ALEXANDER ENGSTRÖM

EVERYDAY LIFE, CRIME, AND FEAR OF CRIME AMONG ADOLESCENTS AND YOUNG ADULTS

MALMÖ
UNIVERSITY

**EVERYDAY LIFE, CRIME, AND FEAR OF CRIME AMONG
ADOLESCENTS AND YOUNG ADULTS**

Malmö University
Health and Society, Doctoral Dissertation 2021:2

© Copyright Alexander Engström 2021
Photo by Neven Krcmarek on Unsplash
ISBN 978-91-7877-178-3 (print)
ISBN 978-91-7877-179-0 (pdf)
ISSN 1653-5383
DOI 10.24834/isbn.9789178771790
Holmbergs, Malmö 2021

ALEXANDER ENGSTRÖM
**EVERYDAY LIFE, CRIME,
AND FEAR OF CRIME AMONG
ADOLESCENTS AND YOUNG
ADULTS**

Malmö University, 2021
Faculty of Health and Society
Department of Criminology

This publication is also available at:
mau.diva-portal.org

To my family

CONTENTS

ABSTRACT	9
LIST OF PAPERS	11
1. INTRODUCTION	13
Aim	14
2. BACKGROUND	17
Chapter outline	17
Theoretical framework	17
Lifestyle-routine activity theory	18
Lifestyle-exposure theory	18
Routine activity theory	20
The use of theory in this dissertation	21
The concept of lifestyle and routine activities	22
The importance of environmental settings	23
Victimisation, offending, and fear of crime	24
Victimisation and offending	24
Fear of crime	25
Studying everyday life	27
Issues when studying lifestyle and routine activities	27
Shortcomings of traditional surveys	29
Alternative methodological approaches	31
3. METHODS	35
Chapter outline	35
Data	35
MINDS	35
The STUNDA project	37

Systematic literature review	40
Analytical approach	40
Ethical considerations	42
4. FINDINGS	45
Chapter outline	45
Lifestyle/routine activities, crime, and fear of crime.....	45
Victims, offenders, and victim-offenders.....	45
Monthly, daily, and momentary fear of crime.....	47
Studying the dynamics of everyday life	48
Conceptualising lifestyle and routine activities.....	48
Experience methods and fear of crime.....	49
5. DISCUSSION	55
Chapter outline	55
Crime and fear of crime in everyday life.....	55
Different roles associated with crime involvement	55
Lifestyle/routine activities and fear of crime	56
Studying crime and fear of crime in everyday life.....	58
Measuring lifestyle/routine activities.....	58
Experience methods and experiential fear of crime	59
Contributions and implications	61
Contributions to theory	61
Methodological contributions.....	64
Policy implications	65
Limitations	66
Samples	66
Variables.....	67
Analytical procedures	67
Experience methods.....	67
Future directions.....	68
POPULÄRVETENSKAPLIG SAMMANFATTNING.....	71
ACKNOWLEDGEMENTS	75
REFERENCES	77
ORIGINAL PAPERS I-IV	87

ABSTRACT

Drawing on lifestyle-routine activity theory, this dissertation explores associations between everyday life, crime, and fear of crime among adolescents and young adults. It also examines the operationalisation of the concepts of lifestyle and routine activities, and explores the use of experience methods, via a smartphone application named STUNDA, to collect data about everyday life. Of the four studies conducted, Study I shows that different specific lifestyle measures are of varying relevance for victims, offenders, and victim-offenders, which indicates that no single universal lifestyle feature is of relevance for all outcomes studied. The findings from Study II reveal that spending time with friends in the city-centre is associated with lower levels of fear of crime across months, days, and moments. However, other associations between everyday life variables and fear of crime are inconsistent across these reference periods. Study III, a systematic review of the literature, shows that measures of lifestyle and routine activities differ in the frequency with which they are used in studies on interpersonal victimisation and offending. Illegal activities are often used as lifestyle/routine activity measures in studies on victimisation while unstructured and peer-oriented activities dominate in studies on offending. However, the measures used in the included studies are diverse, which indicates that researchers use a wide range of activities that are intended to measure lifestyle/routine activities. The final paper, Study IV, explores fear of crime in relation to moments of everyday life and finds that specific features of settings, such as being in semi-public and public spaces and on public transport, increase the odds for experiencing fear of crime.

The overall conclusions of the studies point to methodological and theoretical directions for future research. First, research in the field of lifestyle-routine activity theory needs to consider specific and potentially different activities when examining victimisation, offending, and the overlap between these two outcomes. Further, fear of crime research must consider different reference periods, such as months, days and moments, since fear may not only be defined as a more stable trait-like phenomenon but

also as a momentary and transitory experience in everyday life. The types of measures used to represent everyday life also require consideration, particularly in terms of the inclusion of lifestyle/routine activity measures that are actually related to criminogenic exposure. For theory more specifically, the implications of the findings point to an overall confirmation of the view that exposure to various environmental circumstances is associated with crime and fear of crime. However, across all of the studies conducted, the findings point to potential weaknesses of the theory. In particular, the lack of an elaborated perspective on individual traits and characteristics limits the explanatory scope of lifestyle-routine activity theory. For instance, people with similar lifestyles still vary in terms of their victimisation, offending, and fear of crime, which necessitates the inclusion of additional individual-level factors that could explain these variations. Future research must thus either modify lifestyle-routine activity theory or open up for other theoretical perspectives that provide a more holistic approach to understanding the role of both environmental and individual factors when studying everyday life, crime, and fear of crime.

LIST OF PAPERS

- I. Engström, A. (2018). Associations between risky lifestyles and involvement in violent crime during adolescence. *Victims & Offenders*, 13(7), 898–920.
- II. Engström, A., & Kronkvist, K. (2021). *The relationship between lifestyle-routine activities and fear of crime across months, days, and moments*. Manuscript.
- III. Engström, A. (2021). Conceptualizing lifestyle and routine activities in the early 21st century: A systematic review of self-report measures in studies on direct-contact offenses in young populations. *Crime & Delinquency*, 67(5), 737–782.
- IV. Engström, A., & Kronkvist, K. (2020). *Examining experiential fear of crime using STUNDA: Findings from a smartphone-based experience methods study*. Manuscript submitted for publication.

Papers II and IV were written in collaboration with Karl Kronkvist.

1. INTRODUCTION

Offenders commit crimes, victims are victimised, and individuals react to crime within the boundaries of what can be defined as everyday life. The intersection of everyday life and crime-related outcomes such as offending, victimisation, and fear of crime is therefore an important theme in criminological research. However, ‘everyday life’ is a wide-ranging concept, which makes it necessary to limit which aspects of life are of importance to the phenomena under study. In this regard, theory may provide guidance and lifestyle-routine activity theory constitutes one viable option (Cohen & Felson, 1979; Hindelang et al., 1978). This merger of two similar theories emphasises that the routine activities of everyday life expose people to opportunities for victimisation and offending (McNeeley, 2015). Although it is less common, the same theoretical approach can also be applied to fear of crime, since routine activities are associated with at least some level of fear (e.g. Lee & Hilinski-Rosick, 2012; Mesch, 2000).

Despite being well-researched, there are some aspects of lifestyle/routine activity research that remain less well-developed and somewhat under-studied. Three broad issues are of particular relevance here. First, it is common practice to treat victims and offenders as mutually exclusive groups. However, there may be different associations between lifestyle/routine activities and involvement in crime depending on whether one is ‘only’ a victim or an offender, or whether one is a victim-offender (e.g. Mustaine & Tewksbury, 2000). Categorising individuals as either victims or offenders thus neglects those who belong to both groups but who may in reality constitute a large proportion of all crime-involved individuals (Jennings et al., 2012).

Second, fear of crime is predominantly studied as a stable, generalised individual belief or feeling (for a discussion, see Farrall et al., 2009). However, even those who have a higher tendency to experience fear of crime are probably not always frightened regardless of the type of circumstances to which they are exposed in their everyday lives. Indeed, a growing body of research indicates that when methods are used that allow for the measurement of variation in fear over shorter periods of time, there is substantial

variability within individuals over time and in relation to different environmental circumstances (see Solymosi et al., 2020). This highlights that fear of crime needs to be studied using methodologies that capture life as it is lived.

Third, there is much confusion and ambiguity in the research on lifestyle-routine activity theory regarding the two core theoretical concepts: lifestyle and routine activities (e.g. Pratt & Turanovic, 2016; Tewksbury & Mustaine, 2010). This indicates a need to examine how researchers operationalise these concepts and how they use them in relation to different outcomes.

Returning to the broad notion that crime is embedded in everyday life, all these issues relate to a wider problem associated with the study of everyday life, crime, and fear of crime: which of all the seemingly infinite aspects of everyday life are relevant and how should they be studied? Thus, there are a number of central theoretical and methodological questions in this field that it is important to explore further: the different roles associated with crime involvement, alternative perspectives on fear of crime, and measurements of lifestyle/routine activities. Further, these aspects are arguably of particular importance when studying young populations, since this segment of the population is generally over-represented among victims and offenders (e.g. Rocque et al., 2015). In Sweden, young women now also constitute the population group showing the highest rates of feeling unsafe when walking alone late at night in their neighbourhood (Lifvin et al., 2020). Focusing on younger individuals may thus provide new insights regarding the intersection of everyday life, crime, and fear of crime among those who are at the highest risk of experiencing these outcomes.

Aim

The overarching aim of this dissertation is to explore associations between everyday life, crime, and fear of crime among youth and young adults. Drawing on a lifestyle/routine activity perspective, the dissertation focuses on both theoretical and methodological perspectives in order to provide insights of use to potential future developments. Four separate studies with their respective aims form the empirical foundation of the dissertation:

- Study I aims to examine associations between lifestyle/routine activities and different roles associated with crime involvement.
- Study II aims to explore fear of crime as a dynamic phenomenon by studying associations between lifestyle/routine activities and fear of crime in relation to months, days, and moments.

- Study III aims to review the operationalisations of lifestyle/routine activities employed in the existing literature.
- Study IV aims to explore associations between features of environmental settings and momentary experiences of fear of crime.

2. BACKGROUND

Chapter outline

This chapter begins with a discussion of theoretical perspectives, before moving on to focus on the outcomes of relevance for this dissertation. The final section is devoted to methodological perspectives and issues linked to the study of everyday life.

Theoretical framework

One point of departure in several criminological theories is a focus on crime rather than criminality (for a discussion, see Birkbeck & LaFree, 1993). Crime is a broader term that encompasses anything that is of relevance in the moment in time and space when a crime occurs, including the perspectives of both offender and victim (Meier & Miethe, 1993). This approach can also be transferred to the realm of fear of crime since this outcome may also in part be dependent on different specific events that occur in our daily lives (see e.g. Solymosi et al., 2015).

Theories that focus on events are usually found in the field of environmental criminology, since this field treats factors in the environment as being fundamental to an understanding of where and when the opportunities for these events arise (Bruinsma & Johnson, 2018). However, environmental criminology is oriented towards spatial analyses of crime-related outcomes, whereas this dissertation mainly focuses on individuals, although environmental settings are also explored in Study IV. Nevertheless, while not being a dissertation on environmental criminology, the dissertation adopts the idea that exposure to opportunities for crime and fear of crime is an essential factor. Lifestyle-exposure theory and routine activity theory therefore provide the theoretical foundation due to the way they allow for the application of an environmental approach to individual-level analysis (although routine activity theory was originally a macro-level theory focusing on crime rates; see Cohen & Felson, 1979). The theories are appropriate due to their joint emphasis on what people *do* (i.e. various activities associated with everyday life) rather than who they *are* (i.e. individual characteristics), which provides a link

between everyday activities and individual exposure to opportunities for victimisation, offending, and fear of crime.

Lifestyle-routine activity theory

Both lifestyle-exposure theory and routine activity theory view crime as being dependent on opportunities (e.g. McNeeley, 2015; Wilcox & Cullen, 2018), with exposure to various opportunities being based on the structure of people's lives (i.e. lifestyle/routine activities). It is therefore not surprising that these theories have been treated as similar or even as just one theory. The similarities were acknowledged early, with Cohen et al. (1981) suggesting that lifestyles and routine activities affect the risk for someone to come into direct contact with offenders in the absence of capable guardians. The similarities between the theories have also continuously been recognised more or less explicitly (e.g. Birkbeck & LaFree, 1993; Garofalo, 1987; Lemieux & Felson, 2012; Tewksbury & Mustaine, 2010), with assessments of the theories treating them as one joint theoretical framework (McNeeley, 2015; Spano & Freilich, 2009). The joint lifestyle-routine activity theory (L-RAT) is today employed in numerous studies, focusing on everyday life and crime events (for reviews, see McNeeley, 2015; Wilcox & Cullen, 2018).

The theoretical ideas of L-RAT have also been employed to various extent in relation to fear of crime (see e.g. Alvi et al., 2001; Crowl & Battin, 2017; Ferraro, 1995; Lee & Hilinski-Rosick, 2012; Melde, 2009; Mesch, 2000; Rengifo & Bolton, 2012). The connection between L-RAT and fear is perhaps less clear but nevertheless fits the theoretical focus on exposure. While some types of fear of crime are more accurately defined as inner feelings of worry, other types of fear may be related to events in everyday life. The latter refers to the possibility that being exposed to circumstances perceived to be conducive to victimisation may also be related to fear of crime under such circumstances (for a discussion, see e.g. Melde, 2009; Rountree, 1998). Fear of crime within an L-RAT perspective can therefore be referred to as a reaction to perceived opportunities for crime. The ways in which individuals become exposed to these opportunities is based on their lifestyles/routine activities.

It should be noted that L-RAT is not limited to a specific age span. However, this dissertation focuses on adolescents and young adults and most empirical research within the field is based on such populations (see e.g. Spano & Freilich, 2009). Finally, although the two theories forming L-RAT are treated as a single merged theory in this dissertation, they are not identical but rather complementary. A short description of each theory with a focus on aspects of relevance for this dissertation is therefore warranted.

Lifestyle-exposure theory

Lifestyle-exposure theory can be traced back to the work of Hindelang and colleagues (1978) and focuses on "[...] the probability that the person will come into contact with a

motivated offender and will be seen to be a suitable target for the offense” (Gottfredson, 1981: 724). The main theoretical idea revolves around lifestyle as the mechanism that explains differences in exposure to criminogenic circumstances, which in turn explain differences in personal victimisation across different demographic groups (Hindelang et al., 1978).

The full theoretical model is described in Figure 1. Proceeding from demographic characteristics, the model states that role expectations and structural constraints both affect one another and result in adaptations. Role expectations and structural constraints are not caused by these demographic variables, but they are fundamental in that they provide a backcloth for the model. The fact that demographic groups differ in their victimisation risk has also been identified as an essential part of victimisation theories in general (Cohen et al., 1981) and has been highlighted as a foundation for lifestyles (Meier & Miethe, 1993). Returning to the theoretical model in Figure 1, adaptations create differences in lifestyle which in turn lead to people being differentially exposed to circumstances conducive to victimisation (Hindelang et al., 1978). This exposure is either a direct effect of one’s lifestyle or based on associations with other individuals with similar lifestyles.

This dissertation does not aim to capture the full lifestyle-exposure model but focuses on the main argument: that lifestyles affect exposure to opportunities for crime. These opportunities are here viewed as important not only for victimisation but also for offending and fear of crime. Exposure is the key concept because all these outcomes are dependent on some kind of opportunity for their occurrence, although not all dimensions of fear of crime are related to opportunities (for a discussion of different types of fear, see Farrall et al., 2009).

Figure 1. The lifestyle-exposure theory model (Hindelang et al., 1978).

Routine activity theory

Routine activity theory was introduced in a seminal article examining national crime rates in the US in relation to patterns of routine activities, and as such focused on a macro perspective (Cohen & Felson, 1979). The original theoretical model outlines the three elements deemed necessary for a crime to occur: a motivated offender, a suitable target, and an absence of capable guardians (see Figure 2).

The basic idea is that routine activities affect exposure to various types of environmental circumstances, and when these include the convergence in space and time of the three elements that are necessary for crime, then victimisation, offending and potentially fear of crime are also more likely to occur. The motivation of the offender is taken for granted and not specified (see e.g. Garofalo, 1987; Miró, 2014), and the theory is therefore not concerned with individual factors related to crime propensity. While the theory has evolved over the years, the focus on routine activities as affecting the convergence of the three elements that are necessary for crime remains central and there is an explicit focus on crime as an everyday-life phenomenon (Felson & Boba, 2010).

However, one particular theoretical development needs to be mentioned since it refers to an adaptation of the theory to focus more directly on the individual rather than the aggregate level. Osgood and colleagues (1996) examined routine activities and their relationship with individual offending, thus taking a step away from the explanation of crime rates. This addition was important because it is quite different to examine aggregate patterns in routine activities (e.g. the proportion of households left unoccupied and burglary rates) and routine activities as measures of particular individuals' exposure to the risk for crime. For instance, individual activities referred to as unstructured were found to be of particular relevance for offending in the study by Osgood et al. (1996) and are an activity type that has been used continuously in subsequent research on both victimisation and offending (e.g. Averdijk & Bernasco, 2015; Maimon & Browning, 2012; McNeeley, 2015; Osgood & Anderson, 2004).

Figure 2. The three requirements for a crime event according to routine activity theory (Cohen & Felson, 1978).

The use of theory in this dissertation

Figure 3 describes the very simple but fundamental component of L-RAT that constitutes the focus for this dissertation: lifestyle/routine activities are related to differences in exposure to criminogenic and fear-generating circumstances. These circumstances are represented by the ingredients necessary for crime as described by routine activity theory: a motivated offender and a suitable target converge in space and time in the absence of capable guardians. Depending on the outcome under study, each ingredient has a different meaning (i.e. one is either an offender or a victim). Fear of crime is a special case since it must be understood as a phenomenon based on the *perception* of the convergence of the three ingredients for crime, which may not reflect any actual convergence.

Hindelang et al. (1978) explicitly stated that the more one is exposed to criminogenic circumstances, the greater the probability of becoming a victim of a crime, and there is also evidence that research in the field of routine activity theory departs from a probabilistic approach (e.g. Lemieux & Felson, 2012), although this has been questioned by others (Pratt & Turanovic, 2016). As emphasised in Figure 3, L-RAT is therefore here treated as a probabilistic theory; it is concerned with the notion that exposure is related to an increased *risk* for a given outcome.

It should also be noted that Figure 3 presents the limits of the theoretical focus of this dissertation. The focus is directed at the relationship between activities and crime-related outcomes whereas, for instance, factors affecting why certain individuals are involved in certain activities are not explored. In line with L-RAT, individual characteristics are not explored to any great extent either, but are instead merely treated as factors to be controlled for in the analyses. This approach is based on the notion that regardless of individual crime propensity, individual vulnerability to becoming victimised, or individual propensities for experiencing fear, offending, victimisation, and fear of crime do not occur in an environmental vacuum. Rather, everyday life provides opportunities for these various phenomena to occur, which makes exposure to such opportunities the main focus of interest.

Figure 3. The use of L-RAT in this dissertation.

The concept of lifestyle and routine activities

Lifestyle and routine activities are the key concepts of L-RAT and as such require some further elaboration.

Definitions of lifestyle and routine activities

Lifestyle is a term with a wide range of potential connotations, and criticism of the vagueness of definitions is found more generally within the social sciences (see e.g. Sobel, 1981). However, lifestyle according to Hindelang et al. (1978) appears to be a fairly well-defined concept: “[...] lifestyle refers to routine daily activities, both vocational activities (work, school, keeping house, etc.) and leisure activities” (p. 241). Thus routine activities lie at the centre of the concept, which thus connects the theory to routine activity theory and its definition of routine activities: “[...] any recurrent and prevalent activities which provide for basic population and individual needs” (Cohen & Felson, 1979: 593).

Exposure

According to L-RAT, routine activities lead to individuals being exposed to different types of circumstances. Cohen et al. (1981) define exposure as “[...] the physical visibility and accessibility of persons or objects to potential offenders at any given time or place” (p. 507). Exposure thus relates to the fact that for any given personal crime, the offender and the victim must converge spatiotemporally (Gottfredson, 1984; Hindelang et al., 1978). Different lifestyles (i.e. routine activities) thus affect the probability of being exposed to high-risk circumstances, for instance to certain places, people, and times (Hindelang et al., 1978), which in turn increase the risk for crime-related outcomes, such as victimisation (Gottfredson, 1981; Meier & Miethe, 1993). Needless to say, this whole idea is based on the fact that crime is not randomly distributed across time and space (Hindelang et al., 1978). Importantly, exposure is not necessarily based on free will or rational choice; some activities may be voluntary while others are compulsory (Rengifo & Bolton, 2012).

Types of routine activities

Drawing further on the connection between activities and exposure, routine activities that are of relevance for crime and similar outcomes should be linked to exposure to criminogenic and fear-generating circumstances. However, there is much variation in the specific types of activities that are used in L-RAT research (see e.g. McNeeley, 2015), although leisure activities and their varying contexts are more frequently used than vocational activities. For instance, Garofalo (1987) discussed research that points to less structured leisure activities as being particularly risky while Gottfredson (1984)

found support for the existence of relationships between a number of night-time activities and victimisation (e.g. spending two weekend nights out). Further, although not an explicit L-RAT study, Agnew and Petersen (1989) found that leisure time spent with peers increases the risk for offending. These early studies have since been followed by a large body of research that focuses on various different L-RAT factors and crime (see McNeeley, 2015), but also fear of crime (e.g. Mesch, 2000). The types of activities used include somewhat broader concepts, such as involvement in unstructured activities (Osgood & Anderson, 2004; Osgood et al., 1996), but also more specific activities, such as shopping at a mall (e.g. Mustaine & Tewksbury, 2000). However, using the label 'routine activities' when referring to virtually any activity or aspect of everyday life has come at a price. There is a recurrent criticism in criminology regarding the types of routine activities that are of relevance for crime. This is an issue that will be discussed later in this chapter.

The importance of environmental settings

Routine activities are important because they affect exposure to the three ingredients necessary for a crime to occur. These elements must converge in space and time to create an opportunity for crime (or must be perceived to converge for fear of crime). This convergence is often called a 'situation', which refers to the fact that opportunities are limited in space and time. More precisely, Gottfredson (1981) argued that it is important to explore more specific situational measures of lifestyle and exposure by focusing on "[...] how, where, and with whom people spend their time" (p. 724). It is thus not surprising that it has been suggested that lifestyle is a situational or dynamic phenomenon (Svensson & Pauwels, 2010) and that L-RAT is often referred to as a 'situational' theory (e.g. Birkbeck & LaFree, 1993).

However, the definition of the term 'situation' varies (see e.g. Birkbeck & LaFree, 1993; Reis & Holmes, 2014) and within criminology the concept has arguably been most thoroughly elaborated by situational action theory (SAT). According to SAT, situations consist of the interaction between the individual and the immediate environment, with the latter being referred to as a 'setting' (see e.g. Hardie, 2020; Wikström et al., 2012). This is in line with others who have argued that situations bring personality and context together (Reis et al., 2014). However, although adhering to the terminology of SAT, this dissertation's lack of an elaborated individual perspective, and its focus on victimisation and fear of crime (which are not actions), place it outside the SAT framework. The only connection with SAT is that the term setting is used in this dissertation when referring to the immediate environment surrounding an individual. Nevertheless, this term is also incorporated in L-RAT and has been described as "[...] the central organizing feature for everyday life" (Felson & Boba, 2010: 27).

While settings have been noted as being important for victimisation (e.g. Averdijk & Bernasco, 2015) and offending (e.g. Wikström et al., 2012), settings are only directly examined in Study IV, which focuses on momentary experiences of fear of crime. Other researchers describe this as fear in relation to situations (e.g. Gabriel & Greve, 2003; Nasar & Fisher, 1993; Vitelli & Endler, 1993), an approach which is defined in this dissertation as comprising studies on fear of crime in relation to specific features of settings. However, in contrast to research on victimisation and offending (e.g. Averdijk & Bernasco, 2015; Bernasco et al., 2013; Wikström et al., 2012), fear of crime is rarely studied using research designs that allow for the collection of data on fear as an event that occurs in relation to features of settings (for an exception, see Solymosi et al., 2015).

Victimisation, offending, and fear of crime

Victimisation, offending, and fear of crime constitute the focus of this dissertation and are described below, but with an emphasis on fear of crime as a result of its more complex nature.

Victimisation and offending

There is a wide range of studies focusing on victimisation and offending from an L-RAT perspective (for reviews, see e.g. McNeeley, 2015; Spano & Freilich, 2009). Personal offences are most relevant in this research, since they require direct contact between offenders and victims. And for this reason the lifestyles/routine activities of both offenders and victims constitute the focal point of this dissertation.¹ L-RAT factors that are often included in research on victimisation and offending consist of, for instance, unstructured activities (e.g. Maimon & Browning, 2012; Osgood et al., 1996), peer deviance (Averdijk & Bernasco, 2015; Svensson & Oberwittler, 2010), and alcohol use (Bernasco et al., 2013; Felson & Burchfield, 2004).

However, one important aspect to consider when studying victimisation and offending is that both outcomes are fairly often experienced by similar people or simply by the same individuals (e.g. Broidy et al., 2006; Daday et al., 2005; Deadman & MacDonald, 2004; Jensen & Brownfield, 1986; Singer, 1981), with this phenomenon commonly being referred to as the ‘victim-offender overlap’ (for a review, see Jennings et al., 2012). Although property crimes are also associated with an overlap, the degree of overlap linked to violent offences is usually greater (e.g. Cops & Pleysier, 2014; Jennings et al., 2012).

Of relevance for L-RAT is the notion that there are differences in lifestyles among non-involved individuals, victims, offenders, and victim-offenders (Mustaine & Tewksbury,

¹ Property offences may also be studied within the framework of L-RAT but are different in the sense that it is not a person but an object that is targeted by the offender. This makes the object rather than the person the focus of study, which is less relevant when examining the specific activities of individuals.

2000; TenEyck & Barnes, 2018). For instance, the victim group has been shown to be the one that differs the most from the other two groups involved in crime (i.e. offenders and victim-offenders), which is not surprising, since victims may more generally be less involved in risky activities (e.g. Broidy et al., 2006). Those who are ‘only’ victims may in fact be the group that is most similar to those who are neither victims nor offenders (Klebens et al., 2002), whereas victim-offenders seem to be linked with a wide range of factors that indicate a risky lifestyle (e.g. Mustaine & Tewksbury, 2000).

More generally, research indicates that victimisation is a better predictor of offending than the reverse, and that a risky lifestyle is more closely related to offending than victimisation (Pauwels & Svensson, 2011). It is therefore not surprising that although victims and offenders share some lifestyle characteristics (e.g. Pizarro et al., 2011), offending often remains a significant predictor of victimisation (e.g. Wittebrood & Nieuwbeerta, 1999).

Fear of crime

Fear of crime has no universal definition and is thus most accurately described as an umbrella term encompassing a wide range of different aspects related to reactions to and perceptions of crime. These can be summarised as referring to either affective (e.g. worry and anxiety), behavioural (e.g. avoidance behaviour) or cognitive (e.g. perception of risk) dimensions of fear of crime (Ferraro & LaGrange, 1987; Jackson & Gouseti, 2014). Within this dissertation, fear of crime is examined in the form of worry about victimisation.

Regardless of definition, however, since routine activities are theorised to affect exposure to different kinds of settings, these settings can be associated with varying opportunities to experience fear. This makes it important to divide fear of crime into either an expressive phenomenon, which takes the form of an abstract belief about crime that is related to more stable individual traits, or an experience, which involves a concrete event in the form of a more temporary state of fear (Farrall et al. 2009; Gabriel & Greve, 2003). Experiential fear of crime is more readily located within the L-RAT framework due to its focus on concrete events that, following the logic of the reasoning presented above, occur in everyday settings. This dimension of fear of crime treats it as a transitory rather than a stable phenomenon, and as being affected by the direct features of any given setting (Gabriel & Greve, 2003).

Nevertheless, fear in the form of a trait may of course also be relevant in settings since it may affect whether and to what extent the features of settings are perceived as frightening by an individual, and may also affect the range of typical settings that are perceived as frightening (Gabriel & Greve, 2003; Kappes et al., 2013). Several fear of crime studies touch upon this notion more generally by highlighting that *both* individual

and environmental characteristics are relevant for fear of crime (e.g. Vitelli & Endler, 1993; Ward et al., 1986).

However, the subjective nature of fear of crime makes it possible to interpret associations between L-RAT features and fear of crime in quite diverse ways (see e.g. Crowl & Battin, 2017). One interpretation is the one that has been implied so far in this chapter, that fear of crime may be placed in a theoretical model in which it is treated as generated by the same features as those that affect the likelihood of victimisation within an opportunity-based framework (see e.g. Ferraro, 1995; Melde, 2009; Rountree, 1998). In this rational explanation, fear of crime is simply an expression of actual victimisation risk; people become exposed to risky circumstances and feel that there is a risk of victimisation (Mesch, 2000). Lifestyles/routine activities are thus seen as factors that affect the opportunities for fear (Rountree, 1998) and fear of crime is therefore not 'irrational' but is rather based on real victimisation risk (Stafford & Galle, 1984). In line with this argument is the idea that individuals who do not expose themselves to risky circumstances are less fearful as a result of taking such precautions (e.g. Mesch, 2000). It is thus not surprising that avoidance behaviours have been found to be negatively associated with fear of crime (e.g. Lee & Hilinski-Rosick, 2012; Özascilar, 2013).

Nevertheless, an alternative interpretation is that a person who engages in what might objectively be defined as a risky activity in terms of victimisation, may not in fact *experience* the activity as frightening, nor even judge it in terms of risk (Lee & Hilinski-Rosick, 2012). Individuals may also engage in certain activities despite knowing that these activities may generate a fear of crime in them, perhaps because some activities are seen as important or mandatory (see e.g. Rengifo & Bolton, 2012), or simply as being fun, despite their fear-generating potential. There is also research suggesting that the avoidance of risky activities, and thus being less exposed to actual victimisation risk, is related to higher rates of fear of crime (e.g. Fisher & Sloan, 2003; Maier & DePrince, 2020; Scott, 2003).

Another issue pertains to the possibility that lifestyles/routine activities are related to both momentary and developmental processes. For instance, for momentary fear, L-RAT may be useful by explaining differences between individuals in exposure to various types of settings. However, the way in which these moments are perceived may also be contingent on previous experiences of momentary fear, which have thus produced feedback on a person's dispositional fear (i.e. the individual propensity to perceive a moment as frightening). This way of reasoning is found in research outside the L-RAT framework (Gabriel & Greve, 2003) and shows that fear must be understood as being distinguishable into momentary and dispositional definitions, but with the former providing feedback into the latter.

Finally, for momentary fear that is experienced in specific settings, certain features of those settings may be of particular relevance for fear of crime. For instance, being away from home is often suggested to be associated with feelings of unsafety (e.g. Brantingham & Brantingham, 1995). The type of place has also more generally been found to be the most important feature of settings in relation to fear of crime when using so-called experience methods (for a definition, see next section) in a student sample (Birenboim, 2018). More specifically, Birenboim (2018) found that being at a home or at the university were both associated with lower levels of insecurity, while being in open spaces and traveling/moving around were associated with higher levels of insecurity. Further, perhaps the most common time dimension of settings that has been proposed to increase fear of crime is darkness (e.g. Brantingham & Brantingham, 1995; Warr, 1990), while the type of activity in which one engages in a given setting might also be of relevance, since fear of crime may be contingent on activities of everyday life, such as partying (e.g. Crowl & Battin, 2017). The presence of other people is also a factor that may be associated with fear of crime, both by increasing and decreasing the level of fear (Brantingham & Brantingham, 1995; Scott, 2003; Warr, 1990). Thus overall, the type of place, the time, the type of activity, and the presence of other people are all features of settings that may affect fear of crime.

In summary, various interpretations of the links between involvement in various activities and fear of crime reveal that there are several complexities involved in the application of L-RAT to fear of crime. Consequently, these complexities need to be taken into account when interpreting findings from L-RAT research on fear of crime.

Studying everyday life

Research on everyday life demands appropriate methodologies that capture relevant aspects of our daily lives. However, this can be complicated, which is further discussed here in relation to two sets of issues. First, there has been much criticism directed at the operationalisation of lifestyle and routine activities. The second topic addressed refers to issues associated with the collection of data on dynamic phenomena of everyday life. This issue is discussed more generally but is exemplified in relation to fear of crime. Finally, alternative methodological approaches are outlined that may solve some of the issues discussed.

Issues when studying lifestyle and routine activities

Measures of lifestyle and routine activities have been criticised repeatedly over the years, which has resulted in suggestions that L-RAT research needs to develop more accurate operationalisations (e.g. Mustaine & Tewksbury, 1997, 2000; Pratt & Turanovic, 2016; Tewksbury & Mustaine, 2000). The core of this criticism is related to the conceptualisation of lifestyle and/or routine activities:

Virtually every empirical test of lifestyle theory concludes with a call for better measurement (Maxfield, 1987: 279).

[T]he methodological means employed to date lack rigor and specificity, typically do not provide significant emphasis on the domains in which victimization occurs, and most research employs weak, indirect and/or inappropriate operationalizations of key concepts (Mustaine & Tewksbury, 1997: 179).

[D]espite the centrality of lifestyle to routine activity theory, many of the issues that are presumed to represent lifestyle have not had solid, direct means of measurement identified (Tewksbury & Mustaine, 2010: 191).

As it is, a seemingly infinite number of human behaviors and life statuses can be finagled to fit a vague definition of 'lifestyles/routine activities,' and little effort has been directed at improving how we measure these concepts over the past four decades (Pratt & Turanovic, 2016: 341).

This criticism is related to a number of different, more specific issues, which are here outlined in relation to research on crime, although some of the issues could also be relevant for research on fear of crime. First, proxy measures are sometimes used instead of direct measures of routine activities (e.g. Meier & Miethe, 1993; Mustaine & Tewksbury, 1997). Such measures require major generalisations of their actual meaning because their indirect character requires some kind of interpretation, which may vary depending on the theoretical point of departure employed (Birkbeck & LaFree, 1993; Mustaine & Tewksbury, 1997, 2000). Thus, for the purposes of testing theory, proxy variables are problematic because they may fit competing theoretical perspectives equally well, which results in a risk for theoretical underdetermination (Meier & Miethe, 1993).

A second criticism is related to the focus on activities that are not related to the risk for crime (Pratt & Turanovic, 2016; Tittle, 1995). For instance, spending time outside the home cannot be a risky activity per se because what actually affects the risk for personal victimisation is rather what you actually do when you leave the home and the circumstances in which you do it (Pratt & Turanovic, 2016). Similarly, using the amount of time spent working, or in any other activity that is broad in its character, has also been criticised (Meier & Miethe, 1993; Pratt & Turanovic, 2016). Further, Tittle (1995) argues that it is difficult to know whether an activity is part one's routines, and also points to several routines that are clearly irrelevant for crime, such as brushing one's teeth.

A third strand of criticism is based on the confusion between macro- and micro-level L-RAT studies. For instance, finding a positive correlation between risk and more time

spent in non-household activities at an *aggregated* level is not the same as saying that leaving the house is risky for an *individual* (Pratt & Turanovic, 2016). Aggregate patterns in activities are informative at an aggregate level but less so for any given individual, which is important in relation to the risk for the ecological fallacy: i.e. drawing individual level conclusions on the basis of aggregate patterns in the data (Pratt & Turanovic, 2016).

Finally, a perhaps less common yet relevant criticism refers to the more general scientific requirement that outcomes and predictors need to be analytically different (e.g. Sobel, 1981). In L-RAT research, for instance, Mustaine and Tewksbury (2000) found that individuals who report vandalism are more likely to also report other kinds of offending, which is similar to the way studies have reported a link between a delinquent lifestyle and victimisation (Henson et al., 2010; Lauritsen et al., 1991; Pizarro et al., 2011; Sampson & Lauritsen, 1990). While these findings are certainly accurate, including delinquency as a predictor of offending and/or victimisation does not offer a useful lifestyle explanation unless one is satisfied with a somewhat tautological explanation: crime predicts crime. Nevertheless, a deviant/criminal/delinquent lifestyle has been a major feature of many L-RAT studies and has been highlighted as one of the most important lifestyle factors associated with a high risk for crime (Wilcox & Cullen, 2018).

Shortcomings of traditional surveys

The second issue addressed in this section refers to the study of dynamic phenomena in everyday life. Traditional surveys, such as annual victimisation surveys, provide a great deal of retrospective information regarding factors associated with everyday life. The main benefit of this approach is its global format; a set of survey items are employed to specify a general picture, or an estimate, of any given phenomenon over a period of time. However, this methodology is not without flaws, particularly when the outcome studied may fluctuate over time and is also somewhat vague in nature. One such outcome is fear of crime, which is here used to exemplify issues associated with the use of traditional surveys. Gray et al. (2012: 7) summarise the situation:

[...] it is difficult to measure the everyday experience of fear of crime. [...] Might respondents be trying to recall the number of occasions on which they have worried and calculating some sort of average? How were they weighing up feelings of intensity with the frequency of emotional episodes? Were worrying thoughts future- or past-orientated? Were they worried for themselves or their family? Perhaps answers included an overall fusion of these elements? In short, it is likely that people would struggle to identify and articulate precisely how they felt for the purposes of a questionnaire.

These issues are related to a set of different specific problems associated with the study of everyday experiences using traditional surveys. First, a global measure, such as ‘how often have you worried about falling victim to a crime in the past 12 months?’, demands respondents to recall all occasions of worry and make a correct aggregation or at least an estimation of all the times they have worried during an entire year, which is a process that involves a risk for bias (Schwarz, 2012; Shiffman et al., 2008). More broadly, this can be understood as an issue of reference periods, with longer reference periods generally producing less reliable responses (see Lynch & Addington, 2010). Experiences of a less emotionally powerful character may be particularly difficult to retrieve in an unbiased form from memory (Shiffman et al., 2008), which may also be the case for fear of crime, since this could include experiences that are not extremely fearful but are still somewhat frightening (Farrall et al., 2009; Gray et al., 2008). In general, feelings may also be exaggerated or overestimated in retrospect (e.g. Ben-Zeev et al., 2012), and recalling mood-related events in retrospect is particularly difficult (Bolger et al., 2003). There are also indications that fear of crime, when researched using traditional surveys, is exaggerated in retrospect (Farrall et al., 1997, 2009).

Further, it has been argued that fear of crime needs to be studied in relation to moments of everyday life (Jackson, 2009). This suggestion can be explained by the fact that the dominant, traditional, retrospective methods do not allow for the study of fear of crime as an event that is dependent on the immediate environmental context (Chataway & Bourke, 2020; Solymosi et al., 2015). The current situation in the research field is thus such that “[...] instead of data on the patterning and ecology of events of fear, we are left with only vague ‘global’ summaries of intensity of worry or feelings of unsafety” (Farrall et al., 2009: 7). This is problematic because, as outlined earlier, fear of crime as a state is different from fear of crime as a trait (Gabriel & Greve, 2003). The former is more closely related to actual concrete factors in the environment (Kappes et al., 2013) and is as such important to study in relation to exposure to different settings in everyday life. This is particularly interesting since the importance of a momentary perspective on fear of crime as experienced in everyday settings is actually acknowledged in traditional surveys, which often ask respondents how safe they would feel if they were walking alone at night in their neighbourhood (e.g. Lifvin et al., 2020). However, including just one or a few settings in relation to fear of crime does not provide the full picture (see Jeffords, 1983). Examples do exist in which fear of crime has been studied using more elaborate accounts of settings (e.g. Kappes et al., 2013; Van der Wurff et al., 1989; Vitelli & Endler, 1993). However, these attempts still rely on retrospective data collection and predefined ‘ideal’ settings, which do not capture fear of crime as an actual experience in a specific setting, *in situ*. Alternative methodologies are thus needed.

Alternative methodological approaches

Two alternative approaches to data collection are described here because they have been employed to a varying extent in the studies presented in this dissertation.

Space-time budgets

Diary methods may be more reliable than traditional surveys (Kan, 2008), and such methods, which were proposed at an early stage within the field of L-RAT (Gottfredson, 1981; Hindelang et al., 1978), have made it possible to further examine crime events (Riley, 1987). Having perhaps been employed in its most elaborated form in SAT research, the so-called space-time budget interview constitutes one example of how detailed diary data can be collected in relation to every hour during four days of an individual's life (e.g. Averdijk & Bernasco, 2015; Bernasco et al., 2013; Wikström et al., 2012, see also Hoebe et al., 2014). A similar approach has also been employed in research on victimisation, where a smartphone app was used by participants to chart their lives in ten-minute time slots over the course of four days (Ruiter & Bernasco, 2018). The space-time budget interview used by Wikström and colleagues (2012) included, for each hour of four days of the participants' lives, special events such as victimisation and offending but also the time, geographical location, type of location, activity and the presence of other people. These are features of settings similar to those outlined by others as being essential for understanding how activities in their respective contexts are related to crime (Tewksbury & Mustaine, 2010). Charting everyday life in relation to detailed environmental contexts is thus the main benefit of space-time budgets.

While space-time budgets provide solutions to some of the issues associated with traditional survey methods, there are still some aspects of everyday life that demand other methodological approaches. For instance, the space-time budget methodology collects data retrospectively, which introduces a risk for biases since timelines may be difficult to remember even when reporting them soon after they have taken place (Shiffman et al., 2008).

Everyday experience methods

Everyday experience methods comprise methodologies centred on the collection of data about everyday life as it unfolds in real time, or in very near retrospect (Reis et al., 2014). These methods are here referred to as 'experience methods' and include, for instance, the Ecological Momentary Assessment and the Experience Sampling Method (see e.g. Csikszentmihalyi & Larson, 1987; Stone & Shiffman, 1994). The most commonly used data collection strategies include (1) signal-contingent sampling, where respondents are prompted to respond to surveys at random time points during a day; (2) event-contingent sampling, where respondents report any experience of a predefined phenomenon as soon

as it occurs in daily life, and (3) interval-contingent sampling, which provides surveys to participants at a certain interval, such as every hour (Scollon et al., 2003; for a complete overview see also the full edited volume by Mehl & Conner, 2012). The essence of experience methods is outlined by Shiffman et al. (2008: 5):

EMA [Ecological Momentary Assessment] aims to assess the ebb and flow of experience and behavior over time, capturing life as it is lived, moment to moment, hour to hour, day to day, as a way of faithfully characterizing individuals and of capturing the dynamics of experience and behavior over time and across settings.

By studying various moments in everyday life, either as these moments occur or in very near retrospect, the main strength of experience methods is their high ecological validity, which allows for the more reliable generalisation of findings to the real world (Reis, 2012). One common focus of such studies is therefore to examine how different contexts affect individuals, and also to study interactions between individuals and the environment (Reis, 2012; Scollon et al., 2003; Shiffman et al., 2008). Compared to traditional methodologies, experience methods hold some advantages of which arguably the most important include their higher accuracy in reliably capturing actual experiences (e.g. Ben-Zeev et al., 2012; Scollon et al., 2003; Shiffman et al., 2008; Stone et al., 1998), and their focus on measuring phenomena as they occur in real world settings (see e.g. Hogarth et al., 2007).

Overall, the method provides detailed and rich data regarding specific settings (Hektner et al., 2007). Features of settings that are measured often include place and time but also other features, such as what the respondent is doing at the time of the assessment, and the presence of other people (e.g. Comulada et al., 2016). The latter has been suggested as particularly relevant for experience methods research on fear of crime, since other people are often the source of fear (Leitner & Kounadi, 2015). Collecting these data has become easier since the introduction of smartphones and their spread among the wider population (Raento et al., 2009) as a result of the ability to use smartphone applications to provide surveys, notify participants when to complete a survey, and use sensors to collect data indirectly (for a discussion, see Van Berkel et al., 2017). Typical forms of data that are collected indirectly include the time and the geographic location of each sampled setting, which can be linked to other data containing spatiotemporal information (Van Berkel et al., 2017).

Virtually any phenomenon that it is relevant to study as an experience or event can be studied using experience methods, such as happiness (e.g. MacKerron & Mourato, 2013), quality of life (Liddle et al., 2017), and affective states in relation to alcohol consumption (Duif et al., 2020). Experience methods may be particularly relevant for

fear of crime research since it has been argued that it is important to explore the details of experiences of fear in everyday life, and to study fear *when* it is experienced (Gray et al., 2008). However, although experience methods were first mentioned in relation to fear of crime some time ago (Farrall et al., 2009; Gray et al., 2012), a breakthrough was made when a small pilot study by Solymosi and colleagues (2015) fuelled a discussion on fear as an event that could be studied using experience methods implemented by means of a smartphone application (see e.g. Jackson & Gouseti, 2015; Leitner & Kounadi, 2015). Since then, there has been a growth in similar studies using smartphone-based experience methods (e.g. Birenboim, 2016, 2018; Chataway, 2019; Chataway et al., 2017; 2019; Irvin-Erickson et al., 2020; Solymosi & Bowers, 2018; for a review, see Solymosi et al., 2020). While based on small-scale studies of pilot character, this research shows that fear of crime can be studied as an everyday phenomenon using smartphone-based experience methods.

3. METHODS

Chapter outline

This chapter commences with a description of the data. The focus is oriented towards the more complicated methodological design of the research project that provides the data for Studies II and IV. The analytical approach is thereafter described before concluding the chapter with some ethical considerations.

Data

All studies based on original empirical research (Studies I, II and IV) use data from two separate research projects carried out in Malmö, the third largest city in Sweden with almost 350,000 inhabitants.² Study III is a literature review and is thus based on data from other studies. Table 1 provides an overview of the methodology employed.

