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Explaining Criminal Careers As Crime Events

Towards a Dynamic Developmental and Life-Course Criminology.

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»life-course criminology would be enormously enriched by greater attention to relevant ways that people and their lives change with age.«

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Abstract: Why does people's crime involvement vary and change? Developmental and Life-Course criminology has brought individual change to the forefront of criminological study and has done an impressive job of mapping out people's age-graded patterns of crime involvement and demonstrated an abundance of individual and social factors correlated with various aspects of people's criminal careers and their characteristics. However, DLC criminology has been less successful in comprehensively explaining the identified patterns and their correlates. In this paper I shall discuss some of DLC criminology's theoretical shortcomings, specifically the limitations of the commonplace risk factor approach to explanation and the related idea of cumulative risk. I shall argue that criminal careers are best understood and analysed as a series of situationally caused crime events, putting the explanatory focus on the socially and age-graded stability and change in crime relevant situational factors, and, crucially, the developmental processes that drive continuity and change in these factors (the causes of the causes). All this is discussed based on Situational Action Theory (SAT) and its Developmental-Ecological-Action model (DEA model).

Keywords: Crime. Criminal Careers. Risk Factors. Causes and Explanation. Situational Action Theory. The Developmental-Ecological-Action Model.

¹ Osgood, 2012, p.7.

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Developmental and Life-Course criminology (DLC criminology) is one of the most prominent and important perspectives in the study of crime and its correlates. It has brought *individual change* to the forefront of criminological study and done an impressive job of mapping out how people's crime involvement varies and changes by age and can be summarised as different *pathways in crime* and their characteristics. We have also learned a lot about the abundance of individual and social factors statistically associated with various aspects of crime involvement and its changes (see, e. g., Ahonen et al., 2020; Basto-Pereira & Farrington, 2019; Boers et al., 2010; Craig et al., 2020; Farrington, 2018; Farrington & Wikström, 1993; Jennings et al., 2016; LeBlanc & Frechette, 1989; Loeber & Farrington, 1998; Loeber et al., 2003; Loeber & Wikström, 1993; Lösel, 2003; Lösel & Bender, 2009; Moffitt, 2018; Nagin et al., 1995; Piquero et al., 2007; Sampson & Laub, 1995; Thornberry et al., 2003; Tremblay, 2015; Wikström, 1990; Wikström et al., 2024; Wolfgang, 1983; Wolfgang et al., 1972)².

However, while DLC criminology is empirically (descriptively) strong, I think it is fair to say that overall, it has been less successful in explaining identified criminal career patterns (especially when it comes to explaining what factors and processes *drive* stability and change in people's crime involvement). Typically, but not exclusively, DLC criminology has applied a rather atheoretical public health inspired risk and protective factors perspective to its »explanation« of people's crime involvement and their criminal careers. Julien Morizot and Lila Kazemian (2015, p. 2) have summarised the central objectives of developmental criminology as follows: »[to] describe within-individual continuity and change in criminal and antisocial behavior over time [to] explain the parameters of its development (onset, activation and aggravation) and termination [to] identify etiological factors (risk and protective factors) associated with its different developmental parameters«.

In this paper I will highlight some of DLC criminology's common theoretical shortcomings (see further, Wikström et al., 2024, pp. 5–18) and argue for the need to develop a more dynamic and theory-driven DLC criminology, focused on understanding how people and their environments develop

² For an excellent overview of DLC criminology, its main explanatory approaches, and findings, see Farrington et al., (2019).

and interact in shaping and forming individual crime trajectories and their characteristics. I will stress the importance of adopting an *ecological perspective* on people's crime involvement and its changes (focusing on the role of the person-environment interaction), and that this is grounded in an *adequate action theory* (an explanation of what moves people to action). I will specifically outline how Situational Action Theory (SAT), and its DEA model, have approached these problems (e. g., Wikström, 2006; 2010; 2019a; 2019b; Wikström & Treiber, 2018; Wikström et al., 2012, pp. 3–43; Wikström et al., 2024, pp. 29–112).

1 The Problem of Correlational Criminology. The need to avoid the ›causation by association fallacy‹.

One of the biggest problems with risk-focused research is that it tends to assume that what characterises the people who commit crimes and the places where crimes occur are necessarily also factors implicated in the causation of crime.

