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Using Crime Scene Behavior for Risk Assessment in Sexual Offenders

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Behavior is the mirror in which everyone shows their image.

- **Johann Wolfgang von Goethe,** *Maximen und Reflexionen*

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1   Introduction

Sexual offending represents an important judicial, clinical, and policy issue and tends to invoke considerable public concern. Recent meta-analytic research indicates that about 8% of men and 20% of women had suffered some form of sexual abuse prior to the age of 18 (Pereda, Guilera, Forns, & Gómez-Benito, 2009). Tjaden and Thoennes (2006) report a lifetime prevalence of rape in men of about 3% and in women of about 18%. Accordingly, courts, police, and forensic practitioners invest considerable resources in predicting and preventing sexual offending by known sexual offenders. In general, those involved in assessing an offender's risk for future sexual offending seek to collect diverse information about the offender and the offenses committed to inform their decisions. Furthermore, the importance of including crime scene information into forensic risk assessment (referred to as "risk assessment" from hereon) is emphasized throughout the literature (e.g., Beech, Fisher, & Thornton, 2003; West, 2000).

In Germany, the analysis of crime scene behavior is an essential part of clinical-idiographic risk assessment (Rasch, 1999). Expert witnesses are implicitly required by law to explain an offender's risk by providing evidence from their crime scene behavior. Indeed, the courts have placed increasing demand on the analysis of an offender's crime scene behavior to date. Moreover, the analysis of an offender's criminal behavior following a clinical-idiographic approach (Dahle, 2005) is part of the minimum standards of risk assessment in Germany (Boetticher et al., 2007).

In spite of the theoretical relevance of crime scene analysis (CSA) for risk assessment, there is little empirical evidence to support what crime scene behavior is most relevant for

risk assessment. Therefore, the empirical analysis of the predictive accuracy of crime scene behaviors for the assessment of future sexual offending is needed. For example, whereas frequently used actuarial risk assessment methods rely heavily on the criminal history of an offender with only limited and a-theoretical inclusion of crime scene related variables, CSA could also be applied in cases where offenders have no such criminal history (i.e., first-time offenders) or where the criminal history is simply unknown (e.g., foreign offender). Furthermore, according to German regulations, risk assessment can only be completed using a clinical-idiographic risk assessment approach, which pays particular attention to the individual circumstances and characteristics (e.g., crime scene information) of a particular case. To provide for a scientific and controllable framework as well as for transparency, it is essential to structure the clinical-idiographic assessment content-wise and to follow specific methodological guidelines. In terms of the theoretical and empirical basis for the process of analyzing the crime scene behavior evaluators have to draw on, for example, general theories of criminality and social psychology or dated (non-validated) offender typologies. So far, there are no explicit guidelines or risk assessment instruments assisting the evaluator to structure the CSA or indicating what is the relevant information to include. Therefore, the possibilities for quality control (e.g., comprehensiveness, completeness) of the CSA are limited.

To diagnose deviant sexual preferences diagnosticians often rely on the self-report assessment of the patients themselves. However, given the elevated risk associated with a diagnosis of a sexual paraphilia, patients may have a tendency for dissimulation. To overcome this problem researchers have recently suggested the use of behavioral indicators derived from a person's criminal history as a complementary method for diagnosing sexual paraphilia (Nitschke, Mokros, Osterheider, & Marshall, 2012). In addition to being a useful complement

for the clinical diagnosis of sexual paraphilia, crime scene behavior could generally provide potentially rich information about other enduring offender propensities as well. These propensities (e.g., whether a sexual offense was motivated by general antisocial behavior or sexualized aggression) could have important implications for risk assessment, offender treatment, and police investigations. They could help therapists to identify the important clinical phenomena evident in the offense behavior or could inform risk assessment for police investigations in cases where the offender has yet to be identified (e.g., behavioral investigative advice).