MINDS

The Malmö Individual and Neighbourhood Development Study (MINDS) is an ongoing research project at the Department of Criminology at Malmö University that aims to study the causes of crime by focusing on a wide range of individual and environmental factors, and their interactions. A sample of over 500 individuals born in 1995 (approximately 20 % of the birth cohort) have so far participated every second year in four waves of data collection (Ivert et al., 2018; Ivert & Torstensson Levander, 2014). The project is modelled on the Peterborough Adolescent and Young Adult Development Study at the University of Cambridge (see Wikström et al., 2012). The MINDS sample is similar to the population of Malmö at large, except for having a larger proportion of participants from affluent areas. Further descriptions of the MINDS data and studies based on the material are available elsewhere (see e.g. Chrysoulakis, 2020; Ivert et al., 2018; Ivert & Torstensson Levander, 2014; Nilsson, 2017; Nilsson et al., 2020). The data used

² See <https://malmo.se/Fakta-och-statistik.html> (last visited 2021-04-13)

Table 1. Methodological overview.

Study	Description	Data	Independent variables ^a	Outcome(s)	Analytical approach
I	Examining L-RAT factors in relation to being a victim, offender or victim-offender compared to being an abstainer	MINDS	Exposure to criminogenic settings, unstructured activities, spending time in the city-centre at night, peer deviance, inebriation	Involvement in violence (categorical variable): abstainer, victim, offender or victim-offender	Multinomial logistic regressions
II	Examining associations between L-RAT factors and fear of crime across months, days and moments	STUNDA	Spending time with friends in the city-centre, going to pubs/night clubs, going to restaurants, going to cinema, going to sports events, using public transport within/outside the city, <i>age, gender, marital status, victimisation</i>	Monthly, daily, and momentary fear of crime	Ordinal and binary logistic regressions
III	Synthesising measures of lifestyle/routine activities used in L-RAT studies on personal offences	Literature review	-	Violent and sexual victimisation and offending	Categorising measures, contingency tables
IV	Examining associations between features of environmental settings and experiential fear of crime	STUNDA	Type of place, type of activity, presence of other people, darkness, being outside of home area, <i>gender, age, victimisation, fear propensity</i>	Experiential fear of crime	Ordinal logistic regressions

^a Control variables denoted by italics

in this dissertation are drawn from the third wave when the participants were aged approximately 16 years and were enrolled in the first year of upper secondary school.

The data collection process consists of an interviewer-led questionnaire and a space-time budget interview. The former is a traditional questionnaire with a wide range of items, which is provided to the respondent who completes the survey in the presence of a member of the research team who can assist if the respondent has any queries. The space-time budget is administered as a structured interview in which four days of the interviewee's life are charted. The previous Friday and Saturday are always included in addition to the two weekdays nearest in time prior to the interview. Each day is charted in one-hour time slots, for which information is collected about where the participant was located geographically (e.g. at a specific address), the type of place (e.g. home), the type of activity that the participant was involved in (e.g. hanging out), the presence of other people (e.g. parents), and items referring to special incidents (e.g. offending and victimisation).

The specific variables used in Study I refer to victimisation, offending and routine activities. The dependent variable is constructed from items in the questionnaire measuring violent victimisation and offending during 9th grade (i.e. the previous school year). This variable consists of mutually exclusive groups of violent crime involvement: abstainers, victims, offenders, and victim-offenders. The independent variables are also based on questionnaire items, with the exception of a variable measuring exposure to criminogenic settings. This variable is based on data from the space-time budget, and aggregates the number of hours spent unsupervised with friends in unstructured activities for each participant (see Table 1 for an overview and Study I for the specific survey items used).

The STUNDA project

The data from the STUNDA project (Studies II and IV), were collected using a smartphone application with the name STUNDA.³ While the project's main aim consists of examining the feasibility of using experience methods for studying fear of crime (see Kronkvist & Engström, 2020), this dissertation uses the available data to study the dynamics of fear of crime. Although greatly inspired by an application developed by Solymosi and colleagues (2015), STUNDA was tailor-made for this research project and was initially tested by four students for a week, who then provided feedback that was utilised to finalise the app. STUNDA was thereafter launched to students at Malmö University using a convenience sampling approach. It is estimated that at most 2,000 students came in contact with the project and thus had the possibility to participate. The participants could remain in the study for as long as they wanted but were encouraged

³ STUNDA is an acronym for Situationell TrygghetsUNDersökningsApplikation which can be translated into situational safety survey application. The word 'stund' is also the equivalent Swedish term for 'moment'.

to participate for two weeks, which is a typical duration period for studies of this kind (Van Berkel et al., 2017).⁴ A total of 933 individuals showed interest in participating by retaining the required project flyer with unique user credentials. Of these, 191 (20.5 %) students chose to participate by downloading the app and completing a baseline questionnaire. The final sample consists of just over 70 percent females, which largely reflects the university population (Malmö universitet, 2019), and the participants' ages range from 18 to 40 with a mean age of 24 years, which thus indicates that the sample mainly consists of young adults.

It is recommended that the frequency with which an outcome of interest occurs should guide the types of experience surveys used (Conner & Lehman, 2012). However, no data of this kind are available regarding fear of crime and different survey approaches were therefore used in parallel. Using a mixed approach may also improve the overall quality of an experience study (Bolger et al., 2003) and it reduces the risk for method-dependent findings (Reis et al., 2014).

Surveys⁵

The *baseline survey* was mandatory for enrolment in the project and thus all 191 participants completed it. This is a traditional questionnaire which provided data to create variables referring to demographic factors, routine activities, fear of crime, and victimisation experiences. Having completed this survey, participants could respond to three additional types of surveys, of which two have provided data for this dissertation.⁶

A survey labelled the *daily assessment* refers to fear of crime during the past 24 hours, which can be defined as an interval-contingent survey since it refers to a predefined time slot (Scollon et al., 2003). In line with recommendations (Gunthert & Wenzel, 2012), a reminder to respond to the survey was sent every night at 9 pm although the participants could respond to this survey at any time at their own convenience. The only item used from this survey referred to whether the respondent had been worried about victimisation during the past 24 hours, with the response options 'no', 'yes, once', and 'yes, several times'.

Signal-contingent surveys were sent to participants at random time points, and collected data in real time regarding the respondents' current setting. The surveys were activated for the participants when they received app notifications which were programmed at three random times per day, within three equally sized time slots from 7:30 am to 10:30 pm. As suggested by others (e.g. Scollon et al., 2003), the surveys had an expiry time

4 The willingness to participate over time has been explored elsewhere, but in brief, 21–25 percent of participants completed at least one week of participation, depending on two different definitions (see Kronkvist & Engström, 2020).

5 A flow chart describing all the surveys and their role in the application is available in the online supplementary appendix in Kronkvist and Engström (2020).

6 An event-contingent survey was also used in which the respondents could report an unsafe event at any time at their own convenience. However, this survey was rarely used and thus did not provide much data.

of 20 minutes in order to ensure that assessments were made *in situ*. Drawing on the space-time budget used in SAT research, the survey items referred to specific features of settings, including the type of place (e.g. at home), what the participant was doing (e.g. studying), the presence of others (both familiar and unfamiliar individuals), and time (Pervin, 1978; Wikström et al., 2012). These aspects can be described as fairly objective properties of any given setting (cf. Reis & Holmes, 2014), and have also been included in studies using real-time methodologies focused on everyday life and crime (Goldner et al., 2011; Richards et al., 2004). Worrying about victimisation was measured by asking the participants to place a slider (with underlying values ranging between 0 and 100) between two extremes ('not worried at all' and 'very worried'), a measuring approach more broadly used in previous research on momentary psychological phenomena (e.g. Schwartz et al., 2016). Geographical location and time were logged automatically by the smartphone sensors.

A total number of 965 daily assessments were collected from 163 participants with an estimated average compliance rate of 60.5–67.5 percent (Kronkvist & Engström, 2020). The number of completed surveys among those using this survey varied from 1–56 surveys per participant. In total, 1,305 signal-contingent surveys were collected from 131 participants with an estimated average compliance rate of 27.6–30.8 percent (Kronkvist & Engström, 2020). The number of completed surveys provided by those choosing to respond to this survey ranges from 1–121 per participant. Since the data from both surveys are unbalanced (i.e. the participants provided different numbers of completed surveys), a feasibility study examined which types of participants were more prone to respond to the surveys (Kronkvist & Engström, 2020). In general, the findings indicate that gender (female), age (ascending), and being a criminology student were positively associated to responding to surveys.

The specific STUNDA data employed differ between the specific studies (see Table 1).⁷ Study II uses independent variables from the baseline survey (the level at which all L-RAT factors were measured), and includes measures of worry about victimisation from all three surveys (the baseline survey provides the measure of monthly worry since this item uses the past month as the reference period). Study IV uses both independent and dependent variables from the signal-contingent survey with the former measuring features of settings (where, what, with whom, and when a setting was experienced). Both Studies II and IV also include various control variables from the baseline survey (age, gender, marital status, previous victimisation, and fear propensity). The latter was only used in Study IV and refers to the individual mean level of worry about victimisation for various personal offences, and is treated as a proxy for an individual tendency to perceive settings as frightening. Some additional descriptive findings from the STUNDA

7 See the specific studies for their treatment of cases with missing data.

project are also provided, which are based on items measuring worry about victimisation in all of the surveys. Across all analyses, ‘worry about victimisation’ is used to represent fear of crime because it is a rather concrete dimension of fear, and thus suitable for being examined in relation to concrete features of everyday life. However, it should be noted that the umbrella term ‘fear of crime’ is used interchangeably with worry about victimisation when discussing the findings.

Systematic literature review

Study III is a systematic literature review based on existing research on L-RAT and personal offences. With the aim of providing an overview of the specific measures of lifestyle/routine activities that are utilised in contemporary research, the study synthesises information from other studies and thus uses data produced by others with their respective methodological approaches. It should be noted that the review aimed to be broad and thus encompassed all types of studies regardless of their methodological quality.

The detailed search process and all of the inclusion and exclusion criteria used are described in Study III (p. 747). The review focuses on data collected in year 2000 or later because although older data are not a problem per se, research conducted using these data does not contribute to an understanding of how lifestyle/routine activities have been measured more recently, which was part of the aim of Study III. Further, Study III and this dissertation focus on young individuals, which resulted in the use of an age limit in the review to exclusively focus on measures of lifestyle/routine activities among the age group of interest. Further, perhaps the most difficult criterion consisted in assessing whether studies were actually focused on L-RAT. This may sound surprising but many studies were not explicit in their theoretical perspectives. Moreover, the most important criterion was based on the most fundamental aspect of L-RAT in that the theory focuses on what people *do* in their everyday lives. Therefore, only studies directly measuring at least one activity were included.

Analytical approach

The analytical approach and specific methods used are outlined in detail in each study but also briefly summarised in Table 1. Only significant associations between independent and dependent variables and their respective directions (positive or negative) are reported in the findings chapter.

In Study I, associations between L-RAT factors and being either an abstainer, a victim, an offender or a victim-offender were examined using multinomial logistic regressions with abstainers as the reference group. The predictors are categorical and thus contain reference categories, which is important for the interpretation of the results. Regression models were specified for both the full sample and for boys and girls separately (Table 2 only includes findings from the analysis of the full sample, but sex-specific findings are

briefly described in the text). However, offending was rare among girls which resulted in the girl-specific analyses using only a binary variable measuring whether a girl had been victimised during the previous school year. These separate logistic models cannot be directly compared (see Mood, 2010), but provide an overview of different results obtained when using different sub-samples.

In Study II, associations between L-RAT factors and monthly, daily, and momentary worry about victimisation were examined in three separate analyses. Monthly and momentary worry were coded as ordinal level variables (see Study II for the categorisation approach), and thus examined using ordinal regression. Daily worry was also originally measured at the ordinal level but did not meet the proportional odds assumption and then failed to provide reliable results using a multinomial regression. The analyses of daily worry were therefore carried out using a binary variable (i.e. whether a day had been reported as containing any occasion of worry) in logistic regressions. The analyses on daily and momentary worry employ days and moments as the units of analysis. These units are clustered in individuals, which violates the assumption of independence across observations. Generalised estimating equations (GEE) were therefore employed since this approach can handle clustered data (McNeish, 2014).

In Study III, each of the 101 studies included in the review was screened for the most detailed information available about measures of lifestyle or routine activities (mainly specific survey items). Similar measures were merged if no essential information was lost. This resulted in a list of 238 unique measures of activities which were subsequently categorised into eight mutually exclusive types of activities based on the orientation of the specific activities. However, the categorisation was not always clear-cut which makes it important to check the appendix in Study III for a full overview of the types of activities used in the included studies. The outcomes examined in the included studies were grouped into victimisation and offending, and then further divided into violent and sexual outcomes. It should be noted that these categories were not mutually exclusive which resulted in treating a single study as multiple studies when appropriate. More specifically, as outlined in Study III: “[...] a study examining both victimization and offending, and both violent and sexual offenses, was counted as four studies: (1) one study of violent victimization; (2) one study of violent offending, (3) one study of sexual victimization, and (4) one study of sexual offending” (p. 773). This is important because the results table in the findings section and the Sankey diagrams (available in Study III) are based on this coding approach. The table and the diagrams were created to provide an overview of the frequency with which the different activity categories are used in L-RAT research on violent and sexual victimisation and offending.

Study IV focuses on experiential fear of crime in the form of momentary worry about victimisation (i.e. the same outcome variable as in Study II) and employed

ordinal regressions using GEE for the same reason as Study II. Since many predictors consist of nominal variables, reference categories were used, which is important for the interpretation of the results.

The STUNDA data were also utilised to provide some additional descriptive findings that were not included in any specific study and that are presented in the form of diagrams. Mean levels of worry about victimisation among all participants providing at least three daily assessments and three momentary (i.e. signal-contingent) surveys ($n = 79$) are reported. These mean levels of daily and momentary worry about victimisation are reported separately for each category of monthly fear defined in Study II. More specifically, these groups refer to the participants' level of monthly worry about victimisation (i.e. no, low, low-medium, medium-high, or high worry about victimisation), and were employed in order to compare monthly (i.e. baseline) fear with mean levels of daily and momentary fear. The mean values were calculated from each participant's mean level of daily and momentary fear.⁸ Further, data from one participant in each group of monthly fear are also included in order to illustrate how individuals with differing levels of monthly fear experience worry about victimisation over time in relation to days and moments. Importantly, these data are simply examples of individual responses and were arbitrarily chosen among participants who completed at least five daily and five momentary surveys ($n = 48$). The dashed grey lines in the diagrams show worry about victimisation over time, whereas the black lines represent the group mean level of worry (e.g. the group mean for all participants in the 'no monthly worry' group).⁹ Although the time points are presented in the diagrams in chronological order, it should be noted that they do not necessarily refer to consecutive days or moments because the participants sometimes forgot or chose not to respond to, for instance, a daily survey. The number of reports per participant also varies for both the daily and the momentary surveys, which results in the time lines presented in the diagrams having different lengths. In the diagrams, 'D0' represents the first daily survey that the participant responded to, while 'M0' represents the equivalent for the momentary survey.

Ethical considerations

A more formal aspect of ethics refers to ethical considerations associated with the collection of data. Both MINDS and the STUNDA project have been reviewed by the regional ethics board (ref. 2007/201 and 2018/464) and comply with the ethical guidelines outlined by the Swedish Research Council (2017). All participants were

⁸ It should be noted that the mean number of times per day that an individual had been worried about victimisation was calculated despite the fact that the item measuring daily worry has only three response options (0–2), with the highest category representing 'several times'. The mean values reported for daily worry about victimisation should therefore be interpreted as rough indications of average responses among the participants.

⁹ It should be noted that the diagrams showing daily worry about victimisation use the same scale as in the original survey item which means that a value of '2' represents 'several times'.

provided with information about the projects in order to be able to give informed consent. The participants were informed that participation was voluntary and that they could withdraw their participation at any time without providing a reason. Potential risks of participation were also highlighted, which mainly revolved around the inclusion of sensitive questions in the surveys. In the STUNDA project, participants were informed via several channels, including project presentations in classes, flyers and finally full information about participation in the app. A website containing information about the project was also launched and kept updated during the data collection phase.

In MINDS, precautions are taken to ensure that collected data (which contain no personal information) are stored separately from the personal data. No personal data were collected in the STUNDA project. Nor did STUNDA collect any geographical information in the signal-contingent surveys if the participants stated that they were at home, since home coordinates may be considered personal information. The participants also had to actively allow the app to collect geographical data, which was also not mandatory for participation. Further, STUNDA did not collect any technical data that could be related to any individual (e.g. IP addresses) and no data were shared with any third parties. The findings presented in this dissertation do not reveal any personal information that could lead to the identification of any of the participants.

Aside from the more formal ethical considerations concerning the data collection, research focusing on the lifestyles of victims of crime may imply that victims are responsible for being victimised, which is often discussed as ‘victim blaming’. For instance, Wolfgang (1958) focused on how homicide victims precipitated their victimisation, which can easily slip into a conclusion that the victims were blameworthy. However, although L-RAT is centred on examining how victims and offenders converge, which in many cases might be related to the victims’ actions, this is *not* the same as saying that victims are blameworthy (Meier & Miethe, 1993). It must be possible to explore associations between everyday life and various outcomes without involving issues of blame, particularly since this dissertation makes no causal claims but centres on associations more broadly. Further, the dissertation does not really provide any far-reaching direct policy implications and thus the findings should not be used as a guide for directly intervening in people’s everyday lives.

Another ethical issue pertains to the intrusiveness of experience methods, particularly in terms of being prompted to respond to surveys (Conner & Lehman, 2012; Van Berkel et al., 2017). This topic was discussed in the pilot study prior to finalising the app, which resulted in a number of tweaks to minimise the burden on participants (e.g. at what time signal-contingent surveys could be prompted). Since it is easy to simply ignore app notifications or turn them off completely, it is not likely that any participant suffered greatly from being prompted at potentially inconvenient times. Withdrawal from the

study was also easy (by uninstalling the app), which was always a possible solution for anyone who no longer wanted to participate. It is also possible that being continuously reminded about fear through the surveys may make people more sensitised towards fear (e.g. Jackson & Gouseti, 2015). However, once again, it was easy for participants to withdraw from the study, and since they were participating over a short period of time, this should not have affected them to any major extent.

Further, in both MINDS and the STUNDA project, participants were asked sensitive questions, for instance about victimisation experiences. This may be particularly sensitive in MINDS since the participants are younger and thus potentially more vulnerable. Contact information to support organisations was therefore provided to the participants in both projects. The participants could also contact the research team if they wanted to discuss their experiences.

Nevertheless, the benefits of providing a better understanding of the intersections of everyday life and crime-related outcomes are substantial. By providing insights regarding these aspects, future research with a more practical approach may build on the findings of this dissertation, which may in turn assist in producing greater levels of safety in people's everyday lives. The STUNDA project explores a new methodological approach which may in the long run lead to more accurate information being collected about virtually any everyday phenomenon. Thus, while there are some risks when studying crime and fear of crime in the MINDS and the STUNDA projects, these do not seem to outweigh the benefits of the positive influences that this type of research may produce. Particularly when it comes to fear of crime, this is a contested yet omnipresent phenomenon in today's society, which should benefit from being explored on the basis of new methodological approaches.

4. FINDINGS

Chapter outline

The four separate studies relate to different aspects of everyday life and crime: L-RAT and different roles associated with crime involvement (Study I), an L-RAT perspective on fear of crime in relation to months, days, and moments (Study II), the operationalisation of lifestyle and routine activities (Study III), and fear of crime as a momentary experience (Study IV). The findings from these studies are here more broadly divided into two main sections. The first centres on findings regarding associations between L-RAT factors, victimisation, offending and fear of crime. The second section focuses on findings concerning how everyday life is studied in L-RAT research and also provides results obtained when using experience methods to study the dynamics of everyday life and fear of crime. These latter findings extend beyond the realm of L-RAT and also comprise additional descriptive results not included in any of the studies. Across all four studies, only the main findings are reported, of which the most important results are summarised in Table 2.

Lifestyle/routine activities, crime, and fear of crime

This section outlines the main findings concerning associations between lifestyle/routine activities and the outcomes examined in the thesis.

Victims, offenders, and victim-offenders

Just over 15 percent of the MINDS participants reported having been the victim of a violent offence in the 9th grade while not having committed any such crimes, and were thus categorised as victims-only. This makes the victim-only group the largest of the three different groups with experience of crime involvement that were studied (victims-only, offenders-only, and victim-offenders), although abstainers, which was the reference category in the multinomial regressions, constituted the largest group among the study participants (71.8 %). In the multivariate analysis, spending a substantial amount of time in the city-centre at night and inebriation were positively associated with being a victim

Table 2. Main findings.

Study	Outcome	Significant predictors (direction of association) ^a	
I	Victim-only	Spending time in the city-centre at night (+) Inebriation (+)	
	Offender-only	Peer deviance (+)	
	Victim-offender	Spending time in criminogenic settings (+) Inebriation (+)	
II	Monthly fear of crime	Spending time with friends in the city-centre (-) Going to pubs/nightclubs (+) <i>Female</i> (+) <i>Victimisation</i> (+)	
		Spending time with friends in the city-centre (-) <i>Victimisation</i> (+)	
		Momentary fear of crime	Spending time with friends in the city-centre (-) Going to pubs/nightclubs (+) Going to sports events (-) <i>Age</i> (-)
	Experiential fear of crime	All locations away from a home (+) Social activities (-) Darkness (+) <i>Fear propensity</i> (+)	

Activity categories	Percent of studies including each activity category in relation to different outcome types				
	Victimisation		Offending		Total
	Violent (<i>n</i> =71)	Sexual (<i>n</i> =32)	Violent (<i>n</i> =33)	Sexual (<i>n</i> =8)	(<i>n</i> =101)
Illegal activities	66.2	68.8	12.1	12.5	50.5
Substance use	45.1	71.9	39.4	12.5	46.5
Unstructured and peer-oriented leisure activities	33.8	34.4	87.9	87.5	46.5
Problem behaviours and risky activities	32.4	43.8	3.0	12.5	25.7
Student activities	26.8	18.8	6.1	-	23.8
Structured and other low-risk activities	8.5	12.5	9.1	-	9.9
Victimisation experiences	4.2	9.4	9.1	25.0	6.9
Sex and dating activities	4.2	12.5	6.1	-	6.9

^a Control variables denoted by italics

compared to being an abstainer. Additional analyses using sex-specific models provided similar results but also revealed that inebriation was significant for girls but not for boys. Among girls, victimisation was also related to spending time in unstructured activities.

Further, nearly six percent stated that they had committed a violent offence in the 9th grade but reported no violent victimisation, and were thus categorised as offenders-only. For this group, the only statistically significant L-RAT variable in the multivariate analysis was peer deviance, which exhibited a positive association with being an offender compared to being an abstainer. In sex-specific models focused on boys, the results were similar, although here spending time in the city-centre at night was also positively associated with offending. As was mentioned in the methods section, offending was so rare among girls ($n = 3$) that no girl-specific models could be estimated for this outcome.

Almost eight percent of the MINDS sample were categorised as victim-offenders due to having reported both violent victimisation and violent offending in the 9th grade. Exposure to criminogenic settings, the measure based on the space-time budget, was positively associated with being a victim-offender compared to being an abstainer. A similar association was also found for inebriation. The results were similar when examining boys only. As with offending, being a victim-offender was rare among girls ($n = 4$), which made it impossible to carry out sex-specific analyses with this outcome for girls.

In sum, compared to abstainers, being a victim-only, an offender-only, or a victim-offender is related to the lifestyles of the MINDS youth, since at least one lifestyle variable was significantly associated with each of the outcomes studied. However, the findings indicate that there is no universal L-RAT variable that is associated with all of the different crime-involvement roles by comparison with the abstainer group. Thus, different aspects of the youths' lifestyles seem to be of importance for different outcomes. Although the models based on the full sample cannot be directly compared to the sex-specific models, it may more generally be concluded that sex is an important factor that requires further consideration, not at least because of the large difference in the prevalence of offending between boys and girls.

Monthly, daily, and momentary fear of crime

L-RAT factors were examined in relation to fear of crime for three different reference periods: the last month, the last 24 hours, and the current moment. First, analyses were carried out on monthly worry about victimisation. The findings indicate that spending time with friends in the city-centre is negatively associated with monthly worry about victimisation. Going to pubs/nightclubs, on the other hand, showed a positive association with the outcome. However, two control variables were also significant; being female and previous victimisation were both positively associated with monthly worry about victimisation.

The second analysis examined daily fear of crime. The only significant L-RAT variable was spending time with friends in the city-centre, which was negatively related to daily worry about victimisation. One control variable, previous victimisation, was positively associated with daily worry about victimisation.

The third and final analysis focused on momentary fear of crime. Again, spending time with friends in the city-centre showed a negative association with the outcome. Going to sport events also exhibited a similar association while going to pubs/nightclubs was positively associated with momentary worry about victimisation. Of the control variables, age showed a negative association with the outcome.

Although direct comparisons cannot be made, the findings from all analyses point to spending time with friends in the city-centre as being negatively related to worry about victimisation. Since this L-RAT variable was significant in each analysis, it may more generally be concluded that lifestyle seems to have some relevance for fear of crime in relation to the last month, the last 24 hours, and specific moments of everyday life. However, the separate analyses of monthly, daily and momentary fear also provide different results, which suggest the possibility that fear of crime cannot be expected to exhibit similar associations with lifestyle across months, days, and moments.

Studying the dynamics of everyday life

This section summarises findings regarding the way in which everyday life is studied, starting with the conceptualisation of lifestyle/routine activities and then expanding the scope to describe findings obtained when studying fear of crime by means of experience methods.

Conceptualising lifestyle and routine activities

First, in the systematic review of the literature, eleven studies were excluded due to their not using any direct measures of activities (i.e. they relied on proxy measures). In the included studies, 238 unique activities used to measure lifestyle and/or routine activities were identified and these were placed in eight different overarching categories (see appendix in Study III). These include illegal activities, substance use, unstructured and peer-oriented leisure activities, problem behaviours and risky activities, student activities, structured and other low-risk activities, victimisation experiences, and sex and dating activities. All these activity categories are employed in research on both violent and sexual victimisation, with the most common category being illegal activities, followed by substance use, problem behaviours and risky activities, and unstructured and peer-oriented leisure activities.

In relation to offending, all activities have been employed in research on violence but not in relation to sexual offending, although it should be noted that the sample only

included a few studies on sexual offending. For offending overall, unstructured and peer-oriented leisure activities were the most commonly employed category by a large margin, followed by substance use, illegal activities, and victimisation experiences.

In sum, the findings indicate that a broad range of activities are employed as measures of lifestyle and routine activities. There is a variation in how these different activities are used in the research, both in relation to the type of outcome (victimisation or offending), and in relation to offence type (violent or sexual).

Experience methods and fear of crime

In order to expand on the findings from STUNDA more generally, some selected additional descriptive results are presented here to illustrate the dynamics of fear. Examples of individual participants' variations in daily and momentary fear are also included.

As outlined in Study II, monthly, daily, and momentary worry about victimisation are associated in a similar way with certain L-RAT features, but there are also differences across the analyses. It is therefore relevant to examine the correspondence between fear of crime when measured by reference to the last month, the last 24 hours and in the specific moment. Figure 4 shows the mean level of daily and momentary worry about

Figure 4. Mean levels of daily and situational worry about victimisation across groups with different levels of monthly worry about victimisation.

victimisation for the different categories of the ordinal variable measuring monthly worry about victimisation in Study II. The black bars represent the mean number of times per day that participants were worried within each of the categories of monthly worry. The mean level of momentary worry is represented by the grey bars. Note that there are two axes representing daily (left) and momentary (right) fear. It can be concluded that the mean levels of daily and momentary worry correspond to monthly worry: the group mean becomes higher as monthly worry increases. A general conclusion then, is that the *mean* levels of worry correspond quite well with each other.

However, despite the similarities in mean levels, there is still variation among the participants in each of the groups categorised on the basis of their monthly level of worry about victimisation. Figures 5–6 show examples of responses over time from one participant from each of these groups. The figures provide some insights into the dynamics of fear of crime. For instance, the participant reporting no monthly worry about victimisation (P_1) has still experienced some daily and momentary worry (see Figures 5 and 6 respectively). The same pattern emerges for the rest of the participants (P_2 – P_5), which shows that for these five participants, experiences of worry fluctuate across days and moments. Further, the mean levels within each group of monthly worry show that responses may deviate quite substantially from the mean. This pattern is of course most evident when extreme values are reported, such as those found among the participant who has a high level of monthly worry (P_5). It should also be noted that all five participants, regardless of their level of monthly worry, have days and moments when they do not report any worry about victimisation.

In sum, these additional findings show that monthly worry about victimisation corresponds well with mean levels of daily and momentary worry. However, individual participants still exhibit variations in worry over time, which suggests that fear of crime is a dynamic phenomenon in everyday life. This is particularly evident when it comes to momentary worry about victimisation, which here refers to real-time experiences in relation to features of the immediate setting.

Experiential fear of crime

Study IV focuses on fear of crime in relation to randomly sampled settings in the participants' everyday lives. In contrast to Study II, which also focused on momentary worry about victimisation, the STUNDA data were here employed to provide a more fine-grained analysis of associations between features of settings and experiential fear of crime in the form of worry about victimisation. Several features of settings were found to have statistically significant associations with fear of crime. In comparison to being at home, all other places were positively associated with fear, including school/work, public transport, semi-public places, outdoor public environments, and cars/

Figure 5. Number of times worry about victimisation was reported per day (D) by five participants (P₁-P₅) with different levels of monthly worry about victimisation.

Figure 6. Level of worry about victimisation in each moment (M) for five participants (P₁–P₅) with different levels of monthly worry about victimisation.

taxi. Compared to the reference category (media consumption/nothing), no activities were significantly associated with fear of crime except for social activities, which were negatively associated with the outcome (however, this finding is not supported by sensitivity analyses, see Study IV for details). Further, darkness was positively associated with fear of crime. The only significant control variable, individual fear propensity, was positively associated with experiential fear of crime.

In sum, some features of settings are associated with fear of crime. Fear of crime may thus to some extent be dependent on features of the immediate context. However, since fear propensity remained significant in the analysis, the individual influence on momentary experiences of fear needs further consideration.

5. DISCUSSION

Chapter outline

This chapter places the findings within a broader theoretical and methodological perspective. Articles I–III are centred more directly on L-RAT, while the fourth study has a somewhat different perspective, focusing on features of settings and placing fear of crime within a momentary and experiential perspective that stretches beyond the limits of L-RAT. The findings are thus mainly discussed in relation to L-RAT but also on the basis of a broader perspective on the study of everyday life. Implications and contributions are summarised, and this is followed by a final discussion of the limitations of the findings. Suggestions for future research are presented continuously but are also summarised at the end of the chapter.

Crime and fear of crime in everyday life

The first part of the results discussion refers to empirical findings related to the examination of associations between L-RAT variables, crime, and fear of crime.

Different roles associated with crime involvement

To begin with, it is relevant simply to note that Study I revealed a considerable overlap between offending and victimisation, which echoes previous research (e.g. Broidy et al., 2006; Cops & Pleysier, 2014; Daday et al., 2005; Deadman & MacDonald, 2004; Jennings et al., 2012; Jensen & Brownfield, 1986; Singer, 1981). Victims and offenders are thus not mutually exclusive pools of individuals. It is also important to note that the victim-only group is substantially larger than the offender-only group. This further emphasises previous findings showing that those who commit violent crimes are more likely to also be victims of such offences, while the reverse is not as likely (Pauwels & Svensson, 2011). However, very few girls in the sample reported offending which, unsurprisingly, indicates that violent offending is mainly a male phenomenon.

Further, since Study I showed that at least one L-RAT measure was associated with being a victim, an offender or a victim-offender compared to being an abstainer, this can be interpreted as indicating that lifestyle features affect exposure to opportunities for victimisation and offending. Various measures of unstructured activities, peer deviance, and alcohol use are thus important lifestyle features, as suggested in research on victimisation and offending (e.g. Averdijk & Bernasco, 2015; Bernasco et al., 2013; Felson & Burchfield, 2004; Maimon & Browning, 2012; Osgood et al., 1996; Svensson & Oberwittler, 2010). However, the finding that *different* features of everyday life are related to *different* outcomes illustrates that it is difficult to define any universally risky L-RAT features. The sex-specific analyses for boys also support this finding, while multinomial girl-specific models could not be estimated due to their low offending rates. However, a binary logistic regression model examining victimisation among girls was the only analysis that found a significant association between the variable labelled ‘unstructured activities’ and any outcome, which further emphasises the pattern of there being several variations in the associations between L-RAT features and different outcomes. Finding differences between various types of routine activities and different outcomes is not surprising, however, since lifestyle variables tend to vary in significance depending on the type of crime involvement (Mustaine & Tewksbury, 2000; TenEyck & Barnes, 2018).

In sum, the findings confirm that features of everyday life, as studied within an L-RAT perspective, are related to involvement in violent victimisation, offending, and to the overlap between these two outcomes. However, the study adds complexity in the sense that it found different L-RAT features to be related to different outcomes. Thus, although supporting an L-RAT perspective, the conclusions are conditional on the outcome of interest, which makes it difficult to define any generic lifestyle variable that is related to all outcomes. While not necessarily being a problem per se, this suggests that L-RAT research may require outcome-specific models.

Lifestyle/routine activities and fear of crime

Study II departs from a traditional approach by using conventional L-RAT predictors from the baseline survey in STUNDA while at the same time offering an alternative perspective by exploring these predictors in relation to three different reference periods for worry about victimisation. It should be noted, however, that due to the convenience sample, the findings merely serve as examples of how everyday life may be linked to fear of crime. Nevertheless, the most consistent finding was noted for ‘spending time with friends in the city-centre’, which was significantly associated with monthly, daily, and momentary worry about victimisation. In a general sense, this indicates that there is a connection between what people do in their everyday lives and fear of

crime, which is in line with much previous research (e.g. Crowl & Battin, 2017; Lee & Hilinski-Rosick, 2012; Mesch, 2000; Özascilar, 2013; Rountree, 1998). However, the other L-RAT variables varied in the nature of their associations with worry about victimisation, as did control variables referring to gender and previous victimisation, two common correlates of fear of crime (Collins, 2016). These inconsistencies can be understood as indicating that certain L-RAT features and demographic characteristics are not of relevance for fear of crime in general but for specific forms of fear (i.e. monthly, daily or momentary worry).

Further, there are different potential interpretations of the associations between the lifestyle/routine activities measured in the baseline survey and fear of crime measured in days and moments. First, a day or a moment may be more or less frightening because individuals with different lifestyles are exposed to different fear-generating settings during these days and in these moments. This interpretation thus suggests that settings vary in their fear-generating characteristics and that exposure to these settings is dependent on individuals' lifestyles, which would seem to fit an opportunity perspective on fear (e.g. Ferraro, 1995; Melde, 2009; Rountree, 1998, see also Stafford & Galle, 1984). The fluctuations in fear over time shown by the additional findings may be interpreted as supportive of this interpretation. Even the most and the least fear prone individuals (i.e., those with high or no monthly worry) seem to be affected by daily and momentary influences, as indicated by the variations in fear over days and moments. Fear of crime may thus be neither chronic, nor completely absent in everyday life for most people.

However, despite having different lifestyles in general, exposure to specific types of settings during days and moments is unlikely to be completely different for two different individuals within the same society. Nonetheless, these settings may be experienced differently because of varying individual lifestyles. In this explanation, different lifestyles may make individuals vary in their habituation or sensitisation towards certain types of settings (Engström & Kronkvist, 2018). Thus, lifestyle features may affect the propensity to experience fear in a given setting. This interpretation highlights the connection between a more stable expressive dimension of fear of crime, and fear of crime as a transitory daily or momentary experience (see Farrall et al., 2009). While referring to essentially different types of fear, these two definitions are interrelated to the extent that experiences of fear arguably affect and are affected by an individual's more stable dispositional fear of crime (see Gabriel & Greve, 2003). The two different interpretations of the findings in Study II thus highlight the possibility that associations between L-RAT factors and fear of crime may relate to both situational and developmental processes.

In sum, some L-RAT factors seem to be related to fear of crime but it is important to consider whether these associations are of relevance for fear in the last month, the

last 24 hours, and in the present moment. The main contribution made by the findings is therefore that they point to aspects that need to be explored in future research. These aspects include, for instance, examining how lifestyle directly affects exposure to fear-generating circumstances and whether/how lifestyle plays a developmental role in relation to individuals' dispositional fear.

Studying crime and fear of crime in everyday life

This second part of the results discussion refers to methodological aspects of the study of everyday life, in part from an L-RAT perspective but also in the form of a broader discussion of experience methods and experiential fear of crime.

Measuring lifestyle/routine activities

Study III examined the operationalisations of lifestyle and routine activities that have been employed in the literature. It should first be noted that the sparsity of studies that were excluded from the review due to their only using proxy variables indicates that the issue of employing proxy variables may not be as big as has been suggested in the literature (e.g. Meier & Miethe, 1993; Mustaine & Tewksbury, 1997, 2000). Further, the measures identified refer to a fairly wide array of different types of activities, as indicated by the eight different categories identified. These categories vary in how frequently they are examined in relation to victimisation and offending. For instance, 'illegal activities' is the category of lifestyle factors that is most frequently used in studies on victimisation while 'unstructured and peer-oriented activities' is the most commonly used category of activities in studies focused on offending. While this indicates that a risky lifestyle is often defined differently depending on the outcome, this is not surprising since the findings from Study I showed that different lifestyle factors may vary in significance when considering different roles associated with involvement in crime.

Moreover, the activities employed in the reviewed studies vary quite substantially in the ways in which they may affect exposure to criminogenic circumstances, and thus in how well they correspond with the criticism that some studies do not use measures that tap into any actual risk (e.g. Pratt & Turanovic, 2016; Tittle, 1995). For instance, 'structured and other low-risk activities' are not really meaningful in terms of criminogenic exposure and are thus less relevant as measures of lifestyle and routine activities within the field of criminology (unless one is focusing on protective lifestyle factors). At the other extreme, it is common to use L-RAT measures labelled as 'illegal activities'. This operationalisation of lifestyle/routine activities is somewhat confusing since crime should arguably be treated as an outcome of risky routine activities rather than as constituting a lifestyle measure itself within L-RAT (Cohen & Felson, 1979; Hindelang et al., 1978; Lemieux & Felson, 2012). More generally, it is also important

not to confound predictors and outcomes (Sobel, 1981). Thus, if L-RAT is to be relevant for the wider population, measures are needed that tap into other aspects of everyday life than merely illegal activities, which are arguably only routines for a small fraction of the population. Nevertheless, the finding that delinquency is often employed as a measure of lifestyle/routine activities is expected based on previous research (e.g. Lauritsen et al., 1991; Mustaine & Tewksbury, 2000; Pizarro et al., 2011; Sampson & Lauritsen, 1990).

Further, many of the reviewed studies use vague measures that would appear more appropriate for use at an aggregate rather than at the individual level, such as ‘spending time with friends’, which says very little about any actual individual risk (for a discussion, see Pratt & Turanovic, 2016). Thus, at the *aggregate level* of lifestyle and routine activities, which was *not* studied in Study III, routine activities can be quite unspecific, such as ‘spending time outside of the home’. Patterns in time spent outside the home can then be compared with, for instance, burglary rates. At the *individual level*, however, it would seem more appropriate to focus on more specific activities. These may not constitute a large proportion of an individual’s activities in daily life and might thus be more appropriately labelled merely as ‘activities’. Consequently, the labels of ‘routine’ and ‘lifestyle’ can be dropped, which may in turn counteract the confusion and criticism caused by these labels (cf. Tittle, 1995). Further, many everyday routines are not associated with any great crime risk when considering their relative risk levels (for a discussion, see Lemieux & Felson, 2012). In fact, being involved in a high risk activity just a few times (i.e. where it is neither a routine nor a lifestyle), may be riskier than involvement in a more frequent activity (i.e. a routine/lifestyle).

Finally, since there has historically been a call for more precise measures (e.g. Gottfredson, 1981, 1984; Pratt & Turanovic, 2016; Tewksbury et al., 2010), it is relevant to suggest potential improvements. A measure of an activity should include the specific type of activity and the context of this activity, including where it occurs, the presence or absence of others, and the time at which it occurs (see Wikström et al., 2012). Including these aspects could better pinpoint the risk associated with specific activities.

Experience methods and experiential fear of crime

The additional findings show that there is a relatively good correspondence in fear of crime across different reference periods but also that participants vary in their levels of fear across days and moments. Using mean values that are based on aggregations of data points over time may thus not accurately reflect the nature of the phenomenon under study. This finding illustrates that experience methods provide insights into the actual dynamics of everyday life. These dynamics are perhaps best demonstrated in relation to fear of crime as an experience that is dependent on the immediate setting, which was the topic explored in Study IV. Drawing on the findings from this study, it seems safe to more generally conclude that there is a connection between momentary

worry about victimisation and features of settings. However, the specific findings in terms of associations between features of settings and fear of crime must be interpreted with caution due to the convenience sample employed.

Nevertheless, for the sample studied, place seems to matter in the sense that home is perceived as a safe haven, which is in line with ideas outlined by others (Brantingham & Brantingham, 1995). The more general finding that the type of location seems to be the main feature of a setting of relevance for fear is also in line with previous experience methods research that taps into fear of crime (Birenboim, 2018). What one is doing in a setting seems less relevant and, somewhat surprisingly according to previous research (e.g. Brantingham & Brantingham, 1995; Scott, 2003; Warr, 1990), being alone and being alone with strangers were not significantly associated with the outcome, net of all other features of settings. Although it is a rather blunt measure of time, darkness was significantly and positively associated with experiential fear of crime, which is in line with previous research (e.g. Brantingham & Brantingham, 1995; Warr, 1990). These four dimensions of a setting (where, what, with whom, and when) thus seem to matter to a varying extent when examined as separate independent variables. Overall, this finding echoes recent research focusing on fear of crime as an event that is contingent on the immediate context (e.g. Solymosi & Bowers, 2018; Solymosi et al., 2015). The importance of the characteristics of settings for experiential fear of crime is further emphasised by the fact that most findings were also significant in an additional analysis that controlled for fear propensity.

However, although Study IV did not use a particularly well-elaborated measure of individual propensity, the finding that fear propensity is associated with experiential fear of crime indicates that a more holistic situational perspective is necessary. This perspective should integrate both features of settings and individual characteristics that are of relevance for an individual's fear propensity in a theoretical framework in which experiential fear may perhaps more accurately be defined as 'situational' fear of crime (for a discussion see Engström & Kronkvist, 2018). A situational perspective also needs to acknowledge the previously discussed division of fear of crime into either expressive/stable or experiential/transitory accounts (Farrall et al., 2009; Gabriel & Greve, 2003). Since situational fear of crime is experienced in moments of everyday life, it is thus most definitely a form of experiential or transitory fear. However, experiential fear may be more easily and commonly experienced by individuals who have high levels of expressive fear (as suggested by Study IV), which may thus be more broadly viewed as a factor that indicates a predisposition for experiencing fear (see Gabriel & Greve, 2003; Kappes et al., 2013). A more elaborated situational perspective on fear of crime must therefore consider the link between experiential and expressive fear, which was also discussed previously in relation to the interpretation of the findings in Study II.

Contributions and implications

The discussion of the findings in general, but particularly the many complexities and inconsistencies found in the studies, provide several theoretical, methodological, and policy-related contributions and implications for the research field.

Contributions to theory

This section provides some general insights worth considering in L-RAT but it also highlights some aspects of the above discussion of results that challenge the limits of this theoretical perspective and thus open up for the addition of alternative theoretical approaches in the future.

General contributions

First, examining risky lifestyles and crime involvement requires a careful consideration of the outcome of interest (victimisation, offending, and the overlap between the two). While L-RAT was originally a theory of victimisation, it has been broadened due to its focus on crime events and opportunities for such events (see McNeeley, 2015). Although opportunities are equal regardless of the outcome (i.e. the convergence of the ingredients for crime), Study I provided further support for the findings reported in previous L-RAT research that the lifestyle features hypothesised to result in exposure to such opportunities may vary depending on the outcome of interest (Mustaine & Tewksbury, 2000; TenEyck & Barnes, 2018). Therefore, one theoretical implication for L-RAT consists of considering whether the theory should be further adapted to fit different outcomes.

Second, it is important for L-RAT research to consider how fear of crime is most accurately integrated into its theoretical framework. One obstacle is the fact that fear of crime is a subjective phenomenon, and as such an ‘opportunity for fear’ or a fear experience may be quite different for different individuals. However, Study II shows that there are some lifestyle patterns that point to the potential existence of certain universal aspects even for such a subjective phenomenon as fear of crime. While Study IV did not proceed from the L-RAT framework, the findings are also compatible with the theory since they indicate that opportunities for fear are contingent on specific features of settings. Altogether, the findings from the STUNDA studies point to the possibility of more precisely specifying an L-RAT model of fear of crime. This model would benefit from defining fear of crime as an event that unfolds in people’s everyday lives (see Solymosi et al., 2015). From this point of departure, an important element for L-RAT involves specifying which lifestyle/routine activities affect exposure to opportunities for fear. Another important element in a theoretical model would be to more exactly pinpoint why certain settings generate fear. Thus, a more elaborated L-RAT model of

fear of crime could both include the traditional link between individual lifestyle/routine activities and exposure, and at the same time more thoroughly outline the ‘ingredients for fear’ that are present in the settings to which individuals become exposed.

