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Analytic Criminology: Mechanisms and Methods in the Explanation of Crime and its Causes

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Keywords

analytic criminology, action theory, mechanisms, situational action theory, methodology, research design

Abstract

Criminology is a smorgasbord of disparate theory and poorly integrated research findings. Theories tend to focus either on people's crime propensity or the criminogenic inducements of environments; rarely are these two main approaches effectively combined in the analysis of crime and its causes. Criminological research often either avoids questions of causation and explanation (e.g., risk factor approach) or is based on research designs that yield highly partial accounts (e.g., place-oriented experimental work). To advance knowledge about crime and its causes and prevention, we argue that there is a need for an analytic criminology that allows key theoretical insights and central empirical findings about people's crime propensities and environments' criminogenic inducements and their combination to be integrated based on an adequate action theory. In this review, we outline this approach and its main methodological implications and discuss how its focus on why and how questions leads to a characteristic integration of theory development, methods, and research.

INTRODUCTION

What can we learn from criminology about why crime happens and what we can do about it? How do we know which theoretical propositions and empirical regularities are relevant and important in the explanation of crime and which can serve as a foundation for crime prevention policy and practice? Criminology is by nature a multidisciplinary (outcome-defined) subject. Scholars from all kinds of academic disciplines study crime and its causes and prevention, although the cross-fertilization of insights generated by various perspectives is generally modest. Criminology has accumulated a wealth of diverse information about the characteristics of crime events as well as offenders and victims and their individual and environmental correlates and developments (for an overview, see Ellis et al. 2019) and provided a plethora of various theories and hypotheses to account for these patterns or aspects thereof. In this review, we take on this well-recognized and longstanding problem of criminology (**Table 1**) and present some suggestions for how to best go about addressing this problem through the development of a more analytic criminology.

A major analytic problem is how to assess and make sense of all of criminology's various findings and theoretical propositions [i.e., a "multitude of seemingly unrelated and competitive theories" (Liska et al. 1989, p. 1)]. In fact, criminology, as a discipline, has largely failed to provide a generally accepted theoretical framework (paradigm) to guide its analyses and tests of ideas about crime and its causes [i.e., "it lacks an accepted and general theoretical structure for guiding integrative inquiry into the causes of crime" (Wikström & Sampson 2006, p. 1)], a fact that has impeded its effective contribution to the development of comprehensive crime prevention policy and practice and to counteract the common and unhelpful pick-and-mix approach.¹ As John Laub points out, "to enhance policy and practice one needs not only sound research, but strong theory. Successful theories organize the findings of an area, attract the attention of a broad spectrum of researchers and scholars, and provide influential guides to public policy" (Laub 2004, p. 18).

TOWARD AN ANALYTIC CRIMINOLOGY

To advance criminology and overcome its theoretical stalemate, there is a clear need to identify and integrate key theoretical insights [i.e., "separate the theoretical wheat from the chaff" (Cullen et al. 2008, p. 2)] and core relevant empirical findings [i.e., "determine which risk factors are causes and which are merely markers" (Farrington 2000, p. 7)]. Of particular importance is bridging the person- and place-oriented divide in the theorizing and study of crime and its causes and prevention (e.g., Reiss Jr. 1986, p. 29; Tonry et al. 1991, p. 158; Wikström 2004; Wikström & Treiber 2017). To accomplish this, we need to better address causal mechanisms and better integrate levels of explanation, and to do this "we need a developed theory of action through which causal mechanisms can be addressed and levels of explanation integrated" (Wikström 2004, p. 1).

In this review, we address this task by outlining and advocating our take on analytic criminology² as a way to theorize and study crime, with a special focus on the importance of the roles of the people-place interaction, action theory, mechanism-based explanation, and cross-level analyses, and discuss some of its central methodological implications (particularly regarding situational analyses). These kinds of questions have attracted renewed attention in criminology as several authors have recently put forward proposals for a more analytic or mechanistic criminology

¹A not untypical observation from the field of crime prevention is that by Peter Greenwood (2006, p. 5): "Current prevention theory and practice reflect a vigorous but undisciplined marketplace of competing ideas, often without sound foundations in either theory or research."

²The terms analytical and analytic are largely interchangeable. Initially, situational action theory (SAT)-based criminology was referred to as analytical criminology (e.g., Wikström & Treiber 2013).

Table 1 The longstanding dissatisfaction with the state of criminology

Diagnosis (quotation)	Author(s)
The literature on the topic of criminality reveals a great diversity of factors which have been shown to correlate statistically with this phenomenon; there is, however, no generally accepted conceptual system of crime causation	John Dollard, N.E. Miller, L.W. Doob, O.H. Mowrer, R.R. Sears (1939, p. 79)
Much factual information regarding crime has been accumulated over several generations. In spite of this, criminology lacks full scientific standing. The defects of criminology consist principally of a failure to integrate this factual information into consistent and valid general propositions	Edwin H. Sutherland (1947, preface)
...when factors become too numerous. . .we are in the hopeless position of arguing that everything matters	David Matza (1964, pp. 23–24)
The study of deviance and crime has traditionally been characterized by a multitude of seemingly unrelated and competitive theories	Alan Liska, Marvin Krohn, Stephen Messner (1989, p. 1)
No simple theory in the crime/deviance area. . .has proven to be more than minimally satisfactory in overall explanatory ability, in applicability to a wide range of types of deviance, or in empirical support for its tenets. All are plausible, yet they fail as general theories	Charles Tittle (1995, p. 1)
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	David Farrington (2000, p. 7)
Criminology lacks an accepted and general theoretical structure for guiding integrative inquiry into the causes of crime	Per-Olof H. Wikström & Robert J. Sampson (2006, p. 1)
Criminology risks being a field of study in which many ideas are developed and all are chosen—in which all theories have equal claim to legitimacy and in which only the most highly specialized scholars can separate the theoretical wheat from the chaff	Frank Cullen, John Paul Wright, Kristie Blevins (2008, p. 2)
[A] sizable knowledge gap remains with respect to a deeper understanding of what processes cause people to commit crime and why certain areas experience more crime than others	David Weisburd & Alex Piquero (2008, p. 494)
The field-specific fund of knowledge within criminology contains a narrowly sociological body of contradictory and paradoxical explanations of crime and generally lacks systemicity with other scientific fields	K. Ryan Proctor & Richard Niemeyer (2019, p. 47)

(Matsueda 2017; Opp 2020; Proctor & Niemeyer 2019; Wikström 2004, 2006, 2011). To gain a deeper understanding of crime and its regularities, these scholars have highlighted different elements, such as the micro–macro problem (Matsueda 2017, Wikström 2011), action theory (Opp, 2020, Wikström 2006), and theory comparisons (Opp 2020, Proctor & Niemeyer 2019).

Ross Matsueda's (2017, p. 513) take on analytical criminology is essentially an argument for the value and importance of cross-level analysis with a particular focus on the role of micro-to-macro transactions (explaining “social facts” rather than individual actions), stating that “an analytical criminology addressing the micro–macro problem opens up new puzzles and can shed new light on theoretical, methodological, and policy questions in criminology.” Although we agree with Matsueda considering the importance of cross-level analysis, we insist that the key emphasis of cross-level analyses in the study of crime causation is macro-to-micro analyses, whereas

micro-to-macro analyses are primarily of interest as vital background information to the analysis of crime causation, i.e., as regards the exploration of how criminogenic environments and contexts emerge. We maintain it is crucial analytically to differentiate between the theorizing and exploration of micro-to-macro transitions as regards the aggregation of crime events (micro) into crime rates (macro) and micro-to-macro transitions as background information to crime causation analysis, e.g., how past (historic) individual actions and interactions (micro) have created neighborhood environments and contexts (macro) conducive to the creation of the criminogenic settings to which people's actions are a response (micro) (a point we return to below).