DLC criminology has generally, but not exclusively³, adopted a public health inspired risk and protective factor perspective coupled with a risk-focused prevention strategy that advocates the value of and need to reduce risk factors and increase protective factors⁴ to reduce crime (e. g., Farrington et al., 2012). A *risk factor* is typically defined as a time-ordered statistically significant correlation, i. e., a predictor (e. g., Loeber, 1990). There are 100s of identified risk factors (Ellis et al., 2019). Often, they are rather weak correlations⁵ (little explained variance), where it is only somewhat more common among those who have a certain characteristic that they commit more crimes than others, while most who have the characteristic in question do not (i. e., the within-group variance in crime involvement is large). Even some risk factors that are prominent in the causes of crime debate, such as neighbourhood and individual/family socioeconomic disadvantage, have consistently been shown

in research to have only modest correlations with people's involvement in crime (Wikström & Treiber, 2016).

Although it is likely that most risk factor researchers are aware of *the problem of correlation and causation*, it is still common that they generally talk about risk factors (predictors) in causative terms such as that they ›effect‹, ›influence‹ or ›change‹ the outcome. The concept of risk factor in the study of crime is in itself problematic, because the word ›risk‹ indicates some causal efficacy (i. e., an increased probability of offending). It is therefore not surprising that policymakers and practitioners tend to treat all the many suggested risk factors as causally effective factors. That is especially so, when common advice from risk factor research is that attacking risk factors will reduce crime. A clear understanding of what factors and processes are causally effective and important in crime causation helps policy and prevention to better focus their activities on those that really matter.

To advance DLC criminology (and criminology in general for that matter) there is a need to move away from an essentially correlational criminology to *a more analytic approach* – asking why and how (does it work) questions – to better focus on identifying the factors and processes that are directly or indirectly involved in making people to see and choose crime as an acceptable action alternative in the circumstance and what drives its age-related stability and change (Wikström & Kroneberg, 2022). In this context I would argue that empirical research has two major objectives: To *describe* phenomena of interest (e. g., crime events) and to *test* their proposed explanation (e. g., proposed explanations of crime events). Views such as ›let the data speak‹ is, in my opinion and experience, not very helpful and rarely lead us anywhere useful. *Theory is what explains*. That said, good descriptions of a phenomenon of interest (e. g., ›crime events‹ and ›criminal careers‹) may help us better focus on what could be its potential explanation (and help exclude some unlikely avenues of explanation).

2 The Problem with the idea of Cumulative Risk. An Illustration of the Importance of Asking Why and How (does it work) Questions.

The concept of cumulative risk, prevalent in DLC criminology, is a good illustration of an inherent problem with the risk factor approach to explanation. The idea of *cumulative risk* is the idea that the more risk factors people display,

³ One notable exception is Sampson & Laub's (1995) sociologically oriented age-graded theory of informal social control.

⁴ A protective factor is typically regarded as a factor that *decreases* the probability of crime. However, sometimes it is defined as the reverse end of a risk factor. For example, family socioeconomic disadvantage may be regarded as ›risk‹ and family socioeconomic advantage as ›protective‹.

⁵ For example, see Lösel and Bender (2009, p. 138).

the greater the likelihood they will commit crimes (Loeber et al., 2006, p. 161). However, *a cumulative risk is hardly a cumulative cause*. Adding a number of disparate and unrelated factors to a (often modest) prediction of crime involvement does not provide much knowledge about *what causes* people to perceive and choose crime as an action alternative in certain circumstances. Consequently, it does not give any greater guidance to policy and practice about what to target in their crime prevention efforts.

The problem with the idea of cumulative risk is twofold: *firstly*, most individuals who have typical *social risk factors*⁶ – even those who have a greater number of such risk factors – do not commit more crimes than others (i. e. it is typically *more common but not common* among those who have a high cumulative social risk that they commit more crimes than others), *secondly*, and centrally, it is often unclear *why* and *how* many of these factors *in themselves* would affect people's participation in crime (i. e. they are *theoretically unspecified*). It is hardly the case that the fact that someone, for example, grew up with a single parent, have poor school grades or lives in a public housing neighbourhood (to name a few common ›risk factors‹) *in itself* would cause them to, e. g., shoplift, sexually assault another person, vandalize parked cars, embezzle funds, or shoot a member of a rival gang.