Finally, drawing on the original texts (Cohen & Felson, 1979; Hindelang et al., 1978), routine activities are the key to understanding differences in criminogenic exposure across individuals. In the systematic literature review, however, the label ‘routine’ seemed superfluous and L-RAT, when focused on the individual level, is perhaps best described as a theory of ‘just’ activities. The operationalisation of lifestyle and routine activities also differs across studies, which is not necessarily a problem, but the theory would benefit from focusing more closely on activities that could at least hypothetically affect criminogenic exposure (see Pratt & Turanovic, 2016). Focusing on ‘just’ activities without the lifestyle/routine label may be helpful because it opens up for a better understanding of how *all* the various types of activities that constitute part of everyday life may or may not be related to crime.

Although these contributions may be seen as fairly generic, they are particularly relevant for L-RAT research on adolescents and young adults since the empirical material presented in this dissertation has focused exclusively on these age groups. These age groups are also overrepresented as victims and offenders (e.g. Rocque et al., 2015), and also to some extent exhibit high levels of fear of crime (e.g. Lifvin et al., 2020), which thus highlights that adolescents and young adults should be a primary focus in criminological research on everyday life, crime, and fear of crime.

A theoretical challenge

In the background section, it was stated that regardless of individual predispositions, offending, victimisation, and fear of crime do not occur in an environmental vacuum. This is acknowledged by L-RAT where the central idea is that what people do in their lives exposes them to various opportunities for crime and fear of crime. In a broad sense, the results indicate that this is true, since significant associations were found between some lifestyle features and the outcomes studied. Stated simply, exposure matters.

However, when two individuals are exposed to the same circumstances, the outcome may not be identical. Perhaps only one of them will be victimised, commit an offence or become frightened. This possibility is illustrated by the findings of this dissertation, since they point to exposure as an important prerequisite for each of the outcomes studied, but not as a sufficient explanatory factor. The clearest indication of this is the significance of variables measuring individual differences in demographic factors. For instance, Study I shows that girls and boys differ substantially in their involvement in violent offending, and that sex-specific models produce somewhat different results. The findings from Studies II and IV also indicate that individual factors are important since demographic control variables, such as gender and age, and a proxy variable controlling

for individual fear propensity, were associated with fear of crime in some analyses. These findings are not surprising, since demographic factors often remain significant in L-RAT research (see e.g. Gottfredson, 1984). However, treating individual factors merely as noise that needs to be controlled for via the inclusion of certain demographic variables and proxies downplays the potential importance of more specific individual factors and their interaction with features of the immediate environment.

The inclusion of individual factors therefore needs to be based on a more thoroughly elaborated approach rather than just using demographic variables referring to attributes such as age and gender. A potentially good starting point in this endeavour would be to acknowledge the inherent differences between various outcomes. Being subjected to another person's illegal act, acting illegally oneself, and worrying about crime, are qualitatively different phenomena. Thus, while all these outcomes can be treated as events in everyday life, the analysis differs depending on whether the explanatory focus is directed at an event from a victim's, an offender's, or a frightened person's perspective. This has a bearing on the inclusion of individual factors in a theoretical model.

First, victimisation events may be dependent on characteristics of the victims which make them suitable targets, or related to individual traits that may affect the victims' behaviour, such as self-control (see e.g. Pratt et al., 2014; Wilcox & Cullen, 2018). It has also been argued that to fully explain a victimisation event, information is needed about the offender's target selection (see e.g. Birkbeck & LaFree, 1993). Second, an offending event is likely to be dependent on the crime propensity of the potential offender. For instance, SAT states that the interaction between individual crime propensity (moral values and the ability to exercise self-control) and features of settings is the key to understanding crime as situated action (see e.g. Wikström et al., 2012). Third, a fear event is a quite different phenomenon but could also, as previously discussed, potentially be studied using a situational framework that integrates individual characteristics and features of the immediate environment in order to understand why an individual experiences fear in a given setting (Engström & Kronkvist, 2018). Even a transitory experience/state is still at least partially dependent on an individual's expressive or dispositional fear of crime (Farrall et al., 2009; Gabriel & Greve, 2003; Kappes et al., 2013). The latter has in this dissertation been referred to as 'fear propensity' and may be dependent on relatively stable individual factors, such as personality traits. However, as discussed previously, exposure to various everyday-life settings may also habituate or sensitise an individual to those settings, which in turn affects the individual's propensity to react fearfully to similar settings in the future. Thus, fear of crime must be further explored within a theoretical framework that acknowledges both situational and potential developmental processes that affect fear propensity.

In sum, a central theoretical challenge for L-RAT consists in the fact that exposure alone is not sufficient if the ambition is to fully explain crime and fear of crime. It is therefore important to further consider outcome-specific individual factors and their interactions with environmental features. Treating crime and fear of crime as events that occur as a result of an interaction between individual characteristics and environmental factors could be fruitful because it allows for a dynamic and mechanism-based perspective, such as that offered by SAT (see Wikström et al., 2012). This suggestion challenges the limits of L-RAT and thus highlights its main weakness if the theory is to be expected to provide a full explanation of crime and fear of crime. However, if causation or explanation is not the aim, a theoretical perspective focusing on ‘just’ exposure, such as L-RAT, still provides important knowledge that is useful for understanding associations between everyday life, crime, and fear of crime.

Methodological contributions

This dissertation offers some insights that may be of value for methodological developments, particularly for researchers interested in using experience methods to study everyday life. More generally, the STUNDA project shows that everyday life can be studied using a smartphone app containing both traditional and experience-method surveys. This is arguably the main contribution of the two STUNDA studies; they show that fear of crime can, regardless of the specific definition employed (e.g. worry, fear etc.), be studied as a dynamic everyday-life phenomenon. Although there are a number of methodological pitfalls, some of which have been described elsewhere (Kronkvist & Engström, 2020) and which are further discussed later in this chapter, it is important to continue to use alternative methodologies when studying fear of crime or any other dynamic phenomenon associated with everyday life. This is perhaps most clearly illustrated when focusing on moments, where potential predictors and outcomes are measured as they converge in space and time, in real time, *in situ*. This offers a possibility of not merely relying on hypothetical inferences between predictors and outcomes, since it provides an empirical link between the two. Methodologies that provide access to real-life experiences in everyday settings in this way clearly provide a different type of knowledge than that produced by traditional retrospective surveys (see e.g. Chataway & Bourke, 2020).

However, the STUNDA project is not the first criminological study to open up this possibility (see e.g. Ruiter & Bernasco, 2018), and a growing number of fear of crime studies are using smartphone applications (for a review, see Solymosi et al., 2020). Nonetheless, STUNDA may be a good choice due to its wide coverage (both iOS and Android versions), its having been tested and evaluated using a fairly large sample compared to other apps (Kronkvist & Engström, 2020), its inclusion of different types

of surveys that cover different reference periods (including event-based surveys which were not analysed in this dissertation) which may overcome the biases associated with only using longer reference periods (Lynch & Addington, 2010), and its attempt to place fear of crime more directly within a situational framework (see also Engström & Kronkvist, 2018).

However, the methodological approach offered by STUNDA should not be understood as a rejection of traditional methodologies. Experience methods simply offer a complement that, together with traditional methodologies such as the baseline survey integrated in STUNDA, provide a more holistic approach to the study of phenomena in the context of everyday life. Further, STUNDA is not necessarily complete in its current form but could be further developed by including a space-time budget which would offer the opportunity to contextualise daily life in a diary-like fashion, instead of 'only' providing momentary snapshots. This approach might be similar to that used by Ruiter and Bernasco (2018), who collected detailed diary data in order to calculate the relative victimisation risk associated with various everyday activities. This shows that it is possible to chart individuals' lives in detail in order to measure the context of activities more precisely, which is also in line with suggestions in the L-RAT literature (Tewksbury & Mustaine, 2010). Since diary data may also be more reliable than traditional survey data (e.g. Kan, 2008), there are good reasons for researchers to use space-time budgets and other instruments that provide a detailed picture of everyday life.

Policy implications

Study I may provide some policy implications since it is based on a random sample. For adolescent boys at least, it may be relevant to consider the L-RAT features that are related to the outcomes since these point to factors that could be targeted by interventions, such as alcohol consumption. The STUNDA data cannot be interpreted as having any direct policy implications in terms of fear reduction, due to the convenience sampling approach employed. However, the described methodological implications of the STUNDA studies, and also the systematic review, may feed forward into future policy implications. Using alternative instruments and carefully considering the operationalisation of key concepts may result in more accurate knowledge about how crime-related outcomes are embedded in everyday life. More knowledge about the risk associated with specific activities may also provide increased possibilities for prevention, since it is likely that specific activities are more easily targeted by interventions than broader activity categories. This may in turn result in L-RAT becoming more useful in terms of prevention than it is today (see Pratt & Turanovic, 2016).

More broadly speaking, any L-RAT study with an ambition to also assist in crime and fear prevention needs to consider whether the lifestyle/routine activities measures employed in the research reflect real-life aspects that could be targeted by interventions.

For instance, a broad activity such as ‘spending time outside of the home’ cannot really be helpful in terms of prevention; people cannot be encouraged to stay at home at all times and it is not possible to modify the entire out-of-home environment (for a discussion, see Pratt & Turanovic, 2016). In contrast, proceeding from a youth perspective, activities with peers occurring in a specific location at night could be more relevant. Perhaps the physical environment of the location in question could be modified or increasingly controlled by adults or law enforcement at night, and youth may be encouraged to be careful or to refrain from hanging out at the location at night.

However, there are still many everyday-life factors that are not easily targeted with interventions; “[w]here people live, what they must do in the daytime, how they travel, and with whom they associate can be aspects of life over which there is little control” (Gottfredson, 1984: 32). It is therefore imperative to avoid directly interpreting positive associations between lifestyle/routine activities and crime and fear of crime as pointing to these specific activities as the source of the problem. Rather, the focus should be directed at the circumstances that make activities risky, which is why research is needed that thoroughly contextualises activities in order to adequately address their riskiness. As has previously been discussed, space-time budgets and experience methods could be helpful in this endeavour and are thus potentially important tools for knowing where, when, and how crime prevention and fear reduction efforts should be directed. This approach could thus ultimately result in more accurately targeted interventions that more precisely reach individuals who are at risk of becoming victimised, committing crimes, or becoming frightened.

Limitations

Specific limitations associated with each separate study are presented in detail in the respective articles. This section focuses more broadly on the limitations of the selected methodologies.

Samples

The MINDS sample can be considered fairly representative of the specific birth cohort studied, although caution is warranted due to the fact that individuals from affluent areas were overrepresented. Findings from MINDS should thus be generalisable to this cohort and to individuals in their mid-teens more generally. However, the STUNDA data originate from a convenience sample. The findings from this project are therefore not generalisable, not even to the student population at Malmö University. The STUNDA project should therefore be viewed as a starting point from which future research using similar methods can draw guidance and then carry out studies using random samples that are representative of the studied population.

Variables

Unfortunately, aside from Study I, all studies were carried out more or less in parallel, which means that they could not take advantage of their respective findings. This is perhaps most clearly exemplified by the literature review that focused on different types of activity measures. Since the STUNDA project was launched in parallel, the routine activity items used in this study were not inspired by the findings of the literature review. Further, STUNDA did not unfortunately collect any data in the daily assessment that could be useful to construct any independent day-level L-RAT variables. This neglects the possibility that day-level exposure factors may affect daily fear of crime.

Analytical procedures

Several of the independent variables employed in the studies are categorical, which means that the findings are dependent on comparisons with a reference category. Other categorisations and reference categories would produce different results, which should be examined in future research. Another issue associated with categorisation relates to Study III, which contains a categorisation of measures of lifestyle/routine activities. This categorisation could be executed in other ways and thus produce other results. Nonetheless, the appendix to Study III clearly shows the categorisation approach that was employed, which will hopefully assist those who may be interested in potential alternative categorisations.

It should also be mentioned that the STUNDA data were collected using a longitudinal approach but have not been analysed using longitudinal methods. Since few participants remained in the study over time and thus provided data repeatedly, longitudinal analyses were deemed difficult. Using a larger sample that is kept active over time is therefore important for future research in order to find answers to research questions pertaining to changes in fear of crime over time.

Another limitation is that it may be relevant to examine the type of data collected in the STUNDA project in analyses of interactions between individual and environmental factors. However, because of the focus on L-RAT, the STUNDA studies centred solely on the role of exposure and environmental influences on fear of crime. Further, the poor operationalisation of individual characteristics does not allow for any meaningful analyses in which individual characteristics interact with environmental factors.

Experience methods

While experience methods have here been proposed as an important contribution to the study of everyday life, they still have their own inherent problems, the most important of which are presented here in relation to the STUNDA project.

First, the compliance rates in the experience surveys in STUNDA are estimated to be quite low when compared to other studies, although some other studies also exhibit fairly low compliance rates (see Jones et al., 2019). A certain amount of non-response is of course expected from the methodological approach employed in the STUNDA project; it uses an intrusive methodology, the expiry time for the signal-contingent survey is quite short, some participants may simply not accept to be sent notifications, and there was no incentive for participation (although the use of incentives demands careful consideration, see e.g. Reis et al., 2014; Van Berkel et al., 2017). However, some participants were very active, with high compliance rates, which indicates that the level of compliance in the sample is uneven. This is a common characteristic in similar studies (Solymosi et al., 2020), and a topic that has been further discussed in the STUNDA project in relation to the feasibility of the methodology (Kronkvist & Engström, 2020). Higher compliance rates may be achieved by changing the signalling schedule to fit patterns of everyday life in a way that makes it easy to respond to surveys (e.g. surveying at lunch breaks when surveying students). However, this suggestion needs careful consideration since it neglects the random signalling approach and would thus result in lower representativeness of the participants' everyday lives.

Another possible limitation is the risk that being assessed intensively and repeatedly may affect the participants. Some individuals may change their behaviour since the methodology itself may make them reflect about their lives (e.g. Hufford et al., 2002; Scollon, 2003). This issue is known as 'reactivity' (for an overview see Barta et al., 2012), and is a potential problem in experience research (e.g. Bolger et al., 2003; Reis et al., 2014). It is difficult to state how much studies are affected by this phenomenon (Barta et al., 2012; Shiffman et al., 2008) but it has been raised as a potential issue in relation to the use of experience methods to study fear of crime (Chataway et al., 2019; Jackson & Gouseti, 2015). Further, a related issue is the 'response shift phenomenon', which refers to the possibility that the *same* phenomenon assessed repeatedly may be perceived differently over the study period, such as mood (Barta et al., 2012). Respondents may also experience a desire to provide different responses when they are repeatedly asked to respond to the same surveys, which may result in findings not reflecting the actual phenomenon under study (Schwarz, 2012). The extent of the effects of these issues on the current study is unknown, and it thus an important question to examine in similar research in the future.

Future directions

All of the findings have different implications that point to avenues for future research. These have been highlighted throughout the discussion but the most important suggestions for future research are summarised here. First, L-RAT research should

further examine different roles associated with crime involvement. This could advance our understanding of the differences that may exist between the underlying mechanisms behind victimisation, offending and the victim-offender overlap. Second, fear of crime research needs to treat the outcome as being more dynamic than is possible using traditional methodologies. Thus, using approaches that complement traditional surveys may provide answers to questions that remain unanswered to date. These approaches may include a full situational analysis of fear of crime, in which both features of settings and individual characteristics interact, and longitudinal analyses that include the interplay between situational and developmental processes. Third, L-RAT scholars need to carefully consider the operationalisation of routine activities. Activities of relevance are those that affect exposure to criminogenic circumstances, which implies that the context of various activities is of great importance.

Finally, all these suggestions drawn from the findings of this dissertation more broadly point to the importance of future research focusing on ‘events’, because this is the level at which crime, and at least some fear of crime, is experienced. From this point of departure the role of exposure becomes clearer, because an approach of this kind can more directly focus on the setting in which the event occurs. However, the individual who is being exposed to a given setting must not be forgotten. The findings of this dissertation thus highlight the need to integrate environmental and individual perspectives in a situational, event-based model of crime and fear of crime. This requires a broadening of the scope of L-RAT or the consideration of other theories. Regardless of the theoretical approach chosen, the findings of this dissertation confirm that crime and fear of crime are embedded in everyday life, which is a notion that must remain central in future research.

POPULÄRVETENSKAPLIG SAMMANFATTNING

Brott och upplevelser av otrygghet är händelser som sker inom ramen för vad som kan definieras som människors vardagsliv. Samband mellan vardagslivet, brott och otrygghet är därför viktiga att studera. Detta gäller inte minst bland unga människor eftersom de generellt sett både är mest brottsutsatta och begår mest brott. Otryggheten är också särskilt hög bland unga kvinnor. Inom kriminologi beaktas relationen mellan vardagsliv, brott och otrygghet genom teorier som utgår från att en individs livsstil, med dess olika vardagsaktiviteter, leder till exponering för olika miljöer. Vissa av dessa miljöer är mer riskfyllda än andra genom att de innehåller möjligheter eller tillfällen kopplade till ökad risk för brott och/eller oro för att utsättas för brott.

Trots att denna teoretiska utgångspunkt har använts i otaliga studier, finns tre breda kunskapsluckor som indikerar ett behov av ytterligare forskning. För det första fokuserar forskningen ofta på antingen brottsutsatta *eller* gärningspersoner. Detta angreppssätt riskerar att förbise den särskilda grupp individer som *både* blir utsatta för brott och begår brott. För det andra studeras otrygghet primärt som en tidsmässigt stabil företeelse där forskningen ofta kretsar kring oro för brott över längre tidsperioder, som till exempel det senaste året. Detta metodologiska angreppssätt tar inte hänsyn till att otrygghet kan uppstå i form av korta episoder till följd av olika upplevelser i vardagslivet. För det tredje saknas klarhet och konsensus kring vilka vardagsaktiviteter som bör studeras för att undersöka sambandet mellan unga individers vardagsliv och brott. Detta leder till svårigheter att fastställa vilka av alla vardagsaktiviteter som faktiskt ökar risken för att bli utsatt för brott eller att själv begå brott.

Utifrån dessa kunskapsluckor genomfördes fyra delstudier inom ramen för denna avhandling. I den första delstudien undersöktes utsatthet för brott och brottsdeltagande bland gymnasieungdomar baserat på ett datamaterial från *Malmö Individual and Neighbourhood Development Study* (MINDS). Ungdomarna kategoriserades i fyra

grupper utifrån deras inblandning i våldsbrott under föregående läsår: (1) varken brottsutsatt eller gärningsperson, (2) endast brottsutsatt, (3) endast gärningsperson och (4) både brottsutsatt och gärningsperson. Risken att tillhöra någon av grupperna som kommit i kontakt med brott (grupp 2–4) jämfördes med gruppen utan någon koppling till brott (grupp 1) utifrån olika livsstilsfaktorer. Resultaten visade att frekvent berusning och att ofta vara på ”stan” på kvällen är de primära livsstilsfaktorer som kan kopplas till att vara brottsutsatt (grupp 2) medan att ha vänner som begår brott är den viktigaste faktorn för att vara gärningsperson (grupp 3). För individer som både är brottsutsatta och gärningspersoner (grupp 4) är frekvent berusning, men även att tillbringa mycket tid med vänner i ostrukturerade aktiviteter utan vuxennärvaro (t.ex. ”hänga” med kompisar), de viktigaste livsstilsfaktorerna. Överlag kan det därmed konstateras att det finns samband mellan olika livsstilsfaktorer och inblandning i våldsbrott. Samtidigt är det tydligt att det generellt sett är *olika* faktorer som kan kopplas till att vara brottsutsatt, gärningsperson eller att både vara brottsutsatt och gärningsperson.

I den andra delstudien användes ett material som samlats in med hjälp av en mobilapplikation utvecklad inom forskningsprojektet *STUNDA: Att undersöka upplevelser av situationell otrygghet genom smarta telefoner bland unga vuxna i Malmö*. Applikationen togs fram i syfte att undersöka kortare episoder av otrygghet i ett bekvämlighetsurval bestående av studenter. Tre olika typer av enkäter med olika referensperioder användes i delstudien: oro för brott under den senaste månaden, den senaste dagen och i realtid genom att deltagarna mottog enkäter via notifikationer i applikationen. Svaren på dessa enkäter analyserades sedan genom att undersöka samband mellan deltagarnas vardagsaktiviteter och deras oro för brott. Resultaten visade att individer som tillbringar mer tid med vänner på ”stan” uppvisar lägre nivå av oro i alla tre typer av enkäter. I övrigt varierar sambanden mellan vardagslivsaktiviteter och oro för brott mellan de olika enkäterna, vilket visar att det är viktigt att beakta oro i relation till olika referensperioder för att förstå hur otrygghet är förankrat i vardagslivet.

Den tredje delstudien är en systematisk litteraturöversikt som sammanställer forskningsläget vad gäller de olika specifika aktiviteter som anses representera unga individers vardagsliv i studier av brottsutsatthet och brottsdeltagande. Sammanställningen visar bland annat att individers lagöverträdelse ofta betraktas som en form av vardagslivsaktiviteter i studier som undersöker utsatthet för brott. Studier som undersöker brottsdeltagande fokuserar istället främst på olika former av ostrukturerade vardagslivsaktiviteter (t.ex. ”hänga” med vänner). Överlag visar sammanställningen att de aktiviteter som inom forskningen anses representera individers vardagsliv varierar mellan olika studier. Detta behöver inte vara ett problem i sig men innebär att det är svårt att mer specifikt definiera vilka av alla möjliga specifika vardagslivsaktiviteter som är relevanta för risken att utsättas för brott och/eller begå brott.

I den fjärde och sista delstudien användes STUNDA-materialet för att förflytta fokus till ett mikroperspektiv. Med hjälp av enkäten som undersökte otrygghet i realtid, alltså i den specifika situation som deltagaren befann sig i vid mottagandet av en notifikation i mobilapplikationen, undersöktes om och hur oro för brott i olika situationer kan kopplas till olika aspekter av den direkta omgivningen. Resultaten visar bland annat att oron är högre när en individ befinner sig på andra platser än det egna hemmet eller någon annans hem och när det är mörkt ute. Samtidigt upplevs situationer där en individ umgås med andra som mindre otrygga. Totalt sett visar resultaten att oro för brott kan förstås som en upplevelse som uppstår i relation till den omedelbara miljö i vilken en individ befinner sig för stunden.

Sammanfattningsvis bekräftar avhandlingens delstudier att brott och otrygghet kan härledas till hur ungdomar och unga vuxna lever sina liv i vardagen. Utifrån resultaten kan även en rad mer specifika teoretiska och metodologiska slutsatser dras som bör tillvaratas i framtida forskning. För det första måste forskningen fortsätta undersöka hur *olika* faktorer i vardagslivet kan kopplas till *olika* kriminologiskt relevanta utfall som utsatthet för brott och delaktighet i brott. Det som utgör en riskfylld livsstil kan helt enkelt variera mellan brottsutsatta, gärningspersoner och de individer som både blir utsatta och är gärningspersoner. För det andra är det centralt att studera hur otrygghet varierar i relation till olika referensperioder. Särskilt viktigt att beakta är att oro för brott kanske allra tydligast har en koppling till vardagslivet i form av konkreta otrygghetsupplevelser i olika specifika situationer, avgränsade i tid och rum. Slutligen är det även viktigt att forskning som undersöker samband mellan vardagsaktiviteter och brott fokuserar på de aktiviteter som faktiskt kan kopplas till ökad risk för att bli utsatt för brott eller att begå brott. Många av vardagslivets aktiviteter är inte relevanta i detta avseende och det är därför nödvändigt att sortera ut och studera de specifika aktiviteter som faktiskt kan kopplas till en riskfylld livsstil.

Avslutningsvis bör det också nämnas att resultaten i delstudierna visar att även demografiska variabler kan kopplas till brott och otrygghet. Detta kan tolkas som att fokus bör utvidgas till att inte enbart studera livsstil och dess relation till exponering för riskfyllda miljöer, utan även inkludera mer individrelaterade aspekter som kan tänkas förklara kopplingen mellan demografiska faktorer och brott och otrygghet. För brottsutsatthet och brottsdeltagande skulle detta kunna handla om individens förmåga att utöva självkontroll medan otrygghet kanske kan kopplas till en mer generell individuell benägenhet att uppleva oro. I framtida forskning behövs därför ett modifierat eller alternativt teoretiskt perspektiv som inkluderar såväl livsstilsfaktorer som mer specifika individegenskaper. Med andra ord krävs en förklaringsmodell som tar hänsyn till såväl individ- som miljöfaktorer för att ge en mer komplett förklaring till brott och otrygghet.

ACKNOWLEDGEMENTS

There are several people whom I would like to thank for their support, input and collaboration during the time it has taken to produce this dissertation. First of all, I would like to thank my supervisors, Marie Torstensson Levander and Anna-Karin Ivert. You have given me enough freedom to pursue this project in accordance with my own ideas and wishes, while still giving me the guidance needed to remain on track. Thank you also for always being cooperative and for working as a team to provide clear and helpful input and support.

I would also like to thank my co-author in Studies II and IV, Karl Kronkvist, for all the collaborative work that we have been involved in during these past years. This includes not only the writing of two of the papers presented in this dissertation but also other publications, and not least the planning and execution of the STUNDA project. As a PhD student colleague, but more importantly as a very good friend, your ‘nothing is impossible’ mentality has had a very positive influence on our collaborative work, and also on the way in which I have come to approach my own work.

Further, I would like to thank Robert Svensson and Nina-Katri Gustafsson for giving me plenty of constructive input at my half-time seminar, which helped me find a clearer focus for the dissertation. I would also like to thank Beth Hardie for providing some very important ideas at my final seminar with regard to how I could better pull all the loose ends together to produce a clearer and more coherent picture of where my dissertation is situated within a wider criminological perspective.

I would also like to thank Dave Shannon for his language editing support and Sally Erisman for additional language assistance. I have also received a great deal of support and input from my colleagues at the Department of Criminology at Malmö University. Thank you all for always being supportive and providing constructive input, particularly all of you who have been or are still fellow PhD students.

Finally, thanks to my family and friends for being supportive and accepting that I have, at times, spent too much time working on this dissertation.

REFERENCES

- Agnew, R., & Petersen, D. M. (1989). Leisure and delinquency. *Social Problems*, 36(4), 332–350.
- Alvi, S., Schwartz, M. D., DeKeseredy, W. S., & Maume, M. O. (2001). Women's fear of crime in Canadian public housing. *Violence Against Women*, 7(6), 638–661.
- Averdijk, M., & Bernasco, W. (2015). Testing the situational explanation of victimization among adolescents. *Journal of Research in Crime and Delinquency*, 52(2), 151–180.
- Barta, W. D., Tennen, H., & Litt, M. D. (2012). Measurement reactivity in diary research. In M. R. Mehl & T. S. Conner (Eds.) *Handbook of research methods for studying daily life* (pp. 108–123). New York: Guilford Press.
- Ben-Zeev, D., McHugo, G. J., Xie, H., Dobbins, K., & Young, M. A. (2012). Comparing retrospective reports to real-time/real-place mobile assessments in individuals with schizophrenia and a non-clinical comparison group. *Schizophrenia Bulletin*, 38(3), 396–404.
- Bernasco, W., Ruiter, S., Bruinsma, G. J. N., Pauwels, L. J. R., & Weerman, F. M. (2013). Situational causes of offending: A fixed-effects analysis of space-time budget data. *Criminology*, 51(4), 895–926.
- Birenboim, A. (2016). New approaches to the study of tourist experiences in time and space. *Tourism Geographies*, 18(1), 9–17.
- Birenboim, A. (2018). The influence of urban environments on our subjective momentary experiences. *Environment and Planning B: Urban Analytics and City Science*, 45(5), 915–932.
- Birkbeck, C., & LaFree, G. (1993). The situational analysis of crime and deviance. *Annual Review of Sociology*, 19, 113–137.
- Bolger, N., Davis, A., & Rafaeli, E. (2003). Diary methods: Capturing life as it is lived. *Annual Review of Psychology*, 54, 579–616.
- Brantingham, P., & Brantingham, P. (1995). Criminality of place. Crime generators and crime attractors. *European Journal on Criminal Policy and Research*, 3, 5–26.
- Broidy, L. M., Daday, J. K., Crandall, C. S., Sklar, D. P., & Jost, P. F. (2006). Exploring demographic, structural, and behavioral overlap among homicide offenders and victims. *Homicide Studies*, 10(3), 155–180.

- Bruinsma, G. J. N., & Johnson, S. D. (2018). Environmental criminology: Scope, history, and state of the art. In: G. J. N. Bruinsma & S. D. Johnson (Eds.) *The Oxford handbook of environmental criminology* (pp. 1–21). New York, NY: Oxford University Press.
- Chataway, M. L. (2019). Sense of place and feelings of safety: Examining young adults' experiences of their local environment using mobile surveys. *City & Community*, 19(3), 656–675.
- Chataway, M. L., & Bourke, A. (2020). Fear of crime, disorder, and quality of life. In: K. Lersch & J. Chakraborty (Eds.) *Geographies of behavioural health, crime, and disorder* (pp. 137–163). GeoJournal Library, vol. 126. Cham: Springer.
- Chataway, M. L., Hart, T. C., & Bond, C. (2019). The social-psychological process of fearing crime: Developing and testing a new momentary model of victimisation worry. *Australian & New Zealand Journal of Criminology*, 52(4), 462–482.
- Chataway, M. L., Hart, T. C., Coomber, R., & Bond, C. (2017). The geography of crime fear: A pilot study exploring event-based perceptions of risk using mobile technology. *Applied Geography*, 86, 300–307.
- Chrysoulakis, A. P. (2020). Morality, delinquent peer association, and criminogenic exposure: (How) does change predict change? *European Journal of Criminology*. Epub ahead of print 11 January 2020. DOI: 10.1177/1477370819896216.
- Cohen, L. E., & Felson, M. (1979). Social change and crime rate trends: A routine activity approach. *American Sociological Review*, 44(4), 588–608.
- Cohen, L. E., Kluegel, J. R., & Land, K. C. (1981). Social inequality and predatory criminal victimization: An exposition and test of a formal theory. *American Sociological Review*, 46(5), 505–524.
- Collins, R. E. (2016). Addressing the inconsistencies in fear of crime research: A meta-analytic review. *Journal of Criminal Justice*, 47, 21–31.
- Comulada, W. S., Swendeman, D., & Wu, N. (2016). Cell phone-based ecological momentary assessment of substance use context for Latino youth in outpatient treatment: Who, what, when and where. *Drug and Alcohol Dependence*, 167, 207–213.
- Conner, T. S., & Lehman, B. J. (2012). Getting started. Launching a study in daily life. In M. R. Mehl & T. S. Conner (Eds.) *Handbook of research methods for studying daily life* (pp. 89–107). New York: Guilford Press.
- Cops, D., & Pleysier, S. (2014). Usual suspects, ideal victims and vice versa: The relationship between youth offending and victimization and the mediating influence of risky lifestyles. *European Journal of Criminology*, 11(3), 361–378.
- Crowl, J.N., & Battin, J.R. (2017). Fear of crime and the police: Exploring lifestyle and individual determinants among university students. *The Police Journal: Theory, Practice and Principles*, 90(3), 195–214.
- Csikszentmihalyi, M., & Larson, R. (1987). Validity and reliability of the Experience Sampling Method. *Journal of Nervous and Mental Disease*, 17(9), 526–536.
- Daday, J. K., Broidy, L. M., Crandall, C. S., & Sklar, D. P. (2005). Individual, neighborhood, and situational factors associated with violent victimization and offending. *Criminal Justice Studies*, 18(3), 215–235.

- Deadman, D., & MacDonald, Z. (2004). Offenders as victims of crime? An investigation into the relationship between criminal behaviour and victimization. *Journal of the Royal Statistical Society. Series A (Statistics in Society)*, 167(1), 53–67.
- Duif, M., Thewissen, V., Wouters, S., Lechner, L., & Jacobs, N. (2020). Associations between affect and alcohol consumption in adults: An ecological momentary assessment study. *The American Journal of Drug and Alcohol Abuse*, 46(1), 88–97.
- Engström, A., & Kronkvist, K. (2018). Situating fear of crime: The prospects for criminological research to use smartphone applications to gather experience sampling data. In: G. Leventakis & M. Haberfeld (Eds.) *Community-oriented policing and technological innovations* (pp. 85–93). Cham: Springer.
- Farrall, S., Bannister, J., Ditton, J., & Gilchrist, E. (1997). Questioning the measurement of the ‘fear of crime’: Findings from a major methodological study. *British Journal of Criminology*, 37(4), 658–679.
- Farrall, S., Jackson, J., & Gray, E. (2009). *Social order and the fear of crime in contemporary times*. Oxford: Oxford University Press.
- Felson, M., & Boba, R. (2010). *Crime and everyday life*. Thousand Oaks, CA: SAGE Publications.
- Felson, R. B., & Burchfield, K. B. (2004). Alcohol and the risk of physical and sexual assault victimization. *Criminology*, 42(4), 837–860.
- Ferraro, K. F., (1995). *Fear of crime: Interpreting victimization risk*. Albany, NY: State University of New York Press.
- Ferraro, K. F., & LaGrange, R. (1987). The measurement of fear of crime. *Sociological Inquiry*, 57(1), 70–97.
- Fisher, B. S., & Sloan, J. J. (2003). Unraveling the fear of victimization among college women: Is the “shadow of sexual assault hypothesis” supported? *Justice Quarterly*, 20(3), 633–659.
- Gabriel, U., & Greve, W. (2003). The psychology of fear of crime. Conceptual and methodological perspectives. *The British Journal of Criminology*, 43(3), 600–614.
- Garofalo, J. (1987). Reassessing the lifestyle model of criminal victimization. In M. R. Gottfredson & T. Hirschi (Eds.) *Positive criminology* (pp. 23–42). Newbury Park, CA: Sage, cop.
- Goldner, J., Peters, T. L., Richards, M. H., & Pearce, S. (2011). Exposure to community violence and protective and risky contexts among low income urban African American adolescents: A prospective study. *Journal of Youth and Adolescence*, 40(2), 174–186.
- Gottfredson, M. R. (1981). On the etiology of victimization. *Journal of Criminal Law and Criminology*, 72(2), 714–726.
- Gottfredson, M. R. (1984). *Victims of crime: The dimensions of risk*, Home Office Research Study No. 81, Her Majesty’s Stationery Office, London.
- Gray, E., Jackson, J., & Farrall, S. (2008). Researching everyday emotions: Towards a multi-disciplinary investigation of the fear of crime. In H. Kury H (Ed.) *Fear of crime – punitivity: New developments in theory and research* (Kriminalität und Kriminalpolitik vol. 3, pp. 3–24). Bochum: Universitätsverlag Brockmeyer.

- Gray, E., Jackson, J., & Farrall, S. (2012). In search of the fear of crime: Using interdisciplinary insights to improve the conceptualisation and measurement of everyday insecurities. In: D. Gadd, S. Karstedt, & S. F. Messner (Eds.) *The SAGE handbook of criminological research methods* (pp. 268–281). London: SAGE Publications Ltd.
- Gunthert, K. C., & Wenze, S. J. (2012). Daily diary methods. In: M. R. Mehl & T. S. Conner (Eds.) *Handbook of research methods for studying daily life* (pp. 144–159). New York, NY: Guilford Press.
- Hardie, B. (2020). *Studying situational interaction*. Cham: Springer.
- Hektner, J. M., Schmidt, J. A., & Csikszentmihalyi, M. (2007). Epistemological foundations for the measurement of experience. In J. M. Hektner, J. A. Schmidt & M. Csikszentmihalyi (Eds.) *Experience sampling method* (pp. 3–15). Thousand Oaks, CA: SAGE Publications, Inc.
- Henson, B., Wilcox, P., Reyns, B. W., & Cullen, F. T. (2010). Gender, adolescent lifestyles, and violent victimization: Implications for routine activity theory. *Victims & Offenders*, 5(4), 303–328.
- Hindelang, M. J., Gottfredson, M. R., & Garofalo, J. (1978). *Victims of personal crime: An empirical foundation for a theory of personal victimization*. Cambridge, MA: Ballinger Pub. Co.
- Hoeben, E. M., Bernasco, W., Weerman, F. M., Pauwels, L., & van Halem, S. (2014). The space-time budget method in criminological research. *Crime Science*, 3(12).
- Hogarth, R. M., Portell, M., & Cuxart, A. (2007). What risks do people perceive in everyday life? A perspective gained from the experience sampling method (ESM). *Risk Analysis*, 27(6), 1427–1439.
- Hufford, M. R., Shields, A. L., Shiffman, S., Paty, J., & Balabanis, M. (2002). Reactivity to ecological momentary assessment: An example using undergraduate problem drinkers. *Psychology of Addictive Behaviors*, 16(3), 205–211.
- Irvin-Erickson, T., Malik, A. A., Kamiran, M. F., & Natarajan, M. (2020). Utility of ecological momentary assessments to collect data on fear of crime. *International Journal of Comparative and Applied Criminal Justice*, 44(4), 307–319.
- Ivert, A.-K., Andersson, F., Svensson, R., Pauwels, L. J. R., & Torstensson Levander, M. (2018). An examination of the interaction between morality and self-control in offending: A study of differences between girls and boys. *Criminal Behaviour and Mental Health*, 28, 282–294.
- Ivert, A.-K., & Torstensson Levander, M. (2014). Adolescents' perceptions of neighbourhood social characteristics – is there a correlation with mental health? *Child Indicators Research*, 7, 177–192.
- Jackson, J. (2009). A psychological perspective on vulnerability in the fear of crime. *Psychology, Crime & Law*, 15(4), 365–390.
- Jackson, J., & Gouseti, I. (2014). Fear of Crime. In J. M. Miller (Ed.) *The encyclopedia of theoretical criminology*. Blackwell Publishing Ltd.
- Jackson, J., & Gouseti, I. (2015). Psychological proximity and the construal of crime: A commentary on 'Mapping fear of crime as a context-dependent everyday experience that varies in space and time.' *Legal and Criminological Psychology*, 20, 212–214.
- Jeffords, C. R. (1983). The situational relationship between age and the fear of crime. *The International Journal of Aging and Human Development*, 17(2), 103–111.
- Jennings, W. G., Piquero, A. R., & Reingle, J. M. (2012). On the overlap between victimization and offending: A review of the literature. *Aggression and Violent Behavior*, 17(1), 16–26.

- Jensen, G. F., & Brownfield, D. (1986). Gender, lifestyles, and victimization: Beyond routine activity. *Violence and Victims, 1*(2), 85–99.
- Jones, A., Remmerswaal, D., Verveer, I., Robinson, E., Franken, I. H. A., Wen, C. K. F., & Field, M. (2019). Compliance with ecological momentary assessment protocols in substance users: A meta-analysis. *Addiction, 114*(4), 609–619.
- Kan, M. Y. (2008). Measuring housework participation: The gap between “stylised” questionnaire estimates and diary-based estimates. *Social Indicators Research, 86*(3), 381–400.
- Kappes, C., Greve, W., & Hellmers, S. (2013). Fear of crime in old age: Precautious behaviour and its relation to situational fear. *European Journal of Ageing, 10*, 111–125.
- Klevens, J., Duque, L. F., & Ramirez, C. (2002). The victim-perpetrator overlap and routine activities: Results from a cross-sectional study in Bogotá, Colombia. *Journal of Interpersonal Violence, 17*(2), 206–216.
- Kronkvist, K., & Engström, A. (2020). Feasibility of gathering momentary and daily assessments of fear of crime using a smartphone application (STUNDA): Methodological considerations and findings from a study among Swedish university students. *Methodological Innovations*. DOI:10.1177/2059799120980306.
- Lauritsen, J. L., Sampson, R. J., & Laub, J. H. (1991). The link between offending and victimization among adolescents. *Criminology, 29*(2), 265–292.
- Lee, D. R., & Hilinski-Rosick, C. M. (2012). The role of lifestyle and personal characteristics on fear of victimization among university students. *American Journal of Criminal Justice, 37*, 647–668.
- Leitner, M., & Kounadi, O. (2015). Mapping fear of crime as a context-dependent everyday experience that varies in space and time. *Legal and Criminological Psychology, 20*, 218–221.
- Lemieux, A. M., & Felson, M. (2012). Risk of violent crime victimization during major daily activities. *Violence and Victims, 27*(5), 635–655.
- Liddle, J., Wishink, A., Springfield, L., Gustafsson, L., Ireland, D., & Silburn, P. (2017). Can smartphones measure momentary quality of life and participation? A proof of concept using experience sampling surveys with university students. *Australian Occupational Therapy Journal, 64*, 294–304.
- Lifvin, S., Molin, M., Irlander Strid, Å., & Viberg, J. (2020). *Nationella trygghetsundersökningen 2020: Om utsatthet, otrygghet och förtroende*. Rapport 2020:8. Stockholm: The Swedish National Council for Crime Prevention.
- Lynch, J. P., & Addington, L. A. (2010). Identifying and addressing response errors in self-report surveys. In A. A. Piquero, & D. Weisburd (Eds.) *Handbook of quantitative criminology* (pp. 251–272). New York, NY: Springer.
- MacKerron, G., & Mourato, S. (2013). Happiness is greater in natural environments. *Global Environmental Change, 23*(5), 992–1000.
- Maier, S. L., & DePrince, B. T. (2020). College students’ fear of crime and perception of safety: The influence of personal and university prevention measures. *Journal of Criminal Justice Education, 31*(1), 63–81.
- Maimon, D., & Browning, C. R. (2012). Adolescents’ violent victimization in the neighbourhood: Situational and contextual determinants. *British Journal of Criminology, 52*(4), 808–833.
- Malmö universitet (2019). *Årsredovisning 2018*. Lund: Media-Tryck, Lunds universitet.

- Maxfield, M. G. (1987). Lifestyle and routine activity theories of crime: Empirical studies of victimization, delinquency, and offender decision-making. *Journal of Quantitative Criminology*, 3(4), 275–282.
- McNeeley, S. (2015). Lifestyle-routine activities and crime events. *Journal of Contemporary Criminal Justice*, 31(1), 30–52.
- McNeish, D. M. (2014). Modeling sparsely clustered data: Design-based, model-based, and single-level methods. *Psychological Methods*, 19(4), 552–563.
- Mehl, M. R., & Conner, T. S. (2012). *Handbook of research methods for studying daily life*. New York, NY: Guilford Press.
- Meier, R. F., & Miethe, T. D. (1993). Understanding theories of criminal victimization. *Crime and Justice*, 17, 459–499.
- Melde, C. (2009). Lifestyle, rational choice, and adolescent fear: A test of a risk-assessment framework. *Criminology*, 47(3), 781–812.
- Mesch, G. S. (2000). Perceptions of risk, lifestyle activities, and fear of crime. *Deviant Behavior*, 21(1), 47–62.
- Miró, F. (2014). Routine activity theory. In J. M. Miller (Ed.) *The encyclopedia of theoretical criminology*. Blackwell Publishing Ltd
- Mood, C. (2010). Logistic regression: Why we cannot do what we think we can do, and what we can do about it. *European Sociological Review*, 26(1), 67–82.
- Mustaine, E. E., & Tewksbury, R. (1997). Obstacles in the assessment of routine activity theory. *Social Pathology*, 3(3), 177–194.
- Mustaine, E. E., & Tewksbury, R. (2000). Comparing the lifestyles of victims, offenders, and victim-offenders: A routine activity theory assessment of similarities and differences for criminal incident participants. *Sociological Focus*, 33(3), 339–362.
- Nasar, J. L., & Fisher, B. (1993). ‘Hot spots’ of fear and crime: A multi-method investigation. *Journal of Environmental Psychology*, 13(3), 187–206.
- Nilsson, E.-L. (2017). *Parental socialization and adolescent offending*. Health & Society, Doctoral dissertation 2017: 6, Malmö University.
- Nilsson, E.-L., Ivert, A.-K., & Torstensson Levander, M. (2020). Adolescents’ perceptions, neighbourhood characteristics and parental monitoring – are they related, and do they interact in the explanation of adolescent offending? *Child Indicators Research*. Epub ahead of print 20 November 2020. DOI: 10.1007/s12187-020-09789-7.
- Osgood, D. W., & Anderson, A. L. (2004). Unstructured socializing and rates of delinquency. *Criminology*, 42(3), 519–549.
- Osgood, D. W., Wilson, J. K., O’Malley, P. M., Bachman, J. G., & Johnston, L. D. (1996). Routine activities and individual deviant behavior. *American Sociological Review*, 61(4), 635–655.
- Özascilar, M. (2013). Predicting fear of crime: A test of the shadow of sexual assault hypothesis. *International Review of Victimology*, 19(3), 269–284.
- Pauwels, L. J. R., & Svensson, R. (2011). Exploring the relationship between offending and victimization: What is the role of risky lifestyles and low self-control? A test in two urban samples. *European Journal on Criminal Policy and Research*, 17(3), 163–177.