Karl-Dieter Opp's (2020) treatise of analytical criminology appears to be partly inspired by a critique of situational action theory (SAT) (Opp & Pauwels 2018).³ He argues that "comparing specific theories of crime with a general behavioral theory and integrating them into a unified set of theories is a research program that we call Analytical Criminology" (Opp 2020, p. xiii), where the general behavioral theory in question is rational choice theory, and where the goal of theory comparison is to integrate rational choice and criminological theories by analyzing "to what extent rational choice theory (RCT) implies that they must be modified" (Opp 2020, p. 213). We agree with Opp on the importance of action theory as a foundation for analytic criminology (and for its cross-level analyses) but disagree that rational choice theory is the best theory upon which to build an integrative and comprehensive understanding of crime and its causes, and, hence, we also disagree that an integration of key insights from criminological theories should specifically be made on the basis of their compatibility with rational choice theory (a point we return to below).

Proctor & Niemeyer (2019, pp. 351–74) advocate mechanism-based explanation and theory competition. Their view on theory competition (which is different from Opp's approach) appears essentially to be a question of translating (reinterpreting) key assumptions of opposing criminological theories into a common theoretical format based on creating mechanism sketches (also drawing upon relevant knowledge from neighboring sciences) and, on this basis, assessing the contradictions by constructing critical tests to explore which mechanism sketches best describe reality. We strongly agree with their emphasis on the importance of mechanism-based explanations (in fact, we see this as the hallmark of analytic criminology), but we disagree with their claim (shared by Opp) that theory integration based on theory competition/comparison, with the goal of resolving "the field's numerous paradoxes" (Proctor & Niemeyer 2019, p. 253), is the main route to promote knowledge cumulation and advance the field of criminology⁴ (a point we will return to below).

Analytic criminology, as we envisage it, is essentially a case for theory-driven empirical research (in the empirical-analytical tradition), with a focus on providing integrative explanations and testing by identifying the basic entities (and their relevant properties) and plausible explanatory mechanisms involved in crime causation and their testable implications. Our take on analytic criminology is grounded in the core arguments of SAT (e.g., Wikström 2004, 2006, 2010, 2011, 2019a,b; Wikström & Treiber 2019), a specific theory about crime and its causes that may be

³Opp dismisses SAT because it does not "subscribe to the application of RCT" and "systematically pursue theory comparison" (Opp 2020, p. 224; see Wikström et al. 2022 for a response to Opp's many misunderstandings in his detailed critic of SAT and a comparison of similarities and differences between SAT and Opp's wide version of RCT).

⁴Proctor & Niemeyer criticize the approach of SAT, stating that "the situational action theory proposed within analytical criminology offers a robust substantive theory of crime; however, it is unclear whether it can significantly advance scientific criminology *as a field*" and go on to rebuke SAT for not attempting "to utilize theory competition as a means of progressing science within criminology" and therefore just becoming "yet another school of criminological thought" (Proctor & Niemeyer 2019, p. 181; italics in original).

considered as an application of the general principles of analytic criminology (see, e.g., Wikström et al. 2012, 2022).

SOME NOTES ON THE EPISTEMOLOGY OF ANALYTIC CRIMINOLOGY

The aim of science is “to find *satisfactory explanations* of whatever strikes us as being in need of explanation” [Popper 1983 (1956), p. 132; italics in original], and the way to do this is by answering why and how questions through the identification of plausible explanatory mechanisms (Bunge 1999, p. 51; 2004). Scientific theories are proposed explanations based on the identification of plausible causal mechanisms. Analytic criminology subscribes to the view that in science we do not invent causes and mechanisms, we discover them (and reality exists independent of us). The closer we get to understanding how reality works, the better we can explain why crime events happen. We gain knowledge about reality through systematic observation (empirical study) and reasoning (theorizing), which are both of equal (and interdependent) importance.

Analytic criminology is based on scientific realism, allowing for both observable entities and unobservable processes (mechanisms) to be included in scientific investigation (Bunge 2001, 2006). A mechanism-based approach to explanation requires a realist stance on knowledge because mechanisms involved in the explanation of human action are commonly unobservable or only partially observable. Scientific realism allows for social construction but maintains that what is constructed is reality and hence that people’s perception (and differential perceptions) of reality can be rationally explained. In other words, reality may be more or less adequately and differently constructed (depending, for example, on people’s skills and experiences), and how people construct (perceive) reality has implications for their action-choices. However, this “involves no concession to subjectivism: it only adds subjective experience to the domain of facts to be studied objectively” (Bunge 1999, p. 9).

Causes and Explanations

To explain something, we first need to clearly define what it is we aim to explain (and establish that it actually exists) before looking to identify its causes (Merton 1987) because a cause has to be a cause of something. We can have effects (e.g., crime events) without knowing their causes but not causes without knowing their effects; we cannot have causes of nothing (Wikström 2006). Given that criminology is an outcome-defined discipline, it is surprising that so little attention has been given in criminological theory to the conceptualization of crime (Gottfredson & Hirschi 1990, p. 15). There is no generally agreed upon definition of crime (e.g., Akers 1989, p. 25). Thus, different studies, if defining crime at all, may apply very different definitions of what they aim to explain.⁵ This is a crucial point because clearly defining the outcome of interest provides guidance in the identification of which are relevant entities and potential explanatory factors in the study of crime causation and certainly which are not.

Questions of causation and explanation are central to analytic criminology. However, this is not always the case in criminological studies. David Farrington (2000, p. 7) observed that the popular public health-inspired risk factor (prediction-oriented) paradigm “avoids difficult theoretical questions about which risk factors have causal effects” and highlights that a major problem

⁵ Compare, e.g., Gottfredson & Hirschi (1990, p. 15), who define crime as “acts of fraud and force undertaken in the pursuit of self-interest,” whereas Felson (2006, p. 35), defines crime as “any identifiable behavior that an appreciable number of governments has specifically prohibited and formally punished.”

of the risk factor approach is determining “which risk factors are causes and which are merely markers or correlated with causes.”⁶ Although mapping out crime correlates and making predictions may be useful exercises, e.g., to identify problems or make at-risk predictions for people and places, it is easy to agree with Michael Rutter’s (2007, p. 377) claim that “it is difficult to see why anyone would be interested in statistical associations or correlations if the findings were not in some way relevant to the understanding of causative mechanisms.” To successfully explain and prevent crime events, one needs to understand the causal processes involved and how they can be manipulated.

A cause may be regarded as something that has the power to initiate a causal process (mechanism) producing an effect.⁷ Mario Bunge (2004, p. 186) describes a mechanism as a “process (or sequence of states, or pathway) in a concrete system, natural or social.” When it comes to explaining human action (such as acts of crime), the cause is most likely a causal interaction, the causal process being triggered by the coming together and interaction of a person’s action-propensities and a place’s (or microenvironment’s) action-inducements, providing the input to a mental process (pathway) with a key sequence of states, which, according to SAT, are (*a*) the creation of motivation (goal-directed attention), (*b*) the provision of action alternatives (through rule guidance), and (*c*) a process of choice (through habituation or deliberation), resulting in an action (goal-directed sequence of bodily movements) (for details, see chapter 2 in Wikström et al. 2022).