Altogether, crime scene information is an important and understudied factor that might be a valid contribution to risk assessment as well as for other applied contexts (e.g., the delivery of treatment services). Crime scene information is valuable as it is a more objective measure of what the offender actually did, and is not dependent on self-report. Also, it should commonly be available and easily assessable by the analysis of victim statements, police reports, and court decisions. However, to date no systematic and theory-based empirical evaluation is available that tries to identify the relevant crime scene information to be included into a comprehensive risk assessment.

2   Risk assessment

Three principles fundamental for effective correctional interventions are the risk principle, the need principle, and the responsivity principle (Andrews, Bonta, & Hoge, 1990) with the risk and need principle being of particular importance for the current project. The essence of the *risk principle* is that it is possible to assess the risk of recidivism and desirable to match the amount of treatment services to offender recidivism risk. This means that high risk offenders need intensive and extensive treatment services whereas low-risk offenders need minimal or even no treatment. Here, it is argued that the analysis of crime scene

behavior could help to identify high risk offenders. The *need principle* states that dynamic and changeable offender propensities, which are theoretically and empirically associated with criminal behaviors, should be assessed and addressed in treatment to reduce recidivism. Hence, the aim of the current project was to also investigate the feasibility of identifying such risk-relevant offender propensities using crime scene information. Therefore, in a first step a brief actuarial risk assessment instrument based on crime scene information was developed using a criterion-keying approach (i.e., risk principle). Generally, actuarial risk scales are useful for release decisions, security and supervision classification, and to match levels of treatment services according to the risk level (Andrews & Bonta, 2010). However, key-criterion based actuarial approaches have a major limitation – they have no theoretical basis. To improve on the key-criterion approach to sexual offender risk assessment theoretically and empirically relevant offender propensities were identified by crime scene analysis using a behavioral-thematic approach before investigating their relationship to sexual recidivism (i.e., need principle). Thus, crime scene information could help to assess the general sexual recidivism risk (i.e., risk principle) as well as enduring offender propensities (i.e., need principle).

2.1   Approaches to risk assessment

In the risk assessment literature, criminal behavior is utilized to investigate potential predictors of recidivism; however, few utilize crime scene related variables to do so. The first generation of risk assessment was unstructured professional judgment (UPJ; Andrews & Bonta, 2010). The UPJ approach relied entirely upon the experience and the knowledge of the evaluator making the process of judgment unreliable and non-replicable (Harris & Hanson, 2010). The key feature of this approach is that the reasons for the decision are subjective, sometimes intuitive, and not empirically validated (Andrews & Bonta, 2010). Therefore, UPJ

provided no guidelines on how to include crime scene information into risk assessment. To address the shortcomings of UPJ different approaches to risk assessment were developed: actuarial risk assessment based on static factors, actuarial risk assessment based on dynamic factors, and clinical-idiographic risk assessment (CIRA).

2.1.1 Actuarial risk assessment based on static factors

Given that there has been strong evidence that structured, actuarial approaches to risk prediction are more accurate than UPJ (Ægisdóttir et al., 2006; Meehl, 1954), actuarial risk assessment became increasingly important for evaluators. A number of specialized actuarial risk scales for sexual offenders were developed based on *static* and *dynamic* risk factors (Hanson & Morton-Bourgon, 2009). Following Dawes, Faust, and Meehl (1989) actuarial risk assessment is used to refer to any tool that has explicit rules for classification, and that links classification to probabilistic statements of the outcome. The transition from first to second generation risk assessment was motivated by the need of better predictive accuracy of risk assessments (Harris & Hanson, 2010). Accordingly, actuarial risk assessment instruments based on static factors (second-generation risk assessment; Andrews & Bonta, 2010) use empirically validated risk factors and combine them into a total score. The development of most (modern) actuarial sex offender risk assessment instruments was heavily influenced by the meta-analysis of Hanson and Bussière (1998). This applies, for example, to the development of the most commonly used sex offender risk assessment tool in Canada and the United States, the Static-99 (McGrath, Cumming, Burchard, Zeoli, & Ellerby, 2010). The meta-analytic results indicated that sexual recidivism was best predicted by the constructs of sexual deviancy ($d = 0.19$, 95% CI [0.18, 0.20]) and general criminality ($d = 0.12$, 95% CI [0.10, 0.14]). Accordingly, the Static-99 includes 10 indicators of the two constructs as well a variable related to the offender age. The Static-99 considers crime scene related indicators in