- Pervin, L. A. (1978). Definitions, measurements, and classifications of stimuli, situations, and environments. *Human Ecology*, 6(1), 71–105.
- Pizarro, J. M., Zgoba, K. M., & Jennings, W. G. (2011). Assessing the interaction between offender and victim criminal lifestyles & homicide type. *Journal of Criminal Justice*, 39(5), 367–377.
- Pratt, T. C., & Turanovic, J. J. (2016). Lifestyle and routine activity theories revisited: The importance of “risk” to the study of victimization. *Victims & Offenders*, 11(3), 335–354.
- Pratt, T. C., Turanovic, J. J., Fox, K. A., & Wright, K. A. (2014). Self-control and victimization: A meta-analysis. *Criminology*, 52, 87–116.
- Raento, M., Oulasvirta, A., & Eagle, N. (2009). Smartphones: An emerging tool for social scientists. *Sociological Methods & Research*, 37(3), 426–454.
- Reis, H. T. (2012). Why researchers should think “real-world”. A conceptual rationale. In M. R. Mehl & T. S. Conner (Eds.) *Handbook of research methods for studying daily life* (pp. 3–21). New York, NY: Guilford Press.
- Reis, H. T., Gable, S. L., & Maniaci, M. R. (2014). Methods for studying everyday experience in its natural context. In: H. T. Reis & C. M. Judd (Eds.) *Handbook of research methods in social and personality psychology* (pp. 373–403). Cambridge, UK: Cambridge University Press.
- Reis, H. T., & Holmes, J. G. (2014). Perspectives on the situation. In K. Deaux & M. Snyder (Eds.) *The Oxford handbook of personality and social psychology* (pp. 64–92). New York, NY: Oxford University Press.
- Rengifo, A. F., & Bolton, A. (2012). Routine activities and fear of crime: Specifying individual-level mechanisms. *European Journal of Criminology*, 9(2), 99–119.
- Richards, M. H., Larson, R., Viegas Miller, B., Luo, Z., Sims, B., Parrella, D. P., & McCauley, C. (2004). Risky and protective contexts and exposure to violence in urban African American young adolescents. *Journal of Clinical Child and Adolescent Psychology*, 33(1), 138–148.
- Riley, D. (1987). Time and crime: The link between teenager lifestyle and delinquency. *Journal of Quantitative Criminology*, 3(4), 339–354.
- Rocque, M., Posick, C., & Hoyle, J. (2015). Age and crime. In W. G. Jennings (Ed.) *The encyclopedia of crime and punishment*. Malden, MA: Wiley-Blackwell.
- Rountree, P. W. (1998). A reexamination of the crime-fear linkage. *Journal of Research in Crime and Delinquency*, 35(3), 341–372.
- Ruiter, S., & Bernasco, W. (2018). Is travel actually risky? A study of situational causes of victimization. *Crime Science*, 7(10).
- Sampson, R. J., & Lauritsen, J. L. (1990). Deviant lifestyles, proximity to crime, and the offender-victim link in personal violence. *Journal of Research in Crime and Delinquency*, 27(2), 110–139.
- Schwartz, S., Schultz, S., Reider, A., & Saunders, E. F. H. (2016). Daily mood monitoring of symptoms using smartphones in bipolar disorder: A pilot study assessing the feasibility of ecological momentary assessment. *Journal of Affective Disorders*, 191, 88–93.
- Schwarz, N. (2012). Why researchers should think “real-time”: A cognitive rationale. In M. R. Mehl & T. S. Conner (Eds.) *Handbook of research methods for studying daily life* (pp. 22–42). New York, NY: Guilford Press.

- Scollon, C. N., Kim-Prieto, C., & Diener, E. (2003). Experience sampling: Promises and pitfalls, strengths and weaknesses. *Journal of Happiness Studies*, 4(1), 5–34.
- Scott, H. (2003). Stranger danger: Explaining women's fear of crime. *Western Criminology Review*, 4(3), 203–214.
- Shiffman, S., Stone, A. A., & Hufford, M. R. (2008). Ecological momentary assessment. *Annual Review of Clinical Psychology*, 4, 1–32.
- Singer, S. I. (1981). Homogeneous victim-offender populations: A review and some research implications. *The Journal of Criminal Law and Criminology*, 72(2), 779–788.
- Sobel, M. E. (1981). *Lifestyle and social structure: Concepts, definitions, analyses*. New York, NY: Academic Press.
- Solymosi, R., & Bowers, K. (2018). The role of innovative data collection methods in advancing criminological understanding. In: G. J. N. Bruinsma & S. D. Johnson (Eds.) *The Oxford handbook of environmental criminology* (pp. 210–237). New York, NY: Oxford University Press.
- Solymosi, R., Bowers, K., & Fujiyama, T. (2015). Mapping fear of crime as a context-dependent everyday experience that varies in space and time. *Legal and Criminological Psychology*, 20(2), 193–211.
- Solymosi, R., Buil-Gil, D., Vozmediano, L., & Guedes, I. (2020). Towards a place-based measure of fear of crime: A systematic review of app-based and crowdsourcing approaches. *Environment and Behavior*. Epub ahead of print 1 August 2020. DOI: 10.1177/0013916520947114.
- Spano, R., & Freilich, J. D. (2009). An assessment of the empirical validity and conceptualization of individual level multivariate studies of lifestyle/routine activities theory published from 1995 to 2005. *Journal of Criminal Justice*, 37(3), 305–314.
- Stafford, M. C., & Galle, O. R. (1984). Victimization rates, exposure to risk, and fear of crime. *Criminology*, 22(2), 173–185.
- Stone, A. A., Schwartz, J. E., Neale, J. M., Shiffman, S., Marco, C. A., Hickcox, M., Paty, J., Porter, L. S., & Cruise, L. J. (1998). A comparison of coping assessed by ecological momentary assessment and retrospective recall. *Journal of Personality and Social Psychology*, 74(6), 1670–1680.
- Stone, A. A., & Shiffman, S. (1994). Ecological momentary assessment (EMA) in behavioral medicine. *Annals of Behavioral Medicine*, 16(3), 199–202.
- Svensson, R., & Oberwittler, D. (2010). It's not the time they spend, it's what they do: The interaction between delinquent friends and unstructured routine activity on delinquency. Findings from two countries. *Journal of Criminal Justice*, 38(5), 1006–1014.
- Svensson, R., & Pauwels, L. (2010). Is a risky lifestyle always “risky”? The interaction between individual propensity and lifestyle risk in adolescent offending: A test in two urban samples. *Crime & Delinquency*, 56(4), 608–626.
- Swedish Research Council (2017). *Good research practice*. Stockholm: Swedish Research Council.
- TenEyck, M., & Barnes, J. C. (2018). Exploring the social and individual differences among victims, offenders, victim-offenders, and total abstainers. *Victims & Offenders*, 13(1), 66–83.
- Tewksbury, R., & Mustaine, E. E. (2000). Routine activities and vandalism: A theoretical and empirical study. *Journal of Crime and Justice*, 23(1), 81–110.

- Tewksbury, R. A., & Mustaine, E. E. (2010). Cohen, Lawrence E., and Marcus K. Felson: Routine activity theory. In F. T. Cullen & P. Wilcox (Eds.) *Encyclopedia of criminological theory* (pp. 186–192). Thousand Oaks, CA: Sage.
- Tittle, C. R. (1995). *Control balance: Toward a general theory of deviance*. Boulder, CO: Routledge.
- Van Berkel, N., Ferreira, D., & Kostakos, V. (2017). The experience sampling method on mobile devices. *ACM Computing Surveys*, 50(6), 1–40.
- Van der Wurff, A., Van Staalduinen, L., & Stringer, P. (1989). Fear of crime in residential environments: Testing a social psychological model. *The Journal of Social Psychology*, 129(2), 141–160.
- Vitelli, R., & Endler, N. S. (1993). Psychological determinants of fear of crime: A comparison of general and situational prediction models. *Personality and Individual Differences*, 14(1), 77–85.
- Ward, R. A., LaGory, M., & Sherman, S. R. (1986). Fear of crime among the elderly as person/environment interaction. *The Sociological Quarterly*, 27(3), 327–341.
- Warr, M. (1990). Dangerous situations: Social context and fear of victimization. *Social Forces*, 68(3), 891–907.
- Wikström, P.-O. H., Oberwittler, D., Treiber, K., & Hardie, B. (2012). *Breaking rules: The social and situational dynamics of young people's urban crime*. Oxford, UK: Oxford University Press.
- Wilcox, P., & Cullen, F. T. (2018). Situational opportunity theories of crime. *Annual Review of Criminology*, 1(1), 123–148.
- Wittebrood, K., & Nieuwebeerta, P. (1999). Wages of sin? The link between offending, lifestyle and violent victimisation. *European Journal on Criminal Policy and Research*, 7(1), 63–80.
- Wolfgang, M. E. (1958). *Patterns in criminal homicide*. Philadelphia, PA: University of Philadelphia Press.

ORIGINAL PAPERS I-IV

I

Associations between Risky Lifestyles and Involvement in Violent Crime during Adolescence

Alexander Engström

Department of Criminology, Malmö University, Malmö, Sweden

ABSTRACT

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

KEYWORDS

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

Introduction

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

CONTACT Alexander Engström alexander.engstrom@mau.se Department of Criminology, Malmö University, Malmö, Sweden.

© 2018 The Author(s). Published by Taylor & Francis.

This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

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

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

Background

The relationship between victimization and offending

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

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

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

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

Lifestyle-exposure theory and routine activities theory

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

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

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

Previous research on lifestyle and routine activities

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

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

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

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

Unstructured activities

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

Peer deviance

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

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

Alcohol use

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

Measuring lifestyle

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

The present study

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

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

Method

Data

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

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

Research instruments

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

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

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

Dependent variable

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

Independent variables

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

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

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

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

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

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

Analytical approach

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

Table 1. Descriptive statistics.

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

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

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

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

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

Findings

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

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

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

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

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

Table 2. Multinomial logistic regression models.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Lifestyle risk varies across sexes

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

Table 3. Multinomial logistic regression models.

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

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

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

^a $R^2 = .28$ (Cox & Snell), .32 (Nagelkerke). Model χ^2 (27) = 70.56, $p \leq .001$.

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

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

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

Discussion

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

Table 4. Binary logistic regression models.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Conclusion

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

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

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

Notes

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

Disclosure statement

No potential conflict of interest was reported by the author.

References

- Agnew, R., & Petersen, D. M. (1989). Leisure and delinquency. *Social Problems*, 36(4), 332–350. doi:10.2307/800819
- Averdijk, M., & Bernasco, W. (2015). Testing the situational explanation of victimization among adolescents. *Journal of Research in Crime and Delinquency*, 52(2), 151–180. doi:10.1177/0022427814546197
- Bernasco, W., Ruiter, S., Bruinsma, G. J. N., Pauwels, L. J. R., & Weerman, F. M. (2013). Situational causes of offending: A fixed-effects analysis of space-time budget data. *Criminology*, 51(4), 895–926. doi:10.1111/1745-9125.12023
- Bjarnason, T., Sigurdardottir, T., & Thorlindsson, T. (1999). Human agency, capable guardians, and structural constraints: A lifestyle approach to the study of violent victimization. *Journal of Youth and Adolescence*, 28(1), 105–119. doi:10.1023/A:1021676625844
- Broidy, L. M., Daday, J. K., Crandall, C. S., Sklar, D. P., & Jost, P. F. (2006). Exploring demographic, structural, and behavioral overlap among homicide offenders and victims. *Homicide Studies*, 10(3), 155–180. doi:10.1177/1088767906288577
- Cohen, L. E., & Felson, M. (1979). Social change and crime rate trends: A routine activity approach. *American Sociological Review*, 44(4), 588–608. doi:10.2307/2094589
- Cops, D., & Pleyzier, S. (2014). Usual suspects, ideal victims and vice versa: The relationship between youth offending and victimization and the mediating influence of risky lifestyles. *European Journal of Criminology*, 11(3), 361–378. doi:10.1177/1477370813500886

- Daday, J. K., Broidy, L. M., Crandall, C. S., & Sklar, D. P. (2005). Individual, neighborhood, and situational factors associated with violent victimization and offending. *Criminal Justice Studies*, 18(3), 215–235. doi:10.1080/14786010500287347
- Deadman, D., & MacDonald, Z. (2004). Offenders as victims of crime? An investigation into the relationship between criminal behaviour and victimization. *Journal of the Royal Statistical Society. Series A (Statistics in Society)*, 167(1), 53–67. doi:10.1111/j.1467-985X.2004.00291.x
- Felson, M., & Boba, R. (2010). *Crime and Everyday Life*. Thousand Oaks, CA: SAGE publications.
- Felson, R. B., & Burchfield, K. B. (2004). Alcohol and the risk of physical and sexual assault victimization. *Criminology*, 42(4), 837–860. doi:10.1111/crim.2004.42.issue-4
- Felson, R. B., & Staff, J. (2010). The effects of alcohol intoxication on violent versus other offending. *Criminal Justice and Behavior*, 37(12), 1343–1360. doi:10.1177/0093854810382003
- Gottfredson, M. T., & Hirschi, T. (1990). *A general theory of crime*. Stanford, CA: Stanford University Press.
- Henson, B., Wilcox, P., Reyns, B. W., & Cullen, F. T. (2010). Gender, adolescent lifestyles, and violent victimization: Implications for routine activity theory. *Victims and Offenders*, 5(4), 303–328. doi:10.1080/15564886.2010.509651
- Hindelang, M. J., Gottfredson, M. R., & Garofalo, J. (1978). *Victims of personal crime: An empirical foundation for a theory of personal victimization*. Cambridge, MA: Ballinger Pub. Co.
- Hoeben, E. M., Bernasco, W., Weerman, F. M., Pauwels, L., & Van Halem, S. (2014). The space-time budget method in criminological research. *Crime Science*, 3(1), 12. doi:10.1186/s40163-014-0012-3
- Jennings, W. G., Higgins, G. E., Tewksbury, R., Gover, A. R., & Piquero, A. R. (2010). A longitudinal assessment of the victim-offender overlap. *Journal of Interpersonal Violence*, 25(12), 2147–2174. doi:10.1177/0886260509354888
- Jennings, W. G., Piquero, A. R., & Reingle, J. M. (2012). On the overlap between victimization and offending: A review of the literature. *Aggression and Violent Behavior*, 17(1), 16–26. doi:10.1016/j.avb.2011.09.003
- Jensen, G. F., & Brownfield, D. (1986). Gender, lifestyles, and victimization: Beyond routine activity. *Violence and Victims*, 1(2), 85–99.
- Juster, T. F., Ono, H., & Stafford, F. P. (2003). An assessment of alternative measures of time use. *Sociological Methodology*, 33(1), 19–54. doi:10.1111/j.0081-1750.2003.t01-1-00126.x
- Kan, M. Y. (2008). Measuring housework participation: The gap between “stylised” questionnaire estimates and diary-based estimates. *Social Indicators Research*, 86(3), 381–400. doi:10.1007/s11205-007-9184-5
- Kan, M. Y., & Pudney, S. (2008). Measurement error in stylized and diary data on time use. *Sociological Methodology*, 38(1), 101–132. doi:10.1111/j.1467-9531.2008.00197.x
- Klevens, J., Duque, L. F., & Ramirez, C. (2002). The victim-perpetrator overlap and routine activities: Results From a cross-sectional study in Bogota, Colombia. *Journal of Interpersonal Violence*, 17(2), 206–216. doi:10.1177/0886260502017002006
- Lauritsen, J. L., & Laub, J. H. (2007). Understanding the link between victimization and offending: New reflections on an old idea. In M. Hough & M. Maxfield (Eds.), *Surveying Crime in the 21st Century* (pp. 55–75). Monsey, NY: Criminal Justice/Willow Tree Press.
- Lauritsen, J. L., Sampson, R. J., & Laub, J. H. (1991). The link between offending and victimization among adolescents. *Criminology*, 29(2), 265–292. doi:10.1111/crim.1991.29.issue-2
- Maimon, D., & Browning, C. R. (2012). Adolescents’ violent victimization in the neighbourhood: Situational and contextual determinants. *British Journal of Criminology*, 52(4), 808–833. doi:10.1093/bjc/azs013
- McNeeley, S. (2015). Lifestyle-routine activities and crime events. *Journal of Contemporary Criminal Justice*, 31(1), 30–52. doi:10.1177/1043986214552607
- Meier, R. F., & Miethe, T. D. (1993). Understanding theories of criminal victimization. *Crime and Justice*, 17, 459–499. doi:10.1086/449218
- Menard, S. (2002). *Applied Logistic Regression Analysis*. Thousand Oaks, CA: SAGE.

- Muftić, L. R., Finn, M. A., & Marsh, E. A. (2015). The victim-offender overlap, intimate partner violence, and sex: Assessing differences among victims, offenders, and victim-offenders. *Crime & Delinquency*, 61(7), 899–926. doi:10.1177/0011128712453677
- Mustaine, E. E., & Tewksbury, R. (1997). Obstacles in the assessment of routine activity theory. *Social Pathology*, 3(3), 177–194.
- Mustaine, E. E., & Tewksbury, R. (2000). Comparing the lifestyles of victims, offenders, and victim-offenders: A routine activity theory assessment of similarities and differences for criminal incident participants. *Sociological Focus*, 33(3), 339–362. doi:10.1080/00380237.2000.10571174
- Osgood, D. W., Wilson, J. K., O'Malley, P. M., Bachman, J. G., & Johnston, L. D. (1996). Routine activities and individual deviant behavior. *American Sociological Review*, 61(4), 635–655. doi:10.2307/2096397
- Ousey, G. C., Wilcox, P., & Fisher, B. S. (2011). Something old, something new: Revisiting competing hypotheses of the victimization-offending relationship among adolescents. *Journal of Quantitative Criminology*, 27(1), 53–84. doi:10.1007/s10940-010-9099-1
- Pauwels, L. J. R., & Svensson, R. (2011). Exploring the relationship between offending and victimization: What is the role of risky lifestyles and low self-control? A test in two urban samples. *European Journal on Criminal Policy and Research*, 17(3), 163–177. doi:10.1007/s10610-011-9150-2
- Pizarro, J. M., Zgoba, K. M., & Jennings, W. G. (2011). Assessing the interaction between offender and victim criminal lifestyles & homicide type. *Journal of Criminal Justice*, 39(5), 367–377. doi:10.1016/j.jcrimjus.2011.05.002
- Posick, C. (2013). The overlap between offending and victimization among adolescents: Results from the second international self-report delinquency study. *Journal of Contemporary Criminal Justice*, 29(1), 106–124. doi:10.1177/1043986212471250
- Pratt, T. C., & Turanovic, J. J. (2016). Lifestyle and routine activity theories revisited: The importance of “risk” to the study of victimization. *Victims & Offenders*, 11(3), 335–354. doi:10.1080/15564886.2015.1057351
- Reid, J. A., & Sullivan, J. (2012). Unraveling victim-offender overlap: Exploring profiles and constellations of risk. *Victims & Offenders*, 7(3), 327–360. doi:10.1080/15564886.2012.685216
- Rokven, J. J., Tolsma, J., Ruiter, S., & Kraaykamp, G. (2016). Like two peas in a pod? Explaining friendship selection processes related to victimization and offending. *European Journal of Criminology*, 13(2), 231–256. doi:10.1177/1477370815617186
- Sampson, R. J., & Lauritsen, J. L. (1990). Deviant lifestyles, proximity to crime, and the offender-victim link in personal violence. *Journal of Research in Crime and Delinquency*. doi:10.1177/0022427890027002002
- Sampson, R. J., & Wooldredge, J. D. (1987). Linking the micro- and macro-level dimensions of lifestyle-routine activity and opportunity models of predatory victimization. *Journal of Quantitative Criminology*, 3(4), 371–393. doi:10.1007/BF01066837
- Schreck, C., Wright, R., & Miller, J. (2002). A study of individual and situational antecedents of violent victimization. *Justice Quarterly*, 19(1), 159–180. doi:10.1080/07418820200095201
- Schreck, C. J., Stewart, E. A., & Fisher, B. S. (2006). Self-control, victimization, and their influence on risky lifestyles: A longitudinal analysis using panel data. *Journal of Quantitative Criminology*, 22(4), 319–340. doi:10.1007/s10940-006-9014-y
- Schulz, F., & Grunow, D. (2012). Comparing diary and survey estimates on time use. *European Sociological Review*, 28(5), 622–632. doi:10.1093/esr/jcr030
- Singer, S. I. (1981). Homogeneous victim-offender populations: A review and some research implications. *The Journal of Criminal Law and Criminology*, 72(2), 779–788. doi:10.2307/1143015
- Stewart, E. A., Elifson, K. W., & Sterk, C. E. (2004). Integrating the general theory of crime into an explanation of violent victimization among female offenders. *Justice Quarterly*, 1(21), 159–181. doi:10.1080/07418820400095771
- Svensson, R., & Oberwittler, D. (2010). It's not the time they spend, it's what they do: The interaction between delinquent friends and unstructured routine activity on delinquency.

- Findings from two countries. *Journal of Criminal Justice*, 38(5), 1006–1014. doi:[10.1016/j.jcrimjus.2010.07.002](https://doi.org/10.1016/j.jcrimjus.2010.07.002)
- Svensson, R., & Pauwels, L. (2010). Is a risky lifestyle always “risky”? The interaction between individual propensity and lifestyle risk in adolescent offending: A test in two urban samples. *Crime & Delinquency*, 56(4), 608–626. doi:[10.1177/0011128708324290](https://doi.org/10.1177/0011128708324290)
- TenEyck, M., & Barnes, J. C. (2017). Exploring the social and individual differences among victims, offenders, victim-offenders, and total abstainers. *Victims & Offenders*, 13(1), 66–83. doi:[10.1080/15564886.2016.1268985](https://doi.org/10.1080/15564886.2016.1268985)
- Tewksbury, R., & Mustaine, E. E. (2000). Routine activities and vandalism: A theoretical and empirical study. *Journal of Crime and Justice*, 23(1), 81–110. doi:[10.1080/0735648X.2000.9721111](https://doi.org/10.1080/0735648X.2000.9721111)
- Tillyer, M. S., & Wright, E. M. (2014). Intimate partner violence and the victim-offender overlap. *Journal of Research in Crime and Delinquency*, 51(1), 29–55. doi:[10.1177/0022427813484315](https://doi.org/10.1177/0022427813484315)
- Turanovic, J. J., Reisig, M. D., & Pratt, T. C. (2015). Risky lifestyles, low self-control, and violent victimization across gendered pathways to crime. *Journal of Quantitative Criminology*, 31(2), 183–206. doi:[10.1007/s10940-014-9230-9](https://doi.org/10.1007/s10940-014-9230-9)
- Turanovic, J. J., & Young, J. T. N. (2016). Violent offending and victimization in adolescence: Social network mechanisms and homophily. *Criminology*, 54(1), 487–519. doi:[10.1111/1745-9125.12112](https://doi.org/10.1111/1745-9125.12112)
- Turner, E. L., Dobson, J. E., & Pocock, S. J. (2010). Categorisation of continuous risk factors in epidemiological publications: A survey of current practice. *Epidemiologic Perspectives & Innovations*, 7(9), 1–10. doi:[10.1186/1742-5573-7-9](https://doi.org/10.1186/1742-5573-7-9)
- Van Gelder, J.-L., Averdijk, M., Eisner, M., & Ribaud. (2015). Unpacking the victim-offender overlap: On the role differentiation and socio-psychological characteristics. *Journal of Quantitative Criminology*, 31(4), 653–675. doi:[10.1007/s10940-014-9244-3](https://doi.org/10.1007/s10940-014-9244-3)
- Von Hentig, H. (1948). *The Criminal and His Victim: Studies in the Sociobiology of Crime*. New York, NY: Schoken Books.
- Warr, M. (2002). *Companions in Crime: The Social Aspects of Criminal Conduct*. Cambridge, UK: Cambridge University Press.
- Weerman, F. M., & Hoeve, M. (2012). Peers and delinquency among girls and boys: Are sex differences in delinquency explained by peer factors? *European Journal of Criminology*, 9(3), 228–244. doi:[10.1177/1477370811435736](https://doi.org/10.1177/1477370811435736)
- Wikström, P.-O. H., & Butterworth, D. A. (2006). *Adolescent Crime: Individual Differences and Lifestyles*. Cullompton, UK: Willan Publishing.
- Wikström, P.-O. H., Oberwittler, D., Treiber, K., & Hardie, B. (2012). *Breaking rules: The social and situational dynamics of young people's urban crime*. Oxford: Oxford University Press.
- Wittebrood, K., & Nieuwebeerta, P. (1999). Wages of sin? The link between offending, lifestyle and violent victimisation. *European Journal on Criminal Policy and Research*, 7(1), 63–80. doi:[10.1023/A:1008736114804](https://doi.org/10.1023/A:1008736114804)
- Wolfgang, M. E. (1958). *Patterns in Criminal Homicide*. Philadelphia, PA: University of Philadelphia Press.

III

The Relationship between Lifestyle/Routine Activities and Fear of Crime across Months,
Days, and Moments

Alexander Engström and Karl Kronkvist, Malmö University

Corresponding Author:

Alexander Engström, Department of Criminology, Malmö University, 205 06 Malmö, Sweden.

Email: alexander.engstrom@mau.se

THE RELATIONSHIP BETWEEN LIFESTYLE/ROUTINE ACTIVITIES AND FEAR

Abstract

Drawing on lifestyle-exposure theory and routine activity theory, this study explores associations between lifestyle/routine activities and fear of crime across months, days, and moments. A convenience sample of university students responded to surveys regarding worry about victimization delivered via a custom-made smartphone application named STUNDA. The findings indicate that spending time with friends in the city-center is significantly and negatively associated with fear of crime across months, days, and moments. This can more broadly be interpreted as being supportive of a connection between lifestyle/routine activities and fear of crime. However, other lifestyle/routine activity measures showed varying associations with the outcomes, indicating that specific lifestyle/routine activity variables may only be of relevance for fear of crime in relation to a particular reference period. However, the main contribution of the study consists in studying fear of crime as a dynamic phenomenon that can be understood as both a generalized phenomenon that can be measured in reference to a longer period of time, and as a more specific experience during days and moments in everyday life. Future research needs to continue studying fear of crime in relation to different reference periods and to examine whether the study's findings are applicable in a more general population.

Keywords: Ecological momentary assessment, Experience sampling method, Fear of crime, Lifestyle-Exposure Theory, Reference period, Routine Activity Theory, Smartphone application

THE RELATIONSHIP BETWEEN LIFESTYLE/ROUTINE ACTIVITIES AND FEAR

Introduction

Correlates of fear of crime span over a wide spectrum (Collins, 2016), and several different theoretical explanations have been proposed (see Farrall et al., 2009). One less-well studied theoretical approach involves treating fear of crime as being contingent on what people do in their everyday life. The importance of everyday life is emphasized in lifestyle-exposure theory and routine activity theory, as these theories state that victimization is a result of exposure to environmental circumstances favorable to victimization (Cohen & Felson, 1979; Hindelang et al., 1978). Although less common, research based on these theories also has examined whether activities from daily life are related to fear of crime (see e.g., Alvi et al., 2001; Choi & Dulisse, 2019; Crowl & Battin, 2017; Lee & Hilinski-Rosick, 2012; Melde, 2009; Mesch, 2000; Rengifo & Bolton, 2012).

However, two issues related to the study of lifestyle/routine activities and fear of crime should be noted. First, the findings from previous research are rather mixed, with the same activity being found to be either positively or negatively associated with fear of crime outcomes, or to be unrelated to these same outcomes (cf. Otis, 2007; Rengifo & Bolton, 2012; Rountree, 1998). Second, when examining associations between activities and fear of crime, the outcome is often studied at a general level using measures based on averages, which often refer to an individual's aggregate level of fear during the last 12 months (e.g., national surveys, for an example see Molin & Lifvin, 2019). Although this approach provides important knowledge about general fear of crime, there is a need to consider fear of crime in relation to shorter reference periods as well, since long reference periods are associated with various forms of biases (Gray et al., 2012; Solymosi et al., 2015, see also Lynch & Addington, 2010). And such research is indeed becoming more common, at least in the form of a focus on fear of crime as a specific everyday experience, limited in space and time (Engström & Kronkvist, 2020; Solymosi et al., 2020).

Using a unique set of self-reported data collected by means of a smartphone application named STUNDA, the current study explores the relationship between lifestyle/routine activities and fear of crime across three different reference periods in a convenience sample of students. More specifically, fear of crime is initially examined with reference to worry about victimization in the last month, while subsequent specific analyses are carried out using days and moments as the units of analysis. With this focus, the current study adds an important perspective

THE RELATIONSHIP BETWEEN LIFESTYLE/ROUTINE ACTIVITIES AND FEAR

to both fear of crime research in general and to studies of fear of crime based on lifestyle-exposure theory and routine activity theory in particular. The former refers to the possibility of studying fear of crime as a dynamic phenomenon while the latter explores these dynamics in relation to general measures of everyday-life activities. More specifically, if some activities are more (or less) related to fear of crime in a similar fashion across months, days, and moments, such knowledge could be helpful as a means of better understanding the connection between everyday life and fear of crime.

Background

Lifestyle-Exposure Theory and Routine Activity Theory

What people do in their everyday lives constitutes the common denominator of lifestyle-exposure theory and routine activity theory, which are here treated as a merged lifestyle-routine activity theory (L-RAT, see McNeeley, 2015). Lifestyle-exposure theory postulates that victimization is a result of criminogenic exposure; the more one is exposed to criminogenic circumstances, the greater the risk for victimization (Hindelang et al., 1978). How individuals lead their lives (i.e., their lifestyle) thus determines their level of exposure to circumstances in which victimization is more likely to occur. Similarly, routine activity theory departs from the notion that victimization occurs when a suitable target converges in time and space with a motivated offender in the absence of capable guardians (Cohen & Felson, 1979). Exposure to circumstances of this kind is determined by individuals' routine activities. Both lifestyle-exposure theory and routine activity theory are located within an opportunity perspective (Wilcox & Cullen, 2018) as they emphasize that what people do affects their risk for exposure to opportunities for victimization (Maxfield, 1987). Thus, *activities* are the main focus of inquiry (see Engström, 2021).

Fear of crime, including its many dimensions (see Ferraro & LaGrange, 1987), may also be placed within the L-RAT framework (e.g., Choi & Dulisse, 2019; Crowl & Battin, 2017; Lee & Hilinski-Rosick, 2012; Melde, 2009; Mesch, 2000; Rengifo & Bolton, 2012). However, the way in which various activities may help explain differences in fear of crime can be interpreted quite differently (see e.g., Crowl & Battin, 2017). On the one hand, different lifestyles may expose individuals to more or less fear-generating opportunities (Rountree, 1998). This notion suggests that individuals with a 'risky lifestyle' are at greater risk of experiencing fear

THE RELATIONSHIP BETWEEN LIFESTYLE/ROUTINE ACTIVITIES AND FEAR

of crime (e.g., Melde, 2009; Mesch, 2000; Rountree, 1998). On the other hand, individuals may in fact be less likely to experience fear of crime *because* of their risky lifestyle. Being exposed to fear-generating circumstances may thus increase individuals' resilience against experiencing fear of crime in relation to seemingly risky circumstances. This could be explained as a developmental process whereby a given lifestyle, or set of routine activities, exposes individuals to different everyday-life circumstances, with this resulting in a feedback loop that affects the individuals' dispositional fear of crime (i.e., their tendency to perceive moments as frightening; see Gabriel and Greve, 2003). What people do in their daily lives may thus play a role for fear of crime directly by affecting the type of circumstances to which one is exposed, and also indirectly by affecting how these circumstances are perceived in terms of fear (dispositional fear).

Associations between Activities and Fear of Crime

Although the specific activities included may vary across studies to fit the target populations, for instance students (e.g., Lee & Hilinski-Rosick, 2012) or the elderly (e.g., Ward et al., 1986), the main focus of most L-RAT research on fear of crime relates to leisure activities, even though occupational activities may also be of relevance (see Killias, 1990). However, unlike research focusing on victimization, where there is a theoretically expected association between any given activity and the outcome, L-RAT research on fear of crime has as yet not developed sufficiently to be able to specify the nature and direction of such associations, which is also reflected in the rather inconsistent findings reported in previous research. For instance, visiting pubs/nightclubs has been found to be both negatively (Rengifo & Bolton, 2012) and positively (Rountree, 1998) associated with fear of crime outcomes, and also to be uncorrelated with such outcomes (Otis, 2007). Similar mixed results have also been found for partying (Crowl & Battin, 2017; Hilinski, 2009; Lee & Hilinski-Rosick, 2012; Özascilar, 2013; Özaşçılar & Ziyalar, 2017). This tendency is not just related to partying and visiting pubs/nightclubs, as Mesch (2000) reports that being out at night at a café or going to the cinema is negatively associated with fear of crime, while Özaşçılar and Ziyalar (2017) found that the opposite was the case for going to sports events/concerts/cinemas. Traveling on public transport is another activity that has been suggested to be 'dangerous', and as such to increase fear of violent crime (Rountree, 1998). However, when examining fear of crime specifically on public transport, those who travel alone at night may in fact be less fearful (Scott, 2003), which adds complexity to the potential associations between

THE RELATIONSHIP BETWEEN LIFESTYLE/ROUTINE ACTIVITIES AND FEAR

public transportation and fear of crime. In sum, activities vary in both their significance and the direction of their associations with fear of crime, which means that the picture provided by previous research is somewhat unclear.

It should also be mentioned that L-RAT research generally includes demographic control variables (see e.g., Hindelang et al., 1978; see also Cohen et al., 1981). For fear of crime, perhaps the most common demographic variables are gender and age where the former has been suggested as a particularly important factor since women are commonly found to have higher levels of fear of crime (Collins, 2016). Moreover, many studies examining associations between activities and fear of crime also include measures of victimization (e.g., Hilinski, 2009; Lee & Hilinski-Rosick, 2012; Otis, 2007; Rengifo & Bolton, 2012).

Fear of Crime

While the studies reported above relate to the umbrella term fear of crime, they vary in how they define their outcomes (e.g., worry, risk perception, etc.). In general, definitions of fear of crime have varied substantially in the existing research (for a discussion of conceptualizations see e.g., Ferraro & LaGrange, 1987; Gray et al., 2012). Despite a vast body of research, one aspect that remains less well-studied is fear of crime in relation to different reference periods. For instance, fear of crime is mainly examined in relation to general beliefs about crime in annual surveys, whereas more dynamic approaches using shorter reference periods are less common (Farrall et al., 2009). The former refer to fear of crime as a stable phenomenon, which is perhaps best represented by global measures in traditional surveys (e.g., ‘in the past 12 months, how worried have you been about becoming the victim of a crime?’). At the other end of the scale, fear of crime is seen as a purely momentary concept, experienced as a series of transitory events in people’s lives (e.g., Engström & Kronkvist, 2020; Solymosi et al., 2015). Neither of these perspectives is more relevant than the other, but by considering both, fear of crime can be understood as a concept that varies not only in terms of its dimensions (e.g., risk perception or worry), but also in terms of the level at which these dimensions are located (e.g., general vs. momentary fear of crime). These different levels are also related to the differences between expressive (inner thoughts and beliefs) and experiential (real-life experiences) fear of crime (Farrall et al., 2009). A more holistic perspective on fear of crime may thus include both

THE RELATIONSHIP BETWEEN LIFESTYLE/ROUTINE ACTIVITIES AND FEAR

general feelings and thoughts about fear of crime in relation to a longer reference period (expressive fear) *and*, for instance, the consideration of fear in relation to specific days or moments (experiential fear).

Of particular importance here are the reference periods employed. For instance, while a conventional global measure of fear often refers to the past 12 months, a daily survey could refer to the past 24 hours. To *only* rely on global measures of fear of crime is problematic since this approach is associated with biases (see Gray et al., 2012; Solymosi et al., 2015). More generally, conventional retrospective self-report surveys with long reference periods risk an underreporting of the phenomena of interest during that period, whereas shorter reference periods provide more accurate responses (Lynch & Addington, 2010), as do studies that assess phenomena in real time (Schwarz, 2012). Since fear of crime specifically is both an expressive and an experiential concept, this requires consideration in relation to the methodological approaches employed to measure it; surveys with different reference periods are therefore needed. While expressive aspects are generally incorporated in conventional fear of crime surveys, one promising approach to examining experiential fear consists of using so-called experience methods. These refer to methods that focus on surveying individuals in real time or in near retrospect in order to capture actual experiences (see e.g., Csikszentmihalyi & Larson, 1987; Stone & Shiffman, 1994). This approach minimizes biases such as memory and aggregation bias (e.g., Solymosi et al., 2015) and involves repeatedly collecting data across multiple occasions using short reference periods, often simply referring to ‘here and now’.

The choice of a reference period is of course related to practical constraints associated with the collection of data. For instance, more intensive methodologies that involve respondents being surveyed repeatedly in relation to shorter reference periods may be more difficult to execute than traditional surveys. However, smartphone applications may facilitate this kind of data collection, since they can incorporate both longer and shorter reference periods by combining different kinds of surveys (see e.g., Kronkvist & Engström, 2020). In recent years there has also been an increase in studies that use smartphones to collect data about fear of crime (Solymosi et al., 2020).

THE RELATIONSHIP BETWEEN LIFESTYLE/ROUTINE ACTIVITIES AND FEAR

The Present Study

The aim of the present study is to examine associations between L-RAT factors and fear of crime. More specifically, this includes examining associations between general lifestyle measures of leisure and public transport activities that were measured in a baseline survey, and fear of crime across months, days, and moments. These associations are examined while taking into consideration demographic variables known to be correlated with fear of crime and one additional common correlate of fear of crime in the form of previous crime victimization (see Collins, 2016).

Data

Data for the present study were collected in the research project *STUNDA: Examining experiences of situational fear of crime through smartphone applications among young adults in Malmö*.¹ STUNDA is a smartphone application specifically developed to examine fear of crime as it unfolds in everyday life (for more information, see Kronkvist & Engström, 2020). During the fall of 2018, a convenience sample of students at Malmö University, Sweden, was recruited in classrooms and via manned displays around the campus. Potential participants were provided with a flyer containing the unique user credentials needed to use the app. This recruitment strategy makes it impossible to know the exact number of students who were informed about the project, but a total of 933 students retained a flyer, of which 191 (20.5 %) downloaded the app and completed the *baseline survey*. Once enrolled in the study, participants could choose to respond to additional surveys, of which two constitute the focus in this article. In total, 163 participants completed at least one *daily assessment*, while 131 participants completed at least one *signal-contingent survey*. In the present study, cases with missing data on any of the study variables have been excluded, which resulted in a final sample of 180 individual baseline surveys, 937 daily assessments reported by 154 participants, and 1,283 signal-contingent surveys reported by 125 participants.

Procedure

The baseline survey was launched as soon as the participants downloaded the app and consented to participate in the study. This survey is inspired by conventional crime surveys (e.g., the Swedish Crime Survey; see Molin & Lifvin, 2019), and includes questions on fear of crime, previ-

THE RELATIONSHIP BETWEEN LIFESTYLE/ROUTINE ACTIVITIES AND FEAR

ous victimization, routine activities, and demographic information. Following the baseline survey, participants were asked to complete the daily assessment once a day before going to bed. This survey includes a number of questions relating to fear of crime during the past 24 hours. Since the participants may have varying diurnal rhythms, this survey was always active and could thus be completed at any time during the day. However, a notification was sent every night at 9 pm as a reminder.

The signal-contingent survey was activated three times per day via notifications in the app and consists of items regarding momentary fear of crime. The notification schedule was based on a stratified sampling approach, with notifications being sent at random times within each of three time slots (07:30–12:30; 12:31–17:30; 17:31–22:30) in order to provide data on different times of the day (see Shiffman et al., 2008).² After receiving a notification, the respondents had to complete the survey within 20 minutes before it was deactivated in order to ensure that assessments were made momentarily and thus had high ecological validity (see Scollon et al., 2003). About half of all signal-contingent surveys were in fact initiated within one minute of receipt of a notification, and the vast majority within 15 minutes (Kronkvist & Engström, 2020).

Due to the technical specifications of STUNDA and the research design employed, it is not possible to determine the exact number of surveys provided to each participant.³ However, based on the individuals included in the current study, it is estimated that the compliance rate ranges from 61.8 to 69.1 percent for the daily survey (154 participants) and from 31.3 to 35.1 percent for the signal-contingent survey (125 participants; for a discussion and formulae for estimations, see Kronkvist & Engström, 2020).

Study Variables

All study variables are described in Table 1.

Dependent variables

Monthly worry about victimization is based on six offense types included in the baseline survey and refers to how often participants had worried about these different types of crime during the past month, with the response options ‘never’, ‘rarely’, ‘quite often’, and ‘very often’.⁴ These response options were assigned consecutive values from 0 to 3 which were summarized in an

THE RELATIONSHIP BETWEEN LIFESTYLE/ROUTINE ACTIVITIES AND FEAR

Table 1. Individual-level (N = 180), daily level (N = 937) and momentary level (N = 1,283) variables included.

Individual-level variables	Range, mean (sd)	%
<i>Monthly worry about victimization (summary index value)</i>		
No worry (0)		10.0
Low worry (1–2)		26.1
Low-medium worry (3–4)		26.1
Medium-high worry (5–8)		27.8
High worry (9–16)		10.0
<i>Leisure activities, times/month, dichotomized (category 1)</i>		
Spend time with friends in the city-center (6+)		41.1
Go to pubs/nightclubs (1+)		61.7
Go to restaurants (3+)		45.6
Go to cinema (1+)		49.4
Go to sports events (1+)		28.3
<i>Public transport activities (days/week)</i>		
Within city	0–7, 2.7 (2.5)	
Outside city	0–7, 2.7 (2.4)	
<i>Individual characteristics</i>		
Age, years	18–40, 23.7 (4.3)	
Gender (female)		70.0
Marital status (single)		45.6
Victimization		50.0
Daily level variables		
<i>Daily worry about victimization</i>		
No		85.9
Yes		14.1
Momentary level variables		
<i>Momentary worry about victimization (original value)</i>		
0 (0)		78.9
1 (1–2)		5.2
2 (3–7)		5.5
3 (8–20)		5.0
4 (21+)		5.5

THE RELATIONSHIP BETWEEN LIFESTYLE/ROUTINE ACTIVITIES AND FEAR

index for each participant who responded to at least four items (possible range 0–18 but no participant scored higher than 16). This index was then categorized according to the distribution within the sample. The bottom and top ten percent of the distribution constitute two extreme categories and the remaining 80 percent of the distribution was divided into three mid-range categories of roughly equal size (see Table 1). The final variable consists of categories with the following labels (values on the summary index): ‘no worry’ (0), ‘low worry’ (1–2), ‘low-medium worry’ (3–4), ‘medium-high worry’ (5–8), and ‘high worry’ (9–16). Since the categorization may affect the results, alternative categorizations have also been tested, and these are reported as sensitivity analyses.

Daily worry about victimization is based on an item from the daily assessment asking participants ‘during the past 24 hours, have you been worried about becoming the victim of a crime?’ The response options include ‘no’ (0), ‘yes, once’ (1), and ‘yes, several times’ (2). For analytical purposes (see Analytical approach), this variable was dichotomized by merging those who had been worried once or several times. *Momentary worry about victimization* was measured using an item from the signal-contingent survey asking participants ‘how worried are you about becoming the victim of a crime right now?’ Participants used a slider to report their level of worry, which could range between not worried at all (0) and very worried (100). Since this variable is zero-inflated and thus negatively skewed (78.9 % of reported surveys had the value 0) it was transformed into an ordinal variable. The variable ranges between 0 and 4, with the first category consisting only of zeros and the following four categories being of equal size, based on the thresholds for each quartile of the remaining values above zero (i.e., with about five percent of the full sample in each category; see Engström & Kronkvist, 2020). This categorization thus consists of one very large category (0) and four roughly equally sized smaller categories that represent the dispersion above zero. Again, since the categorization may affect the results, the sensitivity analyses include alternative categorizations.

Independent variables

A total of seven independent variables collected during the baseline survey, and which refer to various aspects of the participants’ general lifestyle/routine activities, were included in the analyses. Five variables measure leisure activities, including how often participants *spend time with friends in the city-center*, *go to pubs/nightclubs*, *go to restaurants*, *go to the cinema*, and *go to*

THE RELATIONSHIP BETWEEN LIFESTYLE/ROUTINE ACTIVITIES AND FEAR

sports events on a monthly basis (0, 1–2, 3–5, 6–10, or more than 10 times). Two variables measure travel using public transport, including the number of days per week participants *travel on public transport within the city* (i.e., city bus) and *travel on public transport outside the city* (i.e., regional bus and train). The latter variable consists of two items, which were merged so that each participant received a value of 0–7 depending on the weekly frequency (number of days) on which they travelled by either or both regional bus and train. Due to the small sample size, many categories of the categorical independent variables contained few cases. These variables were therefore systematically dichotomized by splitting them as close to the center of the distribution as possible (see Table 1). Note that the reference categories consist of all values lower than those reported in Table 1.

Control variables

Demographic variables are often used as controls in lifestyle-routine activity theory research since the independent variables (i.e., measures of L-RAT) should account for differences in demographic variables (i.e., demographic control variables should be non-significant). In the present study, three demographic variables are included, namely *age* (years), *gender* (0 = male/not stating gender, 1 = female), and *marital status* (0 = in a relationship, 1=single). Due to lack of variation within the sample, no variables measuring ethnicity, income, education or occupation were included. However, in fear of crime research, previous victimization is often used as a predictor of fear of crime (e.g., Collins, 2016). Thus, having been a victim of any of seven crime types during the past 12 months was included as a control variable.⁵

Analytical Approach

The overall analytical approach was centered on maximizing the use of the available data. Therefore, the study does *not* use data from an identical sample of individuals across the three different surveys (e.g., some participants did not complete any daily assessments but still completed signal-contingent surveys and vice versa). Further, all outcomes have unique properties that resulted in the use of different statistical approaches. The analysis of *monthly worry* employs ordinal regression models with individuals as the units of analysis because all participants were asked about their worry about victimization during the past month in the baseline survey. The analysis of *daily worry* refers to days as the unit of analysis. However, the original ordinal

THE RELATIONSHIP BETWEEN LIFESTYLE/ROUTINE ACTIVITIES AND FEAR

outcome variable did not meet the proportional odds assumption and also could not be reliably fitted to a multinomial model. This resulted in a decision to dichotomize the outcome variable and employ binary logistic regression. It was possible to fit the data on *momentary worry* to ordinal regression models using moments as the unit of analysis. Since days and moments are nested within individuals, generalized estimating equations (GEE) were employed in these specific analyses because this approach offers the possibility of accounting for the correlation across observations within individuals. GEE may also provide reliable results despite unbalanced data and a small number of observations within clusters (McNeish, 2014).⁶ In the GEE, an exchangeable working correlation matrix was selected (i.e., all observations within individuals are hypothesized to be equally correlated) and a robust estimator (Huber/White/Sandwich) was employed.