The explanation of the crime event and its causes is foundational in analytic criminology. Only personal and environmental factors that directly (or indirectly, as causes of the causes) affect how people see their action alternatives and make their choices are causally relevant in the explanation of crime events. This is the basis on which we can assess and identify, among all the many and various suggested sources of people’s crime propensity and places’ criminogeneity, which factors are causally relevant and distinguish them from those that are merely correlates (markers, symptoms).

According to analytic criminology an adequate scientific explanation may be construed as a theory that (*a*) clearly defines what is to be explained (the outcome) and identifies the key entities involved in its causation and their relevant and important causal properties; (*b*) suggests plausible causal processes (mechanisms) that link putative causes to their effects and thereby tell us how the outcome is produced; and (*c*) has testable implications (empirical expectations) that are consistent with relevant observations (e.g., from ethnographic studies), findings from statistical analyses and modeling, and, as much as possible, manipulations (experiments) that demonstrate relevant changes in hypothesized causal relationships.

What makes a theory scientific is that it has testable implications so that it is possible to empirically falsify its theoretical propositions (Popper 1963). Testable implications (theoretically grounded empirical expectations) should ideally be based on the identification of observable features consistent with the existence of a proposed causal mechanism. The more detailed and varied the testable implications are, the stronger the test of the proposed causal mechanism. An important argument of analytic criminology is that theory testing should be based on and include only testable implications derived from the hypothesized causal mechanism (to minimize the risk of confounding correlates and causes). Deriving strong testable implications is what bridges theory and empirical research and is the hallmark of good science. In other words, testable implications should guide the design and execution of empirical research.

⁶The fact that it is common within risk factor studies (and predictor-oriented research more generally) to talk about its findings in causally charged terms, such as risk, protection, influence, effect, and change, without properly assessing their potential causal status tends to amplify this problem.

⁷For in-depth treatments of the problem of causation, see, e.g., Salmon (1998) or Psillos (2002).

THEORY TESTING IN CRIMINOLOGY AND ITS COMMON LIMITATIONS

Empirical studies in criminology are often too loosely connected to the theories they allegedly test (Opp 2020; Sampson 2012, p. 68). To minimize the gap between theories and empirics, it is crucial to derive as many and as specific testable implications as possible from a theoretical model of the relevant causal mechanisms (Lieberson & Horwich 2008). As argued by Sampson (1999) in his critique of Aker's social learning theory, many correlations and regression coefficients are too ambiguous in meaning to support a particular theory. For example, the well-known strong correlation between one's own delinquency and that of one's friends could be indicative of very different mechanisms. Rather than viewing research findings through the lens of a particular theoretical orientation, one has to identify several specific implications of a theory and subject these to critical tests. Of course, this requires that the respective theories are precisely explicated (Fried 2020).

Theoretical Implications

The confirmation of theoretical expectations bears directly on the validity of a theoretical model. The strategy to derive and test specific implications [e.g., particular interaction effects, specific mediation patterns or nonlinearities such as threshold effects or different modes of decision-making (Beier 2016, Brauer & Tittle 2017, van Gelder & de Vries 2014, Kroneberg et al. 2010, Timmer et al. 2020, Wikström 2006, Wikström et al. 2012)] contrasts with the widespread theories-as-groups-of-variables approach. In an example of this latter approach, Sweeten et al. (2013, p. 935) test "numerous criminological theories and their ability to explain how crime changes with age" and "find at least some support for all tested theories and find that together they are responsible for two-thirds to three-fourths of the age-crime curve from age 15 to 25." In this study, groups of variables represent particular criminological theories, such as "social control (e.g., employment and marriage), procedural justice (e.g., perceptions of the legitimacy and fairness of the legal system), learning (e.g., gang membership and exposure to antisocial peers), strain (e.g., victimization and relationship breakup), psychosocial maturity (e.g., impulse control, self-regulation and moral disengagement), and rational choice (e.g., costs and rewards of crime)" (Sweeten et al. 2013, p. 921). However, from the perspective of analytic criminology, these analyses provide no test of theories. Findings such as a crime decline after entry into employment or marriage are theoretically ambiguous and contradict none of the theories mentioned. To draw conclusions about the validity of theoretical models, it is crucial to derive and test specific implications that are ideally unique to particular theories. Although judgments about the uniqueness of implications ultimately require a theory comparison, we argue that they should be by-products of seeking to identify specific implications of mechanism-based explanations that aim to account for important empirical regularities. This is a major difference between our agenda and that of authors who propose to start from a reconstruction and comparison of several criminological theories (Opp 2020, Proctor & Niemeyer 2019). In our view, such a preoccupation with the theoretical status quo could hinder the advancement of analytic criminology, as it could divert efforts from refining and testing our theoretical models and could risk an inward and backward orientation that would make it more difficult to engage with neighboring disciplines (Buyalskaya et al. 2021).

Testing Interaction Effects

Although testing specific implications is theoretically desirable, it often puts high demands on the data. In particular, methodologists have long noted the difficulty of achieving sufficient statistical

power to estimate interaction effects. In many situations, one needs at least four times the sample size to estimate an interaction effect with the same accuracy as a main effect (Gelman et al. 2020, pp. 301–4; on three-way interactions, see Heo & Leon 2010).⁸ Importantly, this has very different consequences for theory-guided and exploratory examinations of interaction effects. Whenever a strong theoretical rationale exists to test an interaction effect, tests should be based on large samples. Even then, estimates of interaction effects are often subject to greater statistical uncertainty. Therefore, absence of evidence should not be interpreted as evidence of absence, and it is important to accumulate evidence (for or against a hypothesis) over several, sufficiently powered studies. As sample requirements are even greater for weak interactions, there is additional reason to prioritize the identification of strong interactions.

For exploratory tests of interaction effects, the consequences are much more troublesome (Gelman et al. 2020). Researchers sometimes test interaction effects only because they are interested in how much their main effect of interest might vary or in response to not having found the expected main effect in the complete analysis sample. In such cases, sample sizes are often too low for a well-powered test of interaction effects. Finding interaction effects is therefore not only unlikely but, when statistically significant, their estimates tend to be strongly upwardly biased: “So what you think of as interesting exploratory findings could be just a bunch of noise” (Gelman et al. 2020, p. 302). For example, examining various potential sources of individual differences in how people update their risk perceptions or respond to deterrence more generally could easily run into this problem, unless there is an action theory that allows for the derivation of specific interactions (Piquero et al. 2011, Schulz 2014). Hence, analytic criminology embraces causal complexity such as a focus on interactions only when combined with strong theory guidance.

THE FOUNDATION OF ANALYTIC CRIMINOLOGY: EXPLAINING THE CRIME EVENT

At the heart of analytic criminology is the realization that people are the source of their actions (they do as they do because of the action alternatives they see and the choices they make), but that the causes of their actions are situational (people’s actions are a result of their particular reactions and responses to the motivators they experience in the circumstances in which they take part).

Because crime is a special kind of action (actions that break rules of conduct stated in law), only factors that influence whether people see and choose crime as an action alternative are relevant causal factors in the explanation of crime events. The basic question of analytic criminology is thus why people come to see and choose acts of crime (or particular kinds of crime), more specifically, what personal and micro-environmental factors, and, crucially, their particular combination, affect this process. Let us develop these arguments a bit further.