respect to the two domains of victim selection (i.e., male victim, stranger victim, and non-familial victim) and offense type (i.e., non-contact offense). In general, recent meta-analytic reviews of sexual assault recidivism (Gerhold, Browne, & Beckett, 2007; Hanson & Bussière, 1998; Hanson & Morton-Bourgon, 2004; McCann & Lussier, 2008) found that crime scene related indicators of recidivism risk were *only* utilized in relation to victim-offender relationship (i.e., stranger, acquainted, and relative), victim selection criteria (i.e., age, sex), offense type (i.e., contact or non-contact offense), indicators of the offender's modus operandi (i.e., threats, weapon use), and seriousness of sex offense (i.e., degree of force, sexual intrusiveness, and victim injury). Further, the meta-analyses (e.g., Hanson & Bussière, 1998; Hanson & Morton-Bourgon, 2004) showed considerable variability in predictive accuracy among studies (e.g., sexual intrusiveness) or only trivial differences between recidivist and non–recidivist (e.g., weapon use, physical force) in respect to the predictive accuracy of some of the crime scene related indicators of recidivism risk.

2.1.2 Actuarial risk assessment based on dynamic factors

Commonly, actuarial risk factors are characteristics that predict recidivism but are immune to deliberate intervention, such as gender, age, and criminal history. Therefore, actuarial risk assessment instruments only account for the risk principle. Given that risk assessment should also inform risk management not just risk prediction, risk assessment measures were developed that assess *dynamic* risk factors (risk/need instruments; Andrews & Bonta, 2010). Accordingly, the transition from second to third generation risk assessment was motivated by the need of improved utility (Harris & Hanson, 2010). Dynamic risk factors, also called criminogenic needs, are characteristics that both predict recidivism and are amenable to change (e.g., attitudes tolerant of crime, negative peer associations). The change could be a result of naturally occurring events (e.g., offender starts a family) or of treatment

(e.g., reduction of antisocial thinking). Paralleling the development of static risk assessment instruments the development of dynamic risk assessment instruments was influenced by the findings of meta-analytic research (e.g., Hanson & Morton-Bourgon, 2005). Here, the strongest predictors of sexual recidivism were also found to be sexual deviancy ($d = 0.30$, 95% CI [0.22, 0.38]) and antisocial orientation ($d = 0.23$, 95% CI [0.19, 0.27]). Indicators of the construct of sexual deviancy include, for example, deviant sexual interest as well as sexual preoccupations (Hanson & Morton-Bourgon, 2005). Indicators of the construct of antisocial orientation include, for example, antisocial personality disorder or hostility (Hanson & Morton-Bourgon, 2005).

Although the static/dynamic distinction has considerable utility, it describes differences in the indicators, not necessarily differences in the constructs being assessed. Both static and dynamic risk factors predict recidivism because they are markers for the enduring individual propensities that cause reoffending (Mann, Hanson, & Thornton, 2010). Therefore, Mann et al. (2010) argue that risk assessments should focus on identifying the *psychological meaningful risk factors* implied by diverse sources of information. Following this conceptualization, it is argued that enduring individual offender *propensities* (e.g., sexualized violence) may manifest themselves in concrete offense *behavior* (e.g., offender is humiliating the victim, offender injures victim genitals). Consequently, it should be possible to identify these propensities through behavioral CSA of an offender's offense(s).

2.1.3 Clinical-idiographic risk assessment

Even though dynamic risk assessment instruments provide information about changeable risk factors, which are relevant to describe an individual case, the German jurisdiction demands a completely individualized, explanatory, and idiographic approach to

risk assessment. This premise excludes the sole application of aggregate group data to an individual case (Boetticher et al., 2007).