The analyses focus on each survey separately but follow the same approach, examining associations between lifestyle/routine activities and worry about crime while controlling for demographic variables and previous victimization. Standard errors (SE), odds ratios (OR), and p-values are reported in all analyses. The interpretation of the OR for monthly and momentary worry refers to an increase or decrease in the odds for a higher value on the outcome variable (i.e., being more fearful). For daily worry, the OR refers to the odds for a day to have at least one occasion of worry compared to none. P-values are reported in full to show potentially relevant associations that are borderline significant and thus deserve to be further examined using larger samples. Since the analyses have been carried out to fit the data and thus differ across surveys (i.e., different sub-samples, operationalizations of the outcome variable, statistical approach), direct comparisons across the analyses cannot not be made.

Findings

The results from the analyses for each of the surveys are presented in Table 2. The first analysis suggests that two variables have a statistically significant association with monthly fear of crime, net of all other lifestyle/routine activity variables. Spending time with friends in the city-center exhibited a significant negative association with monthly fear of crime whereas going to pubs/nightclubs showed a positive association with monthly fear. Of the control variables, gender was significantly associated with monthly fear of crime with females being more likely to report higher levels of fear of crime. In addition, previous victimization also exhibited an inde-

THE RELATIONSHIP BETWEEN LIFESTYLE/ROUTINE ACTIVITIES AND FEAR

Table 2. Ordinal logistic regressions with monthly worry about victimization as the outcome (N = 180), binary logistic regressions with daily worry about victimization as the outcome (N = 937), and ordinal logistic regressions with momentary worry about victimization as the outcome (N = 1,283).

	Monthly worry about victimization			Daily worry about victimization			Momentary worry about victimization		
	SE	OR	P	SE	OR	P	SE	OR	P
<i>Leisure activities</i>									
Spend time with friends in the city-center	.32	.45	.012	.25	.59	.034	.36	.30	.001
Go to pubs/nightclubs	.33	2.55	.004	.26	1.39	.210	.33	2.26	.014
Go to restaurants	.29	.60	.081	.27	.99	.977	.29	1.07	.823
Go to cinema	.30	1.49	.186	.27	1.14	.637	.32	1.86	.052
Go to sports events	.32	.58	.091	.30	.64	.138	.34	.49	.033
<i>Public transport activities</i>									
Travel on public transport within city	.06	.94	.292	.05	.99	.834	.06	1.02	.787
Travel on public transport outside city	.06	.93	.237	.05	1.04	.450	.06	1.07	.256
<i>Control variables</i>									
Age	.04	.98	.614	.03	.99	.633	.03	.94	.015
Gender (female)	.33	4.70	.000	.32	1.37	.324	.41	1.42	.388
Marital status (single)	.30	.68	.196	.27	.73	.248	.28	1.13	.676
Victimization	.32	4.95	.000	.27	2.07	.006	.32	1.40	.299

Abbreviations: SE = std. error, OR = odds ratio, P = p-value

pendent positive association with monthly fear of crime, suggesting that an individual with a history of previous victimization has higher odds for worry about victimization.

The results from the second analysis suggest that only one lifestyle/routine activity variable was significantly associated with daily fear of crime. More specifically, individuals reporting more time spent with friends in the city-center also reported lower levels of daily fear of crime net of all other lifestyle/routine activity variables. Of the control variables, the only significant association found was between previous victimization and increased levels of daily fear of crime. The third and final analysis shows that three lifestyle/routine activity variables were significantly associated with momentary fear of crime. Spending time with friends in the city-center and going to sports events were negatively associated with momentary fear of crime, while going to pubs/nightclubs exhibited a positive association with the outcome. Here, it should also be noted that there was an indication of a positive association between going to the

THE RELATIONSHIP BETWEEN LIFESTYLE/ROUTINE ACTIVITIES AND FEAR

cinema and momentary fear of crime, but this association just failed to reach statistical significance ($p = .052$). While neither gender nor previous victimization were significantly associated with momentary fear of crime, age was, with older participants generally reporting lower levels of momentary fear.

Sensitivity Analyses

Since the categorization of the independent variables may affect the study's results, the main analyses were also conducted using alternative categorizations of monthly and momentary fear of crime (alternative categorizations for daily fear were not feasible). For monthly fear, three alternative categorizations were tested, which all departed from the original values of the summarized index of all the survey items on monthly fear, but were truncated at seven or above into one, two, or three distinct categories. The results were similar to the main analysis, but the association with spending time with friends in the city-center ended up just above the threshold for statistical significance in all alternative analyses. Further, one of these alternative analyses also suggested that going to sports events was significantly associated with a decreased level of monthly fear of crime. Turning to momentary fear of crime, the main analysis was also conducted with two different classifications of the outcome variable: using a three and a six-category categorization. The only noteworthy difference compared to the main analysis was that going to sports events was not significantly associated with momentary fear of crime based on the three-category categorization.

A large proportion of the participants provided only one or two of the repeated surveys. Although the analytical approach is able to handle imbalanced data, these participants may nonetheless be different from those who provided more data points. To examine whether this situation affected the results, participants reporting at least two or more or three or more daily assessments were included in a reproduction of the main analysis.⁷ However, this analysis did not indicate any notable differences in results. The same procedure was also applied in an analysis of the momentary surveys.⁸ The only noteworthy difference here was that going to the cinema fell below the threshold for statistical significance in both analyses, thus indicating a significant increase in momentary fear of crime.

Overall, the sensitivity analyses suggest that the findings from the main analyses are quite robust. However, it is important to remain aware of the exploratory nature of the current study

THE RELATIONSHIP BETWEEN LIFESTYLE/ROUTINE ACTIVITIES AND FEAR

and the limitations of the data used. Some associations in the sensitivity analyses fell just on the other side of the .05 significance threshold by comparison with the original analyses which is not surprising when results are borderline significant/non-significant. Full information about the sensitivity analyses is available upon request.

Discussion

All findings must be understood against the background of the exploratory nature of the study and its use of a convenience sample. The results are thus mainly of relevance from a conceptual or theoretical perspective that is looking to avenues for future research rather than in terms of providing conclusions that are transferrable to other contexts. With these limitations in mind, the results nevertheless suggest that the more or less one is involved in different activities is related to fear of crime to some extent, but the specific associations differ in significance and direction. The most consistent finding is that spending a substantial amount of time in the city-center with friends is negatively associated with fear of crime across all analyses. This may indicate that a general lifestyle involving a great deal of social interaction makes one feel safe or become more resilient to experiencing fear of crime. However, those who spend *less time* with friends in the city-center may be doing so because they do not feel safe in the context of such activities, which could thus be an alternative explanation. Clearly, both interpretations are possible, but the results from the present study cannot determine which of these alternatives is more or less valid.

Another noteworthy finding is that going to pubs/nightclubs was significantly associated with an increase in monthly and momentary worry, but not with daily assessments of worry. While these findings corroborate some previous research (e.g., Rountree, 1998), they contradict the findings of other studies (e.g., Rengifo & Bolton, 2012). The positive association would nonetheless appear to fit well with an opportunity perspective given the actual higher risk for certain offences at these locations, such as sexual offences (see e.g., Quigg et al., 2020). Furthermore, it is also important to note that going to restaurants, the cinema, and sports events does not seem to be associated with fear of crime. The only exception is that going to sports events was negatively associated with momentary worry, which is similar to some findings reported in previous research (e.g., Özaşçılar & Ziyalar, 2017). Further, while previous research has found traveling on public transport to be associated with increased levels of fear of crime

THE RELATIONSHIP BETWEEN LIFESTYLE/ROUTINE ACTIVITIES AND FEAR

(e.g., Rountree, 1998), this is not supported by the findings presented here. Caution is warranted, however, since perceptions of fear on public transport may vary depending on the time of day or night (Smith & Torstensson, 1997), an aspect not considered in the measures included in this study.

Finally, it should be noted that the associations found between L-RAT factors and fear of crime were found net of demographic control variables. The only significant results for these variables involved gender being associated with an increase in monthly worry, and age being associated with a significant decrease in momentary worry. Previous victimization, however, exhibited the most consistent correlation among the control variables, being positively associated with both monthly and daily worry about crime. It thus remains relevant to consider victimization in relation to fear of crime across different reference periods, and this is also a predictor that is much used in fear of crime research (see Collins, 2016). However, it is important to note that even if victimization adds explanatory value to the analyses, it does not itself fully account for the associations between L-RAT measures and fear of crime.

This study proceeded from the inconsistencies reported in previous L-RAT research and, with some exceptions, found – inconsistencies. It is therefore not possible to state that having an outgoing lifestyle in general (i.e., spending *more* time in any activities) is associated with higher or lower levels of fear of crime. This notion is important for L-RAT because if the structure of everyday life affects exposure to different kinds of settings (Cohen & Felson, 1979; Hindelang et al., 1978) of which some are more fear-generating, research must become better at pinpointing activities that actually expose individuals to these fear-generating settings.

A related question refers to how associations between activities and fear of crime should be interpreted. In the current study, daily and momentary worry about victimization were to some extent associated with the lifestyle/routine activities of the person experiencing these days and moments. This might be interpreted as indicating that lifestyle/routine activities affect exposure to various more or less fear-generating settings across days and moments. For instance, an individual who spends a lot of time with friends in the city-center may less often become exposed to fear-generating settings, and thus report lower levels of fear of crime. However, another interpretation is found in the possibility that the individual propensity to experience fear of crime in a given setting may be related to lifestyle/routine activities. Here, lifestyle/routine activities may be seen as leading individuals to become more or less familiar with certain

THE RELATIONSHIP BETWEEN LIFESTYLE/ROUTINE ACTIVITIES AND FEAR

types of circumstances, which then affects whether these circumstances are perceived as frightening. For instance, an individual who spends a lot of time with friends in the city-center may in general perceive certain settings as less frightening, and report lower levels of fear of crime for this reason. Thus, lifestyle/routine activities may function to habituate (or sensitize) individuals to various circumstances, which in turn affects whether a setting is experienced as fearful (i.e., a type of ‘fear propensity’; see also Gabriel and Greve, 2003). However, in the context of this study it is not possible to test whether direct momentary and/or indirect developmental processes are at work.

In a broader perspective, this discussion taps into the question of whether fear is viewed as a momentary experience or as a dispositional phenomenon (Gabriel and Greve, 2003). Since L-RAT focuses solely on exposure and thereby ignores the role of dispositional fear, other theoretical frameworks are necessary that include both dispositional and transitory aspects of fear (for a discussion, see Engström & Kronkvist, 2018). Adding a more elaborated individual perspective (e.g., ‘fear propensity’) might perhaps help explain why some aspects of lifestyle/routine activities are significant in studies conducted in some samples but are non-significant in others. This is important because being exposed to any given circumstance is generally not enough for fear to occur; fear demands some kind of interaction between the environment and the individual experiencing it. Clearly, this is an important topic for future fear of crime research.

The main contribution of this study has been to treat fear of crime as a phenomenon related to different reference periods. This approach is not only of relevance for L-RAT research but also provides an opportunity to include a new dimension in fear of crime research. While most discussions in fear of crime research pertain to various definitions of fear (e.g., worry, risk perception etc., see e.g., Ferraro & LaGrange, 1987), this study offers another perspective by allowing fear of crime to vary across days and moments. Although the study design does not allow for any direct comparisons, the results indicate that treating fear of crime in this way may both provide similar results (a lifestyle involving more time spent with friends in the city-center is negatively associated with fear of crime, many activities are not significant, etc.) but also many differences in the associations (e.g., a lifestyle that includes going to sports events was only associated with momentary fear of crime). Clearly, future research must further explore this methodological approach by using random samples in a research design that examines fear

THE RELATIONSHIP BETWEEN LIFESTYLE/ROUTINE ACTIVITIES AND FEAR

of crime in relation to different reference periods, and not only within an L-RAT perspective. The smartphone app used here would allow for such a study design (see Kronkvist & Engström, 2020) but there are now a range of potential solutions available within the growing field of app-based fear of crime research (see Solymosi et al., 2020). There are clearly good reasons for this field to grow in the near future, not least as a result of the ability of these studies to use shorter reference periods and real-time sampling, which provide a possibility to overcome issues associated with traditional methods (e.g., Lynch & Addington, 2010; Schwarz, 2012).

Limitations and Future Directions

This study examined fear of crime across different reference periods in *separate* analyses. However, monthly, daily, and momentary fear may be interrelated, which is clearly an important topic that is deserving of attention in future research. Future studies using a similar research design should also consider using more consistent measures of outcomes across different surveys, which would allow for increased comparability. Moreover, this study has focused on associations between a *general* lifestyle measured in the baseline survey and fear of crime at different levels. This approach downplays the potential role of lifestyle/routine activity factors that might exist at the daily and momentary levels. While day-specific factors were not included in STUNDA, momentary data are available that point to the immediate environment being associated with momentary fear of crime (Engström & Kronkvist, 2020). Still, this study's use of L-RAT predictors from the baseline (monthly) level to predict fear of crime on a given day or in a given moment is important because a general lifestyle, as measured in the baseline survey, should be reflected in the types of days and moments that an individual experiences. Another limitation is the study's focus on worry about victimization in *general*. Future research should further examine whether certain activities are related to fear of specific offenses, since fear may be offense-specific (see e.g., Scott, 2003). It is also likely that fear of crime exerts an effect on routine activities (see e.g., Keane, 1998; Rountree and Land, 1996), which has not been assessed here due to the cross-sectional approach employed to measure L-RAT variables. Longitudinal analyses are therefore needed in the future. Future research should also use probability samples to examine whether the findings presented on the basis of the convenience sample employed in this study are applicable more generally. Finally, the study only collected a few daily and mo-

THE RELATIONSHIP BETWEEN LIFESTYLE/ROUTINE ACTIVITIES AND FEAR

mentary surveys from each participant, which is not sufficient to provide a representative picture of the types of days and moments experienced by each individual participant. Future research should therefore attempt to maintain participation over time in order to collect daily and momentary data that are representative of the participants' lifestyles.

Conclusion

The results from the present study support the general notion that lifestyle/routine activities are associated with fear of crime across months, days, and moments. However, the associations differ in many respects and the more specific interpretations of these associations are difficult, which warrants further attention in future research. However, this study's main contribution to fear of crime research is that it highlights the importance of examining fear of crime across different reference periods. This approach treats fear of crime as a dynamic phenomenon, which in turn opens up possibilities for understanding how experiences of fear unfold in everyday life. This way of examining fear of crime requires adequate data collection methods, such as experience methods, which were implemented here within a smartphone app framework (Kronkvist & Engström, 2020). Future research is needed that further examines fear of crime in relation to different reference periods, both within L-RAT but also more generally within fear of crime research.

Notes

1. The research project has been reviewed and approved by the Regional Ethical Review Board in Lund (ref. 2018/464).
2. The half-hour periods at the beginning and end of the time slots were unintentionally oversampled (these were twice as likely to receive a notification).
3. For instance, notifications were deactivated by the operating systems after a certain number of notifications if participants decided not to respond them.
4. These include residential burglary, car theft/vandalism, bicycle theft/vandalism, attack/assault/robbery, threat/harassment in person, and sexual harassment in person.
5. These include residential burglary, car theft/vandalism, bike theft/vandalism, robbery (including attempts), physical violence, sexual harassment in person, and threats in person.

THE RELATIONSHIP BETWEEN LIFESTYLE/ROUTINE ACTIVITIES AND FEAR

6. The number of surveys completed varies across participants, from 1 to 56 per participant (mean = 6.1, median = 4, sd = 6.65) in the daily survey and from 1 to 121 (mean = 10.3, median = 5, sd = 14.5) in the signal-contingent survey.
7. A total of 125 participants reported at least two daily assessments (n = 908) and 97 participants reported three or more daily assessments (n = 852).
8. A total of 107 participants reported at least two momentary surveys (n = 1,265) and 85 participants reported three or more momentary surveys (n = 1,221).

References

- Alvi, S., Schwartz, M. D., DeKeseredy, W. S., & Maume, M. O. (2001). Women's fear of crime in Canadian public housing. *Violence Against Women*, 7(6), 638–661.
- Choi, J., & Dulisse, B. (2019). Behind closed doors: The role of risky lifestyles and victimization experiences on fear of future victimization among South Korean inmates. *Journal of Interpersonal Violence*. Epub ahead of print 15 November 2019.
- Cohen, L. E., & Felson, M. (1979). Social change and crime rate trends: A routine activity approach. *American Sociological Review*, 44(4), 588–608.
- Cohen, L. E., Kluegel, J. R., & Land, K. C. (1981). Social inequality and predatory criminal victimization: An exposition and test of a formal theory. *American Sociological Review*, 46(5), 505–524.
- Collins, R. E. (2016). Addressing the inconsistencies in fear of crime research: A meta-analytic review. *Journal of Criminal Justice*, 47, 21–31.
- Crowl, J. N., & Battin, J. R. (2017). Fear of crime and the police: Exploring lifestyle and individual determinants among university students. *The Police Journal: Theory, Practice and Principles*, 90(3), 195–214.
- Csikszentmihalyi, M., & Larson, R. (1987). Validity and reliability of the experience-sampling method. *Journal of Nervous and Mental Disease*, 175(9), 526–536.

THE RELATIONSHIP BETWEEN LIFESTYLE/ROUTINE ACTIVITIES AND FEAR

- Engström, A. (2021). Conceptualizing lifestyle and routine activities in the early 21st century: A systematic review of self-report measures in studies on direct-contact offenses in young populations. *Crime & Delinquency*, 67(5), 737–782.
- Engström, A., & Kronkvist, K. (2018). Situating fear of crime: The prospects for criminological research to use smartphone applications to gather experience sampling data. In: G. Leventakis & M. Haberfeld (Eds.) *Community-oriented policing and technological innovations* (pp. 85–93). Cham: Springer.
- Engström, A., & Kronkvist, K. (2020). *Examining experiential fear of crime using STUNDA: Findings from a smartphone-based experience methods study*. Manuscript submitted for publication.
- Farrall, S., Jackson, J., & Gray, E. (2009). *Social order and the fear of crime in contemporary times*. Oxford: Oxford University Press.
- Ferraro, K. F., & LaGrange, R. (1987). The measurement of fear of crime. *Sociological Inquiry*, 57(1), 70–97.
- Gabriel, U., & Greve, W. (2003). The psychology of fear of crime. Conceptual and methodological perspectives. *The British Journal of Criminology* 43(3), 600–614.
- Gray, E., Jackson, J., & Farrall, S. (2012). In search of the fear of crime: Using interdisciplinary insights to improve the conceptualisation and measurement of everyday insecurities. In: D. Gadd, S. Karstedt & S. F. Messner (Eds.) *The SAGE handbook of criminological research methods* (pp. 268–281). London: SAGE Publications Ltd.
- Hilinski, C. M. (2009). Fear of crime among college students: A test of the shadow of sexual assault hypothesis. *American Journal of Criminal Justice*, 34(1–2), 84–102.
- Hindelang, M. J., Gottfredson, M. R., & Garofalo, J. (1978). *Victims of personal crime: An empirical foundation for a theory of personal victimization*. Ballinger Pub. Co.
- Keane, C. (1998). Evaluating the influence of fear of crime as an environmental mobility restrictor on women's routine activities. *Environment and Behavior*, 30(1), 60–74.

THE RELATIONSHIP BETWEEN LIFESTYLE/ROUTINE ACTIVITIES AND FEAR

- Killias, M. (1990). Vulnerability: Towards a better understanding of a key variable in the genesis of fear of crime. *Violence and Victims*, 5(2), 97–108.
- Kronkvist, K., & Engström, A. (2020). Feasibility of gathering momentary and daily assessments of fear of crime using a smartphone application (STUNDA): Methodological considerations and findings from a study among Swedish university students. *Methodological Innovations*. DOI: 10.1177/2059799120980306.
- Lee, D. R., & Hilinski-Rosick, C. M. (2012). The role of lifestyle and personal characteristics on fear of victimization among university students. *American Journal of Criminal Justice* 37, 647–668.
- Lynch, J. P., & Addington, L. A. (2010). Identifying and addressing response errors in self-report surveys. In: A. A. Piquero & D. Weisburd (Eds.) *Handbook of quantitative criminology* (pp. 251–272). New York, NY: Springer.
- Maxfield, M. G. (1987). Lifestyle and routine activity theories of crime: Empirical studies of victimization, delinquency, and offender decision-making. *Journal of Quantitative Criminology*, 3(4), 275–282.
- McNeeley, S. (2015). Lifestyle-routine activities and crime events. *Journal of Contemporary Criminal Justice*, 31(1), 30–52.
- McNeish, D. M. (2014). Modeling sparsely clustered data: Design-based, model-based, and single-level methods. *Psychological Methods*, 19(4), 552–563.
- Melde, C. (2009). Lifestyle, rational choice, and adolescent fear: A test of a risk-assessment framework. *Criminology*, 47(3), 781–812.
- Mesch, G. S. (2000). Perceptions of risk, lifestyle activities, and fear of crime. *Deviant Behavior*, 21(1), 47–62.
- Molin, M., & Lifvin, S. (2019). *Swedish Crime Survey 2019: English summary of Brå report no 2019:11*. Stockholm: The Swedish National Council for Crime Prevention.
- Otis, M. D. (2007). Perceptions of victimization risk and fear of crime among lesbians and gay men. *Journal of Interpersonal Violence*, 22(2), 198–217.

THE RELATIONSHIP BETWEEN LIFESTYLE/ROUTINE ACTIVITIES AND FEAR

- Özascılar, M. (2013). Predicting fear of crime: A test of the shadow of sexual assault hypothesis. *International Review of Victimology*, 19(3), 269–284.
- Özaşçılar, M., & Ziyalar, N. (2017). Unraveling the determinants of fear of crime among men and women in Istanbul: Examining the impact of perceived risk and fear of sexual assault. *International Journal of Offender Therapy and Comparative Criminology*, 61(9), 993–1010.
- Quigg, Z., Bigland, C., Hughes, K., Duch, M., & Juan, M. (2020). Sexual violence and nightlife: A systematic literature review. *Aggression and Violent Behavior*, 51, 1–10.
- Rengifo, A. F., & Bolton, A. (2012). Routine activities and fear of crime: Specifying individual-level mechanisms. *European Journal of Criminology*, 9(2), 99–119.
- Rountree, P. W. (1998). A reexamination of the crime-fear linkage. *Journal of Research in Crime and Delinquency*, 35(3), 341–372.
- Rountree, P. W., & Land, K. (1996). Burglary victimization, perceptions of crime risk, and routine activities: A multilevel analysis across Seattle neighborhoods and census tracts. *Journal of Research in Crime and Delinquency*, 33(2), 147–180.
- Schwarz, N. (2012). Why researchers should think “real-time”: A cognitive rationale. In: M. R. Mehl & T. S. Conner (Eds.) *Handbook of research methods for studying daily life*, (pp. 22–42). New York, NY: Guilford Press.
- Scollon, C. N., Kim-Prieto, C., & Diener, E. (2003). Experience sampling: Promises and pitfalls, strengths and weaknesses. *Journal of Happiness Studies*, 4(1), 5–34.
- Scott, H. (2003). Stranger danger: Explaining women’s fear of crime. *Western Criminology Review*, 4(3), 203–214.
- Shiffman, S., Stone, A. A., & Hufford, M. R. (2008). Ecological momentary assessment. *Annual Review of Clinical Psychology*, 4(1), 1–32.
- Smith, W. R., & Torstensson, M. (1997). Gender differences in risk perception and neutralizing fear of crime: Toward resolving the paradoxes. *The British Journal of Criminology*, 37(4), 608–634.

THE RELATIONSHIP BETWEEN LIFESTYLE/ROUTINE ACTIVITIES AND FEAR

- Solymosi, R., Bowers, K., & Fujiyama, T. (2015). Mapping fear of crime as a context-dependent everyday experience that varies in space and time. *Legal and Criminological Psychology*, 20(2), 193–211.
- Solymosi, R., Buil-Gil, D., Vozmediano, L., & Guedes, I. (2020). Towards a place-based measure of fear of crime: A systematic review of app-based and crowdsourcing approaches. *Environment and Behavior*. Epub ahead of print 1 August 2020. DOI: 10.1177/0013916520947114.
- Stone, A. A., & Shiffman, S. (1994). Ecological momentary assessment (EMA) in behavioral medicine. *Annals of Behavioral Medicine*, 16(3), 199–202.
- Ward, R. A., LaGory, M., & Sherman, S. R. (1986). Fear of crime among the elderly as person/environment interaction. *The Sociological Quarterly*, 27(3), 327–341.
- Wilcox, P., & Cullen, F. T. (2018). Situational opportunity theories of crime. *Annual Review of Criminology*, 1(1), 123–148.

III

Conceptualizing Lifestyle and Routine Activities in the Early 21st Century: A Systematic Review of Self-Report Measures in Studies on Direct-Contact Offenses in Young Populations

Crime & Delinquency
2021, Vol. 67(5) 737–782
© The Author(s) 2020

Article reuse guidelines:
sagepub.com/journals-permissions
DOI: 10.1177/0011128720937640
journals.sagepub.com/home/cad

Alexander Engström¹

Abstract

Criticism is commonly directed at research based on lifestyle-exposure theory and routine activity theory for the use of imprecise measures. To examine this issue further, this systematic review maps activities used as indicators of lifestyle and routine activities in studies on direct-contact crime among young individuals (mean age of 24 or younger). The results indicate that a broad range of activities are used as measures of lifestyle and routine activities in the 101 included studies. Studies on victimization often use illegal activities and substance use as measures of lifestyle or routine activities while studies on offending mainly rely on measures of unstructured and peer-oriented leisure activities. Overall, most studies seem more concerned with specific activities rather than routines or lifestyles.

Keywords

lifestyle-exposure theory, measurement, operationalization, routine activity theory, violence

¹Malmö University, Sweden

Corresponding Author:

Alexander Engström, Department of Criminology, Faculty of Health & Society,
Malmö University, 205 06, Malmö, Sweden.

Email: alexander.engstrom@mau.se

Introduction

Lifestyle-exposure theory (Hindelang et al., 1978) and routine activity theory (Cohen & Felson, 1979) have become well established in criminology, and are often treated as a single integrated lifestyle-routine activity theory (L-RAT) (e.g., Garofalo, 1987; Lemieux & Felson, 2012; McNeeley, 2015; Spano & Freilich, 2009). Early studies of L-RAT showed that lifestyles and routine activities affect the risk of encountering opportunities for both victimization (e.g., Cohen et al., 1981) and offending (Riley, 1987). Overall, as a situational opportunity theory (Birkbeck & LaFree, 1993; Wilcox & Cullen, 2018), L-RAT focuses on relationships between everyday activities and exposure to circumstances in which victimization and offending are more likely to occur. Although not limited to youth crime, much empirical research in L-RAT focuses on young individuals, which can be interpreted as concentrating on “an at-risk group” (Spano & Freilich, 2009, p. 310).

However, despite its position as an influential criminological theory, L-RAT is often discussed as being characterized by methodological limitations and a need for methodological improvements (e.g., Gottfredson, 1981, 1984; Meier & Miethe, 1993; Mustaine & Tewksbury, 1997; Pratt & Turanovic, 2016; Tewksbury et al., 2010). The main criticism refers to an absence of agreement regarding the measurement of routine activities and lifestyle, the core theoretical concepts. Although this is a recurrent criticism, little is known about its relevance for current L-RAT research.

As a means of bringing some clarity to this issue, the current study systematically reviews L-RAT research on direct-contact offenses, and aims to provide an overview of conceptualizations of the core theoretical concept in L-RAT, namely lifestyle or routine activities. With a focus on self-reported individual-level measures employed in research on youth (here defined as sample mean age of 24 or younger), this study synthesizes and categorizes activities that have been used as measures of lifestyles or routine activities over the last decade (2009–2018). This is ultimately a matter of focusing exclusively on the types of measures that researchers decide to use in their studies, which means that the results of these studies are not assessed. While this approach may seem somewhat unusual, it offers a possibility to focus on measures in depth, which is often overlooked in previous research on L-RAT. The scientific contribution of this review is twofold. First, it is important to look back at recent research in order to assess the approaches used to operationalize the theory’s core concepts. Second, reviewing and synthesizing measures may provide insights into both problematic and good theoretical conceptualizations. Thus, this systematic review may assist L-RAT researchers in selecting from among different L-RAT measures, and it may also

inspire researchers to think more carefully when operationalizing lifestyle and routine activities.

Background

In *lifestyle-exposure theory*, as originally outlined by Hindelang et al. (1978) (for a revised model, see Garofalo, 1987), demographic characteristics are the foundation from which role expectations (e.g., cultural norms) and structural constraints (e.g., economic, familial etc.) develop. Structural constraints limit behavioral choices and affect role expectations and vice versa, in turn leading to individual and subcultural adaptations, which generate variations in lifestyles. Differences in lifestyles account for variations in criminogenic exposure, both in terms of direct exposure to criminogenic circumstances and in terms of exposure to individuals with similar lifestyles (e.g., risky lifestyles). *Routine activity theory* explains crime as an outcome of the spatiotemporal convergence of motivated offenders and suitable objects (e.g., victims) in the absence of capable guardians (Cohen & Felson, 1979). Although there is an overlap between the two theoretical models, routine activity theory provides extensive information about crime events (e.g., Felson & Boba, 2010) whereas lifestyle-exposure theory is perhaps somewhat more developed when it comes to explaining how individuals become exposed to victimogenic and criminogenic circumstances. Empirical research within both theories consists of studies on different types of populations but youth are frequently in focus, such as college students (e.g., Spano & Freilich, 2009).

Altogether, L-RAT focuses on crime events (McNeeley, 2015), an approach that integrates victim and offender theories into theories of *crime* (Meier & Miethe, 1993). This is not to say that victims and offenders are the same individuals (although there is a considerable overlap, see Jennings et al., 2012), but is rather a recognition of the fact that both offenders and victims must converge spatiotemporally for a direct-contact crime to occur (Cohen & Felson, 1979; Gottfredson, 1984; Hindelang et al., 1978). Thus, opportunities are central to L-RAT, in particular in the form of immediate circumstances that increase the risk for crime (e.g., Agustina & Felson, 2015; Cohen & Felson, 1979; Gottfredson, 1984; Ruiter & Bernasco, 2018), although critics argue that offender motivation should not be excluded (e.g., Tittle, 1995). The term *exposure* is central here and refers to “the physical visibility and accessibility of persons or objects to potential offenders at any given time or place” (Cohen et al., 1981, p. 507), and “[. . .] the centrality of lifestyle derives primarily from its close association with *exposure* to victimization risk situations” (Hindelang et al., 1978, p. 250, emphasis in original).

Differences in exposure across individuals are the consequence of different lifestyles and routine activities (Meier & Miethe, 1993).

Further, lifestyle-exposure theory is probabilistic (Garofalo, 1987; Meier & Miethe, 1993), postulating that the more one is exposed to criminogenic circumstances, the greater the probability of becoming a victim of a crime (Gottfredson, 1981; Hindelang et al., 1978). Similarly, routine activity theory encompasses, if not originally then at least recently, a probabilistic view of the relationship between activities and crime (e.g., Lemieux & Felson, 2012), although some disagree (see Pratt & Turanovic, 2016). The basic idea of L-RAT thus consists of the notion that there is an increased risk of crime in certain circumstances (e.g., Agustina & Felson, 2015; Meier & Miethe, 1993).

However, there has been much debate regarding the definition of lifestyle across scientific disciplines and over time (e.g., Garofalo, 1987; Sobel, 1981; Zablocki & Kanter, 1976) and also regarding which lifestyles and routine activities are risky (e.g., Pratt & Turanovic, 2016; Tittle, 1995). Nevertheless, Hindelang et al. (1978) were clear in their original definition: “[. . .] lifestyle refers to routine daily activities, both vocational activities (work, school, keeping house, etc.) and leisure activities” (p. 241), and Cohen and Felson (1979) define routine activities as “[. . .] any recurrent and prevalent activities which provide for basic population and individual needs” (p. 593). This highlights the consensus within L-RAT that *routine activities* are essential for explaining variations in exposure to criminogenic opportunities. It is thus important to consider the characteristics of different routine activities, such as “when, where, with whom, and in what types of contexts/settings these activities occur” (Tewksbury et al., 2010, p. 188), because “[w]hat people do, how they behave, places them at more or less risk of criminal victimization” (Maxfield, 1987, p. 275). At the same time, however, many activities are carried out routinely without affecting the risk for crime (Tittle, 1995) and many risky activities are not very common (i.e., not routines or lifestyles). Having said this, studies using young samples to study individual-level routine activities often focus on more specific, risky activities, such as unsupervised, unstructured socializing with peers (Osgood et al., 1996), which constitutes a step toward a more precise examination of risky activities.

Measuring Lifestyle and Routine Activities

Since routine activities are essential for both lifestyle-exposure theory and routine activities theory, L-RAT research requires measures that capture daily life in an appropriate way. However, aware of their reliance on data *not* collected for their theoretical propositions, Hindelang et al. (1978) highlighted the preliminary nature of lifestyle-exposure theory. More specifically,

Gottfredson (1981, 1984) argued for the use of more precise situational measures of lifestyle and exposure that measure “how, where, and with whom people spend their time” (Gottfredson, 1981, p. 721) and similar suggestions have also been expressed more recently (Tewksbury et al., 2010). Despite early attempts to promote methodological development (e.g., Gottfredson, 1981, 1984; Hindelang et al., 1978), scholars have over the years continuously raised concerns regarding the measurement of the theoretical concepts in L-RAT (e.g., Maxfield, 1987; Mustaine & Tewksbury, 1997; Pratt & Turanovic, 2016; Spano & Freilich, 2009; Tewksbury et al., 2010). Overall, these measurement issues are related to a number of different, specific problems.

Proxy measures are often highlighted as a problem in L-RAT research, mainly because of the frequent reliance on secondary data (Meier & Miethe, 1993; Mustaine & Tewksbury, 1997). These indirect measures may fit several theoretical explanations, making them insufficient as tests of specific theories (Meier & Miethe, 1993) and thus leading to underdetermination. Studies using proxies simply *infer* a lifestyle connection between, for instance, age and victimization (e.g., Cohen et al., 1981) and “[s]uch inferences introduce conceptual leaps from the demographic characteristics of survey respondents to assumptions regarding such ‘types’ of persons’ activities” (Mustaine & Tewksbury, 1997, p. 184). Direct measures of activities are essential because they should, according to the theory, rule out correlations between status or demographic variables and victimization (Mustaine & Tewksbury, 1997) and also reduce the problem of theoretical underdetermination.

Another measurement issue in L-RAT research is the common use of lifestyle indicators that may also be outcomes of lifestyle. This issue is also present in sociological lifestyle research, in which it has been argued that “[t]he causes and consequences of lifestyles are not separated analytically from the phenomenon itself” (Sobel, 1981, p. 2). In criminology, a criminal or delinquent lifestyle has been included as a predictor in several L-RAT studies (e.g., Lauritsen et al., 1992) and highlighted as the most important lifestyle feature in relation to the risk of victimization (see the review by Wilcox & Cullen, 2018). Although criminal acts clearly put individuals at risk, using such acts as indicators of routines or lifestyles can be problematic, since they are also outcomes that are hypothesized to be the result of certain lifestyles and routine activities. Further, at least in routine activities theory, there is also an explicit focus on crime as feeding on legal routine activities (Cohen & Felson, 1979), which makes the use of illegal activities as indicators of lifestyle and routine activities a poor match to the theory (although crime itself can be a routine activity according to Cohen and Felson).

Pratt and Turanovic (2016) highlight another measurement issue by arguing that many studies include measures of activities that are not in fact risky,

such as sleeping (see also Tittle, 1995). Criticism has also been directed at the use of broad categories of activities, such as the amount of time spent working or the level of non-household activity (e.g., Meier & Miethe, 1993; Pratt & Turanovic, 2016), since such broad measures allow for ambiguous interpretations (e.g., as both increasing and decreasing risk). However, it was actually suggested quite early that there should be a focus on more specific risky activities and the circumstances in which they take place (Gottfredson, 1984). The importance of considering the details of different activities has been further emphasized by a focus on more precise situational aspects, such as whether activities engaged in by youth are unstructured (Osgood et al., 1996).

In sum, L-RAT research is commonly criticized for its operationalization of lifestyle and routine activities, indicating a need for methodological development. However, the criticism has generally not been based on a systematic approach employing a broad review of different measures of lifestyle and routine activities.

Methods

This study aims to systematically review L-RAT research that employs individual-level self-report measures of lifestyle and/or routine activities, with an exclusive focus on contemporary studies of young populations. A systematic methodology provides more reliable and less biased results by comparison with other review designs (Farrington & Jolliffe, 2017; Siddaway et al., 2019), making it a useful approach for producing a broad synthesis of the activity measures employed in L-RAT research. The overarching question posed in this review is:

- Which individual-level activities are used as measures of lifestyle/routine activities in contemporary L-RAT research on direct-contact violent offenses in young populations?

Importantly, the study focuses exclusively on measures of lifestyle and routine activities. Theoretical relevance in terms of researchers' variable selection is thus at center whereas the potential statistical significance of relationships between L-RAT variables and various outcomes is not examined.

Search and Selection Strategy

A 10-year period (2009–2018) was selected as pilot-searches indicated that a longer period would render too many articles for a useful synthesis. The search strategy consisted of systematic searches in criminologically relevant

databases.¹ No searches for unpublished or gray literature were conducted.² Search words related to L-RAT were selected based on review articles (McNeeley, 2015; Spano & Freilich, 2009) and other articles within the field.³ All searches were limited by employing additional words to add criminological relevance, since “lifestyle” and “routine activities” are also common terms in other scientific disciplines.⁴ All searches were conducted on May 17 and May 20, 2019 and were repeated on 12–13 November 2019.⁵ Finally, reference lists from all the included studies were screened in order to find additional studies that fit the inclusion criteria.

The selection strategy generally followed the PRISMA model but without including a methodological quality assessment (i.e., all studies were of interest, regardless of quality differences). Following the deletion of duplicates, titles and abstracts were read in order to include studies for full text screening that fulfilled the basic inclusion criteria: being written in the English language, criminological, original studies (e.g., not reviews), employing data from year 2000 or later, being quantitative, including individual-level outcomes and violent direct-contact offenses as the main outcome, having a sample mean age of 24 years or under, and an explicit focus on L-RAT. Studies that could not be assessed due to a lack of information were also selected for full text screening. The full text eligibility process adopted a hierarchical approach (see Figure 1 for all criteria). Some of the employed criteria need to be discussed briefly since they reflect the limitations of the study.

The review only included studies that employed *data collected in the year 2000 or later* as a result of the focus on contemporary research.⁶ Studies that did not provide information about the data collection year were browsed for additional information until it could be confirmed when the data had been collected. *Young samples* are defined as consisting of individuals with a mean age of 24 or under, in line with the upper limit in the UN’s definition of youth.⁷ There was no minimum age threshold. To use sample mean age to determine whether studies focus on youth is based on the fact that, in most cases, at least half of the individuals in these studies are of age 24 or younger (unfortunately, most studies do not report median age). Therefore, it is assumed that these studies must have been at least partially designed to examine L-RAT among younger individuals. A focus on young individuals was adopted since the inclusion of older populations would make interpretations of the results more complicated (e.g., variations in the meaning of risk across different age groups). Studies that did not report the age or grade of respondents were included if they employed samples of typically young individuals (e.g., school, college, and university samples).

Outcomes could be of any type, as long as they contained a *direct-contact violent offense*, including threats. These offenses require the involved persons

to converge in space and time (i.e., their being exposed to a criminogenic setting), putting them at the center of L-RAT and thus of this study. Bullying is a borderline case but studies on bullying were included if they used at least one outcome item referring to physical violence. Studies using crime indices as outcomes were included if the indices included at least one direct-contact violent offense. A qualitative approach was used to decide whether a study was *testing L-RAT*, since studies vary in terms of the extent to which they are centered on the theory. To be included, a study had to explicitly discuss L-RAT in relation to the empirical research conducted in the study.

Only studies that employed at least one direct measure of *individual-level activities* were included, regardless of whether these activities were used as controls, mediators or main independent variables (needless to say, even a study only using L-RAT variables as controls requires adequate measures). An activity was defined as something individuals *do* as opposed to who they *are*. Some variables nevertheless constitute borderline cases, such as being a member of an organization (which was excluded unless explicitly referred to as “active” membership). Historical variables (e.g., adverse childhood experiences at age 10) were excluded, since they are not considered to constitute activities that reflect one’s current lifestyle. Some studies only describe characteristics of previous criminal acts and some studies only center on intra-individual patterns in situational factors related to offending/victimization. These kinds of studies were excluded since they do not provide any *general lifestyle/routine activity* measures.

Data Extraction and Synthesis

All included studies were screened for information, as were additional studies if authors explicitly referred to these for more information. No information was extracted from additional studies if the author(s) did not specify exactly what had been taken from them. Studies that lacked any information vital to the current study were cross-checked with other included studies that used the same data in order to find the required information.⁸ In the case of inconsistencies within an article, the methods section was deemed the most reliable source. Studies employing multiple waves of data, or with different numbers of participants across analyses, were reported in terms of the largest N stated in the article. School grades were converted into an approximate age if no age information was provided.⁹ Dependent variables were extracted and coded as either “violent” or “sexual”, the two overarching offense categories included in this study.¹⁰

Any variable explicitly labeled as lifestyle or routine activities in an article’s methods section, and which measured an activity, was included.

Variables measuring activities but that were *not* included in a study's L-RAT section (if one existed) were excluded. Activity variables in studies that *lacked* an explicit L-RAT section were included if the author(s) did not state that they were explicitly being used to measure concepts from other theories. Activity variables were always included in the case of any uncertainties.¹¹ The most specific level of information available about the activities used in the articles was extracted, such as the actual item used in a survey.¹² For instance, if a variable labeled "unstructured activities" consisted of more specific activities (e.g., "hanging out with peers", "driving around"), these detailed activities were extracted. Some studies only provide examples of activities and in these cases, these examples were all that could be extracted.

In the synthesis of all activities found among the included studies, identical or similar activities were merged, such as "attacking someone with a weapon" and "severely beating others", with these two activities, along with other similar activities, being coded as "Attack/beat/hit someone with/without weapon". Similarly, various forms of drug consumption were labeled as "drug use", whereas alcohol use was mainly divided into "alcohol use" and "binge drinking". To ensure that no essential information was lost in this merging process, the kind of activity (what), the place in which it occurs (where), other people being present or absent (with whom), and time (when) were never excluded (although exact wordings may differ slightly across studies despite their using more or less identical measures). After this process, 238 unique activities remained, which warranted additional categorization in order to produce a synthesis that offers an overview of the types of measures employed. Eight categories were identified that tap into different aspects of L-RAT, although there is of course heterogeneity within these categories (see Appendix). Given the lack of a standardized categorization of routine activities besides the overarching higher-order categories (e.g., leisure, vocational activities), activities were categorized in regards to the main orientation of each activity. Importantly, the categorization is only a means to organize the results and it is essential to consult the Appendix in order to understand more closely which activities were coded in the respective categories.

The final part of the synthesis consists of an overview of the relationships between categories of L-RAT measures and the outcomes in the included studies. Sankey diagrams illustrate the proportional relationships between these L-RAT categories and the outcomes.¹³ If a study examined both outcome types (victimization and offending) and/or both offense categories (violence and sexual offenses), each outcome was counted as one (1) study in the diagrams.¹⁴ Each specific outcome in a study was then paired with each activity category that had been employed in the study. The Sankey diagrams

thus show how frequently (i.e., in how many studies) each activity category is used in relation to the outcomes.

Findings

The database searches rendered 2,161 articles after duplicates had been removed (see Figure 1).

Title and abstract screening resulted in 288 articles that were selected for full text screening, which in turn rendered 91 articles that met the final inclusion criteria. The repeat searches resulted in the identification of two additional articles and the deletion of one study.¹⁵ Reference list screening of the included studies yielded an additional nine articles that fit the inclusion criteria. The final sample consists of 101 studies (listed in Table 1). Note that each study has a unique number in the table, which is used when the article is referred to in the text.

Sample Characteristics

Most studies employ data from the US ($n=57$), followed by South Korea ($n=11$), the Netherlands ($n=6$), and Sweden ($n=5$). It should be noted, however, that the included studies stem from approximately 50 research projects/data sets, making the contribution of each specific study less unique in terms of variation in the measures of L-RAT concepts employed.¹⁶ Sample sizes range from 127 to 66,080 (median=2,069) and the sample age varies from 10 years of age and upwards. Six studies employed female-only samples (5, 28, 29, 30, 31, 75), while five studies included samples comprised only of males (53, 54, 58, 89, 90). Most studies employed samples that are fairly “general”, such as university or college samples and other forms of school-based samples, but there are also studies focusing explicitly on offenders or individuals involved in the criminal justice system (7, 18, 53, 54, 55, 58, 82, 85, 89, 90, 96). One study is based on a sample of homeless youth (86).

Measures of Lifestyle and Routine Activities

Since studies that do not measure activities were excluded, the issue of proxy measures is not fully examined here. It should be noted, however, that eleven studies were excluded due to them not including variables that measure activities according to this particular criterion outlined earlier (see Figure 1). These studies used a wide range of different L-RAT measures, such as parental monitoring, peer deviance, demographics, and neighborhood-level variables. It is thus difficult to establish any patterns with regard to the types of proxies being used.¹⁷

Figure. 1. Flow chart of the search, screening and eligibility process.