Many commonly studied risk factors (predictors) are at best *markers* (i. e. correlated with causal factors). The trick is to identify *which few of the many* risk factors have causal relevance and importance. This is certainly essential from a crime prevention policy and practise point of view because attacking factors that lack causal efficacy will not have any preventive impact, rather being a waste of time, effort and resources. David Farrington (2000, p. 7) neatly summarised the problem facing the risk factor approach: »a major problem with the risk factor paradigm is to determine which risk factors are causes and which are merely markers or correlated with causes« and he suggests that »wide-ranging explanatory theories need to be devised to explain all the risk factor results«.

3 Crime Events and Criminal Careers

A *criminal career* is a series of crime events. To explain criminal careers, we therefore first need to explain what causes crime events to happen and then, on that basis, seek to ex-

plicate the ›causes of the causes‹, the processes that drives stability and change in the factors causing crime events to occur. My basic argument regarding the relationship between crime events and criminal careers, as developed in SAT and its DEA model, can be summarised as follows:

1. People engage in acts of crime because of the action alternatives they see and choose as a result of the interplay between who they are (their crime propensities) and the setting in which they take part (its criminogenic incentives), explaining the occurrence of *crime events*.

2. Stability and change in people's crime involvement is a result of stability and changes in their crime propensity and criminogenic exposure – explaining their *criminal careers* (crime trajectories) – driven by psychoecological (crime propensity forming) and socioecological (criminogenic exposure providing) developmental processes (referred to as ›the causes of the causes‹ of crime events).

Which factors influence people's *crime propensity* (their tendency to see and choose crime as an action alternative in particular circumstances) and *settings criminogeneity* (their tendency to normalise and encourage acts of crime), and what kind of psychoecological and socioecological developmental processes are implicated in their emergence, stability and change, are crucial questions in explanatory analyses of people's crime and criminal careers. To answer these questions, we first need to be clear about what crime is, what a theory of crime causation should explain. An explanation needs to be an explanation of *something*, and clarity about what we need to explain helps us focus on what factors and processes may reasonably be involved in its causation. In the following, I shall outline the foundation and basic propositions of Situational Action Theory (SAT) and its Developmental-Ecological-Action model (DEA model) as regards the explanation of crime events and criminal careers.

4 Situational Action Theory – Basic Assumptions and Propositions.

What is crime (what is to be explained by a theory of crime causation)?

Crimes are actions that break the rules of law. The law is codified moral guidance for what we should and should not do in different circumstances. Explaining crime is ultimately a matter of explaining why some people perceive and choose to break a rule of the law as a response to a certain motivation in a particular circumstance. Focusing

⁶ Commonly referring to family, school, leisure and neighbourhood social conditions.

on explaining the *rule-breaking* rather than the criminalised *act* (e. g., using violence may be legal in some but not other circumstances and this may vary between jurisdictions and change over time) avoids the problem that what constitutes a crime can change from one day to the next through a political decision (because it is the rule-breaking – not the act – that is to be explained). It also means that its explanation applies to norm violations more generally since violations of the rules of the law is only a *special case* of violating rules of conduct⁷. There is, in principle, no difference between explaining why someone is cheating on their partner or why someone shoots a member of a rival gang. The *action process* (motivation – perceived action alternatives – action choices) is the same, although, and crucially, its *content* varies greatly.

What moves people to action (and to commit acts of crime)?

People are the source of their actions, but their causes are situational. People act as they do because of who they are (propensities) and the setting (incitements) in which they take part. Since people are different and settings are different, their specific *combination* tends to favour the perception of certain action alternatives in relation to the motivations (temptations, provocations) experienced in the circumstance, against which background the person (habitually or deliberately) makes their action-choices. Acts of crime are ultimately a result of the perception and choice of crime as an acceptable action alternative in response to a specific motivation in the circumstance.

People are rule-guided creatures. People act in response to a motivation, but their choice of action is *guided* by their personal morality (their rules of conduct) as *applied* to the moral norms (sensed behavioural expectations) of the setting in which they take part, *tempered* by key inner and outer action-controls, their ability to exercise self-control (inner control) and the settings deterrent qualities (outer control). Whether an act of crime is perceived and chosen is ultimately the result of the actor's *application* of their personal morality to the moral context of the setting, net of the influence from any relevant and effective action-controls.

⁷ Central to note in this context is that, in principle, you can abolish the law through a political decision, but not the moral norms that govern our everyday lives (because social life is necessarily rule-guided).

