reliability analyses on the delinquency measures can be found in Appendix 2B in the supplementary material.

Table 2.2. Descriptive statistics (*N* = 610)

Variables	Mean		SD		Min		Max		Cronbach's alpha		ICC[a]
	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	
Delinquency (general)	5.923	4.707	9.416	7.672	.000	.000	100.000	57.000	.880	.839	.368
Violence	1.633	1.207	2.925	2.477	.000	.000	15.000	15.000	.790	.794	.436
Theft	.640	.664	2.388	2.059	.000	.000	35.000	16.000	.873	.683	.241
Vandalism	1.494	1.177	2.160	1.987	.000	.000	10.000	10.000	.595	.585	.308
Unstructured socializing	5.125	5.831	5.818	6.279	.000	.000	43.000	44.000	-	-	.349
Perceived temptation	8.360	8.258	3.115	3.111	4.000	4.000	20.000	20.000	.623	.631	.418
Perceived provocation	9.348	8.613	3.039	2.803	5.000	5.000	20.000	20.000	.789	.787	.390
Delinquent reinforcement	11.492	11.716	3.356	3.334	4.000	4.000	20.000	20.000	.672	.716	.485
Peer influence conformity	5.576	5.503	2.014	1.982	3.000	3.000	14.000	14.000	.590	.694	.389
Rule breaking tolerance	17.534	18.287	4.555	4.111	7.000	7.000	28.000	27.000	.848	.827	.534
Substance use tolerance	6.251	7.700	3.017	2.976	3.000	3.000	12.000	12.000	.865	.836	.510
Offending tolerance	7.307	7.352	2.659	2.537	5.000	5.000	20.000	20.000	.816	.802	.371
Delinquent peers	8.820	9.085	3.331	2.932	6.000	6.000	23.000	24.000	.818	.722	.398
Parental monitoring	17.178	16.194	4.094	4.693	5.000	5.000	25.000	30.000	.759	.817	.389
Self-control	29.630	30.151	6.265	5.885	10.000	13.000	45.000	48.000	.744	.720	.558
Age	14.402	16.523	1.626	1.660	11.330	13.750	17.920	20.250	-	-	-

ABBREVIATIONS: SD = standard deviation; ICC = intra-class correlation; T1 = first wave data collection; T2 = second wave data collection; Min = minimum; Max = maximum.

[a] The ICCs are calculated in Stata as suggested by Hilbe (2011: 492) and Hosmer and Lemeshow (2000: 320). The ICCs express the percentage of the total variance that is at the individual level. For example, the ICC of delinquency (general) expresses that approximately 37 percent of the variance in delinquency is explained by differences between adolescents. The other 63 percent is explained by differences over time.

Involvement in unstructured socializing expressed the total number of hours (for all four days covered by the space-time budget interviews) the respondent spent in 'unsupervised unstructured peer-oriented activity': It incorporated the hours in which the respondent was involved in unstructured activity, in which one or more peers were present and in which no adult family members or other significant adults were present. Unstructured activities were defined as 'activities in which there are no rules or only (unwritten) rules that can be easily broken by every individual that is involved in the activity' (for example 'hanging around', 'skate boarding', 'watching television' and 'going to a party'). A list of all activities that were defined as 'unstructured' is given in Appendix A at the end of the book. The critical reader may note that we included a broader set of activities than was used in the original operationalization of Osgood et al. (1996). We chose to do so, because a broader set of activities than the activities they included fall under the concept of unstructured socializing if they occur in the presence of peers and absence of authority figures. These activities leave time "available for deviance" and do not "place (..) individuals in roles that make them responsible for social control" (Osgood et al., 1996: 640-641). Osgood et al. (1996: 652) were not able to scrutinize the people who were present during the activities and acknowledged that "better measures would more explicitly distinguish when authority figures are present from when they are not" and that their "set of four unstructured activities is only a narrow sample of the relevant universe of activities." We thus consider our measure of involvement in unstructured socializing an improvement over the measures used in previous studies. However, to enable the comparison of our results to previous studies on this topic, all models were recalculated with an alternative measure for unstructured socializing that only included the activities 'hanging around', 'walking or biking around without a goal', 'going to a party', 'going out', 'combination of socializing', 'socializing', 'talking', 'going to a birthday party' and 'socializing and having a drink'. Results of these additional analyses are given in the supplementary material (Appendix 2I). The pertinent details are provided below, but suffice is to say that the results are very similar to the findings presented in the main body of this chapter. We did not find that any of the two measures (with strict and broad definition of unstructured activities) lead to overall stronger or weaker estimated relationships. The model-fit measure (BIC) indicated that

the models with the broader defined measure for unstructured socializing fitted the data slightly better, but the differences were minimal.

Each explanatory process was represented by one or more variables. The scales for these variables were constructed based on theoretical considerations, principal component analyses (eigenvalues greater than one-criterion; direct oblimin rotation) and reliability analyses. Results of the principal components analyses and reliability analyses are available in the supplementary material (Appendix 2C). In the following paragraph, we will briefly describe the variables that represented the explanatory processes. More information on the items and the answer categories of these variables is provided in Appendix 2A at the end of this chapter; alphas and other descriptive statistics are presented in Table 2.2.

Process one, exposure to opportunities for delinquency, was represented by two variables: 'Perceived temptation' and 'perceived provocation'. *Perceived temptation* included four questions about the last time a respondent felt tempted to commit four types of delinquent acts. A higher score indicated a more recent temptation. This construct originated from the PADS+ study (Wikström et al., 2010; Wikström et al., 2012a). *Perceived provocation*, a construct that consisted of five items, measured how often adolescents believed they were provoked (e.g., to start an argument or fight). This construct was developed for SPAN. Process two, exposure to group processes, was represented by 'delinquent reinforcement' and 'peer influence toward conformity'. *Delinquent reinforcement* was an index of four items about perceived peer reinforcement to become involved in delinquent behavior. *Peer influence toward conformity* incorporated three items on the extent to which respondents perceived peer pressure to engage in unwanted behavior. The variables representing delinquent reinforcement and peer influence toward conformity originated from the NSCR School Project (Megens and Weerman, 2012; Weerman and Hoeve, 2012) and were originally inspired by measures from the National Youth Survey (Elliott, Huizinga, and Ageton, 1985). Process four, increased tolerance toward delinquency, was represented by three variables: *Tolerance toward rule breaking* (seven items), *tolerance toward substance use* (three items) and *tolerance toward offending* (five items). These constructs included items that ask respondents 'how bad do you think it is when someone your age' is involved in certain acts. The constructs originated from the PADS+ study (Wikström et al., 2010; Wikström et al.,

2012a) and were modified versions of the constructs used in the Pittsburgh Youth Study (Loeber et al., 1998) and the National Youth Survey (Elliott, Huizinga, and Ageton, 1985). The variable that represented process five, exposure to *delinquent peers,* included six items asking respondents about their friends' involvement in six different types of delinquent behavior.

Gender, ethnicity, parental monitoring, self-control and age were included as control variables for the between-individual analyses. *Gender* was a dichotomous variable that expressed whether the respondent was a boy or a girl. *Ethnicity* was a dichotomous variable that expressed whether the respondent was from native Dutch descent or from an ethnic minority. We followed the definition of Statistics Netherlands, stating that a person is from native Dutch descent if both of his or her parents were born in the Netherlands. *Parental monitoring* was derived from the parental control-measure of Kerr and Stattin (2003). The five items included, for example, 'I can just go out at night (after 7.00p.m.), without having to tell my parents' and 'If I go out, my parents expect me to tell where I go, with whom and what I'm going to do'. Answer categories were: YES!; yes; yes or no; no; NO! and 'Not applicable, I do not live with my parents any more' (the latter was coded as missing). The construct for s*elf-control* was based on the measure from Grasmick et al. (1993). The ten items included, for example, 'I often do things without thinking of the consequences' and 'I always say what I think'. Answer categories were: YES!; yes; yes or no; no; NO! For age, parental monitoring and self-control, we used the averages of the first and second interview. Descriptive statistics on the variables are given in Table 2.2.

Analytical strategy

To investigate whether the variables representing the four proposed processes mediate the relationship between unstructured socializing and delinquency, we estimate: a) The direct relationship between involvement in unstructured socializing and delinquency, b) the direct relationships between involvement in unstructured socializing and the variables that represent the proposed processes, c) the direct relationships between the variables that represent the proposed processes and delinquency, and finally d) the indirect effect of unstructured socializing on delinquency *through* the mediating variables.

For these different types of relationships, we examined between-individual effects as well as within-individual changes over time. The latter offer a more stringent test, because within-individual effects are unaffected by individual characteristics that are stable across the waves of data collection. The method thereby deals partly with the possible presence of confounding 'selection' effects. Selection exists if, for example, prior involvement in delinquency is a predictor of involvement in unstructured socializing. The estimation of within-individual changes over time requires at least two interviews per individual with some time-lag in between, which applies to the data used for the current study that were collected at two moments with approximately two years in between.