In enforcement proceedings risk assessments by expert witnesses are required in cases of the release on license of offenders with severe index offenses (e.g., if the offender was sentenced to more than two years for a sexual or violent offense) or in cases of the suspension of a life-long sentence on probation (release assessments). Here, the expert witness has to answer to the question if the risk that emanates from offenders and was evidenced in their *offending behavior* is still present. This complex judgment comprises several diagnostic subtasks including the analysis of the relevant personal and situational circumstances of the offense. Here, it becomes apparent that the analysis of the crime scene behavior constitutes a crucial point for the risk assessment process. Generally, the goal of CIRA is to develop an explanatory model for the delinquent behavior of the offender. In contrast to UPJ the model of Clinical-Idiographic Risk Assessment (CIRA; Dahle, 1997, 2000) is an attempt to standardize clinical-idiographic risk assessment by providing a holistic approach including steps to ensure quality control. The proposed CIRA approach allows for a transparent practical implication (Dauer & Ullmann, 2003), is approved by the German jurisdiction (e.g., KG Berlin - 5 Ws 672/98), and accepted into the minimum standards of risk assessment in Germany (Boetticher et al., 2007).

Actuarial (nomothetic) and clinical (idiographic) risk assessments are not mutually exclusive. In fact, CIRA should explicitly include a careful and systematic actuarial risk assessment (Dahle, 2005). Here, static risk assessment instruments can give an evidence-based *a priori* impression on the baseline recidivism risk of an individual offender (Helmus, Hanson, Thornton, Babchishin, & Harris, 2012). Further, the use of dynamic risk assessment instruments can yield content-wise hypotheses regarding risk-relevant or protective offender

propensities (Andrews & Bonta, 2010). Based on the results of an actuarial risk assessment CIRA can be conducted considering the individual characteristics and properties of a particular case (Dahle, 2005) as demanded by the German jurisdiction.

A more detailed description of the CIRA approach is beyond the scope of this text and there are plenty of references for the interested reader who wishes to pursue this topic (Dahle & Lehmann, 2012, 2013). In short, the CIRA approach includes the extrapolation of the individualized theory of criminal conduct (1st step) in terms of the development of the offender's personality in respect to specific risk- and protective factors (2nd step) under the consideration of the current offender development (3rd step) and the offenders' environment after release, possible future risk scenarios, and possibilities for risk management (4th step). For the final judgment of recidivism risk the findings of the (actuarial) nomothetic and (clinical) idiographic risk assessment need to be integrated. Even though in terms of judicial regulations on risk assessment only CIRA meets the legal requirements in Germany there are nonetheless some shortcomings of this approach.

First, a solely idiographic approach can't inform the evaluator about baseline risk of recidivism. Therefore, evaluators should employ actuarial risk assessment instruments. As outlined above current actuarial risk assessment can be problematic for cases where there is no criminal history available (e.g., first-time offenders, foreign offenders). Here, crime scene information could help. Second, the complexity of CIRA is limiting standardization and transparency of the risk assessment process. To provide for a scientific and controllable framework as well as for transparency it is essential to structure the CIRA approach content-wise and to follow methodological guidelines. To control for content-wise completeness and consistency it is necessary to include empirical knowledge about risk- and protective factors. So far, there are no (dynamic) risk assessment instruments based on crime scene behavior to

control for the comprehensiveness and consistency of the CSA necessary for the development

of the individual theory of criminal conduct in the context of CIRA.

3   Crime scene analysis

Generally, the issue of crime scene analysis (CSA) has implications for researchers in

the field of sexual violence (e.g., risk assessment) as well as many others, in particular

Investigative Psychology (IP). Whereas forensic practitioners analyze the pattern(s) of a crime

for risk factors to assess the risk of future offending (Hans-Ludwig Kröber, 2010),

investigative psychologists analyze crime(s) to infer or predict offender characteristics to

investigate an offense committed by an unknown offender (Alison, Goodwill, Almond, van

den Heuvel, & Winter, 2010). Thus, both fields of research are based on similar premises and

have relatively similar goals – they assume criminal behaviors are potentially related to the

propensities of that offender. As such, it has been argued that although IP and risk assessment

research has for the most part existed as separate entities, the two disciplines have

considerable overlap and thus may be able to inform one another (Beauregard, 2010).