The Concept of Crime

Crimes are actions that break rules of conduct stated in law. To explain acts of crime is thus essentially to explain rule-breakings or why people follow or break rules of conduct. There is no difference in explaining why people break the rule of law or any other kind of rules of conduct [Ehrlich 2008 (1936)]. This conceptualization of crime makes it possible to develop a general

⁸This relationship holds for balanced experiments and assumes that the interaction effect is of the same size as the main effect. As shown by Gelman et al. (2020, pp. 301–4) one needs 16 times the sample size if the interaction effect is only half as big as the main effect.

theory of crime causation because the rule-breaking is what all crimes, in all places, at all times have in common. Defining crime this way also has the additional bonus that any explanation is not dependent on whether or not an action is criminalized. It is not the specific action but the fact that it breaks a rule of conduct that is the focus of explanation (Wikström et al. 2022).

People and Places

People's actions are a reaction and response to the circumstances in which they take part. People are different and places (microenvironments) are different. The combination of the two is what triggers people's actions. Therefore, any explanation of people's actions that ignores the person–environment interaction falls short. Criminology is notoriously bad at theorizing and studying how people's crimes relate to their interaction with specific environments and their changes. For example, Osgood (2012) has convincingly argued that development and life-course criminology “would be enormously enriched by greater attention to relevant ways that people and their lives change with age.” Wikström (2022) has observed that environmental criminology is principally a criminology without people (meaning that people's differential and selective response to specific environments is largely ignored). Few criminological theories take the person–environment interaction seriously, at best paying lip-service to its importance, and that includes Cohen & Felson's (1979) Routine Activity Theory, which essentially has become a theory about the role of criminal opportunity (suitable targets and lack of guardianship). Analytic criminology aims to correct this omission by insisting on a focus on (proper) situational analysis in the explanation of crime events.

The Concept of Situation

People are the source of their actions, but the causes of their actions are situational (Wikström 2017). The concept of situation is typically used to refer to the immediate surrounding of a person's location.⁹ However, we maintain that this confuses the understanding of the role of the person–environment interaction in crime causation because people are different and places are different, and it is their specific combination that gives rise to the action alternatives they perceive and, in turn, guides the choices they make in relation to the motivations they experience. In other words, the situation is a mental state, i.e., people's motivations¹⁰ and their related perception of action alternatives from which they make their action-choices (Wikström 2019a). This is an important distinction because if the concept of situation is seen as equivalent to the impact by the immediate environment on people's behavior, we risk ending up with environmental determinism (Wikström 2022).¹¹ Analytic criminology insists that the situation should be the core unit of analysis in the study of crime causation.

⁹See, e.g., Birkbeck & LaFree (1993) and Trinidad et al. (2018) about the study of environmental influences on crime and the common use of the concept of situation in criminology and Wikström & Treiber (2015) and Wikström (2022) for a critique of dominant environmental and situational approaches in criminology.

¹⁰Heckhausen & Heckhausen (2018) make a strong and convincing argument that motivation is best analyzed as a situational concept. In criminology, motivation is often used to refer to propensity (a trait concept). We argue that it is central in the analysis of crime causation to differentiate between the situational concept of motivation (goal-directed attention) and the trait concept of propensity (a person's tendency to act in one way or another).

¹¹For an authoritative analysis and critique of situationism (i.e., behavior caused by the immediate environment) in psychology and a strong argument for the importance of the person–environment interaction, see Bowers (1973).

Table 2 Key entities, central elements (according to SAT), and outcomes

Key entity (unit of analysis)	Key entity elements (according to SAT)	Outcome (effect)
Person	Desires, sensitivities, morality, and ability to exercise self-control	Crime propensity
+ Place	Opportunities, frictions, moral norms, and their enforcement	+ Criminogenic inducements
= Situation	Motivation, perception of action alternatives (process of choice)	= Crime event

Abbreviation: SAT, situational action theory.

The Key Entities to Integrate into the Explanation of Crime Events

The key entities to integrate into the explanation of crime events are action (goal-directed sequences of bodily movements), person (action-propensities), place (action-inducements), and situation (motivations and perception of action alternatives). The argument is simple: People are different and places are different, and it is the convergence and interaction of the two that trigger (cause) people to act in one way or another. Change the person or change the setting and their actions change. To explain people's actions, we need to identify the causally relevant and important personal characteristics that affect their crime propensity (their tendency to see and choose crime or a particular kind of crime as an action alternative) and the causally relevant and important place characteristics that affect their criminogenic inducements (a place's tendency to encourage acts of crime or some particular kind of crime) because they provide the inputs to the perception–choice process, which determines the outcome.

SAT proposes that the key relevant sources of people's crime propensities are people's desires and sensitivities and their personal morals and abilities to exercise self-control, and that the key relevant sources of a setting's criminogenic inducements are its opportunities and frictions, their moral context—their moral norms and their enforcement—and, crucially, their interaction,¹² which serve as inputs to the perception–choice process (situational mechanism) that explains why crime events occur (e.g., Wikström et al. 2022, chapter 2). **Table 2** summarizes the key entities, their central action-relevant elements (according to SAT), and how they combine in the analysis of crime-event causation.

The Situational Mechanism

People do as they do because of the action alternatives they perceive and the choices they make. The perception–choice process is the fundamental (mental) mechanism in the explanation of people's actions (including their acts of crime). That is so because perception is what connects people to their surrounding environment and choice is what connects them to their actions. **Figure 1** presents the situational model, also referred to as the PEA hypothesis (Wikström 2019b, p. 265). It is the main vehicle enabling the effective integration of key insights from

¹²The combination between people's desires and the setting's opportunities is what may create temptation, and the combination between people's sensitivities and the setting's frictions is what may create provocation. The combinations between people's personal morality and the (sensed) moral norms of the setting provide rule guidance as to how to respond to motivators, and people's ability to exercise self-control and the deterrent qualities of the setting act as potential controls when people deliberate over whether or not to commit an act of crime (e.g., Wikström 2017, pp. 511–13).

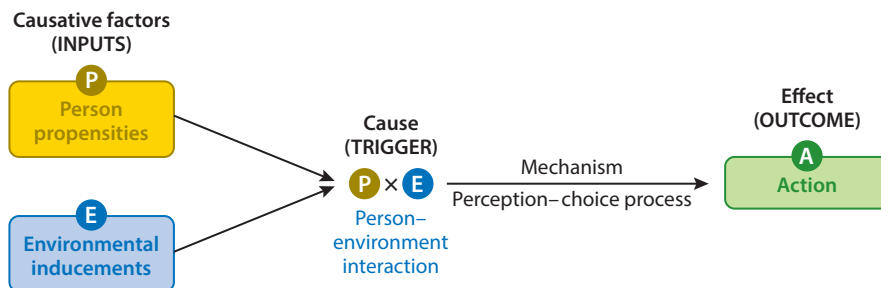


Figure 1

Analytic criminology. The situational mechanism and its inputs (the PEA hypothesis and its key entities and processes in crime-event causation). Adapted from Wikström (2011).

people- and place-based research. It takes its point of departure from the assertion that people are the source of their actions but that the causes of their actions are situational, a result of the coming together and interaction ($P \times E$) of the input from a person's action-propensities (P) and the input from a place's action-inducements (E), with their combination creating specific motivations and perceptions of action alternatives, from which people, depending on their familiarity with the circumstance, make a more or less automated (habitual) or reasoned (deliberative) choice, resulting in some action or inaction (A). The perception-choice process is the situational mechanism that explains why people act as they do, for example, why some people may see and choose an act of crime as an action alternative in response to a specific motivator in a certain circumstance, while others do not. Crucially, it is the combination of a person's crime propensity and the criminogeneity of a setting that triggers the motivation-initiated perception-choice process. Taken independently, neither people's crime propensity nor places' criminogenic inducements cause crime events. It is all about their interaction.