The direct and indirect relationships and the between-individual and within-individual effects were estimated simultaneously in multilevel-path models with Mplus (version 7.2), following suggestions by Preacher, Zyphur, and Zhang (2010). Indirect effects were estimated by multiplying the coefficients of each of the paths in the mediational chain: To estimate the indirect effect of unstructured socializing on delinquency through one mediator, we multiplied the coefficients of two paths; for two-mediator chains, we multiplied three paths. The standard errors of the indirect effects were calculated in Mplus with the multivariate delta method (Bollen, 1987). Muthén and Asparouhov (2015) argued that this approach is only valid for the underlying latent continuous dependent variable and not for the observed count dependent variable. Although we are also interested in the underlying latent variable, to meet their concerns, we reran the separate indirect effects to obtain counterfactually-defined indirect effects (method is discussed in Muthén, 2011, and Muthén and Asparouhov, 2015) and report these alongside the indirect effects that were obtained with the multiplication-method. Independent variables were person-mean centered prior to analysis and person-mean variables were added to the models alongside the 'deviation from the person-mean' variables, as suggested by Allison (2009). Because we regarded the dependent variable (adolescent delinquency) as negative binomially distributed, the models were estimated with robust maximum likelihood estimation (MLR estimator) to correct the standard errors and confidence intervals (Yuan and Bentler, 1998). The models were also estimated while treating general delinquency, violence, theft and vandalism as normally distributed variables, but the count models

had a better fit. We dealt with missing values prior to model estimation by applying multiple imputation, using the expectation maximization method.

The zero-order covariance and correlation matrices are available in the supplementary material as Appendix 2D. None of the bivariate correlations at the between-individual level was higher than .589 (not taking into account the correlations between general delinquency and violence, theft and vandalism) and none of the bivariate correlations at the within-individual level was higher than .530 (idem). The average VIF was 1.72 at the between-individual level, the highest VIF for the variables at the between-individual level was 2.61. The average VIF was 1.28 at the within-individual level, the highest VIF was 1.63. Based on these findings, we did not expect multicollinearity to bias the models and we therefore interpreted the variables representing the proposed processes as separate sources of influence on delinquency.

Findings

The first columns in Table 2.3 present the within-individual results of a multilevel-path model where delinquency is regressed on unstructured socializing (Model 1). These results concern the 'general' delinquency measure only. The results for violence, theft and vandalism can be found in Appendices 2F, 2G and 2H of the supplementary material, respectively, and will be discussed at the end of the findings section.

Since delinquency is analyzed as negative binomially distributed, all paths to delinquency were interpreted as loglinear (the other paths are linear). Loglinear paths express the change in log count of delinquency with every one unit increase of the independent variable and are best interpreted with Incidence Rate Ratios (IRRs): *e*^coefficient. The IRRs express the percentage increase in delinquency with every one unit increase of the independent variable.

The coefficient of unstructured socializing at the within-individual level (B = .019, p < .05, IRR = 1.019) indicates a positive relationship between unstructured socializing and delinquency that exists irrespective of time-stable individual characteristics such as self-control or gender. The coefficients indicate that an increase of about *one hour* involvement in unstructured socializing over the four space-time budget days between the

two waves of data collection (approximately two years) was associated with an increase of approximately 1.9 percent in the delinquency variable *for the same adolescent*. These results are in line with Hypothesis 1, which states that involvement in unstructured socializing is positively related to delinquency.

The results at between-individual level, which are displayed in Table 2E.1 in the supplementary material, confirm the existence of this relationship when looking at differences between adolescents. The findings indicate that the delinquency level was approximately 8.2 percent higher for a person A, who on average spent *one more hour* in unstructured socializing compared to person B ($B = .079$, $p < .01$, IRR = 1.082). Although the findings at between-individual level are interesting of itself to give a more complete picture of the relationship[7], we decided to focus on the within-individual results as they offer a more stringent test by partly dealing with potential confounding selection effects. In the remainder of this section, we will only discuss the within-individual results. The between-individual results can be found in the supplementary material (Appendix 2E).

7 Within-individual results solely concern changing scores of variables over time. These results do not take into account how frequent individuals were initially involved in unstructured socializing or delinquency and they do not give information about differences between subjects. For example, within-individual analyses cannot determine whether individuals who are frequently involved in unstructured socializing score higher on delinquency than other individuals, whereas between-individual analyses can.

Table 2.3. General delinquency regressed on unstructured socializing, variables representing the explanatory processes and control variables, direct and indirect effects (*N* = 610)

Paths, variances and model fit statistics	Model 1			Model 2			Model 3			PNIE[c]	
	B	(SE)	β	*B*	(SE)	β	*B*	(SE)	β	*B*	(SE)
Direct effects											
Unstructured socializing > delinquency[a]	.019*	(.009)	.066*	-.001	(.007)	-.004	-.001	(.007)	-.004	-	-
Unstructured socializing > perceived temptation				.059 *	(.027)	.122 *	.059 *	(.027)	.122 *	-	-
Unstructured socializing > perceived provocation				.009	(.021)	.019	.009	(.021)	.019	-	-
Unstructured socializing > delinquent reinforcement				.061 **	(.020)	.125 **	.035 +	(.019)	.071 +	-	-
Unstructured socializing > peer influence conformity				-.011	(.014)	-.035	-.015	(.014)	-.047	-	-
Unstructured socializing > rule breaking tolerance				.051 +	(.028)	.084 +	.013	(.023)	.022	-	-
Unstructured socializing > substance use tolerance				.070 **	(.019)	.158 **	.037 *	(.017)	.084 *	-	-
Unstructured socializing > offending tolerance				.063 **	(.020)	.150 **	.033 *	(.016)	.077 *	-	-
Unstructured socializing > delinquent peers				.091 **	(.026)	.182 **	.091 **	(.026)	.182 **	-	-
Perceived temptation > delinquency[a]				.110 **	(.020)	.184 **	.110 **	(.020)	.184 **	-	-
Perceived provocation > delinquency[a]				.019	(.019)	.031	.019	(.019)	.031	-	-
Delinquent reinforcement > delinquency[a]				.054 *	(.022)	.092 *	.054 *	(.022)	.092 *	-	-
Peer influence conformity > delinquency[a]				-.013	(.025)	-.015	-.013	(.025)	-.015	-	-
Rule breaking tolerance > delinquency[a]				.025	(.017)	.053	.025	(.017)	.053	-	-
Substance use tolerance > delinquency[a]				-.006	(.019)	-.009	-.006	(.019)	-.009	-	-
Offending tolerance > delinquency[a]				.066 **	(.022)	.097 **	.066 **	(.022)	.097 **	-	-
Delinquent peers > delinquency[a]				.051 **	(.019)	.087 **	.051 **	(.019)	.087 **	-	-
Delinquent reinforcement > rule breaking tolerance							.253 **	(.060)	.204 **	-	-
Delinquent reinforcement > substance use tolerance							.123 **	(.036)	.136 **	-	-
Delinquent reinforcement > offending tolerance							.148 **	(.039)	.173 **	-	-
Peer influence conformity > rule breaking tolerance							.188 *	(.085)	.099 *	-	-
Peer influence conformity > substance use tolerance							-.005	(.055)	-.004	-	-
Peer influence conformity > offending tolerance							.103 +	(.058)	.078 +	-	-

Continuation of Table 2.3

Paths, variances and model fit statistics	Model 1			Model 2			Model 3			PNIE[c]	
	B	(SE)	β	*B*	(SE)	β	*B*	(SE)	β	*B*	(SE)
Delinquent peers > delinquent reinforcement							.292 **	(.040)	.297 **	-	-
Delinquent peers > peer influence conformity							.042	(.032)	.065	-	-
Delinquent peers > rule breaking tolerance							.270 **	(.048)	.222 **	-	-
Delinquent peers > substance use tolerance							.276 **	(.038)	.311 **	-	-
Delinquent peers > offending tolerance							.252 **	(.040)	.299 **	-	-
Indirect effects[b]											
Perceived temptation				.007 *	(.003)	.023 *	.007 *	(.003)	.023 *	.050	(.047)
Perceived provocation				.000	(.000)	.001	.000	(.000)	.001	.002	(.019)
Delinquent reinforcement				.003 +	(.002)	.011 +	.002	(.001)	.007	.042	(.037)
Delinquent reinforcement > rule breaking tolerance							.000	(.000)	.001	-	-
Delinquent reinforcement > substance use tolerance							.000	(.000)	.000	-	-
Delinquent reinforcement > offending tolerance							.000	(.000)	.001	-	-
Peer influence conformity				.000	(.000)	.001	.000	(.000)	.001	-.004	(.012)
Peer influence conformity > rule breaking tolerance							.000	(.000)	.000	-	-
Peer influence conformity > substance use tolerance							.000	(.000)	.000	-	-
Peer influence conformity > offending tolerance							.000	(.000)	.000	-	-
Rule breaking tolerance				.001	(.001)	.004	.000	(.001)	.001	.028	(.048)
Substance use tolerance				.000	(.001)	-.001	.000	(.001)	-.001	.036	(.027)
Offending tolerance				.004 *	(.002)	.015 *	.002	(.001)	.008	.051	(.039)
Delinquent peers				.005 *	(.002)	.016 *	.005 *	(.002)	.016 *	.061	(.041)
Delinquent peers > delinquent reinforcement							.001 +	(.001)	.005 +	-	-
Delinquent peers > peer influence conformity							.000	(.000)	.000	-	-
Delinquent peers > rule breaking tolerance							.001	(.000)	.002	-	-
Delinquent peers > substance use tolerance							.000	(.000)	-.001	-	-
Delinquent peers > offending tolerance							.002 *	(.001)	.005 *	-	-