Crime scene analysis has been one of the predominant focuses of researchers, within

IP (Canter, 2004), and police investigators (Ressler, Burgess, & Douglas, 1988) and has

focused primarily on stranger (sexual) offending. Researchers, police, and practitioners have

commonly used a combination of structured professional judgment and nomothetic (e.g.,

actuarial) approaches for CSA paralleling the methodology used in the risk assessment

literature (Alison, West, & Goodwill, 2004). Structured professional judgment and police-

investigative approaches to CSA both attempt to understand the offense in its unique context

on a case-by-case basis (Musolff, 2001). Conversely, nomothetic methods of risk assessment

and statistical approaches to CSA seek a generalizable basis (e.g., rules, relationships, etc.) for

prediction and analysis of offense and offender behavior (Hanson, 2000). As Canter (2000)

points out, CSA is no different than other scientific endeavors; it must be based on a nomothetic scientific methodology using the collection of empirical data to support idiographic inferences about the relationship between crime scene variables. Accordingly, CIRA combines *a priori* actuarial risk assessment with a structured idiographic approach. However, within CIRA there are no recognized and supported methods available to structure the process of CSA.

The inference of offender propensities from crime scene behavior (e.g., partition of behavioral themes) needs to be based on both theory and evidence. According to Cronbach (1971) "a description that refers to the person's internal process (anxiety, insight) invariably requires construct validation" (p. 451). Specifically, Cronbach and Meehl (1955) argued that investigating the underlying construct of a measure necessarily involves at least the following four steps: (a) the development of a theory, (b) developing ways to measure the hypothetical constructs proposed by the theory, (c) the development of explicit hypotheses based on the theory, and (d) empirically testing of these hypotheses against observable (e.g., behavioral) manifestations. Further, for construct validation it is important to consider content validity, which is the degree to which elements of an assessment instrument are relevant to and representative of the targeted construct for a particular assessment purpose (see Haynes, Richard, & Kubany, 1995).

3.1   Theoretical deduction of enduring offender propensities

The critical first step in identifying and validating offender propensities is to develop a precise and detailed conceptualization of the target propensities and their theoretical contexts. According to Everitt and Dunn (as cited in Ward, Polaschek, & Beech, 2005) the classification of the phenomena being studied is an important component of virtually all scientific research. Also, Knight and Prentky (1990) note that understanding the structure of a

deviant population is essential for theory building and intervention. Hence, Grubin and Kennedy (1991) as well as Kröber (2010) suggest that the reliable classification of an offender is essential for predicting recidivism, especially with sexual and violent offenders.

3.1.1 Early taxometric clinical classification systems

In the context of utilizing CSA for offender profiling (e.g., predicting offender characteristics) previous efforts to classify sexual offenders used early clinical classifications as a theoretical basis (e.g., M. Cohen, Seghorn, & Calmas, 1969; Groth, 1979). Here, different classification systems were proposed for both child molesters (e.g., Burgess, Groth, & Holmstrom, 1978; M. Cohen et al., 1969; Groth & Burgess, 1977) and rapists (e.g., M. Cohen et al., 1969; Groth, 1979). The classification systems for child molesters proposed by M. Cohen et al. (1969; fixated, regressed, and aggressive) and Burgess et al. (1978; fixated, regressed, sex-pressure, exploitative, and sadistic) have considerable overlap. Also, the rapist typologies proposed by Groth (1979) and M. Cohen et al. (1969) bear some similarities as they combine descriptions of types of offenders with motivation (e.g., sexual, power, anger, and sadistic). However, the problem with many early clinical classification systems was their emphasis on the offender's motivation, which is a covert entity, not externally identifiable (Palmer, 1988) and as a consequence "its addition fatally weakens the structures it is meant to support" (Grubin & Kennedy, 1991, p. 125). Accordingly, even though the typologies have some face validity the reliability and validity was not empirically tested. The classification systems designed specifically for use within the context of criminal investigations by the Federal Bureau of Investigations (FBI) were based on these early clinical classifications (Groth, 1979). Therefore, the implementation of these clinical classifications to law enforcement, have also been criticized for lacking scientific rigor, lacking reliability, and for