The 238 unique activities employed in the included studies as measures of lifestyle or routine activities are here discussed in relation to eight categories, as delineated in the methods section. The categories are described in terms of their main characteristics, together with some examples and information on whether the activities are contextualized (e.g., including information about where, when and with whom they occur).

Illegal activities. This category contains all activities that pertain to law-breaking (with the exception of drug use). Since the category encompasses both minor offenses (e.g., theft) and serious violent crimes, activities in this category vary, making it heterogeneous, with varying risk levels. Many illegal activities are likely to be high-risk activities, since they expose the perpetrator to settings and people that are risky. However, some illegal activities, such as jaywalking and using illegal software, cannot really be defined as risky in relation to direct-contact offenses. Many studies employ several

Table 1. Sample Characteristics, Outcomes and Activities in the included Studies.

#	Author(s)	Sample info			Outcomes		Activity categories							
		Country	Size	Age + other	Vict.	Off.	1	2	3	4	5	6	7	8
1	Barrera (2018)	The Philippines	195	M=16	VS		•	•		•				
2	Begle et al. (2011)	USA	3,614	11–18	VS		•	•						
3	Bouchard et al. (2012)	USA	5,101	12–18	V				•	•				
4	Brooks-Russell et al. (2013)	USA	2,566	13–18	V		•	•						•
5	Bryan et al. (2016)	USA	530	18–30 (m=23), females	S		•	•						
6	Carson et al. (2013)	USA	1,892	11–16	V		•	•	•	•				
7	Chen (2016)	USA	1,225	14–19, adjudicated	VS		•	•	•	•				
8	Chen et al. (2017)	China	600	12–15	V		•	•	•	•				
9	Cho (2017a)	South Korea	2,844	11–15	V		•							
10	Cho (2017b)	South Korea	2,844	11	V		•							
11	Cho et al. (2017)	USA	5,621	12–18	V					•				
12	Cho and Wooldredge (2016)	South Korea	2,844	11–15	V		•							
13	Cho and Wooldredge (2018a)	South Korea	2,844	11–15	V		•							
14	Cho and Wooldredge (2018b)	South Korea & USA	3,343, 4,990	15, 12–18	V					•	•			
15	Cho et al. (2016)	South Korea	3,121	15–18	V				•	•	•			
16	Cops and Pleyrier (2014)	Belgium	2,070	13–20	V	V		•	•					
17	Corkin et al. (2015)	USA	233	15–19	V		•	•	•					
18	Daigle and Harris (2018)	USA	1,232	14–22, adjudicated	VS		•	•	•	•				
19	DeCamp and Zaykowski (2015)	UK	5,624	10–29 (m<24)	V		•	•	•					
20	DeCamp et al. (2018)	UK	5,624	10–28 (m<24)	V	V	•	•	•					
21	DePadilla et al. (2012)	USA	242	18+ (m=22)	V	V	•	•	•				•	
22	Deryol et al. (2017)	Turkey	929	12–22	V		•	•	•	•	•			

(continued)

Table 1. (continued)

#	Author(s)	Sample info			Outcomes		Activity categories							
		Country	Size	Age + other	Vict.	Off.	1	2	3	4	5	6	7	8
23	Deryol et al. (2018)	Turkey	913	12–22	V		•	•	•	•				
24	Drummond et al. (2016)	Colombia	1,475	10–19	V	V			•	•	•			
25	Ellonen and Aaltonen (2012)	Finland	5,775	12–16	V				•					
26	Engström (2018)	Sweden	451	16	V	V			•	•				
27	Felson et al. (2013)	Finland	13,459	11–17	V				•	•				
28	Franklin (2011)	USA	221	18–52 (m = 21), females	S				•	•	•			•
29	Franklin (2016)	USA	282	18–52 (m = 21), females	S				•	•	•			•
30	Franklin et al. (2012)	USA	2,230	18+, females	VS		•		•	•	•			
31	Franklin and Menaker (2018)	USA	282	18–52 (m = 21), females	S				•	•				
32	Henson et al. (2010)	USA	541	14–18	V		•		•	•	•			•
33	Higgins et al. (2018)	USA	44,632	12–18+	VS		•		•		•	•	•	•
34	Hines et al. (2012)	USA	1,916	M = 21	S		•		•	•	•	•	•	•
35	Hoeben and Weerman (2014)	The Netherlands	615	11–20		V			•					
36	Hoeben and Weerman (2016)	The Netherlands	610	11–20		V			•					
37	Janssen et al. (2016)	The Netherlands	603	11–20		V			•					
38	Janssen et al. (2017)	The Netherlands	603	11–20		V			•					
39	Jennings and Komro (2011)	USA	2,671	12–17	V	V			•	•				
40	Jo and Lee (2017)	South Korea	2,457	10–12	VS		•		•	•			•	
41	Jo and Lee (2018)	South Korea	2,491	10–12	VS		•							
42	Johnson et al. (2017)	USA	19,155	?	V				•					
43	Khade et al. (2018)	China	2,068	12–24	V		•		•				•	
44	Kulig et al. (2017)	USA	1,901	11–14	V		•		•					

(continued)

Table 1. (continued)

#	Author(s)	Sample info			Outcomes		Activity categories							
		Country	Size	Age + other	Vict.	Off.	1	2	3	4	5	6	7	8
45	Kulig and Sullivan (2017)	USA	3,976	12–22	VS		•							
46	Lee (2015)	South Korea	2,684	15–19	VS		•	•	•					•
47	Lee and Jo (2017)	South Korea	2,552	10–11	VS		•	•	•					
48	Lee and Kim (2017)	South Korea	2,721	14–18	VS		•							
49	McNeeley and Hoeben (2017)	The Netherlands	610	12–19	V	V			•					
50	Melde et al. (2016)	USA	1,127	10–16	V	V		•	•					
51	Miller (2013)	UK	3,454	15	V	V			•					
52	Mollenhorst et al. (2018)	Sweden	2,159	23–24	VS			•	•					
53	Mulford et al. (2018)	USA	1,155	15–24, adjudicated males	VS	VS	•		•					
54	Na (2016)	USA	864	14–24, adjudicated males	VS	VS			•				•	
55	Na (2017)	USA	1,300	14–20, adjudicated	VS	VS			•				•	
56	Oudekerk et al. (2014)	USA	201	13–18	VS		•	•	•					
57	Özbay and Köksoy (2009)	Turkey	974	17–38 (median = 21)		V				•				
58	Parent et al. (2016)	Canada	235	14–41 (n = 18), male offenders		VS			•					
59	Pauwels and Svensson (2011)	Belgium & Sweden	1,554, 1,003	13–14, 15	V	V		•	•					
60	Pauwels and Svensson (2013)	Belgium	1,554	13–14	V	V		•	•					
61	Peguro (2009)	USA	10,438	15–16	V						•			
62	Peguro (2013)	USA	9,870	15–16	V			•		•				
63	Peguro and Popp (2012)	USA	10,440	15–16	V						•			
64	Peguro et al. (2015)	USA	10,440	15–16	V			•		•	•			
65	Peterson et al. (2018)	USA	11,094	15–16	V					•	•			

(continued)

Table 1. (continued)

#	Author(s)	Sample info		Outcomes		Activity categories								
		Country	Size	Age + other	Vict.	Off.	1	2	3	4	5	6	7	8
66	Podan� (2017)	28 countries	64,817	11–18	V		•	•	•					
67	Popp (2012)	USA	8,031	12–18	V		•			•				
68	Popp and Peguero (2011)	USA	10,440	15–16	V						•			
69	Ren et al. (2017)	China	2,937	15–18	VS		•	•	•					
70	Salmi et al. (2015)	Finland	8,914	12–16		V		•	•					
71	Savolainen et al. (2009)	Finland	1,108	14–16	VS		•	•		•				
72	Schreck et al. (2012)	USA	3,682	11–22	V		•							
73	Seffrin et al. (2009)	USA	1,090	12–22		V			•					•
74	Simons et al. (2014)	USA	623	15–25		V		•	•					•
75	Snyder (2015)	USA	14,816	18–24, females	S			•	•	•		•		
76	Steketee et al. (2013)	30 countries	57,940	12–16		V	•	•	•					
77	Sullivan et al. (2011)	USA	3,976	12–16	V		•							
78	Svensson and Oberwittler (2010)	Sweden	1,003	15		V			•					
79	Svensson and Pauwels (2010)	Belgium & Sweden	2,264, 1,003	12–17, 15		V		•	•					
80	Tillyer et al. (2011)	USA	2,644	12–13	V		•				•			
81	Tillyer et al. (2016)	USA	4,102	12–16	S		•	•			•			
82	Tillyer, Ray, et al. (2018)	USA	888	14–19, adjudicated	VS					•				
83	Tillyer, Wilcox, et al. (2018)	USA	4,107	12–16	V		•					•		
84	Tillyer et al. (2010)	USA	3,977	12–16	S		•	•				•		
85	Turanovic et al. (2018)	USA	217	14–26 (m = 19), adjudicated, victims of violence	VS		•	•						

(continued)

Table 1. (continued)

#	Author(s)	Sample info		Outcomes		Activity categories								
		Country	Size	Age + other	Vict.	Off.	1	2	3	4	5	6	7	8
86	Tyler and Beal (2010)	USA	127	19–26 (m = 22), homeless	VS		•		•					
87	van Gelder et al. (2015)	Switzerland	1,447	13–16	VS	VS		•						
88	Vazsonyi et al. (2018)	28 countries	66,080	12–17		V			•				•	
89	Walters (2016)	USA	1,170	14–20, adjudicated males		VS			•					
90	Walters (2018)	USA	1,170	14–20, adjudicated males		VS			•					
91	Weerman et al. (2015)	The Netherlands	843	11–18		V		•	•			•		
92	Weerman et al. (2018)	USA	155	14–16		V			•					
93	Weiss and Dilks (2016)	USA	852	18–61 (m = 22)	VS				•					
94	Wiesner and Shukla (2018)	USA	233	15–19	V		•		•					
95	Wilcox et al. (2009)	USA	3,977	12–16	V			•				•		
96	Wright et al. (2014)	USA	945	18–22, adjudicated		VS				•				
97	Wu and Pyrooz (2016)	USA	1,185	10–16	V				•		•			
98	Wynne and Joo (2011)	USA	5,592	12–18	VS							•		•
99	Zaykowski and Gunter (2012)	USA	5,037	16–17	V			•						
100	Zaykowski and Gunter (2013)	USA	837	?	V			•						
101	Zhao (2018)	China	3,628	15–18	VS			•				•		

Abbreviations:

Outcomes: Vict. = victimization; Off. = offending; V = violent; S = sexual.

Activity categories: 1 = Illegal activities; 2 = Substance use; 3 = Unstructured and peer-oriented leisure activities; 4 = Problem behaviors and risky activities; 5 = Student activities; 6 = Structured and other low-risk activities; 7 = Victimization experiences; 8 = Sex and dating activities.

different measures of illegal activities (i.e., different offense types), explicitly assuming that different offense types may affect exposure to a varying extent. A few studies also examine illegal activities by including contextual information, such as whether crimes are carried out with peers and/or at school.

Substance use. This category is perhaps not intuitively perceived as being an activity, but using substances does involve *doing* something. This category includes alcohol use, both general use and binge drinking, and also drug use, ranging from soft to hard drugs. Substance use may be risky in general but the risk level is likely to vary according to the substance (e.g., alcohol vs. hard drugs), and the frequency of use (e.g., alcohol use vs. binge drinking). Using drugs and alcohol (particularly binge drinking) may affect both an individual's level of aggression or propensity to seek conflict with others, and also the individual's self-defense capabilities. Substance use is thus an activity that may be related to an increased risk of both offending and victimization. Interestingly, one study focuses on activities that entail precautionary alcohol consumption (42), which shows that this category not only encompasses measures of risky but also protective activities. Some studies include a contextualization of the measures, such as substance use with peers and/or at specific locations.

Unstructured and peer-oriented leisure activities. This category encompasses a large number of different kinds of activities pertaining to either explicitly defined unstructured activities or activities that logically occur in the presence of friends, and in the absence of adults and which lack any structured content. It may reasonably be concluded that the characteristics of many of these activities expose people to settings in which it may be more likely for victimization and offending to occur. For instance, several measures are well contextualized via the inclusion of specific, potentially risky locations (e.g., pubs, bars), the presence or absence of other people (e.g., peers and adults respectively), and the time of the day (e.g., evening). Still, many activities cannot be considered risky as a result of their being too vaguely defined by a lack of contextual information (e.g., "spend time with friends").

Problem behaviors and risky activities. This category consists of activities that are presumed to be risky while at the same time not encompassing illegal behaviors or substance use. These are activities that logically increase the risk for offending and victimization by exposing individuals to risky settings and to other people involved in these risky behaviors. However, truancy is the most common activity in this category which of course may not necessarily be related to increased risk (e.g., truancy may be a result of personal

problems, being bullied etc.). This category also entails high-risk activities, such as prostitution. The context of problem behaviors and risky activities may be important, with some studies explicitly asking about truancy that occurs with friends, for example, which constitutes one way of contextualizing activities so that they are better understood in terms of risk (e.g., truancy with friends may indicate that one is exposed to other people and their respective criminal propensities).

Student activities. This category reflects the review's focus on young populations. Various forms of extracurricular activities (e.g., clubs, sports) are often employed in studies focused on high school, college and university samples. Some studies also focus on outcomes that occur at school (not specified in Table 1), making the use of student activity variables logical. If a study examines victimization at school, for example, it is of course vital to examine activities that affect criminogenic exposure at school. Protective activities may be more common in this category, since students involved in certain extracurricular activities (e.g., clubs) may prefer these activities over other riskier activities. Overall, this category is often contextualized in advance (i.e., being at school), making contextualization of the actual measures fairly uncommon.

Structured and other low-risk activities. This category includes a wide range of diverse activities that are structured *or* associated with a low-risk for direct-contact offenses. In relation to L-RAT, this category includes structured activities, such as working, which should theoretically be associated with a lower risk of victimization and offending. Other low-risk activities are also included in this category, such as watching TV or playing video-games. In difference from unstructured and peer-oriented leisure activities, these activities do not refer to any contextual information (e.g., presence of peers, type of location) that can be associated with an increased risk of direct-contact crime. Nevertheless, this category also encompasses activities that are contextualized, for instance by explicitly asking about the presence of parents, a factor which should typically lead to activities being associated with lower risks.

Victimization experiences. Victimization experiences include an array of different activities, ranging from behavioral aspects of the fear of crime to violent victimization. Although victimization is a result of others' behavior, it is here treated as an activity due to it being a clearly defined event that occurs at a specific point in time and space, thus potentially having an effect on what happens in that particular moment. As with illegal activities, victimization

experiences are naturally linked to offending since situations may occur that turn the victim into an offender as well. By comparison with illegal activities, there is less variation among the victimization experiences which is probably a result of the dominance of studies that examine victimization as an outcome rather than offending. Nonetheless, studies that include victimization experiences focus on a number of different offense types, such as assault, sexual offenses, bullying, and theft. In most cases, however, these activities are not specified in terms of their contextual circumstances, which constitutes a difference in relation to the other categories.

Sex and dating activities. Sex and dating activities were merged into a single category since they encompass some features that make them different from other activities. First, sex and dating activities refer to spending time with people with whom individuals have a different type of relationship, as compared to general peer activities for example. As such, these activities mainly occur with partners or persons with whom an individual wishes to become sexually and/or romantically involved. Several activities in this category may be directly related to criminogenic exposure, since these activities, such as having sex, expose individuals to other people, of whom some may be offenders or victims. Most sex and dating activities are not explicitly contextualized, but the presence of other people is implicit in most measures.

Activity Categories and Different Outcomes

Since L-RAT was initially outlined as a theory of victimization, it is not surprising that most of the included studies focus on victimization (see Table 2). Violent victimization represents the most common outcome examined ($n=71$), followed by violent offending ($n=33$), sexual victimization ($n=32$), and sexual offending ($n=8$). It should be noted that several studies focus on more than one outcome and are therefore included in more than one category. Three activity categories are particularly common in the included studies. These are illegal activities (50.5 %), substance use (46.5 %), and unstructured and peer-oriented leisure activities (46.5 %). Two categories are fairly common: problem behaviors and risky activities (25.7 %) and student activities (23.8 %). Finally, the categories employed more infrequently include structured and other low-risk activities (9.9 %), victimization experiences (6.9 %), and sex and dating activities (6.9 %). This shows that L-RAT research varies in terms of which types of activities are used as indicators of lifestyle and routine activities. However, the picture is somewhat different when we look at how the activity categories are employed in relation to victimization and offending respectively. Two Sankey diagrams (Figure 2 and Figure 3)

Table 2. Percentage of Studies ($n = 101$) within each Outcome Type that include at least One Variable from each L-RAT Category. Note that a Study may be included in more than One Outcome Category.

L-RAT categories	Victimization		Offending		Total ($n = 101$)
	Violent ($n = 71$)	Sexual ($n = 32$)	Violent ($n = 33$)	Sexual ($n = 8$)	
Illegal activities	66.2	68.8	12.1	12.5	50.5
Substance use	45.1	71.9	39.4	12.5	46.5
Unstructured and peer-oriented leisure activities	33.8	34.4	87.9	87.5	46.5
Problem behaviors and risky activities	32.4	43.8	3.0	12.5	25.7
Student activities	26.8	18.8	6.1	-	23.8
Structured and other low-risk activities	8.5	12.5	9.1	-	9.9
Victimization experiences	4.2	9.4	9.1	25.0	6.9
Sex and dating activities	4.2	12.5	6.1	-	6.9

graphically illustrate the relationships between these outcomes and the different activity categories.

The nodes in the diagrams represent the size of each category (i.e., the number of times an activity category has been used to measure lifestyle or routine activities in relation to the particular outcome), making it possible to see which activity categories are more commonly used in relation to each outcome.

Victimization. Figure 2 shows the connections between the different activity categories and offense types in studies examining victimization. All activity categories are connected to both violent and sexual offenses. This indicates that L-RAT research as a whole considers all these kinds of activities as affecting the risk for victimization (both in terms of increasing and decreasing risk). However, there is variation in how frequently the different categories are employed in L-RAT research on victimization. Illegal activities are the most common predictors, followed by substance use. This indicates that these presumably high-risk activities constitute the most frequently used indicators in L-RAT research on victimization. Problem behaviors and risky activities, unstructured and peer-oriented leisure activities, and student activities are also fairly common, showing that studies on victimization also consider these activities to affect victimization. Structured and other low-risk

Figure. 2. Sankey diagram showing the activity categories used in relation to the victimization outcomes.

Figure. 3. Sankey diagram showing the activity categories used in relation to the offending outcomes.

activities, sex and dating activities, and victimization experiences are used infrequently in victimization studies.

Offending. As was shown earlier, offending is less frequently employed as an outcome in L-RAT research by comparison with victimization, which means that Figure 3 is based on a smaller number of studies and the results must therefore be interpreted with caution. All activity categories are found in analyses focused on violence, whereas only five categories are found in analyses focused on sexual offenses. The activities used differ in some important respects from those used as predictors of victimization. First, the nodes to the left in Figure 3 reveal that unstructured and peer-oriented leisure activities are by far the most common activities used in the relevant studies. Second, problem behaviors and risky activities were very rarely used in any of the studies focused on offending. This implies that these activities are considered to be more important L-RAT predictors in relation to victimization than in relation to offending. Third, in contrast to victimization studies, student activities are infrequently used in relation to offending. Nonetheless, as with victimization studies, illegal activities and substance use are fairly commonly employed as L-RAT indicators in studies on offending, thus confirming that offending is commonly viewed as a result of other illegal activities and substance use. Victimization experiences are employed as measures of L-RAT in some studies, showing that these activities are regarded as having an impact on offending. Further, structured and other low-risk activities, and sex and dating activities are fairly uncommon in studies on offending, as was also the case in studies on victimization.

In sum, it is clear that there are differences in the use of L-RAT activities depending on the outcomes studied (victimization or offending) and also to some extent in relation to the offense types studied (violent and sexual offenses). Although all activity categories may affect criminogenic exposure (increasing or decreasing it), this shows the diversity in L-RAT research with regard to the use of indicators of lifestyle and routine activities.

Discussion

This study has aimed to provide a systematic overview of measures of lifestyle or routine activities in research that examines direct-contact violent offenses in young populations. It is particularly relevant to examine such measures since L-RAT research aims to offer explanations of the relationship between daily life and victimization and offending, and, in a wider perspective, adequate measures are of course also important for developing any prevention initiatives. The results indicate that L-RAT research on youth focuses on a wide range of different activities that tap into lifestyle and routine activities.

Specific activities employed in the included studies can be categorized into eight categories, all of which are characterized by some level of heterogeneity but which also have some common features, with each category focusing on a particular aspect of young people's lives. It is clear that researchers use these categories differently with regard to the outcomes studied.

Overall, the findings show a varying correspondence with the definitions and meanings of lifestyle and routine activities as outlined earlier (Cohen & Felson, 1979; Hindelang et al., 1978). Two aspects are particularly relevant to discuss in relation to the results: the focus on exposure to opportunities for victimization and offending, and the notion of "routines" or "lifestyle". In addition, the criticisms raised over the years by scholars with regard to the measurement and operationalization of core concepts (e.g., Maxfield, 1987; Mustaine & Tewksbury, 1997; Pratt & Turanovic, 2016; Tewksbury et al., 2010; Spano & Freilich, 2009) also need to be considered in relation to the measures employed in the studies included in the review.

Opportunities and Criminogenic Exposure

Some of the activities in the included studies may clearly expose youth to potential offenders and victims, which is in line with the theory's focus on exposure to crime opportunities and thus ultimately on the spatiotemporal convergence of victims and offenders (Cohen & Felson, 1979; Gottfredson, 1984; Hindelang et al., 1978). More specifically, illegal activities and victimization experiences are the activity categories that best fit this aspect of L-RAT, since they explicitly include crime as part of the activities. On the other hand, these activities differ from the idea of the centrality of routine daily activities (Hindelang et al., 1978) and of crime being dependent on legal activities, as suggested by routine activities theory (Cohen & Felson, 1979). Activities such as substance use, problem behaviors and risky activities and unstructured and peer-oriented leisure activities, on the other hand, do not violate the notion of legal routine activities as being central to understanding crime (at least for routine activities theory), and still have the potential to themselves be defined as daily routine activities.

Since opportunities for offending/victimization are central to L-RAT as a result of its emphasis on immediate circumstances that increase the risk for crime (e.g., Agustina & Felson, 2015; Cohen & Felson, 1979; Gottfredson, 1984; Ruiter & Bernasco, 2018), measures that tap into detailed exposure to such opportunities should constitute a focal part of any L-RAT study. Many of the activities in the unstructured and peer-oriented leisure activities category follow this idea, since they both focus on what youth do and on the circumstances in which these activities are carried out. However, it is also

common to use fairly unspecific activities in both this and other activity categories, such as “spending time with friends”, which makes it difficult to assess whether an individual is actually exposed to criminogenic circumstances. Such vague or unspecific measures may fit the idea of routines or lifestyle to some extent, but they lack the risk aspect needed for an individual-level L-RAT approach (e.g., Pratt & Turanovic, 2016).

A Focus on Activities Rather Than Lifestyle and Routines

L-RAT was originally based on the concept of routine activities, which refers to activities that individuals carry out routinely, such as working, studying, and leisure activities (Cohen & Felson, 1979; Hindelang et al., 1978). However, the activity categories found among the included studies correspond to this interpretation to a varying extent. For instance, illegal activities and victimization experiences are activity categories that likely do not constitute general routines for most young individuals. Unstructured and peer-oriented leisure activities probably constitute a better fit with the routine activities concept, particularly when considering the individual-level development of the theory (Osgood et al., 1996). At the same time, two of the most typical routine activities described by the theory, working and studying, are fairly uncommon in the studies included in this review, which indicates that *leisure* activities appear to be what most L-RAT researchers consider to be most important.

The focus on leisure is logical since other *routine* activities, such as working and studying, would appear to be more meaningful for explaining differences in crime rates at an *aggregate* level (e.g., Cohen & Felson, 1979) compared to an *individual* level. For instance, proposing that individuals who go to work have a risky lifestyle because there may be aggregate patterns of victimization based on an association between working and victimization, risks opening oneself up to the ecological fallacy (see Pratt & Turanovic, 2016), since it is not really meaningful for work per se to be considered as a risky activity for any given individual. Based on the types of activities employed in the studies included in this review, it seems like many researchers perceive the youth's risk for victimization and offending to be conditioned by *specific* risky activities rather than, for instance, the amount of time spent at school. In a more general sense, it could therefore be argued that individual-level L-RAT focuses on how specific activities put youth at varying risk for offending and victimization, regardless of whether these activities are part of one's lifestyle or routines. By centering on activities in general, without the “routine” or “lifestyle” label, the criticism regarding the lack of risk associated with many routines (Tittle, 1995) may become less

challenging for L-RAT. Focusing on those activities that are most strongly related to risk may thus be fruitful, a view which is similar to ideas outlined by other scholars (Pratt & Turanovic, 2016) but which also remains somewhat at odds with L-RAT's notion of routine activities as comprising recurrent daily activities (Cohen & Felson, 1979; Hindelang et al., 1978). At the same time, however, the definitions of lifestyle and routine activities offered by Hindelang et al. (1978) and Cohen and Felson (1979) do not exclude a focus on more specific activities. The routine or lifestyle terminology may be seen as merely being a means of categorizing activities, for example in terms of their being vocational or leisure related, while at the same time acknowledging that these categories are characterized by a great deal of heterogeneity.

Measurement Issues

This review cannot evaluate the often discussed problem of the use of proxy measures in L-RAT research (e.g., Mustaine & Tewksbury, 1997) since studies that only use proxy measures of lifestyle and routine activities (i.e., *not* direct measures of activities) were not included in the study. However, another kind of proxy measure constitutes a potential problem in several of the included studies, since activity items may be used as proxies for *other* activities, particularly when it comes to very broad activity categories. One example is “spend time/hang out in public places”, which does not say much regarding the kind of activity youth are engaged in and under what circumstances they take place (e.g., time, with whom etc.). This activity can thus be interpreted as a proxy for other, more specific activities that occur in public spaces (e.g., youths who spend a lot of time in public spaces tend to hang out with friends informally in unsupervised settings). These “proxy activities” may thus contribute to the aforementioned problem of underdetermination (see Meier & Miethe, 1993), since these variables do not exclusively test L-RAT, but may rather also fit other theories.

It is clear that current L-RAT research uses measures of activities that may both indicate a risky lifestyle *and* be outcomes of a risky lifestyle, thus potentially having difficulties in separating outcomes from predictors. As has already been discussed, illegal activities are often used as predictors of victimization in some studies, whereas other studies examine offending by means of measures of victimization experiences. Interestingly, however, the results of this review show that using illegal activities to predict victimization is far more common than using victimization experiences to predict offending. These findings indicate that the potential problem of separating outcomes

from predictors may be less of an issue in L-RAT research on offending than in research on victimization.

If L-RAT is to be practically relevant for preventing both offending and victimization, it is necessary to consider activities that occur chronologically *prior to* a crime or victimization event. Although reducing offending may constitute an effective means of reducing victimization, there is nonetheless a missing piece (i.e., another activity) that affects youth to commit an offense in the first place by exposing them to the opportunity. Studies that primarily focus on illegal activities as predictors of violent victimization also risk omitting the victimization experienced by those who are not involved in crime, which is problematic since this group may be large among youth (see e.g., Engström, 2018).

What, Where, When and With Whom

Drawing on the discussion so far, it would be reasonable to highlight a number of suggestions regarding theoretically sound conceptualizations of lifestyle and routine activities. Although there are good examples to be found among the studies included in the current review, more can be done in the future in this area to respond to the recurrent suggestion to employ more precise measurements (Gottfredson, 1981, 1984; Tewksbury et al., 2010). A good measure generally includes several dimensions of an activity, since it has been suggested that it is not only the activity itself that is important but also where, when and with whom it occurs (e.g., Tewksbury et al., 2010). It is thus important to begin by specifying *what* an activity is, even if it is just “hanging out”. Second, activities are likely to have different risk levels depending on *where* they occur, highlighting the need to include place. Third, other people exert a high degree of influence over what youth do (e.g., peers, parents, partners, etc.), showing the importance of including information about the presence (or absence) of *other people*. Finally, *time* aspects, such as time of the day and day of the week, affect the characteristics of activities. Contextualizing activities in this way may lead to more specific knowledge about the offending and victimization risks associated with different activities, which may in turn be useful for crime prevention purposes. An activity that does not logically, *and* theoretically, affect exposure in any direction is not a useful L-RAT variable because its effect on crime may be spurious, indicating that important variables have been omitted.

One practical way forward toward the more adequate measurement of daily life may be to use diary methods and time budgets, as proposed by Hindelang et al. (1978) and Gottfredson (1981), which have been employed in some of the studies included in this review (26, 35, 36, 37, 38, 49, 91) and

in other L-RAT related research (see e.g., Wikström et al., 2012). Although Riley (1987) was early to show that instruments of this kind could be incorporated in L-RAT research, the increased use of space-time budgets in criminology (see Hoebein Bernasco et al., 2014) provides good opportunities for L-RAT testing.

Limitations and Future Research

Some limitations associated with the current study need to be mentioned. First, while explicitly focusing on recently collected data, this study omits several recently published studies that use data collected prior to the year 2000. This decision has led to the exclusion of several studies since, for example, researchers have argued that the National Crime Victimization Survey (NCVS) stopped including several L-RAT variables in these surveys from the year 2000 onwards, thus forcing researchers to use older NCVS data sets in their L-RAT studies (e.g., Clay-Warner et al., 2016). Second, although the review focuses on young populations, there is heterogeneity within this group that has not been examined. It is likely that certain activities are more relevant as measures of *risky* activities when the age aspect is taken into consideration (e.g., alcohol use is likely to be riskier at age 12 than at age 20). Third, this study has not differentiated between *how* different studies make use of activities in their measures (e.g., lifestyle indices vs. single item measures). However, the quantitative measurement of lifestyle and routine activities is ultimately a matter of using actual survey items, which thus justifies this study's focus on specific activities rather than on how the scales are constructed. It is nevertheless still important for future research to further examine the qualities of the scales and indices used in L-RAT research. Fourth, other approaches to categorizing and analyzing the measures may lead to different conclusions. For instance, the Sankey diagrams are based on the prevalence of L-RAT categories in the studies included in the review, not on the number of measures found in the different categories (although this information is available in the Appendix). Fifth, this study did not examine any specific offense types besides the broad categories of violent and sexual offenses. Future research could further examine whether there is even more variation in L-RAT research with regard to the activities employed in relation to more specific offenses. Finally, given this study's exclusive focus on measurements per se and not their statistical relationships with victimization and offending, future research should also focus more closely on these associations. However, statistical significance does not necessarily correspond with the accuracy of theoretical conceptualizations.

Conclusion

A wide range of activities are used in L-RAT research on direct-contact offenses in young populations, spanning over eight different activity categories. In studies on victimization, illegal activities and substance use are often used as indicators of lifestyle or routine activities. Offending studies, on the other hand, often rely on measures that have here been defined as unstructured and peer-oriented leisure activities. Overall, researchers use many different kinds of activities, of which many cannot really be defined as lifestyles or routines but simply as specific activities that may affect individuals' criminogenic exposure. Thus, it seems as though individual-level L-RAT research on youth is mainly focused on activities rather than on lifestyles or routines, if the latter are defined as common and recurrent activities in people's lives. Further, the varying levels of specification applied to the characteristics of the activities identified in this review indicate that measures range from extremely broad and vague to very specific. It seems reasonable that detailed measures are particularly useful, since they may better encompass various risky dimensions of a given activity, such as where it occurs, who else is there and also the temporal dimension. By using better measures, more can be learned about the relationship between daily life and victimization and offending, which in turn may provide useful knowledge that can be of use for both theory testing and potentially also for developing prevention strategies. The current study may here be of practical use by providing an overview of various L-RAT measures in relation to different outcomes, and by highlighting the need for adequate measures of lifestyle and routine activities.

Appendix. Activities*

Illegal Activities

Assault/threaten teachers/students/other adults with/without weapon at school (22, 23, 44)

Attack/beat/hit someone with/without weapon (2, 7, 9, 10, 12, 13, 17, 18, 40, 41, 43, 44, 46, 47, 48, 56, 66, 71, 72, 85, 94, 97, 99, 100)

Attack/beat/hit someone with/without weapon at school (45, 77, 80, 81, 83, 84, 95)

Attack/beat/hit someone with/without weapon not at school (45, 77, 80, 81, 83, 84, 95)

*Indicates that a measure was based on a space-time budget methodology with a large number of different specific activities that cannot fully be described here.

Be arrested/in jail (2)
Bullying (9, 10, 12, 13, 40, 41, 46)
Burglary (incl. vehicle) (2, 7, 18, 66, 71, 85, 100)
Buy drugs from a stranger (1)
Buy/sell stolen goods (7, 17, 18, 85, 94)
Carjacking (7, 18)
Carry a weapon (7, 18, 19, 43, 44, 53, 66)
Carry a weapon at school (34, 45, 77, 80, 81, 83, 84, 95)
Delinquency (unspecified) (32)
Do illegal things together with one's group (50)
Drive drunk/high (7, 18)
Drive without a license (71)
Drug-related offending (unspecified) (19)
Fare evasion (40, 71)
Fare evasion with friends (69, 101)
Fight (7, 8, 18, 33, 46, 56, 85)
Firesetting (7, 17, 18, 44, 85, 94)
Forgery (100)
Gang fight/beating (2, 6, 7, 18, 44, 48)
Group fight (8, 66)
Group fight with friends (69, 101)
Harass others with friends (69, 76, 101)
Hit/threaten to hit one's parent(s) (44)
Jaywalking (40)
Kill someone (7, 18)
Physical fight at school (62, 64)
Physical fight with/without weapon (45, 67, 77, 80, 81, 83, 84, 95)
Property offending (unspecified) (19, 20)
Rape/sexual assault (2, 7, 17, 18, 46, 94)
Robbery with friends (69, 101)
Robbery with/without weapon (2, 7, 8, 10, 12, 13, 17, 18, 40, 41, 43, 44, 46, 48, 66, 71, 72, 85, 94)
Robbery with/without weapon at school (22, 23, 45, 77, 80, 81, 83, 84, 95)
Robbery with/without weapon not at school (45, 77, 80, 81, 83, 84, 95)
Sell drugs (2, 7, 17, 18, 30, 44, 53, 56, 66, 80, 85, 86, 94)
Sell drugs at school (33)
Shoplifting (7, 18, 66, 71, 85)
Shoplifting with friends (76)
Street harassment (71)
Theft (incl. vehicle) (2, 7, 8, 10, 12, 13, 17, 18, 19, 40, 46, 47, 66, 71, 85, 94, 100)

Theft at school (45, 77, 80, 81, 83, 84, 95)
Theft not at school (45, 77, 80, 81, 83, 84, 95)
Theft with friends (69, 101)
Threaten others (10, 12, 13, 40, 41, 46, 47, 48)
Threaten someone with a weapon (71, 99)
Touch someone in a sexual manner without consent/against will at school (45, 77, 81, 83, 84, 95)
Touch someone in a sexual manner without consent/against will not at school (45, 77, 81, 83, 84, 95)
Use an unauthorized internet ID (47)
Use check/credit card illegally (7, 18, 85)
Use illegal software downloaded from the internet (47)
Use someone else's registration number on the Internet (47)
Vandalism (incl. graffiti) (2, 7, 8, 17, 18, 45, 66, 71, 77, 80, 81, 83, 84, 85, 94, 95, 97, 100)
Vandalism at school (8, 44)
Vandalism with friends (69, 76, 101)
Violent offending (unspecified) (19)

Substance Use

Alcohol use (4, 8, 16, 22, 23, 27, 28, 29, 31, 34, 39, 40, 42, 43, 44, 46, 47, 56, 66, 71, 81, 84, 87, 92, 93, 94, 100)
Alcohol use at bars and clubs (93)
Alcohol use at home (93)
Alcohol use at parties (93)
Alcohol use with friends (69, 101)
Be offered/given drugs at school (33)
Binge drinking (e.g., drinking amount, being drunk) (2, 5, 18, 26, 28, 29, 31, 34, 42, 52, 59, 70, 75, 79, 85, 93, 100)
Binge drinking at weekends (60)
Binge drinking with friends (76)
Binge drinking/being high in public place (1, 17, 94)
Drink/get high at someone's house/apartment (74)
Drug use (2, 4, 16, 18, 21, 22, 23, 28, 29, 33, 34, 42, 44, 52, 56, 71, 75, 81, 84, 85, 87, 92, 93, 94, 100)
Drug use at bars and clubs (93)
Drug use at parties (93)
Drug use in homes (93)
Drug use with friends (69, 101)
Precautionary drinking activities (42)

Spend time with friends at places where alcohol or cannabis are used by the respondent/his or her peers (e.g., pubs) (91)

Stay out drinking alcohol past 9 pm (1)

Tobacco use (8, 22, 23, 40, 46, 47, 56, 81, 84, 87)

Tobacco use with friends (69, 101)

Unstructured and Peer-Oriented Leisure Activities

Fraternity/sorority activities (29, 30, 31, 75)

Get back home after 9 pm (12–13-year-olds)/10 pm (15–16-year-olds) when going out on a weeknight (70)

Get together with friends informally (7, 53, 54, 55, 82, 89, 90, 96)

Go out at night (66, 76)

Go out to eat (51)

Go out with friends in evenings/at weekends (51)

Go out with friends to a bar/club at night (87)

Go shopping/to the mall (30, 51, 92)

Go to a party in the evening with friends (87)

Go to a pool hall (74)

Go to an amusement arcade (51)

Go to discos or concerts with friends (88)

Go to friends' houses in evenings/at weekends (51)

Go to music concerts/gigs (51, 52)

Go to nightclubs (19, 74)

Go to over-18 discos/nightclubs/raves (51)

Go to parties at someone's house/apartment (74)

Go to parties while unsupervised (92)

Go to parties/partying (7, 30, 34, 52, 53, 82, 89, 90, 96)

Go to pubs/bars (19, 51, 74)

Go to sports centers/youth clubs/groups (51)

Go to strip clubs (74)

Go to the cinema or the theater (51, 52, 92)

Go to the city center during evenings (59, 79)

Go to the city center in the evening alone (78)

Go to the city center in the evening/at night with friends (26, 78)

Go to under-18 discos/nightclubs/raves (51)

Go to watch a sport event (51, 52)

Go to youth parties while unsupervised and where alcohol is consumed (70)

Hang around at the youth center with friends, without taking part in organized activities (87)

Hang around in a park, at the train station or in a shopping mall and have fun with friends in the afternoon/evening (87)

Hang around in areas outside the city (51)

Hang around in other areas of the city (not city center) (51)

Hang around in the city center (51)

Hang around where one lives (51)

Hang out alone in public places without doing anything particular (78)

Hang out in public places with friends after 9 pm (70)

Hang out in youth clubs on weeknights (70)

Hang out/socialize (34, 86)

Meet friends at someone's home while unsupervised (87)

Meet with friends at a café/restaurant (87)

Participate in cyberclubs (15)

Participate in public space and night time activities (16)

Play computer games with friends or chat on the computer with friends (88)

Play in a band with friends (88)

Play sports (not at school) (88)

Play sports with friends (88)

Ride around in a vehicle for fun (7, 53, 82, 89, 90, 96)

Ride/drive around with friends (32, 92)

Spend evenings out for fun and recreation (7, 53, 82, 89, 90, 96)

Spend leisure time in public settings before 6 pm/between 6 and 8 pm/from 10 pm and later (27)

Spend leisure time with older friends (25, 70)

Spend most free time with large group of friends (76)

Spend time at internet café's/gaming facilities (22, 23)

Spend time unsupervised (39)

Spend time with at least two peers (91)

Spend time with friends (e.g., hang out, socializing) (73, 76, 88, 91, 92)

Spend time with friends in evenings/at night (59, 79, 87)

Spend time with friends where drugs and alcohol are available (50)

Spend time with friends while not exposed to alcohol/drugs (91)

Spend time with friends while not socializing (91)

Spend time with one peer (91)

Spend time with peers in non-public places (91)

Spend time with peers while unsupervised (22, 23, 24, 91)

Spend time/hang out in public places (25, 59, 60, 79)

Spend time/hang out with friends in public places (26, 66, 78, 91)

Stay out until 2 or 3 o'clock in the morning (74)

Unstructured activity (e.g., hang around) with peers while unsupervised (26*, 35*, 36*, 50, 97)

Unstructured activity (e.g., hang around) with peers while unsupervised in private space (35*)

Unstructured activity (e.g., hang around) with peers while unsupervised in public space (35*, 49*)

Unstructured activity (e.g., hang around) with peers while unsupervised in semi-public spaces (35*)

Unstructured activity (i.e. socialize or hang around) with peers while unsupervised in settings with high disorder (37, 38)

Problem Behaviors and Risky Activities

Accept a ride from a stranger/someone one does not know well (1, 28, 29)

Be late for school (65)

Be put on in-school suspension (65)

Be suspended or put on probation (65)

Carry valuables in a public place (30)

Cause disorder in a public place (58)

Cheating on an examination (40)

Defy a teacher with shouting (40)

Delinquent self-cutting (22, 23)

Gamble with friends (69, 101)

Get in trouble for not following school rules (62, 64, 65)

Misappropriate expenses for stationery and school necessities (40)

Panhandling (86)

Prostitution (7, 18, 86)

Quarrel with teachers/students on school premises (22, 23)

Run away (40, 46, 47)

Spend the night on the street (86)

Stay at a party after one's friends have left (28, 29)

Truancy (3, 6, 8, 40, 43, 46, 56, 62, 64, 65, 67, 71, 97)

Truancy with friends (69, 101)

Student Activities

Academic (or achievement)-related honor society activities (61, 62, 63, 64, 65, 68)

Arts/media/entertainment club activities (34)

Be on campus before 6 pm (30)

Cultural/region club activities (34)

Environmental/service club activities (3, 11, 34, 61, 62, 65, 67, 68)

Hobby club activities (61, 62, 65, 68)

Interscholastic sports (34, 61, 62, 65, 68)
Intramural sports (34, 61, 65, 68)
Meet with faculty (34)
Music/arts activities at school (3, 11, 61, 62, 63, 64, 65, 67, 68, 80, 81, 83, 84, 95)
Other school activities (3, 11)
School academic club activities (3, 11, 34, 61, 62, 65, 67, 68)
School activities (unspecified) (6, 24, 32, 98)
School club activities (14, 15, 24)
School sports (3, 6, 11, 14, 24, 32, 63, 64, 67, 75, 80, 81, 83, 84, 95)
School yearbook, newspaper, or literary magazine activities (61, 62, 63, 64, 65, 68, 80, 81, 83, 84, 95)
Spend weekends away from campus (34)
Student government activities (3, 11, 61, 62, 63, 64, 65, 67, 68, 80, 81, 83, 84, 95)
Take classes during the day or in the evening (57)
Vocational education or student organization club activities (61, 62, 65, 68)

Structured and Other Low-Risk Activities

Be alone at home (24)
Church activities (32)
Club activities outside school (14)
Do housework (24)
Do service work (34)
Eat the evening meal with parent(s) (88)
Exercise (34)
Have 8 or more hours of sleep (33)
Have someone walk with one to one's destination after dark (34)
Phone-/web-based social activities (32, 91)
Play music instruments (88)
Play video/computer games (32, 34)
Spend time with family (32)
Spend time with parents in various activities (88)
Spend time with peers while supervised (91)
Study/read (15, 24, 32, 34, 88)
Use computers more than 3 hours a day (33)
Use the Internet for personal reasons (34)
Use the university escort service (34)
Watch TV (34, 88)
View pornographic media (28, 40)
Work (15, 24, 32, 34)

Victimization Experiences

Be attacked/beaten with/without weapon (21, 54, 55)
Be chased and thought one might get seriously hurt (54, 55)
Be followed or spied on (34)
Be sent unwanted/threatening text messages (34)
Be threatened with/without weapon (21, 54, 55)
Cyberbullying victimization (33)
Dating violence victimization (34)
Have rumors spread about one through electronic means (34)
Not go to school due to feeling unsafe at/on the way to/from school (33)
Physical victimization by someone of about the same age that one was not dating (4)
Rape/sexual assault victimization (54, 55)
Robbery victimization (54, 55)
Stay away from places due to worry of physical victimization (98)
Theft victimization (21)
Vandalism victimization (21)
Victimization not at school (unspecified) (98)

Sex and Dating Activities

Flirting/dating activities (73)
Go on dates with lots of different guys (28, 29)
Go to bars/clubs with the hope of hooking up (74)
Have sex (33, 46)
Have sex after drinking alcohol or using drugs (28, 29, 33)
Have sex with multiple partners (28, 29, 33)
Have sex with someone one has just met or does not know well (28, 29)
Leave a social event with someone one has just met (28, 29)
Spend time with romantic partner (32)

Acknowledgments

The author would like to thank Marie Torstensson Levander and Anna-Karin Ivert for their valuable comments and support throughout the work with this paper. Nina-Katri Gustafsson and Robert Svensson provided much appreciated comments on an early draft of this paper.

Declaration of Conflicting Interests

The author declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author received no financial support for the research, authorship, and/or publication of this article.