Continuation of Table 2.3

Paths, variances and model fit statistics	Model 1			Model 2			Model 3			PNIE[c]	
	B	(SE)	β	*B*	(SE)	β	*B*	(SE)	β	*B*	(SE)
Residual variances											
Perceived temptation				2.776 **	(.227)	.985 **	2.776 **	(.227)	.985 **	-	-
Perceived provocation				2.647 **	(.221)	1.000 **	2.647 **	(.221)	1.000 **	-	-
Delinquent reinforcement				2.836 **	(.186)	.984 **	2.590 **	(.172)	.899 **	-	-
Peer influence conformity				1.218 **	(.092)	.999 **	1.213 **	(.091)	.995 **	-	-
Rule breaking tolerance				4.382 **	(.315)	.993 **	3.789 **	(.272)	.859 **	-	-
Substance use tolerance				2.270 **	(.154)	.975 **	1.954 **	(.129)	.839 **	-	-
Offending tolerance				2.074 **	(.220)	.977 **	1.737 **	(.175)	.818 **	-	-
Delinquent peers				2.869 **	(.234)	.967 **	2.869 **	(.234)	.967 **	-	-
Dispersion delinquency	.864 **	(.097)	.864**	.509 **	(.066)	.507 **	.508 **	(.066)	.508 **	-	-
Values of fit statistics											
Intercept delinquency	5.556 **	(.539)		.231	(.647)		.127	(.648)		-	-
Residual variance delinquency	.428 **	(.091)	.428**	.231 **	(.055)	.233 **	.232 **	(.055)	.232 **	-	-
LL	-2979.467			-34167.853			-33510.780			-	-
BIC (sample size adjusted)	5998.236			68634.400			67406.719			-	-

NOTES: Results at within-individual level. Values of fit statistics are applicable for both within-individual and between-individual estimates: These effects are estimated simultaneously in the same model. Between-individual estimates are presented in Table 2E.1 in the supplementary material. Standardized estimates are obtained by standardizing independent variables prior to model estimation.

ABBREVIATIONS: SE = standard error; PNIE = Pure Natural Indirect Effect; LL = log likelihood; BIC = Bayesian Information Criterion.

[a] Coefficients of the direct paths to delinquency report changes in the log count-rate.

[b] Indirect effects express the effect of unstructured socializing on delinquency through specified variables.

[c] Calculated as suggested by Muthén (2011) and Muthén and Asparouhov (2015).

$+p < .10$; $*p < .05$; $**p < .01$ (two-tailed).

Mediation of the unstructured socializing - delinquency relationship

After confirming that the unstructured socializing-delinquency relationship existed in our data and that it was not spurious, we turned to our analysis of mediation. The variables representing the four processes were added to the model in Model 2, Model 3 also includes the sequential effects (Table 2.3). For a visualization of the results of Model 3, see Figure 2.2. The results from Models 2 and 3 in Table 2.3 indicate that the magnitude of the association between unstructured socializing and delinquency decreased by 95 percent and was no longer significant after the mediators (variables representing the processes) were added to the model (B = -.001, p > .10; IRR = .999). The decrease of the direct effect between unstructured socializing and delinquency suggests that the proposed processes indeed offer an explanation for the relationship.

To further study these *mediation effects*, we focused per process on a) the direct relationships between unstructured socializing and the variables representing the proposed processes, b) the direct relationships between these variables and delinquency, and c) the indirect effects of unstructured socializing on delinquency through the variables representing the proposed explanatory processes.

Exposure to opportunities for delinquency

The results from Model 2 in Table 2.3 show that involvement in unstructured socializing is positively related to perceived temptation (β = .122, p < .05), and that perceived temptation is positively related to delinquency (B = .110, p < .01, IRR = 1.116). These two positive direct paths suggest the presence of an indirect effect, and we indeed find marginal support for it. When we calculate the standard errors of the indirect effect with the multivariate delta method, the results indicate a significant positive indirect effect (β = .023, p < .05), but following the method from Muthén and Asparouhov (2015), the indirect effect does not differs significantly from zero (B = .050, p > .10). The second variable that represents the process 'exposure to opportunities': Perceived provocation, does not seem to be relevant in explaining the unstructured socializing-delinquency relationship. We do not find direct

or indirect effects between this variable, involvement in unstructured socializing and delinquency.

The results are partly in line with Hypothesis 2. We find support for direct effects between involvement in unstructured socializing, perceived temptation and delinquency, but the support for an indirect effect is less robust. We do not find support for associations between the key variables (unstructured socializing and delinquency) and perceived provocation.

Exposure to group processes

The results from Model 2 in Table 2.3 indicate that delinquent reinforcement is positively related to involvement in unstructured socializing (β = .125, p < .01) and to involvement in delinquency (B = .054, p < .05, IRR = 1.055). We find a modest indirect effect of unstructured socializing on delinquency through delinquent reinforcement when calculated with the multivariate delta method (β = .011, p < .10), but not when calculated with the method by Muthén and Asparouhov (2015; B = .042, p > .10).

Model 3 (Table 2.3) allows for direct paths between delinquent reinforcement, delinquent peers and tolerance toward delinquency, as well as for sequential effects. The results from Model 3 indicate that the direct path from delinquent reinforcement to delinquency remains after allowing for these additional paths (B = .054, p < .05, IRR = 1.055), but that the direct path from unstructured socializing to delinquent reinforcement decreases substantially (β = .071, p < .10) and that the *indirect path* of unstructured socializing on delinquency through delinquent reinforcement seems to disappear (β = .007, p > .10). These results suggest that the indirect effect through delinquent reinforcement actually is explained with exposure to delinquent peers, in that involvement in unstructured socializing exposes adolescents to delinquent peers, which exposes them to delinquent reinforcement, which increases the likelihood of involvement in delinquency (sequential effect: β = .005, p < .10). On the other hand, although we find direct paths between delinquent reinforcement and the tolerance measures (rule breaking tolerance, substance use tolerance and offending tolerance), the results do not support sequential mediation of the unstructured socializing-delinquency relationship through delinquent reinforcement and subsequent tolerance toward delinquency.