A Note on Rational Choice and Its Limits as an Alternative Action Theory for Analytic Criminology

Perhaps the natural contender for an action theory upon which to build an analytic criminology is rational choice theory. After all, it is the dominant action theory to which criminologists allude (if they allude to any action theory), and several scholars have argued that some version of rational choice theory would provide powerful microfoundations for the discipline (Clarke & Cornish 1985, Cornish & Clarke 2014, Loughran et al. 2016, McCarthy 2002, Opp 2020). Modern rational choice explanations of crime include not only the perceived tangible benefits and costs of offending (Becker 1968) but also psychological benefits, such as the perceived excitement and coolness of the crime, and costs, such as anticipated feelings of shame or guilt (Loughran et al. 2016, Matsueda et al. 2006, Nagin & Pogarsky 2001).

Our main reservations concerning rational choice theory derive from its low heuristic power or disinterest in psychological mechanisms (for a more comprehensive discussion, see Wikström & Treiber 2015 and Kroneberg 2014). Even proponents of rational choice theory acknowledge that "the rational choice approach is not a theory of cognition" but merely "contends that we can make useful predictions of human behavior by assuming that most people act 'as if' they had made cost-benefit calculations" (McCarthy 2002, p. 422). The guiding hypothesis that actors attempt to realize their (subjective) interests given (perceived) constraints is minimalistic. As this notion offers relatively little guidance, the auxiliary assumptions that further specify the relevant

incentives carry an unusually high weight. And the resulting explanations hardly open up the black box of decision-making that produces deviance and conformity.

As criminology is interested in not only macrolevel phenomena but also the explanation of crime as individual action, we argue that psychologically richer theories of action (such as SAT) provide a more fruitful starting point, yield more specific implications, and allow us to derive more interesting hypotheses on the interaction of persons and settings. Although SAT, as an action theory, has similarities with rational choice theory—and more so with some versions than with others—it was specifically developed to better serve the goal of integrating key insights about the role of people and places and their interactions in the explanation of crime events and thus provide a stronger theoretical basis for the empirical study of situational causes of crime.

TESTING SITUATIONAL HYPOTHESES

How do we best study situational factors, their interactions, and the causal processes involved? We have argued that the causes of crime events are situational. Hence, testing such explanations requires us to focus on the spatiotemporal convergence of individuals, settings, and actions. This interaction of individuals and settings is conceptually distinct from the interaction of variables in statistical models (Hardie 2020; Wikström et al. 2018, p. 15). In statistical modeling, the idea of interactions refers to conditional dependence, such that the relationship between two (or more) variables varies across the values of another variable. But before we even approach statistical estimation, the research design determines the extent to which our data capture how the convergence of individuals and settings leads to crime.

Ideally, the empirical study of such a person–environment interaction is based on situational data about the behavioral outcomes of particular person–place convergences, i.e., data that spatiotemporally link the person, the setting, and the action. In principle, such data can be obtained in various ways, including laboratory and field experiments (Farrington et al. 2020), retrospective reporting in surveys (Wikström et al. 2012), experimental scenario methods (Bouffard & Niebuhr 2017, Exum & Bouffard 2010), and analysis of process-generated data such as video footage from public surveillance cameras (Ejbye-Ernst et al. 2020).

In space–time budget studies, respondents are usually asked to report on past days and indicate hour by hour where they have been, what the circumstances were (for example, with whom and doing what), and whether or not they committed an offense in this setting. Such data provide a spatiotemporal link between acts of crime and settings and can be matched with measures of respondents' propensity and measures of crime-relevant setting characteristics (Bernasco et al. 2013, Wikström et al. 2012). For example, the Peterborough Adolescent and Young Adult Development Study complemented the main survey of adolescents with a separate community survey to capture the collective efficacy as perceived by inhabitants of certain small areas. On the basis of this combination of data sources, Wikström et al. (2018) operationalized criminogenic settings as unstructured and unsupervised activities with peers that take place in either areas with relatively low collective efficacy or a city or local center area. Their analysis showed that the probability of crime was strongest when respondents with low morality and low self-control faced a criminogenic setting and, crucially, that such respondents were particularly vulnerable to criminogenic exposure. Of course, the retrospective nature of space–time budgets limits the degree of detail in describing how a situation unfolds (e.g., how individuals approach a target or react to bystanders). Moreover, respondents self-select into settings, which allows one to study this important process (Sampson 2012).

Experimental research designs provide another important way to study person–environment convergences. Most importantly, they allow researchers to randomly assign subjects to almost

identical settings that, ideally, differ only in those aspects that they wish to manipulate. In comparison to other disciplines, lab experiments occupy a more peripheral role in criminology. First of all, the set of crimes that can be studied in lab experiments is limited for ethical and practical reasons, excluding real violence, burglary, corporate crime, and other more serious offenses (Farrington et al. 2020, p. 656). A second reason is the problem of low external validity. How do the settings and processes observed in the lab mirror those in the real world? For example, it is questionable how much can be learned from experiments that assign university students to the roles of potential offenders and law enforcement agents and study their strategic interaction. Even if their findings could be replicated with other samples of the student population (generalizability), transportability to other parts of the population, real crime, and real settings is questionable (Findley et al. 2021, List 2011). To be sure, lab and online experiments can be very useful and should be used more often to test theories about the situational determinants of cheating and dishonesty (Nagin & Pogarsky 2003). In general, however, the power of lab (or online) experiments to inform a particular criminological question should be carefully scrutinized before embarking on them.

Field experiments are often advocated as a middle road between internal and external validity (Farrington et al. 2020, List 2011). Compared to lab experiments, the use of real settings comes with massive improvements in external validity that often more than outweigh the reduced control over the experimental situation. And the fact that subjects in natural field experiments do not know that they participate in an experiment removes another potential source of bias (List 2011, p. 6). In criminology, randomized field experiments have been applied to study a diverse set of topics, including policing, early prevention, corrections, courts, and community treatment (see Farrington 2013). Although the main focus of field experiments has been on what works in terms of prevention and intervention, Farrington has recently called for using field experiments “to test hypotheses about explanations of offending” (Farrington et al. 2020, p. 654) and “to investigate theories of offending” (Farrington et al. 2020, p. 656). However, the paucity of field experiments that test and inform the development of criminological theories is not accidental. Most field experiments in criminology are based on the idea that manipulating some aspect of the real world, e.g., in the form of a policy or program, will help to reduce crime. From the perspective of analytic criminology, this focus often leads to an overemphasis on settings and a neglect of crime propensity. Criminology has repeatedly demonstrated the important role of rather stable interindividual differences that are not directly observable from the outside and often excluded in field experimental research designs.

Ultimately, the experimental focus on causation and what works will be more successful if it is informed by theories that focus on explanation and on how it works. This is evident from systematic reviews that have found the typical effect size of programs to be small or near zero (Sherman 2007, p. 303). As a remedy, Sherman (2007) suggested targeting experimental treatments to those often small subgroups of offenders and settings that are responsible for the greatest volume of crime and harm caused, as did those few experiments that could demonstrate strong effects. Hence, within experimental criminology, the realization that “crime prevention interventions seem to have very different effects on different kinds of people” (Sherman 2007, p. 305) could pave the way for research designs that take into account how crime results from the convergence of particular persons in particular settings. Going beyond narrow field experimental research designs, one could not only target specific subsamples of persons, such as frequent offenders, but also integrate field experiments with surveys or other methods that allow researchers to measure crucial aspects of people’s crime propensities. Hence, we advocate a theory-guided focus on person–environment interactions at the research design stage rather than checking only for treatment effect heterogeneity after (quasi)experimental work has been conducted.