ORCID iD

Alexander Engström <https://orcid.org/0000-0002-0825-1838>

Notes

1. The following databases were included in the search: Scopus, Academic Search Elite, Social Sciences Citation Index/Web of Science, PsycINFO, Criminal Justice Database, Sociological Abstracts, Social Science Database, International Bibliography of the Social Sciences, Applied Social Sciences Index & Abstracts, Sociology Database, National Criminal Justice Reference Service, and PsycARTICLES. All searches focused on the articles' title and abstract. Keywords and KeyWords plus (Social Sciences Citation Index/Web of Science) were also searched when available.
2. Since this study does not examine effects of lifestyle and routine activities on victimization and offending, the problem of bias in terms of differences between published and unpublished studies is likely to be less important.
3. L-RAT words: lifestyle* OR "life-style*" OR "life style*" OR "routine activit*" OR "opportunity theor*".
4. Criminological relevance words: crime* OR criminal* OR offending OR offender* OR victim* OR deliquen* OR offence* OR offense* OR "law breaking" OR "law-breaking" OR devian* OR violen* OR assault* OR homicide* OR murder* OR rape* OR rapist* OR "sexual abuse" OR "sexual aggress*" OR harass* OR robber* OR mugging* OR mugger*.
5. Repeating the searches is considered good practice in systematic reviews (Lefebvre et al., 2019).
6. One study used two different datasets with one consisting of data collected prior to the year 2000 and the other one consisting of data collected after the turn of the millennium. In this case, only information from the latter dataset was included in the synthesis.
7. See <https://www.un.org/en/sections/issues-depth/youth-0/index.html> (last visited 2020-05-25).
8. This was done quite often and consisted of, for instance, filling gaps in activity measures when one study only provided a few examples of a 13-item index with different activities, while another study using the same data provided information of all 13 items. Assuming that studies using the same data also use the same items may result in minor errors in the reported activities. However, this approach seemed appropriate since many studies do not provide full information about the data being used.

9. The sample age may differ slightly across studies using the same data due to different ways to report age across studies. The sample age in longitudinal studies usually covers all data collection sweeps used in the analyses; however, some studies do not state whether the age reported refers to all waves or just the baseline wave. If a longitudinal study reports the baseline age and no follow-up age, the age span is calculated by using baseline maximum age plus the time until the final measure point. In cases of uncertainty, a wider rather than a narrow age range is reported.
10. Studies were either classified as having a violent outcome or a sexual outcome or both. Note that this classification was based exclusively on the prevalence of each offense type among the outcome items used in the respective studies. For instance, a study using an offending index with 15 items of which 14 refer to violent offenses and one item refers to a sexual offense, was coded as examining both outcome types.
11. This approach may somewhat overestimate the amount of activity measures and some authors of the original studies may not fully agree with this categorization. Studies vary in terms of how explicitly they link their variables to L-RAT, thus at times making it difficult to identify whether certain variables are used as indicators of lifestyle or routine activities. However, this issue only affects the results to a limited extent due to the large number of included studies.
12. Items were sometimes also split in more specific activities if they measured more than one specific activity. Indices were also generally split in their respective specific activities (e.g., an index consisting of 22 items on delinquency was collapsed into its specific delinquent activities).
13. The Sankey diagrams were created using RAWgraphs (see Mauri et al., 2017).
14. For example, a study examining both victimization and offending, and both violent and sexual offenses, was counted as four studies: (1) one study of violent victimization; (2) one study of violent offending, (3) one study of sexual victimization, and (4) one study of sexual offending.
15. The study was excluded because it was assigned to an issue in 2019. Studies published in 2018 or earlier but not assigned to a journal issue at the time of the repeat searches were included in the final sample ($n=3$).
16. The most prevalent research projects or large scale studies are the Korean Youth Panel Survey (9, 10, 12, 13, 14, 15, 40, 41, 46, 47, 48), followed by a number of US based studies, including but not limited to the Pathways to Desistance Study (7, 18, 53, 54, 55, 82, 85, 89, 90, 96), the Rural Substance abuse and Violence Project (45, 72, 77, 80, 81, 83, 84, 95), the Educational Longitudinal Study (61, 62, 63, 64, 65, 68). The Study of Peers, Activities and Neighborhoods, a Dutch longitudinal research project, provided data for six studies (35, 36, 37, 38, 49, 91). There are many other research projects that produced 2–4 studies (a full list is available upon request).
17. Note, however, that variables such as these were also found among the included studies but they are not presented in the results since activities are given exclusive focus in this study.

References

- *Indicates that a study was included in the sample for this review.
- Agustina, J. R., & Felson, M. (2015). Routine activities, delinquency, and youth convergences. In A. R. Piquero (Eds.), *The handbook of criminological theory* (pp. 137–155). Wiley-Blackwell.
- *Barrera, D. J. (2018). The role of “problematic” and “improved” indicators of risky lifestyles in the self-control/lifestyle framework of victimization among Filipino adolescents. *Asian Journal of Criminology*, 13(3), 175–191.
- *Begle, A. M., Hanson, R. F., Danielson, C. K., McCart, M. R., Ruggiero, K. J., Amstadter, A. B., Resnick, H. S., Saunders, B. E., & Kilpatrick, D. G. (2011). Longitudinal pathways of victimization, substance use, and delinquency: findings from the National Survey of Adolescents. *Addictive Behaviors*, 36(7), 682–689.
- Birkbeck, C., & LaFree, G. (1993). The situational analysis of crime and deviance. *Annual Review of Sociology*, 19(1), 113–137.
- *Bouchard, M., Wang, W., & Beauregard, E. (2012). Social capital, opportunity, and school-based victimization. *Violence and Victims*, 27(5), 656–673.
- *Brooks-Russell, A., Foshee, V. A., & Ennett, S. T. (2013). Predictors of latent trajectory classes of physical dating violence victimization. *Journal of Youth and Adolescence*, 42(4), 566–580.
- *Bryan, A. E. B., Norris, J., Abdallah, D. A., Stappenbeck, C. A., Morrison, D. M., Davis, K. C., George, W. H., Danube, C. L., & Zawacki, T. (2016). Longitudinal change in women’s sexual victimization experiences as a function of alcohol consumption and sexual victimization history: A latent transition analysis. *Psychology of Violence*, 6(2), 271–279.
- *Carson, D. C., Esbensen, F.-A., & Taylor, T. J. (2013). A longitudinal analysis of the relationship between school victimization and student mobility. *Youth Violence and Juvenile Justice*, 11(4), 275–295.
- *Chen, X. (2016). Childhood onset of behavioral problems and violent victimization among serious juvenile offenders: A longitudinal study. *Youth Violence and Juvenile Justice*, 14(3), 243–256.
- *Chen, X., Liang, N., & Ostertag (2017). Victimization of children left behind in rural China. *Journal of Research in Crime and Delinquency*, 54(4), 515–543.
- *Cho, S. (2017a). Explaining the overlap between bullying perpetration and bullying victimization: Assessing the time-ordered and correlative relationships. *Children and Youth Services Review*, 79, 280–290.
- *Cho, S. (2017b). Self-control and risky lifestyles in context: Cross-level integration between opportunity and collective efficacy in the study of peer victimization among South Korean youth. *Journal of Child and Family Studies*, 26(1), 67–79.
- *Cho, S., Hong, J. S., Espelage, D. L., & Choi, K.-S. (2017). Applying the lifestyle routine activities theory to understand physical and nonphysical peer victimization. *Journal of Aggression, Maltreatment & Trauma*, 26(3), 297–315.
- *Cho, S., & Wooldredge, J. (2016). The link between juvenile offending and victimization: Sources of change over time in bullying victimization risk among South Korean adolescents. *Children and Youth Services Review*, 71, 119–129.

- *Cho, S., & Wooldredge, J. (2018a). Direct and indirect effects of low self-control on the personal victimization of South Korean youth. *Journal of Youth Studies*, 21(7), 958–982.
- *Cho, S., & Wooldredge, J. (2018b). Lifestyles, informal controls, and youth victimization risk in South Korea and the United States. *Journal of Child and Family Studies*, 27(4), 1358–1371.
- *Cho, S., Wooldredge, J., & Sun Park, C. (2016). Lifestyles/routine activities and bullying among South Korean youths. *Victims & Offenders*, 11(2), 285–314.
- Clay-Warner, J., Bunch, J. M., & McMahon-Howard, J. (2016). Differential vulnerability: Disentangling the effects of state dependence and population heterogeneity on repeat victimization. *Criminal Justice and Behavior*, 43(10), 1406–1429.
- Cohen, L. E., & Felson, M. (1979). Social change and crime rate trends: A routine activity approach. *American Sociological Review*, 44(4), 588–608.
- Cohen, L. E., Kluegel, J. R., & Land, K. C. (1981). Social inequality and predatory criminal victimization: An exposition and test of a formal theory. *American Sociological Review*, 46(5), 505–524.
- *Cops, D., & Pleysier, S. (2014). Usual suspects, ideal victims and vice versa: the relationship between youth offending and victimization and the mediating influence of risky lifestyles. *European Journal of Criminology*, 11(3), 361–378.
- *Corkin, D., Wiesner, M., Reyna, R. S., & Shukla, K. (2015). The role of deviant lifestyles on violent victimization in multiple contexts. *Deviant Behavior*, 36(5), 405–428.
- *Daigle, L. E., & Harris, M. N. (2018). Recurring victimization: What role does head injury play? *Journal of Criminal Justice*, 58, 78–86.
- *DeCamp, W., & Zaykowski, H. (2015). Developmental victimology: Estimating group victimization trajectories in the age-victimization curve. *International Review of Victimology*, 21(3), 255–272.
- *DeCamp, W., Zaykowski, H., & Lunn, B. (2018). Victim-offender trajectories: Explaining propensity differences from childhood to adulthood through risk and protective factors. *The British Journal of Criminology*, Volume 58(3), 667–688.
- *DePadilla, L., Perkins, M. M., Elifson, K. W., & Sterk, C. E. (2012). Adult criminal involvement: A cross-sectional inquiry into correlates and mechanisms over the life course. *Criminal Justice Review* 37(1), 110–126.
- *Deryol, R., Wilcox, P., & Dolu, O. (2017). School-based violent victimization in turkey: An examination of the cross-national generality of lifestyle-routine activities and self-control theories. *Victims & Offenders*, 12(6), 913–938.
- *Deryol, R., Wilcox, P., & Dolu, O. (2018). School-based violent victimization in turkey: Are correlates gender-specific? *Journal of Interpersonal Violence*. Advance online publication. <https://doi.org/10.1177/0886260518787813>
- *Drummond, H., Dizgun, J., & Keeling, D. (2016). Role differentiation in an adolescent victim-offender typology: Results from Medellin, Colombia. *Journal of Interpersonal Violence*, 31(18), 3080–3107.

- *Ellonen, N., & Aaltonen, M. (2012). Association between drinking and victimisation among Finnish adolescents: Estimating the extent of the spurious effect. *Nordic Studies on Alcohol and Drugs*, 29(2), 125–138.
- *Engström, A. (2018). Associations between risky lifestyles and involvement in violent crime during adolescence. *Victims & Offenders*, 13(7), 898–920.
- Farrington, D. P., & Jolliffe, D. (2017). Special issue on systematic reviews in criminology. *Aggression and Violent Behavior*, 33, 1–3.
- Felson, M., & Boba, R. (2010). *Crime and Everyday Life*. SAGE publications.
- *Felson, R. B., Savolainen, J., Berg, M. T., & Ellonen, N. (2013). Does spending time in public settings contribute to the adolescent risk of violent victimization? *Journal of Quantitative Criminology*, 29(2), 273–293.
- *Franklin, C. A. (2011). An investigation of the relationship between self-control and alcohol-induced sexual assault victimization. *Criminal Justice and Behavior*, 38(3), 263–285.
- *Franklin, C. A. (2016). Sorority affiliation and sexual assault victimization: Assessing vulnerability using path analysis. *Violence Against Women*, 22(8), 895–922.
- *Franklin, C. A., Franklin, T. W., Nobles, M. R., & Kercher, G. A. (2012). Assessing the effect of routine activity theory and self-control on property, personal, and sexual assault victimization. *Criminal Justice and Behavior*, 39(10), 1296–1315.
- *Franklin, C. A., & Menaker, T. A. (2018). Feminist routine activity theory and sexual assault victimization: Estimating risk by perpetrator tactic among sorority women. *Victims & Offenders*, 13(2), 158–178.
- Garofalo, J. (1987). Reassessing the lifestyle model of criminal victimization. In M. R. Gottfredson & T. Hirschi (Eds.), *Positive criminology*, (pp. 23–42). SAGE, cop.
- Gottfredson, M. R. (1981). On the etiology of victimization. *Journal of criminal law and criminology*, 72(2), 714–726.
- Gottfredson, M. R. (1984). *Victims of crime: The dimensions of risk*. Home Office Research Study No. 81, Her Majesty's Stationery Office, London.
- *Henson, B., Wilcox, P., Reyns, B. W., & Cullen, F. T. (2010). Gender, adolescent lifestyles, and violent victimization: Implications for routine activity theory. *Victims and Offenders*, 5(4), 303–328.
- *Higgins, G. E., Marcum, C. D., Nicholson, J., & Weiner, P. (2018). Predictors of physical and dating violence in middle and high school students in the United States. *Crime & Delinquency*, 64(5), 625–649.
- Hindelang, M. J., Gottfredson, M. R., & Garofalo, J. (1978). *Victims of personal crime: An empirical foundation for a theory of personal victimization*. Ballinger Pub. Co.
- *Hines, D. A., Armstrong, J. L., Palm Reed, K., & Cameron, A. Y. (2012). Gender differences in sexual assault victimization among college students. *Violence and Victims*, 27(6), 922–940.
- Hoeben, E. M., Bernasco, W., Weerman, F. M., Pauwels, L., & van Halem, S. (2014). The space-time budget method in criminological research. *Crime Science*, 3(1), 12.

- *Hoeben, E., & Weerman, F. (2014). Situational conditions and adolescent offending: Does the impact of unstructured socializing depend on its location? *European Journal of Criminology*, 11(4), 481–499.
- *Hoeben, E. M., & Weerman, F. M. (2016). Why is involvement in unstructured socializing related to adolescent delinquency? *Criminology*, 54(2), 242–281.
- *Janssen, H. J., Eichelsheim, V. I., Deković, M., & Bruinsma, G. J. N. (2016). How is parenting related to adolescent delinquency? A between- and within-person analysis of the mediating role of self-control, delinquent attitudes, peer delinquency, and time spent in criminogenic settings. *European Journal of Criminology*, 13(2), 169–194.
- *Janssen, H. J., Weerman, F. M., & Eichelsheim, V. I. (2017). Parenting as a protective factor against criminogenic settings? Interaction effects between three aspects of parenting and unstructured socializing in disordered areas. *Journal of Research in Crime and Delinquency*, 54(2), 181–207.
- *Jennings, W. G., & Komro, K. A. (2011). A longitudinal examination of the relationship between physical aggression and violent victimization among urban minority Chicago youth and young adults. *The Open Family Studies Journal*, 4(1), 68–73.
- Jennings, W. G., Piquero, A. R., & Reingle, J. M. (2012). On the overlap between victimization and offending: A review of the literature. *Aggression and Violent Behavior*, 17(1), 16–26.
- *Jo, Y., & Lee, B. (2017). Correlates of diverse pathways in violent victimization in early adolescence. *International Journal of Law, Crime and Justice*, 48, 80–89.
- *Jo, Y., & Lee, B. (2018). Self-control, risky lifestyles, and violent victimization: A longitudinal study of the youth in South Korea. *International Journal of Law, Crime and Justice*, 55, 27–39.
- *Johnson, L. M., Daigle, L. E., & Napper, S. (2017). Precautionary behavior and violent victimization: Do safer drinking strategies reduce risk? *Victims & Offenders*, 12(3), 381–400.
- *Khade, N. B., Wang, X., & Decker, S. H. (2018). Examining the link between childhood physical abuse and risk for violent victimization in youth and young adulthood in China. *Journal of Interpersonal Violence*. Advance online publication. <https://doi.org/10.1177/0886260518794002>
- *Kulig, T. C., Pratt, T. C., Cullen, F. T., Chouhy, C., & Unnever, J. D. (2017). Explaining bullying victimization: Assessing the generality of the low self-control/risky lifestyle model. *Victims & Offenders*, 12(6), 891–912.
- *Kulig, T. C., & Sullivan, C. J. (2017). Continuity and change in adolescent victimization: Examining the effects of stable and dynamic influences. *Victims & Offenders*, 12(5), 777–799.
- Lauritsen, J. L., Laub, J. H., & Sampson, R. J. (1992). Conventional and delinquent activities: Implications for the prevention of violent victimization among adolescents. *Violence and Victims*, 7(2), 91–108.
- *Lee, W. (2015). A longitudinal study of victimization among South Korean youth: The integrative approach between lifestyle and control theory. *Children and Youth Services Review*, 58, 200–207.

- *Lee, B., & Jo, Y. (2017). Correlates of repeat victimization and sex differences in South Korean youth. *Journal of Interpersonal Violence*. Advance online publication. <https://doi.org/10.1177/0886260517708760>
- *Lee, Y., & Kim, J. (2017). An examination of victimization trajectories among a sample of South Korean adolescents: risk and protective factors. *Crime & Delinquency*, 63(11), 1434–1457.
- Lefebvre, C., Glanville, J., Briscoe, S., Littlewood, A., Marshall, C., Metzendorf, M.-I., Noel-Storr, A., Rader, T., Shokraneh, F., Thomas, J., Wieland, L.S., & Cochrane Information Retrieval Methods Group. (2019). Searching for and selecting studies. In J. P. T. Higgins, J. Thomas, J. Chandler, M. Cumpston, T. Li, M. J. Page, & V. A. Welch (Eds.), *Cochrane handbook for systematic reviews of interventions*, version 6.0 (updated July 2019). Cochrane, 2019. www.training.cochrane.org/handbook
- Lemieux, A. M., & Felson, M. (2012). Risk of violent crime victimization during major daily activities. *Violence and Victims*, 27(5), 635–655.
- Mauri, M., Elli, T., Caviglia, G., Ubaldi, G., & Azzi, M. (2017). RAWGraphs: A visualisation platform to create open outputs. *CHIItaly '17: Proceedings of the 12th Biannual Conference on Italian SIGCHI* (pp. 28: 1–28: 5). ACM.
- McNeeley, S. (2015). Lifestyle–routine activities and crime events. *Journal of Contemporary Criminal Justice*, 31(1), 30–52.
- *McNeeley, S., & Hoeben, E. M. (2017). Public unstructured socializing and the code of the street: Predicting violent delinquency and victimization. *Deviant Behavior*, 38(6), 633–654.
- Maxfield, M. G. (1987). Lifestyle and routine activity theories of crime: Empirical studies of victimization, delinquency, and offender decision-making. *Journal of Quantitative Criminology*, 3(4), 275–282.
- Meier, R. F., & Miethe, T. D. (1993). Understanding theories of criminal victimization. *Crime and Justice*, 17, 459–499.
- *Melde, C., Berg, M. T., & Esbensen, F.-A. (2016). Fear, social interactions, and violence mitigation. *Justice Quarterly*, 33(3), 481–509.
- *Miller, J. (2013). Individual offending, routine activities, and activity settings: Revisiting the routine activity theory of general deviance. *Journal of Research in Crime and Delinquency*, 50(3), 390–416.
- *Mollenhorst, G., Edling, C., & Rydgren, J. (2018). Personal networks and crime victimization among Swedish youth. *Journal of Scandinavian Studies in Criminology and Crime Prevention*, 19(2), 116–135.
- *Mulford, C. F., Blachman–Demner, D. R., Pitzer, L., Schubert, C. A., Piquero, A. R., & Mulvey, E. P. (2018). Victim offender overlap: Dual trajectory examination of victimization and offending among young felony offenders over seven years. *Victims & Offenders*, 13(1), 1–27.
- Mustaine, E. E., & Tewksbury, R. (1997). Obstacles in the assessment of routine activity theory. *Social Pathology*, 3(3), 177–194.
- *Na, C. (2016). The consequences of fatherhood transition among disadvantaged male offenders: Does timing matter? *Journal of Developmental and Life-Course Criminology*, 2(2), 182–208.

- *Na, C. (2017). The consequences of school dropout among serious adolescent offenders: More offending? more arrest? both? *Journal of Research in Crime and Delinquency*, 54(1), 78–110.
- Osgood, D. W., Wilson, J. K., O'Malley, P. M., Bachman, J. G., & Johnston, L. D. (1996). Routine activities and individual deviant behavior. *American Sociological Review*, 61(4), 635–655.
- *Oudekerk, B. A., Guarnera, L. A., & Reppucci, N. D. (2014). Older opposite-sex romantic partners, sexual risk, and victimization in adolescence. *Child Abuse & Neglect*, 38(7), 1238–1248.
- *Özbay, Ö., & Köksoy, O. (2009). Is low self-control associated with violence among youths in Turkey? *International Journal of Offender Therapy and Comparative Criminology*, 53(2), 145–167.
- *Parent, G., Laurier, C., Guay, J.-P., & Fredette, C. (2016). Explaining the frequency and variety of crimes through the interaction of individual and contextual risk factors. *Canadian Journal of Criminology and Criminal Justice*, 58(4), 465–501.
- *Pauwels, L. J. R., & Svensson, R. (2011). Exploring the relationship between offending and victimization: What is the role of risky lifestyles and low self-control? A test in two urban samples. *European Journal on Criminal Policy and Research*, 17(3), 163–177.
- *Pauwels, L. J. R., & Svensson, R. (2013). Violent youth group involvement, self-reported offending and victimisation: An empirical assessment of an integrated informal control/lifestyle model. *European Journal on Criminal Policy and Research*, 19(4), 369–386.
- *Peguero, A. A. (2009). Opportunity, involvement, and student exposure to school violence. *Youth Violence and Juvenile Justice*, 7(4), 299–312.
- *Peguero, A. A. (2013). An adolescent victimization immigrant paradox? School-based routines, lifestyles, and victimization across immigration generations. *Journal of Youth and Adolescence*, 42(11), 1759–1773.
- *Peguero, A. A., & Popp, A. M. (2012). Youth violence at school and the intersection of gender, race, and ethnicity. *Journal of Criminal Justice*, 40(1), 1–9.
- *Peguero, A. A., Popp, A. M., & Koo, D. J. (2015). Race, ethnicity, and school-based adolescent victimization. *Crime & Delinquency*, 61(3), 323–349.
- *Peterson, S., Lasky, N. V., Fisher, B. S., & Wilcox, P. (2018). Gendered opportunity and school-based victimization: An integrated approach. *Youth Violence and Juvenile Justice*, 16(2), 137–155.
- *Podaná, Z. (2017). Violent victimization of youth from a cross-national perspective: An analysis inspired by routine activity theory. *International Review of Victimology*, 23(3), 325–340.
- *Popp, A. M. (2012). The effects of exposure, proximity, and capable guardians on the risk of bullying victimization. *Youth Violence and Juvenile Justice*, 10(4), 315–332.
- *Popp, A. M., & Peguero, A. A. (2011). Routine activities and victimization at school: The significance of gender. *Journal of Interpersonal Violence*, 26(12), 2413–2436.

- Pratt, T. C., & Turanovic, J. J. (2016). Lifestyle and routine activity theories revisited: The importance of "risk" to the study of victimization. *Victims & Offenders*, 11(3), 335–354.
- *Ren, L., He, N., Zhao, R., & Zhang, H. (2017). Self-control, risky lifestyles, and victimization: A study with a sample of Chinese school youth. *Criminal Justice and Behavior*, 44(5), 695–716.
- Riley, D. (1987). Time and crime: The link between teenager lifestyle and delinquency. *Journal of Quantitative Criminology*, 3(4), 339–354.
- Ruiter, S., & Bernasco, W. (2018). Is travel actually risky? A study of situational causes of victimization. *Crime science*, 7(10), 1–12.
- *Salmi, V., Kivivuori, J., & Aaltonen, M. (2015). Correlates of immigrant youth crime in Finland. *European Journal of Criminology*, 12(6), 681–699.
- *Savolainen, J., Sipilä, P., Martikainen, P., & Anderson, A. L. (2009). Family, community, and lifestyle: Adolescent victimization in Helsinki. *The Sociological Quarterly*, 50(4), 715–738.
- *Schreck, C. J., Ousey, G. C., Fisher, B. S., & Wilcox, P. (2012). Examining what makes violent crime victims unique: Extending statistical methods for studying specialization to the analysis of crime victims. *Journal of Quantitative Criminology*, 28(4), 651–671.
- *Seffrin, P. M., Giordano, P. C., Manning, W. D., & Longmore, M. A. (2009). The influence of dating relationships on friendship networks, identity development, and delinquency. *Justice Quarterly*, 26(2), 238–267.
- Siddaway, A. P., Wood, A. M., & Hedges, L. V. (2019). How to do a systematic review: A best practice guide for conducting and reporting narrative reviews, meta-analyses, and meta-syntheses. *Annual Review of Psychology*, 70(1), 747–770.
- *Simons, R. L., Burt, C. H., Barr, A. B., Lei, M.-K., & Stewart, E. (2014). Incorporating routine activities, activity spaces, and situational definitions into the social schematic theory of crime. *Criminology*, 52(4), 655–687.
- *Snyder, J. A. (2015). The link between ADHD and the risk of sexual victimization among college women: Expanding the lifestyles/routine activities framework. *Violence Against Women*, 21(11), 1364–1384.
- Sobel, M. E. (1981). *Lifestyle and social structure: Concepts, definitions, analyses*. Academic Press.
- Spano, R., & Freilich, J. D. (2009). An assessment of the empirical validity and conceptualization of individual level multivariate studies of lifestyle/routine activities theory published from 1995 to 2005. *Journal of criminal justice*, 37(3), 305–314.
- *Steketee, M., Junger, M., & Junger-Tas, J. (2013). Sex differences in the predictors of juvenile delinquency: Females are more susceptible to poor environments; males are influenced more by low self-control. *Journal of Contemporary Criminal Justice*, 29(1), 88–105.
- *Sullivan, C. J., Wilcox, P., & Ousey, G. C. (2011). Trajectories of victimization from early to mid-adolescence. *Criminal Justice and Behavior*, 38(1), 85–104.

- *Svensson, R., & Oberwittler, D. (2010). It's not the time they spend, it's what they do: The interaction between delinquent friends and unstructured routine activity on delinquency. Findings from two countries. *Journal of Criminal Justice*, 38(5), 1006–1014.
- *Svensson, R., & Pauwels, L. (2010). Is a risky lifestyle always “risky”? The interaction between individual propensity and lifestyle risk in adolescent offending: A test in two urban samples. *Crime & Delinquency*, 56(4), 608–626.
- Tewksbury, R. A., Mustaine, E. E., Cohen, L. E., & Felson, M. K. (2010). Felson: Routine activity theory. In F. T. Cullen & P. Wilcox (Eds.), *Encyclopedia of criminological theory* (pp. 186–192). SAGE.
- *Tillyer, M. S., Fisher, B. S., & Wilcox, P. (2011). The effects of school crime prevention on students' violent victimization, risk perception, and fear of crime: A multilevel opportunity perspective. *Justice Quarterly*, 28(2), 249–277.
- *Tillyer, M. S., Gialopsos, B. M., & Wilcox, P. (2016). The short-term repeat sexual victimization of adolescents in school. *Crime & Delinquency*, 62(1), 81–106.
- *Tillyer, M. S., Ray, J. V., & Hinton, M. E. (2018). Protecting high-risk youth in high-risk contexts: Neighborhoods, parenting, and victimization. *Journal of Youth and Adolescence*, 47(10), 2027–2040.
- *Tillyer, M. S., Wilcox, P., & Fissel, E. R. (2018). Violence in schools: Repeat victimization, low self-control, and the mitigating influence of school efficacy. *Journal of Quantitative Criminology*, 34(2), 609–632.
- *Tillyer, M. S., Wilcox, P., & Gialopsos, B. M. (2010). Adolescent school-based sexual victimization: Exploring the role of opportunity in a gender-specific multilevel analysis. *Journal of Criminal Justice*, 38(5), 1071–1081.
- Tittle, C. R. (1995). *Control balance: Toward a general theory of deviance*. Routledge.
- *Turanovic, J. J., Pratt, T. C., & Piquero, A. R. (2018). Structural constraints, risky lifestyles, and repeat victimization. *Journal of Quantitative Criminology*, 34(1), 251–274.
- *Tyler, K. A., & Beal, M. R. (2010). The high-risk environment of homeless young adults: Consequences for physical and sexual victimization. *Violence and Victims*, 25(1), 101–115.
- *van Gelder, J.-L., Averdijk, M., Eisner, M., & Ribaud, D. (2015). Unpacking the victim-offender overlap: On role differentiation and socio-psychological characteristics. *Journal of Quantitative Criminology*, 31(4), 653–675.
- *Vazsonyi, A. T., Javakhishvili, M., & Ksinan, A. J. (2018). Routine activities and adolescent deviance across 28 cultures. *Journal of Criminal Justice*, 57, 56–66.
- *Walters, G. D. (2016). Crime continuity and psychological inertia: Testing the cognitive mediation and additive postulates with male adjudicated delinquents. *Journal of Quantitative Criminology*, 32(2), 237–252.
- *Walters, G. D. (2018). Unsupervised routine activities as a mediator of the parental knowledge–delinquency relationship. *Justice Quarterly*, 35(5), 871–894.
- *Weerman, F. M., Bernasco, W., Bruinsma, G. J. N., & Pauwels, L. J. R. (2015). When is spending time with peers related to delinquency? The importance of where, what, and with whom. *Crime & Delinquency*, 61(10), 1386–1413.

- *Weerman, F. M., Wilcox, P., & Sullivan, C. J. (2018). The short-term dynamics of peers and delinquent behavior: An analysis of bi-weekly changes within a high school student network. *Journal of Quantitative Criminology*, 34(2), 431–463.
- *Weiss, K. G., & Dilks, L. M. (2016). Intoxication and crime risk: Contextualizing the effects of “party” routines on recurrent physical and sexual attacks among college students. *Criminal Justice Review*, 41(2), 173–189.
- *Wiesner, M., & Shukla, K. (2018). Family deviance, self-control, deviant lifestyles, and youth violent victimization: a latent indirect effects analysis. *Victims & Offenders*, 13(4), 504–525.
- Wikström, P.-O. H., Oberwittler, D., Treiber, K., & Hardie, B. (2012). *Breaking rules: The social and situational dynamics of young people's urban crime*. Oxford University Press.
- Wilcox, P., & Cullen, F. T. (2018). Situational opportunity theories of crime. *Annual Review of Criminology*, 1(1), 123–148.
- *Wilcox, P., Tillyer, M. S., & Fisher, B. S. (2009). Gendered opportunity? School-based adolescent victimization. *Journal of Research in Crime and Delinquency*, 46(2), 245–269.
- *Wright, K. A., Kim, B., Chassin, L., Losoya, S. H., & Piquero, A. R. (2014). Ecological context, concentrated disadvantage, and youth reoffending: Identifying the social mechanisms in a sample of serious adolescent offenders. *Journal of Youth and Adolescence*, 43(10), 1781–1799.
- *Wu, J., & Pyrooz, D. C. (2016). Uncovering the pathways between gang membership and violent victimization. *Journal of Quantitative Criminology*, 32(4), 531–559.
- *Wynne, S. L., & Joo, H.-J. (2011). Predictors of school victimization: Individual, familial, and school factors. *Crime & Delinquency*, 57(3), 458–488.
- Zablocki, B. D., & Kanter, R. M. (1976). The differentiation of life-styles. *Annual review of sociology*, 2(1), 269–298.
- *Zaykowski, H., & Gunter, W. D. (2012). Youth victimization: School climate or deviant lifestyles? *Journal of Interpersonal Violence*, 27(3), 431–452.
- *Zaykowski, H., & Gunter, W. D. (2013). Gender differences in victimization risk: Exploring the role of deviant lifestyles. *Violence and Victims*, 28(2), 341–356.
- *Zhao, R. (2018). Impacts of the school context on victimization in a sample of Chinese adolescents: A multilevel approach. *Journal of Contemporary Criminal Justice*, 34(2), 196–218.

Author Biography

Alexander Engström is a PhD student at the Department of Criminology, Malmö University, Sweden. His research interests are centered on the relationships between lifestyle, victimization, offending, and fear of crime, but also include methodological aspects of collecting data about daily life.

IV

EXAMINING EXPERIENTIAL FEAR OF CRIME USING STUNDA

Examining Experiential Fear of Crime Using STUNDA: Findings from a Smartphone-Based Experience Methods Study¹

Alexander Engström and Karl Kronkvist, Department of Criminology, Malmö University, Sweden

Corresponding Author:

Alexander Engström, Department of Criminology, Malmö University, 205 06 Malmö, Sweden.

Email: alexander.engstrom@mau.se

Biographical note

Alexander Engström is a PhD student at the Department of Criminology, Malmö University, Sweden. His research interests are centered on the relationships between lifestyle, victimization, offending, and fear of crime, as well as methodological approaches to the collection of data about daily life.

Karl Kronkvist is a PhD student at the Department of Criminology, Malmö University, Sweden. His research relates to the criminology of place, including crime prevention, fear of crime, and methodological issues pertaining to these research areas.

EXAMINING EXPERIENTIAL FEAR OF CRIME USING STUNDA

Abstract

Situational data have become more frequently used in research on offending and victimization. However, one outcome that has received less attention is fear of crime. The current study uses situational data collected through a smartphone application (STUNDA) to examine fear of crime as it is experienced in daily life among a sample of university students. Roughly 1200 situations reported by 129 students were analyzed using generalized estimating equations. The results indicate that experiential fear of crime, in the form of worrying about victimization, is related to features of the immediate settings. More specifically, the odds ratio for experiencing fear of crime is significantly higher in places away from home and after dark, while social activities are associated with a significantly lower odds ratio, net of individual-level controls (gender, age, previous victimization, and fear propensity). Yet, fear propensity, measured here using items that refer to an individual's general worry about victimization, has an independent significant effect on fear of crime. As a result of the study's convenience sample, the generalizability of the findings is limited, but a more general theoretical conclusion can nonetheless be drawn; *both* features of settings and individual characteristics are of importance. Further, the use of experience methods via a smartphone application provided detailed and unique situational data, which suggests that future research should further employ these methods to study situational phenomena such as fear of crime.

Keywords

Ecological momentary assessment, experience sampling method, fear of crime, situation, experiential fear of crime, smartphone application

EXAMINING EXPERIENTIAL FEAR OF CRIME USING STUNDA

Introduction

There is a growing interest in using situational data for studying the dynamics of crime. However, while previous research has focused on offending (e.g. Bernasco et al., 2013) and victimization (e.g. Ruiter & Bernasco, 2018), one outcome that has received less attention is fear of crime. One potential reason to this is that much previous fear of crime research has relied on data collected using traditional global survey methodologies (e.g. large scale national surveys, such as the Swedish Crime Survey, see Molin and Lifvin, 2019), which limits the possibilities of providing insights into fear as a momentary state experienced in a given setting. It has therefore been argued that methodological improvements are needed for fear of crime research to capture the complex nature of the phenomenon under study (Gray et al., 2008). A promising alternative approach to examining experiences of fear of crime is to use smartphone-based experience methodologies, which have been employed in a handful of recent studies. Overall these studies provide empirical support for the notion that fear of crime varies across space and time (Chataway et al., 2017, 2019; Irvin-Erickson et al., 2020; Solymosi and Bowers, 2018; Solymosi et al., 2015), thus highlighting that fear of crime, at least to some extent, should be studied as a dynamic phenomenon. However, this small but growing field of research varies in many respects, for instance in terms of survey items, research design, and also in terms of the way in which fear of crime is framed within a wider theoretical framework.

This study explores the relationship between features of settings and experiential fear of crime, while also accounting for individual characteristics. The empirical material consists of 1232 situations reported *in situ* by a convenience sample of 129 university students via STUNDA, a smartphone application specifically developed to survey fear of crime. This study contributes to the current body of knowledge by examining fear of crime in the form of experiences embedded in settings of everyday life. It also contributes new methodological knowledge, since this novel and innovative way of collecting data may present new opportunities and spark interest in further research focusing specifically on experiential fear of crime.

Background

Framing experiential fear of crime

In the absence of a universal definition, fear of crime may be referred to as an umbrella concept covering multiple dimensions of fear (for discussions on definitions, see e.g. Farrall et al., 2009;

EXAMINING EXPERIENTIAL FEAR OF CRIME USING STUNDA

Ferraro and LaGrange, 1987; Hale, 1996). Regardless of definition, however, fear of crime is often discussed as either a stable phenomenon, mainly explained by *traits* among those experiencing it, or as a temporary *state* that varies across time and place (Gabriel and Greve, 2003; see also Gray et al., 2012). The latter refers to the more general notion that thoughts, feelings, and emotions vary across space and time (e.g. Liddle et al., 2017; Shoval et al., 2018), including fear of crime (e.g. Solymosi and Bowers, 2018; Solymosi et al., 2015). This type of fear of crime refers to what Farrall et al. (2009) label *experiential* fear, which is related to actual experiences that unfold at given moments in space and time, as opposed to *expressive* fear which refers to more general beliefs about crime. In the current paper, the former definition is in focus by placing experiential fear of crime (EFC) within individuals' immediate environmental contexts (i.e. settings) which is similar to others who discuss fear of crime in relation to situations (e.g. Ferraro, 1995; Gabriel and Greve, 2003; Vitelli and Endler, 1993).² Since both individual and environmental factors may explain fear of crime (e.g. Vitelli and Endler, 1993; Ward et al., 1986), the present study views EFC as being dependent on specific features of environmental settings and individual characteristics (see Engström and Kronkvist, 2018). As such, EFC may here refer to both cognitive and affective experiences of fear of crime (e.g. worry, fear, risk perception; see Ferraro and LaGrange, 1987), but considers these dimensions at a situational level.

Studying experiential fear of crime

One possible approach to studying fear of crime in relation to specific settings is to ask respondents how safe they feel walking alone in their own neighborhood after dark, an item that is frequently employed in national crime surveys (e.g. Molin and Lifvin, 2019; see also Chataway and Bourke, 2020). This item clearly relates to fear as being dependent on circumstances of the immediate environment, including where (*own neighborhood*), when (*after dark*), what (*walking*), and with whom (*alone*). However, it is limited in the sense that it only provides insights with regard to an expressive account of fear of crime by measuring beliefs about how one *would* feel in such a setting as opposed to how the setting is actually *experienced* (see Farrall et al., 2009). Furthermore, asking about only *one* type of setting limits the possibility of examining variations in fear of crime across different settings. Accordingly, after finding that the age-fear of crime relationship differed across contexts, Jeffords (1983) suggested as early as almost 40

EXAMINING EXPERIENTIAL FEAR OF CRIME USING STUNDA

years ago that there is a need to develop items with higher content validity than the commonly used “walking-outdoors-alone-late-at-night” item (see also Chataway and Bourke, 2020).

Although alternative approaches to assessing fear of crime have been introduced, such as the use of vignettes or multiple setting-specific items (e.g. Kappes et al., 2013; Van der Wurff et al., 1989), the arguably most promising alternatives are those referred to as everyday experience methods (Reis et al., 2014), in this paper simply labeled *experience methods*. These methods, which include for instance Ecological Momentary Assessments and the Experience Sampling Method (e.g. Csikszentmihalyi and Larson, 1987; Stone and Shiffman, 1994), examine experiences as they occur *in situ* and provide a rich picture of the phenomena studied (Hektner et al., 2007). The typical methodological approach consists of sending repeated randomly distributed signals to participants asking them to make an immediate assessment of their current situation by means of a short survey (Scollon et al., 2003). Research using experience methods has flourished since smartphones were introduced due to their unique ability to trigger participant responses, provide questionnaires, and collect auxiliary data through sensors (see Van Berckel et al., 2017). Experience research is of particular importance when studying EFC in particular, and holds some major advantages compared to conventional methodologies.

Traditional methodologies using global survey items (e.g. worrying about becoming the victim of a particular crime during the past year) rely on insecure assumptions, such as respondents’ ability to identify, retrieve and estimate the number of times they have experienced a certain outcome during a given reference period (Schwarz, 2012). While this process is vulnerable to various forms of biases, such as memory and aggregation biases (see Gray et al., 2012; Solymosi et al., 2015), the use of global survey items has also been criticized for only providing vague general estimates of fear, worry and unsafety (Farrall et al., 2009). For instance, Farrall et al. (2009) found that many respondents who reported feeling worried in global items did not state having *experienced* any actual *incidents* of worry, suggesting that global items may overestimate fear of crime (see also Farrall et al., 1997). This issue is not unique to fear of crime research since the correspondence between global retrospective surveys and experience methods is far from perfect (e.g. Scollon et al., 2003; Shiffman et al., 2008). More specifically, individuals tend to be biased towards reporting recent or extreme events in global measures, rather than providing an estimate across all experiences over a given reference period (Stone et al.,

EXAMINING EXPERIENTIAL FEAR OF CRIME USING STUNDA

2000). Thus, as argued by Reis et al. (2014: 378), global measures do not really capture experiences but rather consist of “[...] reconstructed interpretations of personal experience,” an issue related to the fact that individuals are generally asked to assess fear of crime at the time of completing a survey as opposed to when fear of crime may be experienced (Gray et al., 2008). This issue also makes it difficult to know whether suggested predictors of fear actually have an explanatory role in relation to settings that elicit fear, since independent and dependent variables are not measured as they converge in space and time (for a general discussion of this issue, see Hardie, 2020).

Experience methods examine participants in the actual settings they are experiencing (e.g. Reis et al., 2014; Van Berkel et al., 2017), making results generalizable across similar settings in the real world (Shiffman et al., 2008). Ecological validity is therefore a central benefit of experience methods because “[i]f one is interested in how subjects feel at work, there is no point asking them how they feel in the research clinic—or at home, for that matter” (Shiffman et al., 2008: 4). Today, experience research is employed across several scientific disciplines (see e.g. Reichert et al., 2020; Van Berkel et al., 2017), examining phenomena such as quality of life (Liddle et al., 2017), and emotional arousal (Shoval et al., 2018). However, these methods are rare in crime-oriented research (for an exception see e.g. Goldner et al., 2011). Although this methodology was mentioned in relation to fear of crime some time ago (Farrall et al., 2009; Gray et al., 2012), it is not until recently that fear of crime research has come to employ this increasingly popular methodological approach by examining fear of crime as a dynamic feature that varies across space and time (Chataway et al., 2017, 2019; Irvin-Erickson et al., 2020; Solymosi and Bowers, 2018; Solymosi et al., 2015; see also Chataway, 2019).

Factors of relevance for experiential fear of crime

Features of settings. Important features of a setting include where and when it is experienced, what one is doing and who else is present (see Pervin, 1978; Wikström et al., 2012). While these elements have been examined to a varying extent in relation to offending and victimization (e.g. Bernasco et al., 2013; Ruiter and Bernasco, 2018; Wikström et al., 2012), they are also of theoretical relevance for EFC due to their focus on essential characteristics of the immediate environment.

EXAMINING EXPERIENTIAL FEAR OF CRIME USING STUNDA

Where a setting is located relates to the functional location (e.g. home, school, or work-place). For instance, being away from home or in unfamiliar places may lead to increased fear (Brantingham and Brantingham, 1995; Warr, 1990), while familiarity is generally associated with lower levels of fear of crime (Lorenc et al., 2013; Solymosi and Bowers, 2018). Using experience methods, Birenboim (2018) found that the type of place was in fact the main feature affecting insecurity. More specifically, being at home, at the university, or at others' houses was related to lower levels of insecurity whereas being in open spaces and traveling/moving around increased the level of insecurity. However, not all types of crime abide by this logic, with one exception being domestic offenses (for a discussion, see Pain, 2000). *When* in time a setting is experienced is of relevance, since fear may increase "at night, in the dark" (Brantingham and Brantingham, 1995: 9). Thus, one typical time-related feature of a setting of relevance for fear is darkness (see Warr, 1990), which adds complexity to the perceptions of a given location, since a place considered safe during the day may be considered unsafe at night (see Nasar et al. 1993). *What* one is doing in a given setting may also be related to fear of crime, since individuals' activities constitute part of the setting (Ferraro, 1995). For instance, individuals with a more home-oriented lifestyle and those who refrain from risky activities, such as going to a party on campus or going to a café at night, tend to be more fearful (Crowl and Battin, 2017; Mesch, 2000), whereas being involved in partying activities is related to lower levels of fear of aggravated assault (Lee and Hilinski-Rosick, 2012). *Who* else is present in a setting is important because fear can increase as a result of being alone but also as a function of "encounters with 'scary' people" (Brantingham and Brantingham, 1995: 9). The presence of other people may be perceived as a threat, as in the case of women's fear of men as a form of "stranger danger" (Scott, 2003). However, the presence of unspecified "others" can both increase *and* decrease the level of fear of crime depending on who these others are (Warr, 1990), indicating that it is important to specify which kinds of people are present in a given setting.

Individual characteristics. When studying EFC, differences across individuals in their tendency to experience fear of crime need to be considered. Women consistently report higher levels of fear than men (see Collins, 2016), which may in part be explained by women's fear of sexual offenses (e.g. Ferraro, 1996). Further, age is often associated with increased levels of fear (e.g. Molin and Lifvin, 2019), although not conclusively across different studies (e.g. Collins, 2016;

EXAMINING EXPERIENTIAL FEAR OF CRIME USING STUNDA

Jackson, 2009; Jeffords, 1983). Victimization experiences are commonly used as predictors of fear of crime, with results showing that those with a victimization history report higher levels of fear across different studies (Collins, 2016). Importantly, gender, age, and previous victimization are merely proxies for other unmeasured factors affecting EFC, which indicates a need to also use other measures of “dispositional fear” (i.e. the propensity to perceive a setting as frightening, see Kappes et al., 2013). However, the definition of EFC outlined here is understudied, making it difficult to understand which individual-level factors may measure a propensity to experience fear of crime. One possible option explored in this study is that of using fear of crime in a traditional survey (expressive fear) as an indicator of the propensity to experience fear of crime in a given setting. Although this reasoning may seem tautological, it is important not to expect beliefs about crime to be identical to actual experiences of fear of crime.