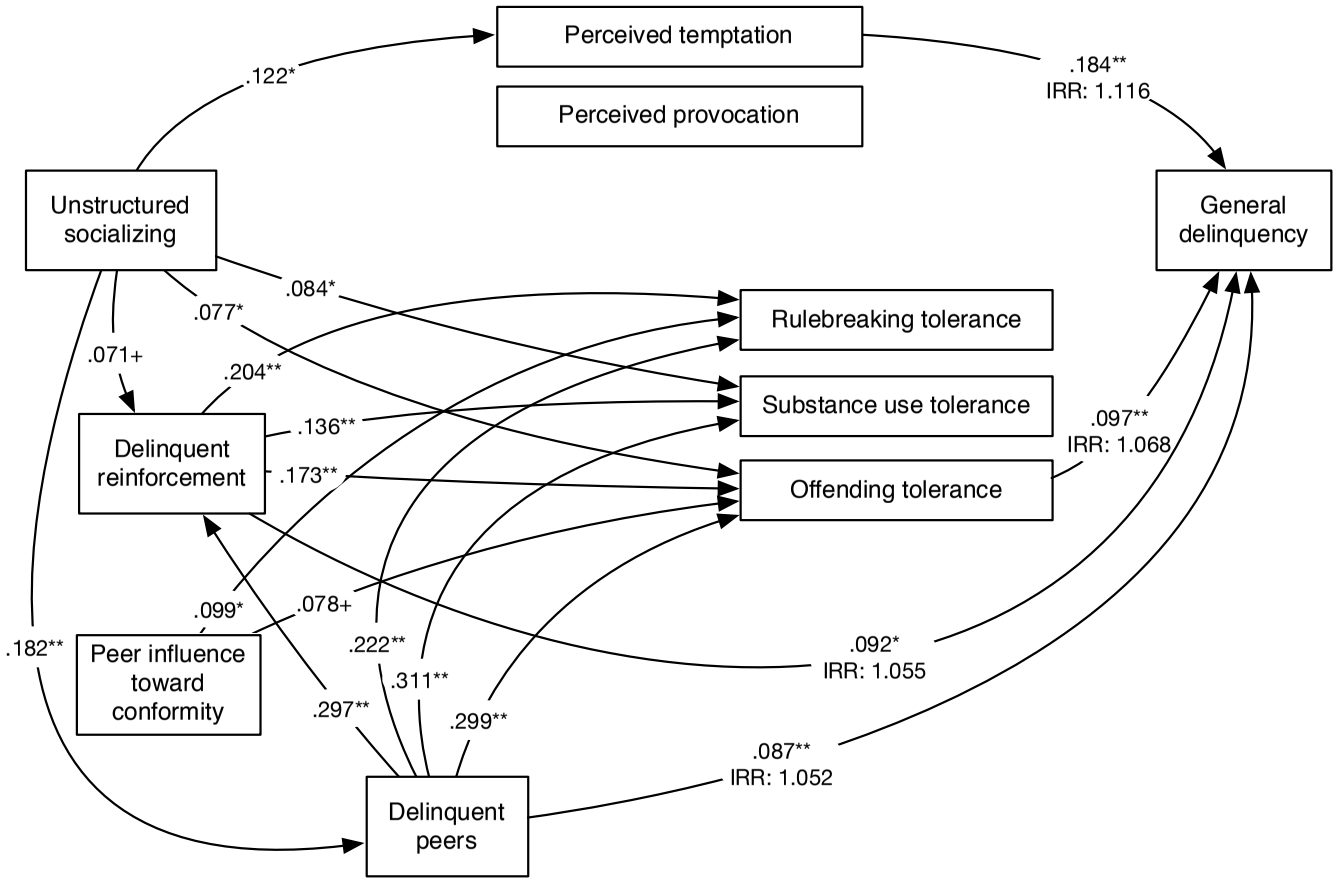

Figure 2.2. Standardized robust maximum likelihood estimates at within-individual level for general delinquency, Model 3. Only significant paths are displayed (+$p < .10$; *$p < .05$; **$p < .01$, two-tailed). Control variables excluded for clarity reasons. For a full presentation of the results, see Table 2.3

The results do not suggest that *peer influence toward conformity* is relevant in explaining the relationship between unstructured socializing and delinquency. Peer influence toward conformity does not seem to be related to unstructured socializing or delinquency at the within-individual level in any of the models. We do find positive relationships between peer influence toward conformity and rule breaking tolerance ($\beta = .099$, $p < .05$) and offending tolerance ($\beta = .078$, $p < .10$), but none of the single-mediator or two-mediator indirect effects that involve peer influence toward conformity differ significantly from zero.

The results for delinquent reinforcement give modest support for Hypothesis 8 (regarding the sequential effect through delinquent peers and subsequent exposure to group processes), but are not in line with Hypothesis 3 (on the indirect effect through group processes) and Hypothesis 7 (concerning the sequential effect through group processes and subsequent tolerance toward delinquency). The results do not suggest the presence of an indirect effect of unstructured socializing on delinquency through peer influence toward conformity.

Increased tolerance toward delinquency

Results from Model 2 (Table 2.3) suggest that involvement in unstructured socializing is, as expected, positively related to rule breaking tolerance ($\beta = .084$, $p < .10$), substance use tolerance ($\beta = .158$, $p < .01$) and offending tolerance ($\beta = .150$, $p < .01$). However, contrary to our expectations, only one of the three tolerance measures is significantly related to general delinquency (offending tolerance: $B = .066$ $p < .01$, IRR = 1.068). Offending tolerance is thus the only one of the tolerance measures that mediates the unstructured socializing-delinquency relationship (indirect effect: $\beta = .015$, $p < .05$).

After adding direct paths between delinquent reinforcement, delinquent peers and tolerance toward delinquency and allowing for serial mediation in Model 3 (Table 2.3), the indirect effect of offending tolerance in the unstructured socializing-delinquency relationship decreases to insignificance ($\beta = .008$, $p > .10$). Furthermore, results from Model 3 indicate that direct relationships are present between the tolerance measures and delinquent reinforcement and between the tolerance measures and delinquent peers. We find modest evidence for a sequential effect through exposure to delinquent

peers and subsequent tolerance toward offending (sequential effect: β = .005, $p < .05$). We do not find support for sequential effects through delinquent peers and subsequent tolerance toward rule breaking or substance use; nor do we find support for sequential effects through delinquent reinforcement or peer influence toward conformity and subsequent tolerance toward offending, rule breaking or substance use.

The results offer partial support for Hypothesis 4 and Hypothesis 6. In line with Hypothesis 4, we find that the unstructured socializing-delinquency relationship is mediated by tolerance toward offending, but not by tolerance toward rule breaking or substance use. However, this mediation is no longer found after allowing for sequential effects through delinquent peers. In line with Hypothesis 6, we find that the indirect effect of offending tolerance occurs partially through exposure to delinquent peers. We do not find support for sequential effects through group processes (delinquent reinforcement and peer influence toward conformity) and subsequent tolerance toward delinquency, as formulated in Hypothesis 7.

Exposure to delinquent peers

As expected, we found a positive direct effect between involvement in unstructured socializing and exposure to delinquent peers (Model 2, Table 2.3: β = .182, $p < .01$) and a positive direct effect from delinquent peers on delinquency (Model 2, Table 2.3: $B = .051$, $p < .01$, IRR = 1.052). Also, we found a positive indirect effect of unstructured socializing on delinquency through delinquent peers (Model 2, Table 2.3: β = .016, $p < .05$), although we have to remark that this effect at the within-individual level is not significantly different from zero when calculated with the method suggested by Muthén and Asparouhov (2015; $B = .061$, $p > .10$). Apart from the 'independent' indirect effect of delinquent peers in the unstructured socializing-delinquency relationship, exposure to delinquent peers also seems to explain the relationship through an increased exposure to delinquent reinforcement (sequential effect from Model 3, Table 2.3: β = .005, $p < .10$) and through shifting attitudes toward offending (sequential effect from Model 3, Table 2.3: β = .005, $p < .05$).

These results are in line with Hypothesis 5 (on the indirect effect through delinquent peers), although the indirect effect at the within-individual

level is less robust, and offer partial support for Hypotheses 6 and 8: The effect of exposure to delinquent peers runs through offending tolerance and delinquent reinforcement, but not through rule breaking tolerance, substance use tolerance or peer influence toward conformity.

Violence, theft and vandalism

To investigate whether the unstructured socializing-delinquency relationship depends on the type of delinquency and to examine whether different processes may be at play for different types of delinquency, all models were repeated with violence, theft and vandalism as dependent variables. The results from these analyses are presented in the supplementary material (Appendices 2F, 2G and 2H, respectively) and briefly described in the remainder of this section. Figures 2.3, 2.4 and 2.5 present the results in a more visual way.

Results from Model 1 (Tables 2F.1, 2G.1 and 2H.1 in the supplementary material) indicate that involvement in unstructured socializing is directly related to theft and vandalism, but not to violence (B = .011, p > .10, IRR = 1.011). An increase of *one hour* in involvement in unstructured socializing is related to an increase of approximately 5.2 percent in theft (B = .051, p < .01, IRR = 1.052) and approximately 2.4 percent in vandalism (B = .024, p < .05, IRR = 1.024) *for the same adolescent*. The magnitudes of all relationships (from unstructured socializing to violence, theft and vandalism) decrease after adding the variables that represent the proposed processes to the model, thus indicating the presence of mediation[8].

While there is no evidence for a direct effect of involvement in unstructured socializing on *violence*, there could be important indirect effects. Indeed, the results from Model 3 in Table 2F.1 (in the supplementary material) indicate that the unstructured socializing-violence relationship is explained by perceived temptation (indirect effect: β = .023, p < .10) and exposure to delinquent peers (indirect effect: β = .021, p < .10). Furthermore,

8 The relationship between involvement in unstructured socializing and theft seemed somewhat stronger when estimated with the 'strict' measure for unstructured socializing. The coefficient for this relationship remained significantly different from zero in Models 2 and 3, where the mediating variables were added.

we found a sequential effect that explained the unstructured socializing-violence relationship through exposure to delinquent peers and a subsequent increased tolerance toward offending (sequential effect: β = .007, $p < .10$). Differences between the model for violence (Figure 2.3) and the model for general delinquency (Figure 2.2) are that the path from delinquent reinforcement to violence appears to be irrelevant and that the paths from perceived temptations ($B = .114$, $p < .01$, IRR = 1.121), delinquent peers ($B = .069$, $p < .05$, IRR = 1.071) and offending tolerance ($B = .083$, $p < .05$, IRR = 1.087) to *violence* appear to be somewhat stronger than to *general delinquency* (respectively $B = .110$, $p < .01$, IRR = 1.116; $B = .051$, $p < .01$, IRR = 1.052 and $B = .066$, $p < .01$, IRR = 1.068). Furthermore, violence is the only examined type of delinquency for which 'perceived provocation' is a significant predictor ($B = .056$, $p < .05$, IRR = 1.058).