Finally, hypothetical scenarios have become a major method to test hypotheses about the interplay of personal and setting characteristics (Bouffard & Niebuhr 2017, Exum & Bouffard 2010, Nagin & Paternoster 1993, Wikström et al. 2012). Compared to lab experiments, scenarios allow the representation of any kind of crime, but they do not capture actual behavior. The crucial question is that of external validity, i.e., whether the attributes of fictitious situations evoke responses similar to those evoked by their real-world counterparts and whether respondents are motivated and able to anticipate how they would behave in real-world situations (Eifler & Petzold 2019, Exum & Bouffard 2010, Petzold & Wolbring 2019, van Gelder et al. 2019).

In all these research designs, the collection of data on person–environment interactions provides the basis for evaluating the implications of situational mechanisms. To tap more directly into these mechanisms requires not only theoretical work (i.e., identifying specific implications) but also innovative measurement. For example, studies that measure which action alternatives individuals perceive or how fast they react to situational stimuli can test our models of the perception–choice process much more directly (Beier 2016, Brauer & Tittle 2017). In this context, analytic criminology would also benefit from engaging more closely with supplementary supportive evidence for its proposed mechanisms from neighboring sciences, e.g., neuropsychology (Pajevic 2020, Treiber 2013).

Testing Situational Hypotheses Based on Nonsituational Data and Panel Data

Although we have so far discussed situational research designs, most quantitative research in criminology is based on nonsituational data—even when the goal is to test hypotheses about situational mechanisms (see, e.g., Pauwels et al. 2018). Most surveys ask respondents separately about the settings they are confronted with in their everyday life (e.g., neighborhood characteristics, routine activities, characteristics of friends), elements of their crime propensity (e.g., impulsivity, crime-related moral beliefs), dimensions of perceptual deterrence (e.g., perceived severity and certainty of formal sanctions), and the offenses they committed within a certain time period. The obvious problem with this practice is that it results in groups of variables that lack spatiotemporal links. Still, when interpreting interaction effects in regression models, researchers frequently conclude that exposure to criminogenic settings matters more or less for respondents' crime involvement depending on their personal characteristics. However, we do not even know whether or not the reported acts of crime took place in those criminogenic settings. Hence, when situational data are not available, analytic criminology calls on researchers to not mistake statistical interaction for convergence but to acknowledge and explicate the assumptions necessary to draw conclusions about the causes of crime.

One main reason why quantitative criminologists continue to make heavy use of nonsituational data is the availability of rich longitudinal surveys, such as AddHealth, PHDCN, National Youth Survey, or Pathways to Desistance, for secondary data analysis (Cullen et al. 2019, p. 5). Longitudinal data provide several unique opportunities and are often portrayed as allowing researchers to discover and test the mechanisms that underlie cross-sectional associations. The question of how longitudinal research can help and hamper analytic criminology therefore deserves special attention.

In addition to describing trajectories of offending, testing developmental hypotheses, or studying the impact of events (Bersani & Doherty 2018, Farrington et al. 2019, Nguyen & Loughran 2018), longitudinal data are often advocated for improving the basis for causal inferences. First, measuring independent and dependent variables at different time points ensures the correct time ordering between causes and effects. Second, longitudinal data allow researchers to relax the

strong assumption of ignorability by using fixed effects to account for time-constant unobserved heterogeneity.

However, upon greater scrutiny, both arguments need qualification. The benefit of the correct time ordering can be more than offset by the wrong time interval: “Most longitudinal studies collect data on an annual basis or with even longer intervals, while crime-event causation is a question of a process of minutes rather than years, and hence the problem of time ordering is a question of minutes rather than years” (Wikström et al. 2018, p. 15). Therefore, when assessing crime-event causation, it is problematic to correlate crime events with a putative cause that happened a year or more before (see also Cullen et al. 2019, p. 5).

Of course, if analytic interest is in the more indirect causes (i.e., causes of the causes) of crime, relatively long time intervals can be appropriate. Although events and environmental changes might immediately affect exposure to criminogenic settings, they might also set in motion more long-term changes, such as a change of friends or daily routines, that ultimately also change individuals’ crime propensity. However, even then, getting the proper temporal lags correct is crucial and failure to do so can result in severe biases, leading even to coefficients of the opposite sign rather than the true parameter values (Vaisey & Miles 2017).

A main advantage of longitudinal data is the possibility to remove time-constant unobserved heterogeneity. By relying on within-person variation only, fixed-effects panel models do not require the assumption that the available control variables block all confounding effects. For example, surveys can hardly fully measure where and with whom people spend their time, resulting in differential criminogenic exposure to temptations, provocation, and moral settings. Although fixed-effects models do not account for unobserved changes in these activities, they remove time-constant baseline differences between individuals that might stem from characteristics of their families, neighborhoods, and schools, from their tendency to seek or avoid settings of high or low criminogenic exposure, or from other unknown sources.

An example of this analytic strategy comes from Loughran et al. (2016), who sought a more rigorous test of rational choice theories of crime by regressing six-month changes in self-reported delinquency to corresponding changes in a comprehensive set of perceived costs and benefits of crime. From the perspective of analytic criminology, it is important to recognize that the authors’ analytic strategy tests the developmental implications of situational hypotheses. These implications hold only under strong assumptions that need to be explicated to strengthen the derivation chain. Most importantly, the authors must assume that changes in the perceived costs and benefits of offending over the six-month intervals reflect changes in those situations in which respondents engaged in more or fewer acts of delinquency. For example, changes in perceived deterrence must reflect changes in the perceived deterrent qualities of the settings that respondents encountered in the past six months, during which they engaged in (more or fewer) acts of delinquency (compared to the six months before). In addition, the authors rightly grant that even the correct time ordering does not shield against the possibility of reverse causation (e.g., experiential effects of crime involvement on perceived costs and benefits) and that the variation over time might itself be spurious or endogenous and therefore provides no firm basis for causal inference.

Against this background, it should be clear that panel data provide no panacea for testing causal hypotheses. As pointed out by Morgan & Winship (2007, p. 242), the often-heard phrase “I cannot get at causality because I do not have longitudinal data” is mistaken and based on an uncritical view of panel data and methods. As is the case with most other methods, a causal interpretation of the results of panel data analyses depends on defensible assumptions that should be grounded in previous research and strong theory.