5 SAT's Development-Ecological-Action Model – Basic assumptions and propositions

Why do people vary in their crime propensity and exposure to criminogenic settings?

People develop and act in response to the content of the particular environments in which they take part, as conveyed in their interactions with the people they meet and socialise with, the activities they take part in, and the media they consume. People vary (and change) in the environments in which they partake – the kinds of people, activities and media they encounter and engage with – and this is a central part of the explanation of why they develop different crime propensities (as an outcome of the formation of their crime-relevant personal morality and ability to exercise self-control) and are differently exposed to criminogenic settings in their everyday life (settings whose moral norms and lack of deterrent qualities may incentivise acts of crime).

What developmental processes affect stability and change in people's crime propensity and exposure to criminogenic settings?

The psychoecological processes of moral education and cognitive nurturing form and shape people's crime-relevant morality and capacity for self-control (affecting their crime propensity). Crucial to crime relevant *moral education* is the extent to which the content of the environments (people, activities, media) in which people takes part *justify, excuse, tolerate or ignore* crime, or particular kinds of crimes, and thereby contribute to their acceptability and normalisation (see further, Wikström et al., 2024, pp. 66–90); while central to *cognitive nurturing* is the extent to which the environments in which the person partakes (e. g., family and school environments) provide naturally occurring training in such things as *problem-solving, concentration, patience and restraint*, affecting their ability to self-control⁸ (see further, Wikström et al., 2024, pp. 90–93).

The socioecological processes of social and self-selection condition people's exposure to criminogenic environments (settings incentivising or normalising crime, settings

⁸ On the foundation of a person's innate cognitive qualities.

that sometimes overlap). *Social selection*⁹ refers to the age-graded cultural (rule-based) and structural (resource-based) social forces that *favour or constrain* people's access to and partaking in particular kinds of environments (manifested in general patterns of age and social group differentiation in environmental exposure). The, so called, 'birth lottery' is the strongest (most deterministic) example of social selection, people have no influence on the environments into which they are born. As people progress in life, they will develop an increasing, albeit differently efficacious, capacity to influence the course of their own life through self-selection. *Self-selection* refers to people's competence and preference-based *active navigation* of their broader environment within the imagined and real constraints of social selection. People's differential exposure to criminogenic settings (settings that instantly incentivise or gradually normalise crime) may be seen as an outcome of the combined workings of processes of social and self-selection, explaining, for example, why some young people from the same family, living in the same neighbourhood and going to the same school, may develop different lifestyles and, relatedly, different experiences of being exposed to criminogenic settings (see further; Wikström et al., 2024, pp. 93–104).

The outlined psychoecological and socioecological processes may be viewed as (ecologically related) developmental *causal pathways* in which *past* experiences set the stage for *present* influences which, in turn, set the stage for *future* influences. The development of a career of serious and persistent crime involvement may commonly be characterised as a *slippery slope*, where one thing leads to another (e. g., a gradually increasing exposure to criminogenic environments and an amplified crime propensity causing an escalating level of crime involvement), highlighting the need for *pre or early career intervention* to be a central part of policy and prevention if one wants to counter the development of pathways of serious and persistent crime.

What is the role of social context for the developmental processes?

People do not act and develop in a cultural and structural social vacuum. The psychoecological processes (moral education, cognitive nurturing) are *context-dependent* for their *content and efficacy*. The same holds for the socioecological processes of social- and self-selection. Nations vary in their *moral climate* (shared behavioural standards and expecta-

tions and their social homogeneity) and *structural conditions* (the level and distribution of human, social and financial capitals). This constitutes the broader social context in which the developmental processes operate and draw upon for their content and efficacy, with clear implications for the general (and social segment specific) development of crime relevant content, its efficacy of influence and expression. Importantly, *while the suggested developmental processes are supposed to be universal, their social contexts are not.*¹⁰

6 Situational Action Theory: Further on the Causes of the Crime Event: the PC-process.

I have argued that the basis for the explanation of people's criminal careers (crime trajectories) is the explanation of *why crime events happen* (something that DLC criminology has not paid that much attention to). In this section I shall expand somewhat on the suggested basic *causal mechanism* of the situational model of SAT, the *perception-choice process*¹¹, in short referred to as the *PC-process* (motivation – action alternatives – choice). As previously discussed, the PC-process is initiated and guided by the convergence and interaction of a person's character-based crime propensity and the settings' circumstance-based criminogeneity (Figure 1; for further details, and the groundings of the arguments, see, e. g., Wikström, 2006; 2010; Wikström et al., 2012, pp. 11–29; Wikström et al., 2024, pp. 29–64).