Findings from Model 3 for *theft* (Table 2G.1 in the supplementary material) indicate that the relationship between involvement in unstructured socializing and theft is explained with an increased tolerance toward substance use (indirect effect: β = .023, $p < .10$) and exposure to delinquent peers (indirect effect: β = .035, $p < .05$). Apart from the independent indirect effects through these mediators, we also found a sequential effect through delinquent peers and subsequent tolerance toward substance use (sequential effect: β = .016, $p < .05$). Comparing the findings for theft (Figure 2.4) to that of general delinquency (Figure 2.2) suggests that exposure to delinquent reinforcement ($B = .077$, $p < .10$, IRR = 1.080) and to delinquent peers ($B = .112$, $p < .01$, IRR = 1.119) are more relevant in explaining theft, and that perceived temptations are less important ($B = .092$, $p < .10$, IRR = 1.096). The most striking difference, however, is that theft is predicted by respondents' tolerance toward *substance use*, whereas the other investigated types of delinquency are predicted by respondents' tolerance toward *offending*. The path from substance use tolerance toward theft is also particularly strong ($B = .181$, $p < .01$, IRR = 1.198), compared to the other paths to theft.

The relationship between involvement in unstructured socializing and *vandalism* (Table 2H.1, Model 3) is mainly explained with perceived temptations (indirect effect: β = .028, $p < .05$). An important difference between this model (Figure 2.5) and the models for the other types of delinquency (Figures 2.2, 2.3 and 2.4) is that exposure to delinquent peers does not seem to have an independent indirect effect in the relationship

between unstructured socializing and vandalism (β = .004, $p > .10$), only a sequential effect though tolerance toward offending (sequential effect: β = .005, $p < .10$). Findings in Table 2H.1 (in the supplementary material) and Figure 2.5 indicate that the paths from delinquent reinforcement and delinquent peers to vandalism are not significantly different from zero. Furthermore, the path from perceived temptations to vandalism (B = .136, $p < .01$, IRR = 1.146) is much stronger than the path from perceived temptations to the other investigated types of delinquency.

In summary, we found that the explanatory processes differed between the different types of delinquency. That being said, some of the processes were relevant for most of the relationships. Exposure to opportunities (to temptations rather than provocations; Hypothesis 2), exposure to delinquent peers (Hypothesis 5) and tolerance toward delinquency (Hypothesis 4) seemed relevant in most relationships, regardless of the type of delinquency. Also, the relevance of the sequential effect through delinquent peers and subsequent tolerance toward delinquency was fairly consistent across the different types of delinquency (Hypothesis 6). We found support for a sequential effect through delinquent peers and subsequent delinquent reinforcement for vandalism at the between-individual level, but not at the within-individual level (Hypothesis 8). None of the models offered support for Hypothesis 3 (on the indirect effect of group processes) and Hypothesis 7 (on the sequential effect through group processes and subsequent tolerance toward delinquency).

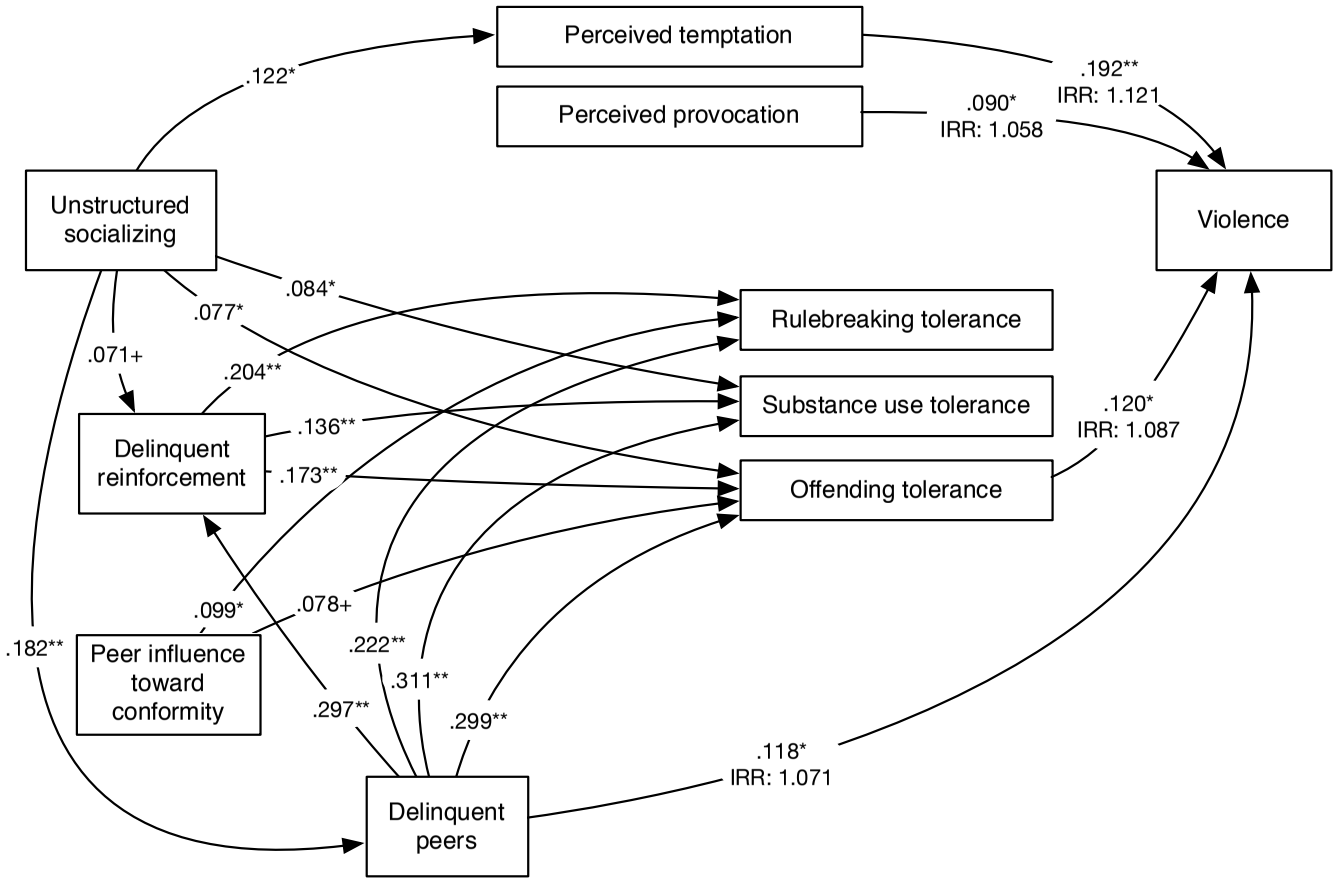

Figure 2.3. Standardized robust maximum likelihood estimates at within-individual level for violence, Model 3. Only significant paths are displayed (+$p < .10$; *$p < .05$; **$p < .01$, two-tailed). Control variables excluded for clarity reasons. For a full presentation of the results, see Table 2F.1 in the supplementary material