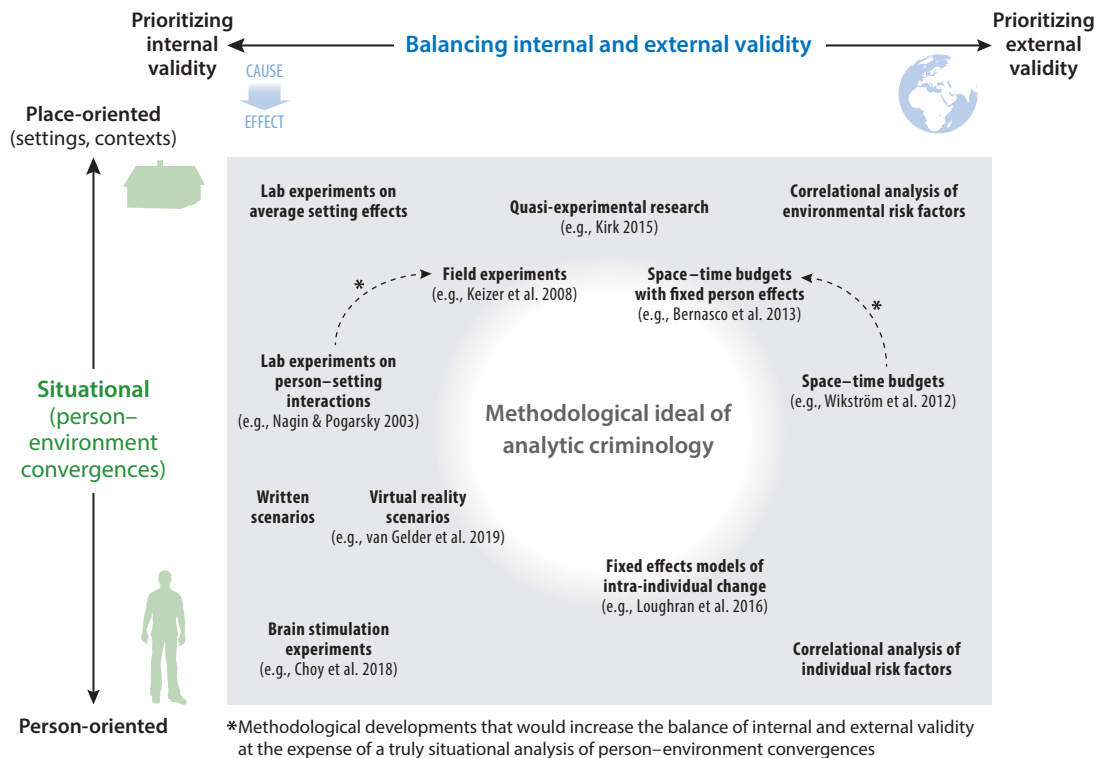


Figure 2

Research designs from the perspective of analytic criminology: Their suitability in studying person-environment convergences and balancing internal and external validity.

Hence, without denying the importance of experimental approaches and longitudinal data for causal inference, analytic criminology demands that we remain aware of the limitations of all research designs and explicate the assumptions on which the respective inferences are based. The starting point should be our knowledge about the relevant mechanisms and sources of variation, even if some of them escape our methods and data. Hence, analytic criminology calls on researchers to subject the implications of mechanism-based explanations to a series of tests that use different methodological angles. Taken together, this series should balance internal and external validity.

Methodological Trade-Offs and Future Directions

To summarize our argument regarding situational analysis, **Figure 2** illustrates how major research designs compare from the perspective of analytic criminology. On the vertical dimension, situational approaches are located between primarily place-oriented and person-oriented research designs. On the horizontal dimension, we depict the degree to which research designs prioritize internal or external validity.

The methodological ideal of analytic criminology is research design that collects data on person-environment convergences and balances internal and external validity in a way that allows causal inferences on real-world crime and delinquency. Along the vertical axis, place-oriented approaches tend to result in a criminology without people (Wikström 2022), whereas

person-oriented research tends to miss out on the situational causes of crime because it focuses only on kinds of people. Along the horizontal axis, internal validity is an important strength of experimental research designs, whereas studies using observational data tend to prioritize external validity. Balancing internal and external validity remains a daunting challenge for future research in criminology.

Our discussion of different research designs and analytic strategies also showed that attempts to increase internal validity sometimes come at the expense of a truly situational analysis (see the arrows marked with an asterisk in **Figure 2**). For example, analyzing space–time budget data with person fixed effects rules out time–constant unobserved heterogeneity by focusing on only within-person variation (Bernasco et al. 2013), but it thereby also misses out on the conditioning impact of crime propensity (Wikström et al. 2018). Similarly, the often-advocated move from lab experiments to field experiments that combine randomization and realism often implies that one can no longer measure individuals' crime propensity. Conversely, combining fixed effects models with panel data relaxes some assumptions that are necessary for causal inference (Loughran et al. 2016), but, lacking truly situational data, it can produce only indirect evidence on situational mechanisms.

Hence, the principles of analytic criminology motivate skepticism with regard to alleged methodological gold standards (see Nagin & Sampson 2019, Sampson 2010). Research designs differ in the extent to which they produce data that capture the phenomenon of interest, allow the tracing of the impact of setting as well as person characteristics, and enable causal inferences based on defensible assumptions. Process-generated data and field experiments tend to miss out on the most important person characteristics (criminology without people), lab experiments and vignette studies often do not capture the phenomenon of interest (criminology without crime), and retrospective reporting in surveys and process-generated data have difficulties in accounting for self-selection into settings.

Future research should attempt to enrich existing research designs by tackling their respective weaknesses. For example, to study person–environment interactions in laboratory, online, or field experiments, they can be combined with survey measurements of interindividual differences (e.g., Leung & Cohen 2011, Nagin & Pogarsky 2003), ideally several days before the experiment. In turn, when setting up large-scale surveys, it is worthwhile to think about how subsets of participants could be subjected to experimental treatments (Farrington et al. 2010). Analysis of space–time budget data could statistically model the selection into settings or try to identify quasi-random variation in exposure. Finally, recent studies suggest that virtual reality technology may improve the realism and external validity of scenario-based methods (van Gelder et al. 2019).

SITUATING THE SITUATIONAL MODEL: CROSS-LEVEL AND DEVELOPMENTAL PROCESSES

A central aim of analytic criminology is to reduce the theoretical pluralism and correlational chaos of criminology into a smaller number of key integrated explanatory mechanisms that can serve as the basis for the development of a better and more comprehensive and empirically grounded understanding of crime and its causes and prevention. At its core is the argument that the foundation for such an enterprise is the successful explanation of crime–event causation. Without knowing why crime events happen or the role of people and places and their interaction in that process, it is difficult to assess with any certainty what macrosocial and developmental conditions and processes are implicated in crime causation as the causes of the causes.

There is not enough space within this article to develop these arguments in detail, but the Coleman (1990) boat-inspired diagram in **Figure 3** gives an ideal typical overview of the key proposed entities and processes involved in a comprehensive analysis of crime causation. In addition

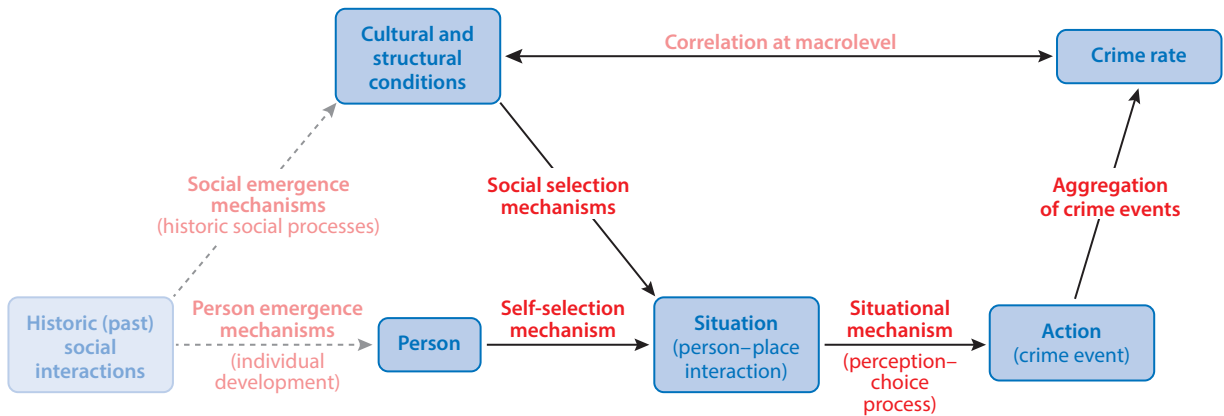


Figure 3

Analytic criminology. Situating the situational mechanism in crime causation (macro–micro–macro transitions and their key entities and mechanisms in the comprehensive analysis of crime causation). Adapted from Wikström (2011).

to the basic suggested situational mechanism (the perception–choice process), the comprehensive analyses of crime causation include two major kinds of mechanisms, social and self-selection mechanisms and mechanisms of person and social emergence. The situational and selection mechanisms refer to present time influences on crime–event causation, whereas mechanisms of emergence refer to past time influences on how people and places become as they are (i.e., have developed their crime-relevant characteristics) and as such provide background knowledge to crime–event causation (where it is often possible to use relevant psychological research into human development and sociological knowledge about macrosocial conditions).