The Present Study

The overarching research question posed in the present study is *which features of a setting are related to experiential fear of crime?* By also including individual-level control variables, the importance of *both* features of settings and individual characteristics is acknowledged.

Data

The data are drawn from the research project *STUNDA: Examining experiences of situational fear of crime through smartphone applications among young adults in Malmö*. STUNDA is a smartphone application specifically developed to study fear of crime (for an overview and detailed description of the methodology, see Kronkvist and Engström, 2020). The aim of the project is primarily exploratory and focuses on the feasibility of utilizing a smartphone application in experience research on fear of crime. The study has been approved by the Regional Ethical Review Board in Lund (ref. 2018/464).

Participants are comprised of a convenience sample of students enrolled at Malmö University, Sweden, during the fall of 2018. Students were recruited in classrooms and in manned displays across campus by being handed flyers with project information and unique user credentials for the smartphone app. The exact participation rate is unknown but based on a liberal estimate, no more than 2000 students came into contact with the project and were thus offered the possibility of participating. A total of 933 students were definitely informed of the project, since that is the number of students who retained the flyer. Of these, 191 individuals (20.5 %)

EXAMINING EXPERIENTIAL FEAR OF CRIME USING STUNDA

downloaded the app, completed a baseline survey and thus qualified as participants in the study. Participants then decided themselves how they wanted to use the app, which resulted in 131 individuals choosing to answer at least one *signal-contingent survey*. Across all participants, 1305 such surveys were completed. Cases with missing data on the study variables were deleted listwise, resulting in 1232 cases with complete data, clustered in 129 participants.

Procedure

Signal-contingent surveys were activated among participants at three random times per day via notifications in the app, one per time slot (07:30–12:30; 12:31–17:30; 17:31–22:30), in order to collect data across different periods of the day (i.e. using stratified sampling, see Shiffman et al., 2008).³ Participants were required to allow STUNDA to send notifications in order to participate in the survey, which contained items on various aspects of fear of crime and the current setting.⁴ Data were also collected passively via smartphone sensors (time and geographic location). Each survey expired 20 minutes after receiving the notification to ensure high ecological validity (i.e. that participants answered the survey in the sampled situation, see e.g. Scollon et al., 2003). The number of notifications (i.e. possible surveys) received by each participant is unknown (e.g. participants may have turned off notifications), for which reason it is not possible to report an exact compliance rate. However, based on estimates of received notifications among the participants in this study, the compliance rate is estimated at between 31.2 and 35.0 percent (for details regarding these estimations, see Kronkvist and Engström, 2020).

Study variables

An overview of the study variables is available in Table 1 (see also Appendix).

Dependent variable. EFC is here measured via the item “how worried are you about becoming the victim of a crime right now?” Participants selected the level of worry using a slider with underlying integer values (not visible to participants) ranging between the two extremes “not worried at all” (0) to “very worried” (100). Given that most situations were experienced as safe, which resulted in an excessive amount of zeros in the data (79 %), the outcome variable was transformed into an ordinal variable (range 0–4). As shown in Table 1, the first category consists of zeros only while the remainder are based on the cumulative number of responses with cut

EXAMINING EXPERIENTIAL FEAR OF CRIME USING STUNDA

Table 1. Situation-level (N = 1232) and individual-level (N = 129) variables included.

Situation-level variables	%
Fear of crime (original value)	
0 (0)	79.0
1 (1–2)	5.3
2 (3–7)	5.6
3 (8–20)	5.0
4 (21+)	5.2
Where	
At home/other's home	69.1
At school/work	12.3
Public transport	6.7
Semi-public place	5.4
Outdoors, public environment	4.8
Car/cab	1.7
What	
Media consumption/nothing	42.0
Educational activity/working	27.5
Traveling/moving around	11.2
Household/personal activities	10.5
Social activity	8.8
With whom	
Familiar individuals	51.9
Alone	41.5
Unknown others	6.7
After dark	42.4
Outside of home area	37.1
<hr/>	
Individual-level variables	
Gender, female (%)	76.0
Age (range, mean, sd)	18–40, 24.0 (4.2)
Victimization, yes (%)	43.4
Fear propensity (range, mean, sd)	0–2.6, 0.6 (0.6)

EXAMINING EXPERIENTIAL FEAR OF CRIME USING STUNDA

points at each quartile of the values over zero (with roughly five percent of the total number of situations in each category).

Independent variables. A set of variables were included that tap into the features of a setting that have been employed in criminological space-time budget research (e.g. Wikström et al., 2012), crime-related research using experience methods (Goldner et al., 2011), and experience research on perceptions of insecurity (Birenboim, 2018). Three variables are based on survey items referring to different features of settings; the functional place, what the participant was doing at the time, and the presence of other people. The latter refers to both familiar and unfamiliar individuals that were present in the setting and thus not necessarily interacting with the participant. Although participants could select from among pre-defined categories or use an open-end response option, the original categories were reduced to a smaller set of categories by merging similar responses. Reference categories were selected based on the most commonly reported categories within each item: “at home/other’s home” (where), “media consumption/nothing” (what), and “familiar individuals” (who). Full information about the categorization is available in the Appendix.

Two variables were created from data automatically collected by STUNDA. Time was logged for each situation, and this was then paired with data from an online resource (Time and date, 2020) in order to create a variable measuring whether a setting was experienced *after dark*. A variable was also created that measures whether a setting was experienced *outside of the home area*. The participants’ home area was defined by their postal code, as reported in the baseline survey.⁵ The geographical midpoint of this area was selected as an individual’s home. Geodata on the specific location of each survey were then compared with this midpoint; surveys reported more than 500 meters away from home were coded as occurring outside of the home area. The 500-meter limit is an arbitrary cut-off but seems reasonable, since most people are likely to be familiar with the surrounding area within such a distance.

Control variables. Individual-level control variables were included from the baseline survey. *Gender* is a variable in which females are compared to a combination of the other two categories (19.4 % males, and 4.7 % who did not state their gender). *Age* (years) was also included, as was a dichotomous variable measuring *victimization*. The latter variable measures whether a participant had been victimized in the form of any of the following offenses in the past 12 months:

EXAMINING EXPERIENTIAL FEAR OF CRIME USING STUNDA

robbery (including attempts), physical violence, sexual harassment in person, sexual harassment online, threat in person, and threat online. How worried participants were about becoming the victim of a crime during the past month is here used as a proxy measure of *fear propensity* because it refers to a general or expressive level of fear which may reflect an individual tendency to also perceive settings as eliciting fear (experiential fear). This variable is a mean index (Cronbach's $\alpha = .79$) of responses relating to items referring to specific personal offenses in the baseline survey (attack/assault/robbery, threat/harassment in person, threat/harassment online, sexual harassment in person, and sexual harassment online). While this proxy variable by no means captures *all* of the possible individual variation in fear propensity, it is here nonetheless considered a reasonable means of acknowledging the importance of dispositional fear.

Analytical approach

The signal-contingent surveys are the units of analysis in this study. The number of completed surveys with non-missing data on the study variables ranges from 1 to 120 per participant (mean = 9.6, median = 4, SD = 14.0), indicating that the data are clustered and unbalanced, which is typical in studies of this kind (Solymosi et al., 2020). Since the clustering violates the assumption of independence across observations, analyses were performed with robust standard errors using generalized estimating equations (GEE). This method can handle few observations per cluster and provide reliable results despite unbalanced data (McNeish, 2014). Since this study mainly *controls* for the clustering rather than drawing cluster-specific conclusions, the GEE method is utilized here instead of multilevel modelling (see McNeish, 2014). A robust estimator (Huber/White/Sandwich) was employed in conjunction with an exchangeable working correlation matrix. The latter was selected because experiences within an individual are here hypothesized to correlate to the same extent, regardless of their order in time. The GEEs were estimated by first specifying an ordinal distribution with a logistic function.

Three separate analyses were carried out. First, bivariate associations were examined with each independent variable regressed on EFC. Second, a multivariate analysis was performed in order to examine associations when considering all features of settings simultaneously. Finally, a multivariate analysis was employed in which both features of settings and individual-level controls were included. Across all analyses, standard errors, odds ratios (OR), and significance

EXAMINING EXPERIENTIAL FEAR OF CRIME USING STUNDA

levels (p-value) are reported to describe associations between dependent and independent variables. The odds ratios refer to the increase or decrease in the odds of having a higher value on EFC. Multicollinearity was examined using a regular OLS regression model (categorical variables recoded into dummies). Although it does not account for the clustering of the data, this analysis did not reveal any VIF values that indicated a high level of multicollinearity (highest VIF value = 2.6). Excluded cases comprise 73 surveys, of which 71 had missing data on the variable measuring being outside of the home area, which may be due to technical problems or that participants declined the option for STUNDA to collect spatial data. The remaining two excluded surveys contained open-ended answers that did not provide an accurate response to the relevant survey items.

Findings

Table 2 presents the three different analyses. The bivariate analyses reveal that all functional places were related to a significantly higher OR for fear of crime compared to being in a home, of which being on public transport was related to the largest OR (4.33). Compared with media consumption/nothing, traveling/moving around (OR = 2.69) and household/personal activities (OR = 1.68) were the only activities showing a statistically significant relationship with fear. Being with unknown others was significantly related to higher levels of fear compared to being with familiar individuals (OR = 2.88). Settings experienced after dark were not related to higher levels of fear, while settings experienced outside of the home area produced a significantly larger OR compared to being in the home area (OR = 2.14).

In the first multivariate analysis, all variables measuring functional place were significant except for being in a car/taxi. However, traveling/moving around and household/personal activities were not significant, while social activities were significantly associated with a lower OR for fear compared to media consumption/nothing (OR = .60). Further, being with unknown others compared to being with familiar people was not significant. The multivariate analysis also showed that settings experienced after dark were significantly associated with an increase in the OR for fear compared to settings experienced during daylight (OR = 1.33). However, settings experienced outside of the home area were not significantly related to a higher level of fear.

EXAMINING EXPERIENTIAL FEAR OF CRIME USING STUNDA

Table 2. Generalized estimating equations using ordinal logistic regressions with EFC as the outcome.

	Bivariate			Multivariate 1			Multivariate 2		
	SE	OR	P	SE	OR	P	SE	OR	P
Where (ref. = being home)									
At school/work	.18	1.96	.000	.20	2.26	.000	.23	2.81	.000
Public transport	.21	4.33	.000	.31	3.39	.000	.37	3.99	.000
Semi-public place	.24	3.32	.000	.27	3.34	.000	.32	4.34	.000
Outdoors, public environment	.21	3.13	.000	.20	2.86	.000	.24	3.76	.000
Car/taxi	.33	2.49	.006	.46	2.40	.059	.53	3.92	.010
What (ref. = media consumption/nothing)									
Educational activity/working	.16	1.17	.323	.17	.81	.222	.19	.79	.216
Traveling/moving around	.19	2.69	.000	.25	.96	.870	.29	.92	.785
Household/personal activities	.17	1.68	.002	.18	.94	.738	.21	.95	.820
Social activity	.25	.94	.809	.26	.60	.048	.30	.54	.044
With whom (ref. = familiar individuals)									
Alone	.13	1.13	.355	.15	1.32	.072	.18	1.35	.089
Unknown others	.23	2.88	.000	.30	1.31	.365	.32	1.39	.296
After dark	.10	.96	.703	.12	1.33	.014	.13	1.50	.002
Outside of home area	.13	2.14	.000	.19	1.29	.165	.22	1.28	.261
Individual-level controls									
Gender (female)							.48	.93	.872
Age							.03	.94	.071
Victimization (yes)							.36	1.23	.558
Fear propensity							.37	2.75	.006

Abbreviations: SE = std. error, OR = odds ratio, P = p-value

The final multivariate analysis included variables measuring individual characteristics. Most relationships between features of settings and fear were similar to the previous analysis with the exception of being in a car/taxi, which was significant in the final analysis. The only individual control variable significantly associated with fear was fear propensity (OR = 2.75), with neither gender, age nor previous victimization showing any significant associations with the outcome.

In sum, bivariate analyses revealed that most features of settings are associated with the level of fear compared to their reference categories. Some associations were different in the

EXAMINING EXPERIENTIAL FEAR OF CRIME USING STUNDA

multivariate analyses, with the final analysis showing that all functional places are related to higher fear compared to being in a home, net of all other variables. Social activities decrease the OR for fear, while darkness is associated with a larger OR. In relation to individual-level controls, only fear propensity showed a significant association with fear.

Sensitivity tests

Given the arbitrary definition of being away from the home area, alternative categorizations were tested (1000 and 1500 meters away from home) in the final multivariate analysis. However, no significant differences were found in relation to the main analysis. The final multivariate analysis was also carried out without this variable and using two different samples: the sample with complete data ($N = 1232$) and a sample including the cases omitted due to missing data on this variable ($N = 1303$). An analysis was also performed using a sample in which the cluster size encompassed at least two observations ($N = 1211$). The only noteworthy difference in all these alternative analyses was that social activities were not statistically significant. Gender was also examined using an alternative categorization (female and those not stating their gender as the reference category) but no significant differences emerged. Full information regarding the sensitivity analyses is available upon request.

Discussion

The results from the present study support the notion that fear of crime can be referred to as an experience (see Farrall et al., 2009), or as a transitory state (see Gabriel and Greve, 2003), depending on features of the immediate environmental setting (e.g. Solymosi and Bowers, 2018; Solymosi et al., 2015) and individual characteristics (Engström and Kronkvist, 2018, see also Vitelli and Endler, 1993; Ward et al., 1986). Further, since fear propensity (i.e. baseline worry about victimization) was not the only significant factor affecting EFC, it can be assumed that EFC is different from other forms of fear of crime. More specifically, this result highlights that those who report elevated levels of fear of crime using conventional global survey items are not necessarily fearful all the time, across all settings, a pattern which is similar to that found in similar research on offending (e.g. Bernasco et al., 2013).

Given the use of a convenience sample, the more specific findings need to be interpreted with caution. However, the most consistent finding in the current study is that functional place is related to EFC, which is similar to results from previous experience research (Birenboim,

EXAMINING EXPERIENTIAL FEAR OF CRIME USING STUNDA

2018). More specifically, settings away from a home were more likely to be associated with higher levels of fear, as would be expected (e.g. Brantingham and Brantingham, 1995). However, the variable measuring whether a setting was located outside of one's home area was not significant in multivariate models. This finding may be interpreted as indicating that the familiarity of a place may not be of particular importance for EFC, which is at odds with much previous research (Brantingham and Brantingham, 1995; Lorenc et al., 2013; Warr, 1990; Solymosi and Bowers, 2018). However, individuals are also probably familiar with several places that are more than 500 meters away from home, such as their workplace, school and the homes of friends and family, making the interpretation of this variable difficult. Future research clearly needs to use more refined measures to study this issue further and more generally develop the use of geodata by including other relevant factors related to geographic locations.

Social activities were associated with a lower level of fear compared to media consumption/nothing in the final multivariate analysis. However, the results relating to activities are somewhat difficult to interpret in relation to previous research given the lack of fear of crime studies that focus on this specific feature. For instance, a home-oriented lifestyle and refraining from risky activities, such as going to parties on campus or to cafés at night, are both more common among people who in general report higher levels of fear (Crowl and Battin, 2017; Mesch, 2000). However, these cannot really be compared to the operationalization of activities in the current study as a result of these earlier studies' use of items that mix activities and places. The sensitivity analyses also showed that social activities were not significantly associated with fear. Therefore, the role of activities in EFC remains unclear and should be examined more thoroughly in the future. No significant associations remained for the variable measuring the presence of other people in the final multivariate analysis. This is somewhat surprising since it has been argued that the presence or absence of people affects fear of crime (Brantingham and Brantingham, 1995; Scott, 2003, Warr, 1990). One possible interpretation may be that the functional place is simply more important than the presence of people (and also the activities one is involved in), which was indicated by the final multivariate analysis and also reflects previous research using a similar methodology (Birenboim, 2018). Darkness showed a significant positive association with fear in the multivariate analyses thus indicating that settings may be perceived as eliciting more fear if they occur after dark, which is in line with previous research (Brantingham and Brantingham, 1995; Nasar et al., 1993; Warr, 1990).

EXAMINING EXPERIENTIAL FEAR OF CRIME USING STUNDA

Despite gender being one of the most well-established individual-level predictors of fear of crime in previous research (e.g. Collins, 2016), the results from this study indicate that it may not be of significance for EFC. This finding warrants attention in future research since it implies that women are perhaps more worried when examined using traditional surveys than they are using methods that encompass experiences. Clearly, the small convenience sample used does not allow for any further conclusions, but future research should examine associations between gender and EFC in depth, including potential selection effects (e.g. gender differences in self-selection into certain kinds of settings). Age was not significantly related to EFC although it is necessary to bear in mind that the variation in this variable is relatively limited (i.e. the age range 18–40). A wider sample age range is needed in future research. Although victimization has been found to be related to fear of crime in much previous research (e.g. Collins, 2016), it did not show a significant association with EFC. This may be due to the inclusion in the analysis of baseline worry about victimization as a proxy measure of the individual propensity to experience fear. An analysis that excluded fear propensity (not reported, available upon request) did indeed exhibit a significant effect of victimization on EFC (OR = 1.89, $p = .047$), thus indicating that fear propensity eliminated the effect of victimization in the current study. Nevertheless, fear propensity was included in the main analysis and should have had a substantial effect on the results if fear were *not* dependent on features of settings (i.e. if fear prone individuals are fearful all the time). While showing a positive association with EFC net of the other predictors, the analysis including this variable showed similar associations for features of settings as in the previous multivariate analysis. Thus, EFC is not only attributable to individual propensity but also to specific features of the settings in which fear is experienced.

While providing insights regarding EFC, the current study also contributes methodologically to the growing body of experience research on fear of crime. Although the exclusively methodological considerations related to the present project are discussed elsewhere (Kronkvist and Engström, 2020), this study shows that rich quantitative data can be collected using a fairly simple approach. The random sampling strategy is important here since it provides information of *both* safe and unsafe situations which makes it possible to study variations in fear more fully.

EXAMINING EXPERIENTIAL FEAR OF CRIME USING STUNDA

Limitations and future directions

Due to the exploratory nature of this paper, a number of important limitations point into avenues for future research. First, the uneven number of surveys completed across participants is not randomly distributed (Kronkvist and Engström, 2020). Although such participation bias is common in this kind of research (Solymosi et al., 2020), future studies should attempt to minimize the imbalance in the data. Further, while many findings are in line with previous research, future studies on EFC should attempt to use random probability samples to improve the generalizability and examine whether the findings can be replicated. Improved measures of individual characteristics that constitute fear propensity are also warranted, which may be achieved by including variables based on validated scales that tap into personality traits (e.g. Guedes et al., 2018). This may also provide opportunities to study the *interaction* between individual characteristics and features of settings as proposed in relation to crime causation (see Hardie, 2020), which could develop into a full causal test and an elaborated model of *situational fear of crime* and not just the environmental aspect examined in this study (i.e. features of settings). In such future research, features of settings may also be further explored and combined into multidimensional settings that typically elicit fear. This could be further assisted by collecting data also in late hours to better grasp the time dimension of fear but also by a more comprehensive data collection approach in general, perhaps by using device sensors to collect data without bothering the participants (see e.g. Reichert et al., 2020; Van Berkel et al., 2017). Further, while this study focused on worry of victimization in generic terms, crime specific worry was not assessed which could be another important development for experiential fear of crime research. Another limitation is related to the study's assumption that the scale measuring EFC is interpreted as being equally representative across participants although this may not be the case. Centering the variable within individuals would solve this problem, but the large number of participants who provided only a few surveys did not allow for such an approach in the current study. Future research should thus try to collect more data points from each participant or focus on sub-samples of participants with more data entries.

Finally, one possible more general limitation pertaining to experience research is reactivity (e.g. Reis et al., 2014), an issue that has also been raised in relation to smartphone-based experience research on fear of crime (see Jackson and Gouseti, 2015). Since participants are assessed repeatedly and intensively, they may start to think more about themselves and their

EXAMINING EXPERIENTIAL FEAR OF CRIME USING STUNDA

behavior, and potentially also change their behavior (Hufford et al., 2002; Scollon, 2003). However, studies examining reactivity show varying results (e.g. Hufford et al., 2002; Labhart et al., 2019), which indicates that it is not clear how much studies are affected by it (Shiffman et al., 2008). Nonetheless, future research clearly needs to study reactivity in relation to experience methods in fear of crime research.

Conclusion

The findings from the present study provide empirical support for EFC as dependent on features of settings *and* individual characteristics. Various types of functional places outside of homes, darkness, and fear propensity increase the odds ratio for experiencing higher levels of fear. Social activities, on the other hand, are related to a lower odds ratio for fear compared to activities related to media consumption/nothing, although this finding is not supported by the sensitivity analyses. Thus, although EFC is in part contingent on more general beliefs about crime (i.e. fear propensity), its significant associations with some features of settings suggest that EFC must be studied as a phenomenon that is distinguishable from other forms of fear of crime. Further, the present study contributes methodologically by showing that rich situational data can be obtained by employing experience methods based on smartphone applications. However, random probability sampling, and a more well-elaborated operationalization of the individual-level variables that may affect EFC are only two of many important developments needed in the future.

Notes

1. An early draft of this paper was presented at the 19th Annual Conference of the European Society of Criminology in Ghent, 19 September 2019.
2. The term “situation” can have different meanings which is why the term “setting” is used here as it refers to the immediate environment in which experiences occur (for a discussion, see Hardie, 2020; see also Reis and Holmes, 2014).
3. The signaling schedule unintentionally oversampled each half hour located at the beginning and the end of the time slots, making the receipt of a notification twice as likely at these times.
4. The operating systems deactivated notifications if participants chose not to respond to a certain number of consecutive notifications.

EXAMINING EXPERIENTIAL FEAR OF CRIME USING STUNDA

5. No specific home coordinates or addresses were collected since this is considered personal information requiring additional ethical justification, which seemed excessive given the exploratory nature of the project.

Appendix

Table A1. Categorization of features of settings.

Variable (n surveys)	Specific contents (n surveys within category)
<i>Where</i>	
At home/other's home (851)	Home (723), other person's home (128)
At school/work (152)	School (139), work (13)
Public transport (83)	Public transport (82), airport (1)
Semi-public place (66)	Restaurant/café (25), training facilities (23), cultural establishment (7), mall/shop (5), hotel (4), bar/night club (1), health care (1)
Outdoors, public environment (59)	City-center (30), walking around (26), outdoors (3)
Car/taxi (21)	Car/taxi (21)
<i>What</i>	
Media consumption/nothing (518)	Watching film/series/TV-show (208), nothing in particular (147), surfing the Internet (113), playing computer/video/mobile games (42), listening to music/radio/podcast (4), reading (4)
Educational activity/working (339)	Studying/lecture etc. (321), working (15), driving lesson (1), meeting (1), workshop (1)
Traveling/moving around (138)	Going somewhere (134), walking the dog (4)
Household/personal activities (129)	Eating (29), shopping (29), exercising (22), cooking (15), cleaning (8), resting/going to bed/woke up (6), doing the dishes (5), washing (3), getting ready (2), brushing teeth (1), buying lunch (1), getting vaccination (1), personal hygiene (1), planning the week (1), putting children to bed (1), riding a horse (1), sexual activity (1), taking medication (1), throwing out waste (1)
Social activities (108)	Hanging out with friends (82), partying (8), hanging out with family (5), "fika" = socializing while having e.g. a cup of coffee (4), talking on the phone/texting (4), watching live sport (3), arguing with a known other person (1), eating at a restaurant (1)
<i>With whom¹</i>	
Familiar individuals (687)	Friends (235), partners (200), parents (126), other known people (34), siblings (27), colleagues (23), other family members (22), own child (20)
Alone (526)	Alone (526)
Unknown others (92)	Unknown others (92)

¹ The following hierarchy was used in the coding procedure if more than one category was reported in a survey: familiar individuals, unknown others, alone

EXAMINING EXPERIENTIAL FEAR OF CRIME USING STUNDA

References

- Bernasco W, Ruiter S, Bruinsma GJN, Pauwels LJR and Weerman FM (2013) Situational causes of offending: A fixed-effects analysis of space-time budget data. *Criminology* 51(4): 895–926.
- Birenboim, A (2018) The influence of urban environments on our subjective momentary experiences. *Environment and Planning B: Urban Analytics and City Science* 45(5): 915–932.
- Brantingham P and Brantingham P (1995) Criminality of place: Crime generators and crime attractors. *European Journal on Criminal Policy and Research* 13(3): 5–26.
- Chataway ML (2019) Sense of place and feelings of safety: Examining young adults' experiences of their local environment using mobile surveys. *City & Community* 19(3): 656–675.
- Chataway ML and Bourke A (2020) Fear of crime, disorder, and quality of life. In: Lersch K and Chakraborty J (eds) *Geographies of Behavioural Health, Crime, and Disorder: The Intersection of Social Problems and Place*. Cham: Springer, 137–163.
- Chataway ML, Hart TC and Bond C (2019) The social-psychological process of fearing crime: Developing and testing a new momentary model of victimisation worry. *Australian & New Zealand Journal of Criminology* 52(4): 462–482.
- Chataway ML, Hart TC, Coomber R and Bond C (2017). The geography of crime fear: A pilot study exploring event-based perceptions of risk using mobile technology. *Applied Geography*, 86: 300–307.
- Collins RE (2016) Addressing the inconsistencies in fear of crime research: A meta-analytic review. *Journal of Criminal Justice* 47: 21–31.
- Crowl JN and Battin JR (2017) Fear of crime and the police: Exploring lifestyle and individual determinants among university students. *The Police Journal: Theory, Practice and Principles* 90(3): 195–214.
- Csikszentmihalyi M and Larson R (1987) Validity and reliability of the experience-sampling method. *Journal of Nervous and Mental Disease* 175(9): 526–536.

EXAMINING EXPERIENTIAL FEAR OF CRIME USING STUNDA

- Engström A and Kronkvist K (2018) Situating fear of crime: The prospects for criminological research to use smartphone applications to gather experience sampling data. In: Leventakis G and Haberfeld M (eds) *Community-Oriented Policing and Technological Innovations*. Cham: Springer, 85–93.
- Farrall S, Jackson J and Gray E (2009) *Social Order and the Fear of Crime in Contemporary Times*. Oxford: Oxford University Press.
- Farrall S, Bannister J, Ditton J and Gilchrist E (1997) Questioning the measurement of the ‘fear of crime’: Findings from a major methodological study. *The British Journal of Criminology* 37(4): 658–679.
- Ferraro KF (1995) *Fear of crime: Interpreting victimization risk*. Albany, NY: State University of New York Press.
- Ferraro KF (1996) Women's fear of victimization: Shadow of sexual assault? *Social Forces* 75(2): 667–690.
- Ferraro KF and LaGrange R (1987) The measurement of fear of crime. *Sociological Inquiry* 57(1): 70–97.
- Gabriel U and Greve W (2003) The psychology of fear of crime. Conceptual and methodological perspectives. *The British Journal of Criminology* 43(3): 600–614.
- Goldner J, Peters TL, Richards MH and Pearce S (2011) Exposure to community violence and protective and risky contexts among low income urban African American adolescents: A prospective study. *Journal of Youth and Adolescence* 40(2): 174–186
- Gray E, Jackson J and Farrall S (2008) Researching everyday emotions: Towards a multi-disciplinary investigation of the fear of crime. In Kury H (eds) *Fear of Crime - Punitivity. New Developments in Theory and Research* (Kriminalität und Kriminalpolitik Vol 3). Bochum: Universitätsverlag Brockmeyer, 3–24.
- Gray E, Jackson J and Farrall S (2012) In search of the fear of crime: Using interdisciplinary insights to improve the conceptualisation and measurement of everyday insecurities. In:

EXAMINING EXPERIENTIAL FEAR OF CRIME USING STUNDA

- Gadd D, Karstedt S and Messner SF (eds) *The SAGE Handbook of Criminological Research Methods*. London: SAGE Publications Ltd., 268–281.
- Guedes IMES, Domingos SPA and Cardoso CS (2018) Fear of crime, personality and trait emotions: An empirical study. *European Journal of Criminology* 15(6) 658–679.
- Hale C (1996) Fear of crime: A review of the literature. *International Review of Victimology* 4: 79–150.
- Hardie B (2020) *Studying Situational Interaction*. Cham: Springer.
- Hektner JM, Schmidt JA and Csikszentmihalyi M (2007) Epistemological foundations for the measurement of experience. In Hektner JM, Schmidt JA and Csikszentmihalyi M (eds) *Experience sampling method*. Thousand Oaks, CA: SAGE Publications, Inc., 3–15.
- Hufford MR, Shields AL, Shiffman S, Paty J and Balabanis M (2002) Reactivity to ecological momentary assessment: An example using undergraduate problem drinkers. *Psychology of Addictive Behaviors* 16(3): 205–211.
- Irvin-Erickson T, Malik AA, Kamiran MF and Natarajan M (2020) Utility of ecological momentary assessments to collect data on fear of crime. *International Journal of Comparative and Applied Criminal Justice* 44(4): 307–319.
- Jackson J (2009) A psychological perspective on vulnerability in the fear of crime. *Psychology, Crime & Law* 15(4): 365–390.
- Jackson J and Gouseti I (2015) Psychological proximity and the construal of crime: A commentary on ‘Mapping fear of crime as a context-dependent everyday experience that varies in space and time’. *Legal and Criminological Psychology* 20: 212–214.
- Jeffords CR (1983) The situational relationship between age and the fear of crime. *The International Journal of Aging and Human Development* 17(2): 103–111.
- Kappes C, Greve W and Hellmers S (2013) Fear of crime in old age: Precautious behaviour and its relation to situational fear. *European Journal of Ageing* 10: 111–125.

EXAMINING EXPERIENTIAL FEAR OF CRIME USING STUNDA

- Kronkvist K and Engström, A (2020) Feasibility of gathering momentary and daily assessments of fear of crime using a smartphone application (STUNDA): Methodological considerations and findings from a study among Swedish university students. *Methodological Innovations*. DOI: 10.1177/2059799120980306.
- Labhart F, Tarsetti F, Bornet O, Santani D, Truong J, Landolt S, Gatica-Perez D and Kuntsche E (2019) Capturing drinking and nightlife behaviours and their social and physical context with a smartphone application – Investigation of users' experience and reactivity. *Addiction Research & Theory* 28(1): 62–75.
- Lee DR and Hilinski-Rosick CM (2012) The role of lifestyle and personal characteristics on fear of victimization among university students. *American Journal of Criminal Justice* 37: 647–668.
- Liddle J, Wishink A, Springfield L, Gustafsson L, Ireland D and Silburn P (2017) Can smartphones measure momentary quality of life and participation? A proof of concept using experience sampling surveys with university students. *Australian Occupational Therapy Journal* 64(4): 294–304.
- Lorenc T, Petticrew M, Whitehead M, Neary D, Clayton S, Wright K, Thomson H, Cummins S, Sowden A and Renton A (2013) Fear of crime and the environment: Systematic review of UK qualitative evidence. *BMC Public Health* 13(1): 496.
- McNeish DM (2014) Modeling sparsely clustered data: Design-based, model-based, and single-level methods. *Psychological Methods* 19(4): 552–563.
- Mesch GS (2000) Perceptions of risk, lifestyle activities, and fear of crime. *Deviant Behavior* 21(1): 47–62.
- Molin M and Lifvin S (2019) *Swedish Crime Survey 2019: English summary of Brå report no 2019:11*. Stockholm: The Swedish National Council for Crime Prevention.
- Nasar JL, Fisher B and Grannis M (1993) Proximate physical cues to fear of crime. *Landscape and Urban Planning* 26(1–4): 161–118.

EXAMINING EXPERIENTIAL FEAR OF CRIME USING STUNDA

- Pain RH (2000) Place, social relations and the fear of crime: A review. *Progress in Human Geography* 24(3): 365–387.
- Pervin LA (1978) Definitions, measurements, and classifications of stimuli, situations, and environments. *Human Ecology* 6(1): 71–105.
- Reichert M, Braun U, Lautenbach S, Zipf A, Ebner-Priemer U, Tost H and Meyer-Lindenberg A (2020) Studying the impact of built environments on human mental health in everyday life: methodological developments, state-of-the-art and technological frontiers. *Current Opinion in Psychology* 32: 158–64.
- Reis, HT and Holmes JG (2014) Perspectives on the situation. In Deaux K and Snyder M (eds) *The Oxford Handbook of Personality and Social Psychology*. New York, NY: Oxford University Press, 64–92.
- Reis HT, Gable SL and Maniaci MR (2014) Methods for studying everyday experience in its natural context. In: Reis HT and Judd CM (eds) *Handbook of Research Methods in Social and Personality Psychology*. Cambridge, UK: Cambridge University Press, 373–403.
- Ruiter S and Bernasco W (2018) Is travel actually risky? A study of situational causes of victimization. *Crime Science* 7(10): 1–12.
- Schwarz N (2012) Why researchers should think “real-time”: A cognitive rationale. In: Mehl MR and Conner TS (eds) *Handbook of Research Methods for Studying Daily Life*. New York, NY: Guilford Press, 22–42.
- Scollon CN, Kim-Prieto C and Diener E (2003) Experience sampling: Promises and pitfalls, strengths and weaknesses. *Journal of Happiness Studies* 4(1): 5–34.
- Scott H (2003) Stranger danger: Explaining women’s fear of crime. *Western Criminology Review* 4(3): 203–214.
- Shiffman S, Stone AA and Hufford MR (2008) Ecological momentary assessment. *Annual Review of Clinical Psychology* 4(1): 1–32.
- Shoval N, Schvimer Y and Tamir M (2018) Tracking technologies and urban analysis: Adding the emotional dimension. *Cities* 72(part A): 34–42.

EXAMINING EXPERIENTIAL FEAR OF CRIME USING STUNDA

- Solymosi R and Bowers K (2018) The role of innovative data collection methods in advancing criminological understanding. In: Bruinsma GJN and Johnson SD (eds) *The Oxford Handbook of Environmental Criminology*. New York, NY: Oxford University Press, 210–237.
- Solymosi R, Bowers K and Fujiyama T (2015) Mapping fear of crime as a context-dependent everyday experience that varies in space and time. *Legal and Criminological Psychology* 20(2): 193–211.
- Solymosi R, Buil-Gil D, Vozmediano L and Guedes, I (2020) Towards a place-based measure of fear of crime: A systematic review of app-based and crowdsourcing approaches. *Environment and Behavior*. Epub ahead of print 1 August 2020. DOI: 10.1177/0013916520947114.
- Stone AA and Shiffman S (1994) Ecological momentary assessment (EMA) in behavioral medicine. *Annals of Behavioral Medicine* 16(3): 199–202.
- Stone AA, Broderick JE, Kaell AT, DelesPaul PAEG and Porter LE (2000) Does the peak-end phenomenon observed in laboratory pain studies apply to real-world pain in rheumatoid arthritis? *The Journal of Pain* 1(3): 212–217.
- Time and Date (2020) Sunrise and sunset calculator – city lookup. Available at: www.time-anddate.com/sun/ (accessed 20 September 2020).
- Van Berkel N, Ferreira D and Kostakos V (2017) The experience sampling method on mobile devices. *ACM Computing Surveys* 50(6): 1–40.
- Van der Wurff A, Van Staalduinen L and Stringer P (1989) Fear of crime in residential environments: Testing a social psychological model. *The Journal of Social Psychology* 129(2): 141–160.
- Vitelli R and Endler NS (1993) Psychological determinants of fear of crime: A comparison of general and situational prediction models. *Personality and Individual Differences* 14(1): 77–85.

EXAMINING EXPERIENTIAL FEAR OF CRIME USING STUNDA

- Ward RA, LaGory M and Sherman SR (1986) Fear of crime among the elderly as person/environment interaction. *The Sociological Quarterly* 27(3): 327–341.
- Warr M (1990) Dangerous situations: Social context and fear of victimization. *Social Forces* 68(3): 891–907.
- Wikström P-OH, Oberwittler D, Treiber K and Hardie B (2012) *Breaking Rules: The Social and Situational Dynamics of Young People's Urban Crime*. Oxford, UK: Oxford University Press.

Malmö University Health and Society Doctoral Dissertations

- Ross, M. W. Typing, doing and being. A study of men who have sex with men and sexuality on the Internet. 2006:1
- Stoltz, P. Searching for meaning of support in nursing. A study on support in family care of frail aged persons with examples from palliative care at home. 2006:2
- Gudmundsson, P. Detection of myocardial ischemia using real-time myocardial contrasts echocardiography. 2006:3
- Holmberg, L. Communication in palliative home care, grief and bereavement. A mother's experiences. 2007:1
- Ny, P. Swedish maternal health care in a multiethnic society – including the fathers. 2007:2
- Schölin, T. Etnisk mångfald som organisationsidé. Chefs- och personalpraktiker i äldreomsorgen. 2008:1
- Svensson, O. Interactions of mucins with biopolymers and drug delivery particles. 2008:2
- Holst, M. Self-care behaviour and daily life experiences in patients with chronic heart failure. 2008:3
- Bahtsevani, C. In search of evidence-based practices. Exploring factors influencing evidence based practice and implementation of clinical practice guidelines. 2008:4
- Andersson, L. Endocytosis by human dendritic cells. 2009:1
- Svendsen, I. E. In vitro and in vivo studies of salivary films at solid/liquid interfaces. 2009:2
- Persson, K. Oral health in an outpatient psychiatric population. Oral status, life satisfaction and support. 2009:3
- Hellman, P. Human dendritic cells. A study of early events during pathogen recognition and antigen endocytosis. 2009:4
- Baghir-Zada, R. Illegal aliens and health (care) wants. The cases of Sweden and the Netherlands. 2009:5
- Stjernswärd, S. Designing online support for families living with depression. 2009:6
- Carlsson, A. Child injuries at home – prevention, precautions and intervention with focus on scalds. 2010:1

- Carlson, E. Sjuksköterskan som handledare. Innehåll i och förutsättningar för sjuksköterskors handledande funktion i verksamhetsförlagd utbildning – en etnografisk studie. 2010:2
- Sinkiewicz, G. Lactobacillus reuteri in health and disease. 2010:3
- Tuqvesson, H. Psychiatric nursing staff and the workplace. Perceptions of the ward atmosphere, psychosocial work environment, and stress. 2011:1
- Ingvarsdotter, K. Mental ill health and diversity. Researching human suffering and resilience in a multicultural context. 2011:2
- Hamit-Eminovski, J. Interactions of biopolymers and metal complexes at biological interfaces. 2011:3
- Mellgren, C. What's neighbourhood got to do with it? The influence of neighbourhood context on crime and reactions to crime. 2011:4
- Annersten Gershter, M. Prevention of foot ulcers in patients with diabetes mellitus. Nursing in outpatient settings. 2011:5
- Pooremamali P. Culture, occupation and occupational therapy in a mental care context- the challenge of meeting the needs of Middle Eastern immigrants. 2012:1
- Gustafsson A. Aspects on sepsis: Treatment and markers. 2012:2
- Lavant, E. Multiplex HLA-DR-DQ genotyping. For genetic epidemiology and clinical risk assessment. 2012:3
- Wangel, A-M. Mental ill-health in childbearing women. Markers and risk factors. 2012:4
- Scaramuzzino, R. Equal opportunities? - A cross-national comparison of immigrant organisations in Sweden and Italy. 2012:5
- Ivert, A-K. Adolescent mental health and utilisation of psychiatric care - The role of parental country of birth and neighbourhood of residence 2013:1
- Znamenskaya, Y. Effect of hydration on thermodynamic, rheological and structural properties of mucin. 2013:2
- Andersson, F. The female offender. Patterning of antisocial and criminal activity over the lifecourse. 2013:3
- Lindroth, M. Utsatthet och sexuell hälsa – en studie om unga på statliga ungdomshem. 2013:4
- Hulusjö, A. The multiplicities of prostitution experience – narratives about power and resistance. 2013:5

- Falk, M. Direct electron transfer based biofuel cells. Operation in vitro and in vivo. 2014:1
- Finnbogadóttir, H. Exposure to domestic violence during pregnancy. Impact on outcome, midwives' awareness, women's experience and prevalence in the south of Sweden. 2014:2
- Fagerström, A. Effects of surfactant adjuvants on barrier properties of plant leaf cuticle. 2014:3
- Lamberg, P. Design and characterization of direct electron transfer based biofuel cells including tests in cell cultures. 2014:4
- Richert, T. Överdoser, försörjningsstrategier och riskhantering – livsvillkor för personer som injicerar narkotika. 2014:5
- Örmon, K. Experiences of abuse during the life course. - Disclosure and the care provided among women in a general psychiatric context. 2014:6
- Sjöblom, I. Planerade hemförlossningar i Norden - kvinnors och barnmorskors perspektiv. 2014:7
- Albèr, C. Humectants and Skin - Effects of hydration from molecule to man. 2015:1
- Kisch M., A. Allogeneic stem cell transplantation. – Patients' and sibling donors' perspectives. 2015:2
- Weiber, I. Children in families where the mother has an intellectual or developmental disability – incidence, support and first person perspectives. 2015:3
- Schlyter, M. Myocardial infarction, personality factors, coping strategies, depression and secondary prevention 2016:1
- Carlström, C. BDSM – Paradoxernas praktiker. 2016:2
- El-Schich, Z. Novel imaging technology and tools for biomarker detection in cancer. 2016:3
- Boonsatean, W. Living with type 2 diabetes in Thai population: Experiences and socio-economic characteristics. 2016:4
- Vejzovic, V. Going through a colonoscopy and living with inflammatory bowel disease: Children's and parents' experiences and evaluation of the bowel cleansing quality prior to colonoscopy. 2016:5
- Isma, G.E. Overweight and obesity in young children: Preventive work in child health care with focus on nurses' perceptions and parental risk factors. 2016:6
- Brännvall, M. Frigörelse med förhinder – Om polisanmälan när kvinnor tar sig ur mäns våld i nära relationer. 2016:7

- Pankratov, D. Self-charging biosupercapacitors. 2016:8
- Guidi, P. Social work assessment of families with children at risk: Similarities and differences in Italian and Swedish public social services. 2016:9
- Jakobsson, J. The process of recovery after colorectal cancer surgery: Patients' experiences and factors of influence. 2017:1
- Gerell, M. Neighborhoods without community. Collective efficacy and crime in Malmö, Sweden. 2017:2
- Wierzbicka, C. New fractionation tools targeting elusive post-translational modifications. 2017:3
- Afzelius, M. Families with parental mental illness: Supporting children in psychiatric and social services. 2017:4
- Nordgren, J. Making drugs ethnic – Khat and minority drug use in Sweden. 2017:5
- Nilsson, E-L. Parental socialization and adolescent offending. 2017:6
- Sixtensson, J. Härifrån till framtiden. Om gränslinjer, aktörskap och motstånd i tjejers vardagsliv. 2018:1
- Vasiljevic, Z. Ambulatory risk assessment and intervention in the prison services. Using Interactive Voice Response to assess and intervene on acute dynamic risk among prisoners on parole. 2018:2
- González Arribas, E. Flexible and transparent biological electric power sources based on nano-structured electrodes. 2018:3
- Svalin, K. Risk assessment of intimate partner violence in a police setting. Reliability and predictive accuracy. 2018:4
- Andersson, M. Hate crime victimization: Consequences and interpretations. 2018:5
- Djampour, P. Borders crossing bodies. The stories of eight youth with experience of migrating 2018:6
- Yeung, S.Y. Stimuli-responsive lipid bilayer mimics for protein, virus and cell recognition. 2018:7
- Holst-Hansson, A. On a journey for survival: Everyday life during radiation therapy from the perspectives of women with breast cancer and their families. 2018:8
- Berlin Hallrup, L. Experiences of everydaylife and participation for people with intellectual disabilities -from four perspectives. 2019:1
- Aleksejeva, O. Blue copper proteins as bioelements for bioelectronics devices 2019:2

- Wendel, L. Dokumentation, profession och hälso- och sjukvård. Rättsliga perspektiv. 2019:3
- Larsson, H. Existentiell ensamhet hos sköra äldre personer: Ett närståendeperspektiv. 2020:1
- Sundström, M. Existentiell ensamhet hos sköra äldre personer: Vårdpersonals och volontärers erfarenheter och behov av stöd. 2020:2.
- Kvist, M. Varken resurs eller problem. Om lågutbildade ungas etablerings- och försörjningsmöjligheter. 2020:3.
- Waldie, S. Model membranes and their interactions with native and artificial lipoproteins 2020:4
- Sjöberg, M. Existentiell ensamhet hos sköra äldre personer: Äldre personers upplevelser samt dokumentation i patientjournalen. 2020:5
- Samzelius, T. A vicious circle of silent exclusion: Family homelessness and poverty in Sweden from a single-mother perspective. 2020:6
- Hylén, M. Pain in intensive care: Assessments and patients' experiences. 2021:1
- Engström, A. Everyday life, crime, and fear of crime among adolescents and young adults. 2021:2

ISBN 978-91-7877-178-3 (print)
ISBN 978-91-7877-179-0 (pdf)
ISSN 1653-5383

MALMÖ UNIVERSITY
205 06 MALMÖ, SWEDEN
WWW.MAU.SE