Motivation – goal directed attention.

People act for a *reason* (e. g., they wish to get, experience, or achieve something or they react to something). What motivates individuals in a circumstance may differ. People vary in their *desires* (wants, needs) and *commitments* and in their *sensitivities*. In their everyday life they confront *opportunities* to fulfil their desires or to honor their commitments which may create *temptation* (e. g., an urge to do something desired or promised). People will also encounter *frictions* (external unwanted interferences) in their daily

⁹ Not to be confused with how this concept – social selection – is used in evolutionary studies.

¹⁰ Our knowledge about how the broader social context (moral climate, structural conditions) influence the content and efficacy of the developmental processes implicated in crime causation is limited. This is an important question for DLC criminology to pursue.

¹¹ *Perception* is what links us to our immediate environment and *choice* is what links us to our actions. Hence, the *perception-choice process* is what links us and our immediate environment to our actions.

life that may activate their sensitivities creating *provocation* (e. g., feelings of upset or anger that may favour confrontational responses). Temptations and provocations are the main motivational forces initiating *goal-directed attention*. Motivation is a necessary but not sufficient factor in the explanation of people's actions (including their acts of crime). Motivation is the *reason* for acting, while morality affects its *expression*¹².

Perception of action alternatives – the moral filtering.

What *action alternatives* emerge as acceptable responses to a specific *motivation* (temptation, provocation), and if that involves an act of crime (rule-breaking), depends on the *moral filtering* that spontaneously occurs when people apply their *personal morality* (rules of conduct) to the *moral context* (sensed behavioural expectations) of the setting in which they take part¹³. If crime does not appear as an action alternative there will be no crime, with the important implication for crime prevention policy and practice that successfully attacking the processes that normalise crime (rule-breakings) as an action alternative in response to particular motivations is the most effective form of crime prevention (something that crime prevention rarely has as its focus). Importantly, *people do not choose their action-alternatives (they just emerge), but they choose from among the action-alternatives they perceive*.

The process of choice.

The fact that people choose their actions from the action alternatives they perceive in relation to a motivation suggests, that the perception of action alternatives is more fundamental to the explanation of their actions than the process of choice. The perception-choice process may be predominantly *habitual* (only perceiving one potent action alternative that is automatically chosen) or *deliberative* (perceiving different action alternatives that require some

INPUTS

Criminogenic Exposure (E)

Circumstances:
Moral contexts [of opportunities and frictions]

Crime Propensity (P)

Character:
Personal morals and ability to exercise self-control [re desires and sensitivities]

TRIGGER

Convergence, Interaction

P x E

OUTCOME

Action (A)

Crime/

No crime

Perception-choice Process (Habitual, Deliberative)



Fig. 1: An outline of the basic situational model of SATs explanation of the occurrence of crime events and the key elements of its PC-process.

level of decision-making¹⁴). When people act out of habit, their choice is *pre-determined* (they act as they normally do in the circumstance without giving it much thought), when they deliberate, they exercise (constrained) 'free will', i. e., *actively choose freely* among perceived action alternatives¹⁵. Habitual behaviour is most likely when people act in familiar environments responding to familiar problems. A lot of human action is likely to be automated, although we know little about how important habits are for people's crimes, and hence for their criminal careers, although it is easy to see that habit often may play a role in things like the occurrence of traffic crimes and partner violence (to mention a few examples). It is plausible that *crime habit formation* is most common among crimes (rule-breakings) that are committed regularly in similar circumstances.

When people deliberate, *action-controls* may influence their decision, when they act out of habit they will not. People's *ability to exercise self-control*, i. e., their executive functions based¹⁶ capacity to act in accordance with their own morality when externally challenged, is the prime source of (inner) control (peer pressure is a prime example of an external challenge). The *deterrent qualities of the setting*, its capacity (by creating fear or worry of consequences¹⁷) to

¹² *Motivation* is a – here and now – situational concept (goal-directed attention), not to be confused with *propensity* (somewhat stable tendencies to react and respond in certain ways to environmental cues).