Selection Processes

Of central interest to analytic criminology is to understand the processes that are responsible for the patterns of exposure of different kinds of people (crime propensities) to different kinds of settings (criminogenic inducements), creating the situations to which their actions (and acts of crime) are a response. SAT proposes that this essentially is a question of explaining the role of the processes of (societal rule and resource-based) social selection and (individual preference and capital-based) self-selection and their interaction in the creation of criminogenic situations (Wikström et al. 2022, Wikström & Sampson 2003). Social selection is one proposed key source of variation in crime rates between different demographic groups (e.g., by age, sex, social class, ethnicity), and self-selection is a key source of variation within such groups.

Processes of Person Emergence

It is well-known that the distribution of crime in the population is heavily skewed (Farrington et al. 2019, Piquero et al. 2007, Wikström 1990). Of central interest to analytic criminology is to explain why this is the case, building on the insights from the analysis of crime–event causation regarding which personal characteristics are key sources of people’s crime propensity and, therefore, which psycho–ecological processes may be implicated in processes of person emergence. SAT has suggested that processes of moral education (affecting people’s morality) and cognitive nurturing (affecting people’s ability to exercise self-control) are central processes influencing people’s crime propensity, i.e., their tendency to see and choose crime as an action alternative (Wikström 2019b, Wikström et al. 2022, Wikström & Treiber 2019).

Processes of Social Emergence

It is also a well-known fact that (many kinds of) crime events tend to be concentrated at certain places and times (e.g., Brantingham & Brantingham 1984, Sampson et al. 2002, Sherman et al. 1989, Weisburd et al. 2012, Wikström 1991). Of prime interest to analytic criminology is to explain why this is the case, building on the insights from the analysis of crime-event causation regarding which place characteristics are key sources of their criminogeneity and, therefore, which kind of socioecological processes may be implicated in processes of their social emergence. Of special interest here are those socioecological processes that are involved in the creation of the moral contexts of places' opportunities and frictions that people confront in their daily life and that may promote (some) participants in the setting to see and choose crime as an action alternative (Wikström et al. 2012).

The Micro–Macro Focus of Attention

Although the micro-to-macro transition is the most central step for analytical sociology—e.g., to Hedström & Bearman (2009, p. 4), who argue that “detailing in clear and precise ways the mechanisms through which social facts are brought about is one of the pillars of the analytical approach”—the macro-to-micro step is typically the more interesting one for criminology, e.g., understanding how cultural (rule-based) and structural (resources-based) features impact through processes of selection people's exposure to the settings to which their actions (and crimes) are a response. The micro-to-macro link in the study of crime rates is mostly of interest as regards understanding the process of aggregation of crime events into crime rates (e.g., relating to dark figures of police-recorded crime or nonresponse rates in survey-based research). However, the (historic) micro-to-macro relationship is of greater substantive interest as important background knowledge (social emergence mechanisms in **Figure 3**) when it comes to understanding how macrosocial conditions are brought about that, in turn, may impact the occurrence of criminogenic settings (but here we typically rely on general sociological knowledge).

Explaining Crime Rates

Analytic criminology agrees with Hedström & Bearman (2009, p. 11) when they argue that “trying to make causal inferences on the basis of macrolevel data is highly error prone.” This would be particularly true for criminological studies with crime rates as the outcome variable. Crime rates do not exist other than as a statistic. They are made up of typically unrelated crime events, which can be spread over time and a large geographic area (consider a past-year crime rate for a major city or neighborhood). One could of course argue that a manipulation of macrosocial conditions (that always) results in a predicted change of crime rates is indicative of some kind of causation (Sampson 2012), although understanding the causal mechanism of why that happens requires opening up the black box (i.e., to detail the plausible process through which the outcome is produced). We maintain that the explanation of crime rates by macrolevel conditions requires cross-level (macro–micro–macro) analysis, understanding whether, and if so, how, crime events are influenced by macrosocial conditions and, in turn, how the crime events have been aggregated into a crime rate.

CONCLUSION

Rather than targeting one of the many specialized areas of criminological inquiry, our review proposed analytic criminology as an agenda that has the potential to link these areas and make sense of their disparate results by identifying and integrating key theoretical insights and core empirical findings of the discipline. Analytic criminology may be regarded as the antithesis of the view on

theory integration and testing advocated by Bernard & Snipes (1996, pp. 302–3): “We believe that the competition among the different theories in criminology is largely empirical, over how much or how little variation can be explained by particular variables and therefore by particular theories. Because of our views on integration, we favor the common research technique of simply throwing a whole bunch of variables into one gigantic regression stew. This technique has often been criticized as being theoretically sloppy, but we think it is almost always theoretically appropriate.”

We conclude by summarizing several principles that we regard as particularly important for realizing the agenda of analytic criminology:

- Principle 1: Start from a clear definition and description of the outcome of interest. Although crime can be studied at different levels (e.g., nations, cities, neighborhoods, individuals) and timescales (e.g., historical, life course, momentary) depending on analytic interests, crime events provide the building blocks for its mechanism-based explanation.
- Principle 2: Elaborate the causal mechanisms that are likely to produce the outcome. Integrate key insights from person- and place-oriented approaches by theorizing how the combination of a person’s crime propensity and the criminogeneity of a setting triggers the motivation-initiated perception–choice process.
- Principle 3: Specify which personal and environmental factors are likely causes of whether people see and choose crime as an action alternative (and which factors are merely correlates, i.e., markers or symptoms).
- Principle 4: Derive as many and as specific testable implications as possible from the theoretical model of the relevant causal mechanisms.
- Principle 5: Invest in the collection of situational data that capture person–environment convergences to test hypotheses about the proximate determinants of crime.
- Principle 6: Explicate the auxiliary assumptions necessary to draw conclusions about the causes of crime when situational data are not available.
- Principle 7: Subject the implications of mechanism-based explanations to a series of tests that use different methodological angles. Taken together, this series should balance internal and external validity.

Analytic criminology aims at both theoretical elaboration and empirical rigor without denying the underlying and practical trade-offs. In fact, although analytic criminology’s call for theory-guided research and evidence-based theory development might seem uncontroversial and easily embraced at first sight, it continues to be a daunting task in criminology and other social sciences. Analytic criminology requires simultaneous attention to theory, methods, and research that makes life harder for both theorists and empirical researchers. For theorists, it implies a more disciplined theoretical imagination that keeps in mind the requirements of empirical testing. For empirical researchers, it sometimes requires a willingness to take a step beyond the seemingly firm ground of those sources of variation that can be studied in the most rigorous way. Although it can be justified to trade theoretical comprehensiveness and detail for more powerful research designs, researchers should be explicit about which major causes they have to ignore and which untested assumptions they have to rely on. This would not only allow for an adequate theoretical interpretation of the identified regularities or causal effects but also shield against the proliferation of highly partial theoretical accounts.

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