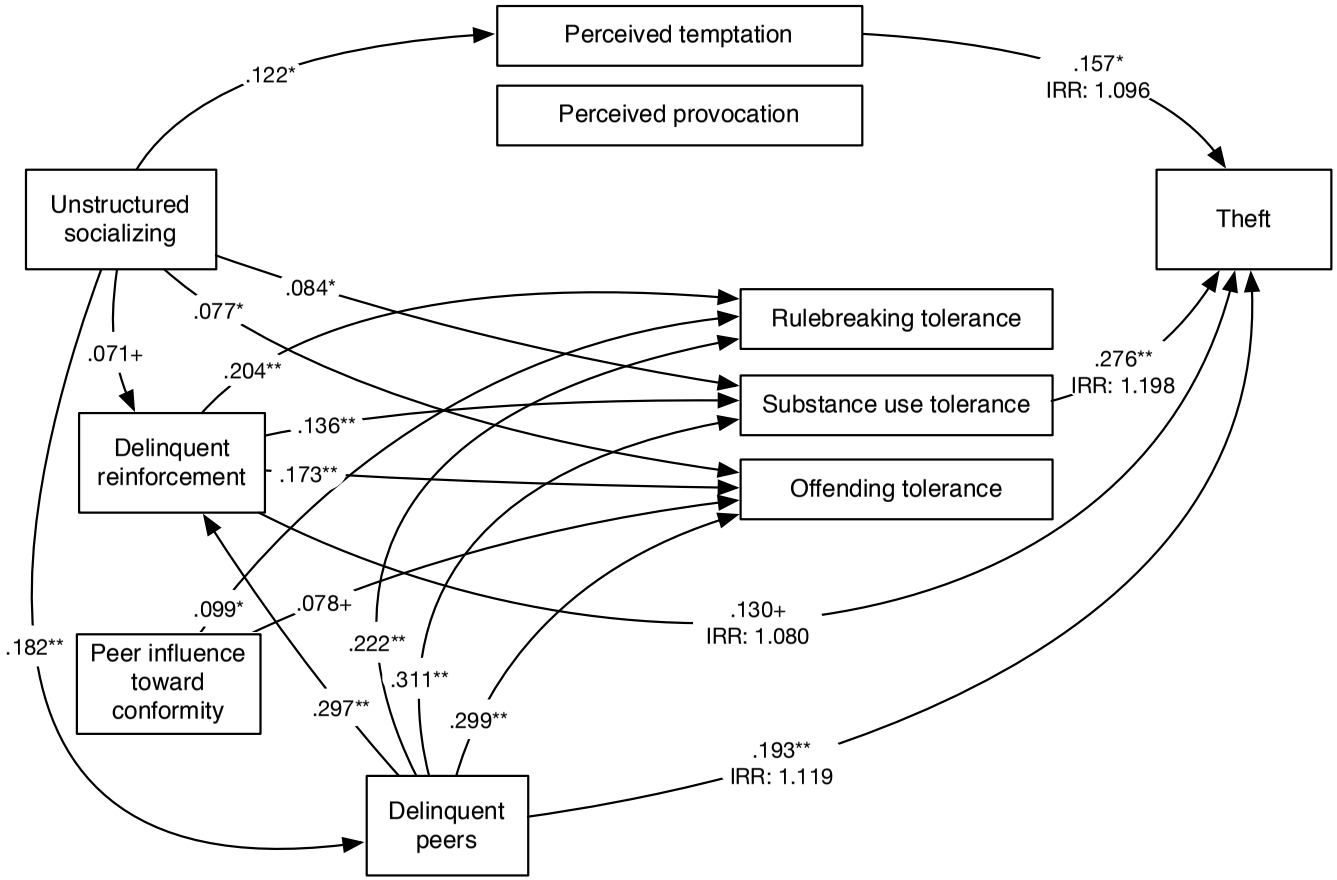

Figure 2.4. Standardized robust maximum likelihood estimates at within-individual level for theft, Model 3. Only significant paths are displayed (+$p < .10$; *$p < .05$; **$p < .01$, two-tailed). Control variables excluded for clarity reasons. For a full presentation of the results, see Table 2G.1 in the supplementary material

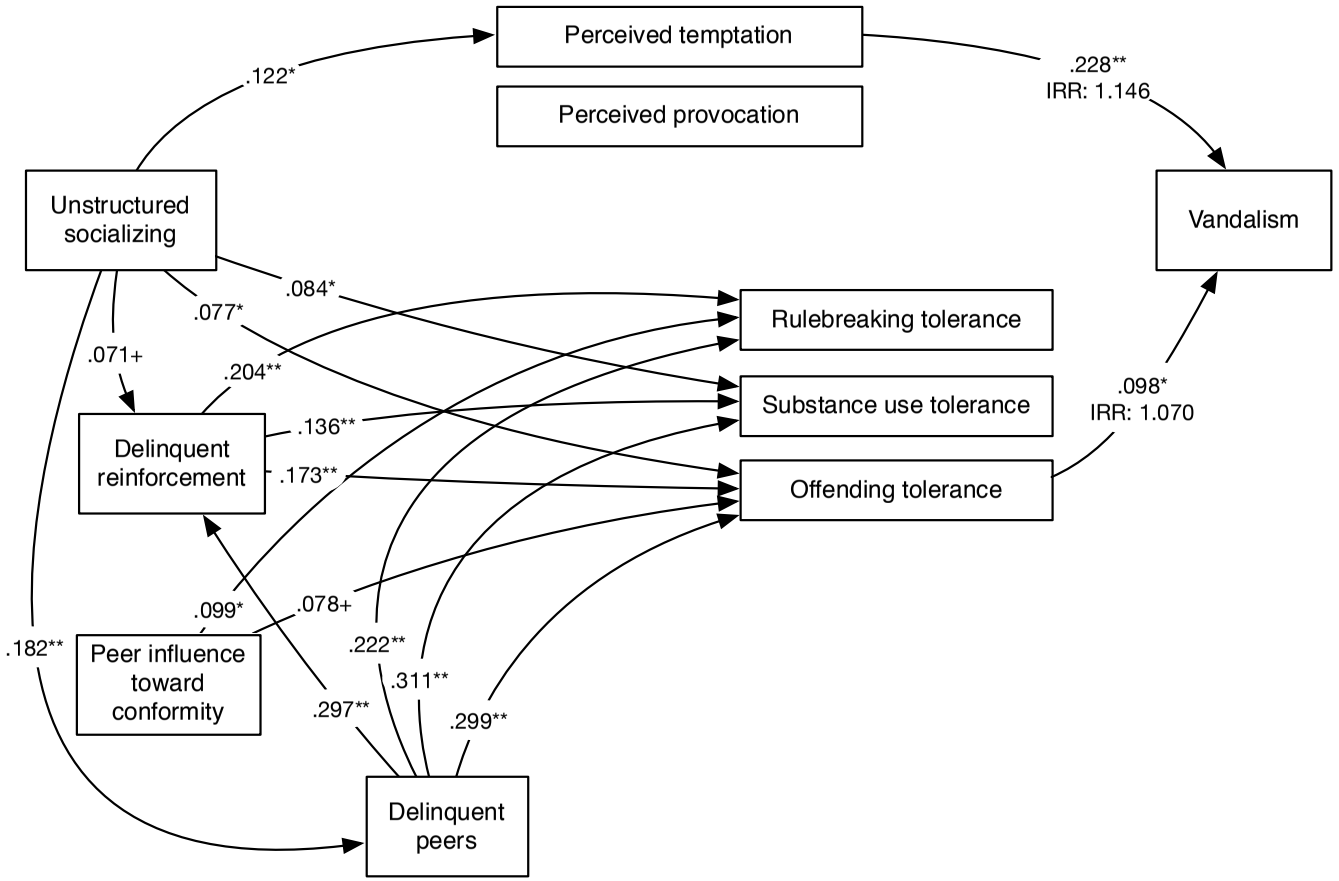

Figure 2.5. Standardized robust maximum likelihood estimates at within-individual level for vandalism, Model 3. Only significant paths are displayed (+$p < .10$; *$p < .05$; **$p < .01$, two-tailed). Control variables excluded for clarity reasons. For a full presentation of the results, see Table 2H.1 in the supplementary material

Discussion and conclusion

Routine activity patterns and lifestyles, in particular unstructured socializing, have been associated with individual delinquency in many studies. The empirical support for the association between unstructured socializing and delinquency is quite convincing (e.g., Osgood and Anderson, 2004; Svensson and Oberwittler, 2010; Vazsonyi et al., 2002), but until now no study has elaborated on this important relationship by empirically investigating different processes that may be responsible for the relationship. The purpose of this study was to investigate four potential explanatory processes: Exposure to opportunities for delinquency; exposure to group processes; increased tolerance toward delinquency; and exposure to delinquent peers.

Our findings suggest that involvement in unstructured socializing is related to delinquency for at least four reasons: 1) Adolescents experience temptations (perceive opportunities) for delinquency in situations of unstructured socializing; 2) adolescents are exposed to delinquent peers in situations of unstructured socializing; 3) which subsequently increases their exposure to delinquent reinforcement 4) and their tolerance toward offending. Some of these indirect effects are more substantial than others and the effects differ somewhat for the three types of delinquency that were investigated. We found relationships between unstructured socializing and theft and vandalism, but the relationship with violence was less robust. The relationship between unstructured socializing and vandalism was best explained with exposure to temptations (opportunity), the relationship with theft was best explained with exposure to delinquent peers and the relationship with violence was best explained with both of those processes, although other processes were also relevant.