¹³ Depending on the circumstance (e. g. the relative strength and relevance of sensed moral norms and personal morality), sometimes personal morality, other times the moral context of the setting, may have the greater weight in this process.

¹⁴ Please note that 'to do or not to do' a certain thing is an action alternative. Probably the most basic one.

¹⁵ Which does not imply that all perceived action alternatives are equally important and attractive to the actor.

¹⁶ Particularly, information processing capacity and impulse control, which are partly heritable, partly a result of their training.

¹⁷ Deterrent qualities do not only refer to the risk of potential criminal justice interventions but may also involve things like concern for potential social reactions (e. g., affecting social reputation) and the risk of

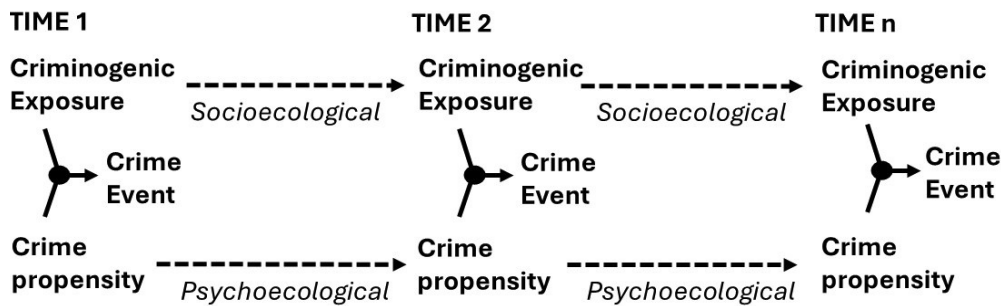


Fig. 2: The Drivers of Criminal Careers (a series of crime events) illustrated. Adapted from Wikström (2019b)

make people act in accordance with its moral norms when they consider a rule-breaking, is the prime source of (external) control. Importantly, action controls only affect people's crime choices when they see crime as an action alternative and deliberate over whether or not to select this option for action (the SAT principle of *the conditional relevance of controls*). The main implication of this for crime prevention policy and practise is the importance of advancing strategy and methods with the aim (a) to counteract the emergence of, and to break existing, crime habits and (b) to affect people's crime choices by influencing the efficacy of action-controls.

7 SAT – the DEA Model: Concluding comments on criminal careers as crime events and its study.

People develop and change over the life-course in relation to the general and age-graded content of the environments in which they take part and are influenced by, and this is an important part of the explanation of their crime involvement and its changes. If one accept the core propositions of SAT and its DEA model, that *the causes of crime events are situational* and that *criminal careers*¹⁸ *are a series of crime events*, the basic question for DLC criminology becomes to explicate and study the stability and change in the personal and environmental factors, whose spatiotemporal convergence and interaction are involved in triggering the action-process that brings about crime events (rule breakings), and, crucially, the developmental processes that drives these factors' stability and change.

others' direct reactions (e. g., fighting back) or future responses (e. g., revenge attacks).

¹⁸ I use the concept of criminal career as a descriptive term, interchangeable with those of 'pathways in crime' and 'crime trajectories', all referring to an *age-graded series of crime events and its characteristics*.

Summarising the proposed explanation of criminal careers and their drivers.

The SAT based explanation of criminal careers as a series of crime events discussed in this paper can briefly be summarised as follows (illustrated in Figure 2):

1. *Explaining criminal careers.* Stability and changes in people's crime propensity – based on the crime-relevant content of their personal morality and their ability to exercise self-control – and in their criminogenic exposure – based on the crime relevant moral norms (behavioural expectations) and their enforcement in the settings in which they take part and experience – is *what jointly and interactively explains peoples' criminal careers* (their crime trajectories) and its key characteristics.

2. *Explaining the drivers of criminal careers (the causes of the causes).* The psychoecological processes of moral education and cognitive nurturing – affecting stability and changes in people's crime propensity – and the socioecological processes of social selection and self-selection – affecting stability and changes in people's criminogenic exposure – are the drivers (the causes of the causes) of stability and change in the factors causing crime events, providing an *explanation for why people vary and change in their crime propensity and criminogenic exposure*.

3. *Explaining the content and efficacy of the drivers of criminal careers (the role of social context).* The general and age-graded content and efficacy of the discussed crime-relevant developmental processes depend on the broader social context in which they are situated and operate – the particular historically formed cultural (moral climate) and structural (resource distributive) features of society and its various social segments – and *this explains why the content and efficacy of the crime relevant developmental processes may vary between countries and among their social segments*.

The causes of criminal careers are best studied as matched (concurrent) developments of people's crime propensity, criminogenic exposures and crime involvement

A common argument in DLC criminology is the need to lag explanatory factors to establish causal order. However, because crime event causation is situational and longitudinal data collection typically is done on an annual or longer interval basis *it does not make much sense to use lagged data* (crime event causation is rather a question of minutes than of years). In fact, it makes the causality problem worse. Given that the causes of crime events are situational and that a criminal career is a series of crime events it makes much more sense to study how well explanatory factors *temporally match* (mirror) the development of crime involvement rather than analysing them as lagged. Ideally one would like to match people's crime propensity and criminogenic exposure at the *exact points in time* of the crime events but there is to my knowledge no longitudinal study that has effectively achieved this, and it would obviously be practically difficult and very costly to do so, especially over any longer period of time¹⁹. The second-best solution, although not wholly unproblematic, is *to study as closely as possible matched developments* of explanatory factors and the outcome (which in practice often mean measured and matched on a yearly basis²⁰), preferably justifying the selection of explanatory variables by the findings from situational research demonstrating their likely causal relevance in the explanation of crime events (further on this problem and how we have handled it in the PADS+ longitudinal study, see, Wikström et al., 2024, pp. 8–9, pp. 156–162).

There is a need to better measure the crime relevant moral and cognitively nurturing content of the environments in which people develop and act, to better enable the study of the role of the psychological processes of moral education and cognitive nurturing for people's crime propensity.

DLC criminology is generally strong in describing the *social characteristics of people's developmental context*, e. g., the key social features of their family, school and leisure environments, such as their resources (e. g., disadvantage), relationships (e. g., cohesion) and functioning (e. g., monitoring) and its statistical associations with the subject's crime

involvement²¹. What DLC criminology has been less good at is to capture *the crime relevant moral and cognitively nurturing content of the social environments* in which the subjects take part and develop, something that is crucial, I would argue, for the understanding of the processes of crime relevant moral education and cognitive nurturing and, therefore, for the understanding of the development of and changes to people's crime propensity. Central to the crime relevant moral content of social environments (as transmitted by the people, activities and media encountered) is the extent to which they in the immediate term may *incentivise*, or in the longer-term may help to *normalise*, acts of crime (rule-breakings) by *justifying, excusing, tolerating or ignoring* their commission or intended commission²². Some measures commonly used in DLC criminology, such as 'peer delinquency' and 'parent's criminality' may be seen as markers of exposure to potentially crime relevant moral content²³, but there is a need to more directly and comprehensively measure the crime relevant moral content of the environments to which people are exposed. When it comes to cognitive nurturing it is primarily a question of aiming to measure the extent to which people (and especially young people²⁴) experience *natural training* in their daily life (through their activities and person interactions) of such things as *problem-solving, concentration, patience and restraint* which may strengthen their ability to exercise self-control (on the basis of their inherited cognitive capability). *While the study of the social characteristics of environments (e. g., resources, relationships and functioning) may say something about conditions potentially affecting the efficacy of processes of moral education and cognitive nurturing, they say little about their moral and cognitively nurturing content*²⁵, the latter being crucial to the under-

21 DLC criminology is particularly strong in measuring a wide range of personal characteristics, which perhaps is not too surprising since many DLC criminologists have a background in psychology.

22 Some crime relevant moral content is general (e. g., not harming or affecting others welfare), but much is crime specific (e. g., justifying or excusing particular kinds of crime).

23 Collective efficacy, a concept measured as combined area social cohesion and informal social control (Sampson et al., 1997), has been used as a marker of the social and moral context of environments (predominantly subjects' neighbourhoods).

24 Environmental influences on people's self-control ability appears to be strongest in childhood and thereafter declining in importance (net any effects of biological maturation and decline).

25 In this context the phenomenon of *cumulative social risk* can be interpreted as a **marker** of social context, (providing a better representation of social context than single social risk factors) although it does not specify its moral or cognitive nurturing content, nor how the combination of various social conditions may be related to and influence its efficacy (Wikström et al., 2024, pp. 15–16; Treiber & Wikström, 2025).

19 A particularly difficult problem in this context is that people's crime involvement typically is temporally irregular, occurring at varying short and long intervals.