Contribution to theory

The findings of the current study contribute to the increasing body of literature on the relationship between *unstructured socializing* and adolescent delinquency. Several empirical studies have shown that adolescents, who are more often involved in unstructured socializing, are more likely to be involved in delinquency. This relationship has proven to be robust in longitudinal tests (Osgood et al., 1996), at the situational level (Bernasco et al., 2013b) and

in cross-national studies (Vazsonyi et al., 2002). Although some scholars have suggested processes that might explain the relationship (Mahoney and Stattin, 2000; Osgood et al., 1996), or even investigated mediation of the relationship by variables that represent the proposed processes (Agnew and Peterson, 1989; Bernburg and Thorlindsson, 2001; Boman, 2013; Hawdon, 1996; Hughes and Short, 2014), we are unaware of previous studies that empirically compared different explanatory processes. The current study expanded the set of investigated explanatory processes by incorporating explanations that focus on attitude transference and exposure to delinquent peers in addition to 'opportunities' and 'group processes'. Furthermore, the current study examined sequential effects derived from social learning theory and the situational inducement perspective. By expanding the theory and testing various explanatory processes, the current study brings us one step closer to disentangling the complex amalgam of opportunities and peer influence processes underlying the relationship between unstructured socializing and delinquency.

More generally, the findings of the current study provide further insight in the processes through which routine activities may be linked to delinquent behavior and thus contributes to a better understanding of *routine activity theory*. According to routine activity theory, "illegal activities must feed upon other activities" (Felson and Cohen, 1980: 393). The current study elaborates how delinquency 'feeds upon' involvement in unstructured socializing (Osgood et al., 1996) and integrates the routine activity approach with insights from social learning theory and differential association theory. Integrating these theories deepens the notion on how legal, regular activities may result in increased risks for delinquency. Our findings give reason to believe that a situation of 'unstructured socializing' is not only a setting that increases opportunity for crime, but also a situation that offers a certain social context for behavior. A situation in which peers are present and authority figures are absent opens the gates to several processes of peer influence. This broader perception of unstructured socializing is in line with earlier studies that explained the relationship between typical leisure activities and delinquency with Hirschi's social control theory (Hawdon, 1996) or subcultural deviance theory (Agnew and Petersen, 1989). Future research is needed to determine whether principles from social learning theory are also relevant in explaining relationships between other routine activities and

individual behavior. Specifically, social learning processes may explain the relationship between involvement in structured leisure activities and positive developmental outcomes for adolescents (Eccles et al., 2003).

It is important to note, however, that exposure to temptations, or 'opportunities', remains an independent path explaining the relationship between unstructured socializing and delinquency after taking into account several peer influence processes. We argue that this path represents the risk associated with factors that are more or less non-peer related: The fact that adolescents are not under supervision of authority figures and that the activity they participate in is unstructured (which leaves more time and thus opportunity for other activities such as delinquency; Osgood et al., 1996).

Further, our findings indicate that routine activities may result in different types of delinquency through different processes. Vandalism seems to be especially opportunity driven, as its relationship with unstructured socializing is predominantly explained with exposure to temptations. The relationships between unstructured socializing and violence and theft, on the other hand, are (also) explained with exposure to delinquent peers and their normative influence. These findings contribute to a further understanding of previous work, which indicated that involvement in unstructured socializing was related to some types of delinquency, but not others (Miller, 2013; Müller, Eisner and Ribeaud, 2013).

The current study contributes to literature on the *social learning theory* by providing empirical evidence for pathways that have been explicated in that theory. The theoretical framework in the current study incorporates three processes and two sequential effects that were derived from social learning theory: Exposure to delinquent peers, exposure to group processes (delinquent reinforcement in particular), increased tolerance toward delinquency and sequential effects through delinquent peers and subsequent delinquency tolerance, and through reinforcement and subsequent delinquency tolerance. In line with social learning theory, we found that all three processes (exposure to delinquent peers, exposure to delinquent reinforcement and increased delinquency tolerance) were relevant in explaining the unstructured socializing-delinquency relationship, although only one of them had an independent explanatory effect after the sequential paths were allowed for in the model (exposure to delinquent peers). Furthermore, we found support for a sequential effect of unstructured socializing on delinquency through

exposure to delinquent peers and a subsequent increased tolerance toward offending, which is also in line with social learning theory (e.g., Akers, 1998; Akers and Jensen, 2006; Akers et al., 1979). The presence of this sequential effect indicates that individuals internalize attitudes that are acquired from their social environment. Our results were fairly consistent across the different types of delinquency (violence, theft and vandalism) and provided stronger support for the proposed pathway than was found in previous studies (Megens and Weerman, 2012; Reed and Rose, 1998; Reed and Rountree, 1997). For a second sequential effect derived from social learning theory we did not find support: Exposure to delinquent reinforcement did not significantly affected delinquency through shifting attitudes toward delinquency. This is contrary to the sixth statement of the social learning theory as formulated by Burgess and Akers (1966).

The lack of support for a sequential effect through delinquent reinforcement and subsequent attitude shifts can be interpreted as supportive of short-term processes where adolescents adjust their behavior to that of their peers without changing their own attitudes. Such processes are in the conformity literature referred to as 'public compliance' and more elaborately described by Warr (2002). The presence of short-term peer influence processes in situations of unstructured socializing is further supported by our findings regarding a sequential path through exposure to delinquent peers and subsequent exposure to delinquent reinforcement. The support for this path is consistent with the idea of present peers as an 'appreciative audience' (Osgood et al., 1996) and with the situational inducement perspective of Briar and Piliavin (1965).

Thus, our findings provide evidence that both short-term processes (of exposure to delinquent reinforcement as well as exposure to temptations) and long-term processes (of acquiring attitudes from the social environment) explain the relationship between involvement in unstructured socializing and adolescent delinquency.

Important to point out here, is that *delinquent reinforcement* of peers may work short-term as well as long-term in promoting delinquent behavior. Reinforcement affects delinquency in the long-term if social rewards provided by peers (in the form of positive reinforcement) stimulate adolescents' tolerance toward delinquency. We do not find support for the proposed long-term effects through delinquent reinforcement, as exposure

to delinquent reinforcement does not seems to stimulate delinquent behavior through increased tolerance toward delinquency. On the other hand, peer reinforcement can be viewed as a situational inducement that has short-term influence on delinquent behavior. We *do* find evidence for the proposed short-term effects of peer reinforcement, in the form of a sequential effect through delinquent peers and subsequent exposure to delinquent reinforcement.

Our findings have implications for *studies on the interaction between individual traits such as impulsivity or self-control and environmental immediate cues or 'opportunity'*, for which unstructured socializing is often applied as proxy (Hay and Forrest, 2008; Simons et al., 2014; Thomas and McGloin, 2013; Wikström et al., 2012a). The expected direction of this interaction is that individuals with low self-control or high impulsivity will be more likely to respond to situational cues provided in 'crime conducive' situations such as unstructured socializing. For example, Thomas and McGloin (2013) argued that adolescents who rely predominantly on the 'slow' cognitive system (adolescents who are low impulsive) are more likely to respond to long-term normative peer processes, whereas adolescents who rely predominantly on the 'fast' cognitive system (adolescents who are highly impulsive) are likely to be influenced by short-term situational peer process present in situations of 'informal socializing with peers' (a measure for unstructured socializing). The problem with using unstructured socializing as a proxy for 'situational peer processes' or 'opportunity' in studying these interactions is that the effect of unstructured socializing on delinquency is *not solely situational.* As indicated by the current study, involvement in unstructured socializing has also long-term effects on delinquency through exposure to delinquent peers and the adoption of delinquency favoring attitudes from those peers. Involvement in unstructured socializing thus potentially affects the behavior of *all* individuals, regardless of their level of self-control or impulsivity. As a matter of fact, no activity may have solely situational effects on behavior if one operationalizes it at the individual level as 'general involvement in that activity' and relate it to 'general involvement in delinquent behavior' of that individual. Socialization occurs in a chain of situational processes: Individuals who are repeatedly exposed to the same situational influences may experience influences on their long-term development and future behavior.

Based on these arguments and the findings of the current study, we suggest to expand our thinking about unstructured socializing and other routine activities by acknowledging that (leisure) activities are situations that provide opportunities for delinquency (or positive behavior) and at the same time form a social context for such behavior. We argue that the situations in which adolescents spent their leisure form a *behavior setting* (Barker, 1968) and should be further investigated as such. Behavior settings are "extra-individual units with great coercive power over the behavior that occurs within them" (Barker, 1968: 17). They incorporate 'standing behavior patterns' (extra individual behavior phenomena) that explain why adolescents would conduct behavior in a setting of unstructured socializing that they would not conduct in another entity of the ecological environment, such as in the classroom or at home with their parents (Barker, 1987; Barker et al., 1978; Barker and Wright, 1955). Behavior objects in unstructured socializing settings are the present peers, present others who are not directly involved in the activity (e.g., store manager of the supermarket where they hang out in front of) and elements of the physical environment where unstructured socializing occurs (e.g., a nearby trash bin). The peers are thus part of the setting; they are "interchangeable and replaceable" and contribute to an ecological atmosphere that persists after they leave the setting (Barker, 1968). Criminology may benefit from a behavioral setting approach in its understanding of how environments influence individual behavior. Although the measurement and operationalization of behavior settings has been rather difficult and expensive in the past (Scott, 2005), it becomes increasingly feasible with the emergence of (space) time diary methods (Chapter 3, appeared as Hoeben et al., 2014; Wikström, Treiber, and Hardie, 2012c). Therefore, we believe that consideration and further scrutiny of the concept of behavior settings may be very beneficial in future research on the intersection of routine activities, social relations and (delinquent) behavior. More research is needed to identify conditions that specify the 'risk' of an activity, over and above the nature of the activity itself and of the people who are present.