20 Often the intervals between the measurements, the matching points, may be longer and irregular.

standing of environmental influences on people's crime and criminal careers.

There is a need to better measure people's exposure to different kinds of environments, its age-graded changes, and the socioecological process that are implicated in affecting people's differential and changing environmental exposures.

The ecology of people's lives and its age-graded changes (the people, activities and media they are exposed to, interact with, and are influenced by in their daily life) is crucial for the understanding of environmental influences on their actions and development, including their acts of crime and criminal careers. This is a very difficult area to properly investigate, especially longitudinally, but an area whose methodological improvement has a potentially high pay-off by providing new important insights in our understanding and testing of the role of the environment and its influences on the development and changes in people's crime propensity and criminogenic exposure, and the socioecological processes that influence this exposure²⁶. In our PADS+ longitudinal research we made a considered effort to better measure the kinds of environments in which people actually take part and its changes by combining a city-wide small-area community survey with a space-time budget methodology²⁷ (see, e. g., Wikström et al., 2010; 2011) and utilising *ecometrics*, measuring area collective efficacy to tap into some relevant (albeit restricted) aspects of area social and moral content (Oberwittler & Wikström, 2008). This in addition to collecting the kind of individual, family, school, work and neighbourhood data normally included in longitudinal research, enabling an improved investigation of the person-environment interaction and its changes than what would normally be the case (see, e. g., Wikström et al., 2012, pp. 44–106; 2024, pp. 115–146). Although I believe our data and research design is a significant improvement over what is currently available when it comes to exploring the ecology of crime and criminal careers, this being a virgin area of methodology, there is still much need for further innovation and elaboration for it to reach its full potential. *The better we can explore people's exposure to the different kind of environments in which they take part in their daily life, and their crime relevant content, the better the possibility to more effectively analyse and test the environmental impact on people's crime involvement and criminal careers.*

²⁶ If longitudinal studies into crime at all consider this, it is typically a question of measuring some social characteristics of the neighbourhood in which the subjects live as a proxy for their environmental exposure.

²⁷ The space-time methodology used was initially developed and tested in the Peterborough Youth Study, a cross-sectional forerunner to the PADS+ longitudinal study (Wikström & Butterworth, 2006)

8 Testing SAT and its DEA model. Promising findings.

A theory is just a theory. It needs clear testable implications²⁸, proper testing and supportive findings to qualify as a good theory. This is not the place to review the increasing number of studies that have aimed to test various key propositions of SAT and its DEA model (that is for another day). Suffice to say at this point is, that the findings from our own PADS+ research (e. g., Haar & Wikström, 2010; Wikström et al., 2012, pp. 323–402; Wikström et al., 2018) and others' research (e. g., Herrmann et al., 2025; Hirtenlehner & Mesko, 2025; Pauwels, 2018; Sattler et al., 2022) aiming to test predictions of the *situational model* are promising, as are the findings of our own PADS+ research (e. g., Wikström et al., 2024, pp. 219–397) and others' studies (e. g., Chrysoulakis, 2022; Kessler & Reinecke, 2021) aiming to test some of the *developmental predictions* of the theory. The fact that the theory has been applied in studies of *different types of crimes* and in *various parts of the world* with generally supportive findings is encouraging (e. g., Botchkovar & Marshall, 2022; Brauer & Tittle, 2017; Craig, 2019; Serrano-Mailo, 2018; Fujino, 2023; Kabiri, 2025; Kafafian et al. (2022); Rose, 2023; Kokkalera t al., 2023; Shadmanfat et al., 2024; Trivedi-Bateman et al., 2024; Uhl & Hardie, 2025).

Although the empirical testing on the whole has been broadly supportive of the theory's core propositions, there is still much need for additional testing and room for further elaboration and refinements of the theory and its particular propositions²⁹. *Science is always a work in progress.*

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²⁸ SAT is probably best described as a comprehensive and complex theory. However, it was designed to have clear testable implications (empirical expectations) of its various key theoretical propositions.

²⁹ For example, as regards testing, studies have not always used the most adequate data, primarily because data used was not collected with testing SAT propositions in mind. When it comes to theory, I believe the situational model is well developed, but there is, for example, room for further developments (detailing) regarding the developmental processes and, particularly, as regards the role of the broader social context and how it links to the development of people's crime propensity and criminogenic exposure. Work that is in the pipeline.

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