Limitations and future research

The extensive information about daily activities of the SPAN respondents derived from the space-time budget interviews, and the rich pool of items on potential mediating variables made the SPAN data particularly useful for examining our research question. Nevertheless, the current study has limitations that will be addressed in this paragraph.

First, the longitudinal data incorporate two moments of observation with a time-lag of approximately two years in between. This time-lag may be too short to study development among adolescents, but may be too long to study the explanatory processes from a situational perspective. To truly fathom the relevance of the different processes, the current study needs to be replicated with situational data as well as with data that cover a longer part of adolescence (see for example the study of Lam, McHale, and Crouter, 2014).

Second, the operationalization of the processes could be improved upon in future studies. 'Exposure to opportunities for delinquency' was operationalized with perceived temptations and provocations, whereas the concept of 'opportunity' is much broader and might require additional information on, for example, deterrence or the presence of guardians or place managers (Felson, 1995; Spano and Freilich, 2009). Absence or presence of 'delinquent reinforcement' (the first variable representing 'exposure to group processes') in situations of unstructured socializing could be more accurately determined, for example in experimental studies that focus on adolescents' reactions to each other's deviant talk (see Dishion et al., 1996; Patterson, Dishion, and Yoerger, 2000). The construct of 'peer influence toward conformity' (the second variable representing 'exposure to group processes') was expected to relate positively to delinquency, but did not significantly associate with any of the dependent variables (with a negative tendency for associations with general delinquency and violence). This unexpected result may be due to the ambiguous nature of our measure of group conformity: If the group is prosocial, it will supposedly evoke conventional behavior, whereas an antisocial group will evoke deviant behavior. The construct also has a relatively low Cronbach's alpha and may be improved when more items are added, as it now consists of three items. We suggest the 'susceptibility to peer influence' scale from Meldrum, Miller, and Flexon (2013) as an improved measure. The 'tolerance toward

delinquency' measures (rule breaking tolerance, substance use tolerance and offending tolerance) could be extended with items from Bandura's moral disengagement scale (Bandura et al., 1996). Furthermore, the current study applies a conventional measure for 'exposure to delinquent peers', in which respondents are asked about behavior of their friends. Studies on network-generated data, in which friends report about their own behavior, showed that conventional measures overestimate the association between peer delinquency and adolescents' delinquent behavior (Weerman and Smeenk, 2005; Young et al., 2015), which implies that the mediation effect of 'exposure to delinquent peers' may be overestimated in the current study. Because of the imperfect operationalization of the explaining processes, the results of the current study should be interpreted as a first step toward elaborating the unstructured socializing-delinquency relationship. Further exploration may benefit from improvement of the measures.

The current study did, of course, not examine all associations that are relevant to the unstructured socializing-delinquency relationship. There are at least a few associations that need to be scrutinized in future research. First, the current study focused on the processes *through which* involvement in unstructured socializing influences delinquency behavior, rather than on the *conditions under which* unstructured socializing relates to delinquency. Several processes of *moderation* may be relevant in the proposed framework are. For example, the unstructured socializing-delinquency relationship may be stronger if delinquent peers are present (Haynie and Osgood, 2005; Svensson and Oberwittler, 2010), or if adolescents have tolerant attitudes toward delinquency. One can also think of moderation of one of the direct paths in the model: The path from unstructured socializing to perceived temptation may be stronger when adolescents perceive delinquent reinforcement. Additionally, previous studies have found that demographics (e.g., gender, age, education) and other individual characteristics (e.g., self-control, moral emotion) moderate the unstructured socializing-delinquency relationship (Augustyn and McGloin, 2013; Hay and Forrest, 2008; Wikström and Svensson, 2008).

Second, further research is needed to investigate the extent to which involvement in unstructured socializing mediates the influence of other predictors on delinquency, such as parental monitoring (Osgood and Anderson, 2004), age, sex or socioeconomic status (Osgood et al., 1996).

Third, whereas the current study proposes involvement in unstructured socializing as a cause of delinquent behavior, exposure to delinquent peers and tolerance toward delinquency, other studies have indicated opposite directions of these or similar relationships (e.g., Bernburg and Thorlindsson, 2001; Müller, Eisner, and Ribeaud, 2013; Vásquez and Zimmerman, 2014). The current study leaves out of account processes such as social selection, where delinquent behavior affects the future selection of friends, and rationalization, where delinquent behavior evokes neutralization processes that affect attitudes toward delinquency (Reed and Rose, 1998; Reed and Rountree, 1997).

We considered the examination of reciprocal effects, moderation effects and predictors of unstructured socializing to be beyond the scope of this study, but they may be fruitful directions for future studies.

Concluding remarks

This study responded to the call from Agnew (1995: 364) for "an explicit focus on motivational processes" that explain why predictors relate to delinquent behavior. In previous empirical studies, we have come to know 'involvement in unstructured socializing' as a powerful predictor of adolescent delinquency. However, as Agnew (1995) argued, only the investigation of motivational processes will help us understand *why* these and other factors are related to delinquent behavior. The current study strongly suggests that involvement in certain activities evokes situational processes (as argued in routine activity theory) as well as socialization processes (as elaborated in social learning theory) that offer short-term as well as long-term explanations for delinquent behavior. Replication of our findings and further exploration of explanatory processes are necessary to obtain more information on the intriguing association between 'risky' leisure activities and adolescent delinquency.

Appendices Chapter Two

Appendix 2A. Items measuring variables representing the proposed processes

Supplementary material

(enclosed in a separate document available from the author):

Appendix 2B. Factor loadings and alpha reliabilities for delinquency
Appendix 2C. Factor loadings and alpha reliabilities for dimensions of the explanatory processes
Appendix 2D. Zero-order covariances and correlations
Appendix 2E. Results at between-individual level general delinquency
Appendix 2F. Results for violence
Appendix 2G. Results for theft
Appendix 2H. Results for vandalism
Appendix 2I. Results with strict definition of 'unstructured activity'

Appendix 2A

Table 2A.1. Items measuring variables representing the proposed processes

Processes	Variables	Items
Exposure to opportunities for delinquency	Perceived temptation	*When was the last time you felt tempted to...* Steal from a shop/ destroy or damage something/ hit someone/ break into a car to steal something. *Last week/ last month/ last year/ longer than a year ago/ never been tempted.*
	Perceived provocation	*How often...*are you being scoffed at/ do people start an argument or quarrel with you/ are you being provoked into a fight/ do you feel that others disrespect you/ do people treat you badly. *Never/ sometimes/ frequently (every month)/ often (every week or every day).*
Exposure to group processes	Delinquent reinforcement	When I would do something that is not allowed, my friends find it quite funny/ When I'm with friends I break the rules more often than when I'm alone/ I will stick with my friends, even if they do something dangerous/ If my friends would get into contact with the police, I would lie for them to protect them. *YES!/ yes/ yes or no/ no/ NO!*
	Peer influence toward conformity	Sometimes, my friends make me do things that I don't really want to do/ My friends would find it uncool when there is something that I don't dare to do/ My friends think it's OK when I don't dare or want to do something. *YES!/ yes/ yes or no/ no/ NO!*
Increased tolerance toward delinquency	Rule breaking tolerance	*How bad do you think it is when someone of your age does the following:* Bicycling through red light/ skip homework/ skip school without excuse/ lie, disobey or talk back to teachers/ skateboarding where it is not allowed/ bully a classmate because of how he or she dresses/ steal a pencil from a classmate. *Very bad/ bad/ a little bad/ not bad at all.*
	Substance use tolerance	*How bad do you think it is when someone of your age does the following:* Smoke cigarettes/ get drunk on a Friday evening/ smoke soft drugs. *Very bad/ bad/ a little bad/ not bad at all.*
	Offending tolerance	*How bad do you think it is when someone of your age does the following:* Paint graffiti on a house wall/ smash a street light/ steal a CD from a shop/ break into a building to steal/ use a weapon or force to get money or things from another young person. *Very bad/ bad/ a little bad/ not bad at all.*
Exposure to delinquent peers	Delinquent peers	*How often do your friends...*Skip school without excuse/ get drunk/ use drugs/ steal something from others or from shops/ destroy things/ beat up or get into fights with others. *(Almost) never/ sometimes/ often (each month)/ very often (each week).*