their limited empirical validation (Canter, Alison, Alison, & Wentink, 2004; Canter & Wentink, 2004).

3.1.2 Theory-driven classifications

However, as offender profiling research and its application became increasingly nomothetic, other clinical classification were adopted for CSA (Knight, Warren, Reboussin, & Soley, 1998), such as the Massachusetts Treatment Center (MTC) rape classification system as well as the MTC child molester classification system (Knight & Prentky, 1990). The MTC:R3 is a motivation-driven classification including the four primary motivations of opportunity, pervasive anger, sexual gratification, and vindictiveness. Furthermore, the classification system discriminates between nine offender types based on additional dimensions (social competence, sadism). The MTC:CM3 differentiates between 24 different types of offenders on the basis of the level of fixation (high, low) and the social competence (high, low) on the first axis and based on the degree of contact with children (high, low) and the meaning of the contact (six levels) on the second axis. The two taxometric classification systems addressed some of the limitations of early clinical-based classification methods and have been extensively empirically tested and validated (Knight, Prentky, & Cerce, 1995; Prentky, Knight, Lee, & Cerce, 1995). Also, Knight, Warren, Reboussin, and Soley (1998) attempted to predict rapist-type from crime scene behavior and reported promising predictive results for the domains of adult antisocial and expressive aggression. More importantly the study constitutes an attempt to scale offender crime scene behavior and to predict offender characteristics.

However, in the most recent revision of the rapist typology (MTC:R4; Knight, 2010) offenders are no longer described as types, but as individuals high or low on the three components of the revised model (i.e., violence, sexualization, impulsivity). Also, outside the

taxometric differentiation of the high-fixation/low-social competence type, all other proposed discriminations in the most recent revision of the MTC child molester classification (MTC:CM4; Knight & King, 2012) are dimensional (e.g., externalization).

3.1.3 Crime scene behavior-led classifications

Given the reliability and validity problems of previous attempts to classify sexual offenders, Canter and Heritage (1990) argued that the analysis of offense behavior should be separated from offenders` intentions or motivations. In this regard, Canter and Heritage were among the first researchers to classify sexual offenders on the basis of observable or directly inferred crime scene behavior alone. Echoing Canter and Heritage's message some years later, Alison, Bennell, Mokros, and Ormerod (2002) argued that CSA should only be conducted by examining behaviors at a general observable level, limiting the use of behavioral inference of motives and cognitions. In essence, the analysis should be based around largely observable behaviors with inferences made based on the latent (or observable) dimensions and themes within the data. Loosely, this process is referred to as Behavioral Thematic Analysis (BTA), a cornerstone of IP research (Canter, 2004). BTA has been used as a predictive tool exploring the relationship between behavioral themes and stranger offender characteristics with notable success (e.g., Goodwill, Alison, & Beech, 2009; Häkkänen, Puolakka, & Santtila, 2004; Mokros, 2007; Santtila, Häkkänen, Canter, & Elfgren, 2003). For the conceptual thematic investigation of crime scene information most studies partition the content domain under study into qualitatively different regions or themes and assign offenders to a dominant theme subsequently. Studies employing BTA of stranger rape offense details have found the presence of five (Canter & Heritage, 1990), four (Alison & Stein, 2001; Canter, Bennell, Alison, & Reddy, 2003) or three (Canter, 1994; Häkkänen, Lindlöf, & Santtila, 2004) themes of offense behavior. Although the BTA of these previous studies

differed in interpretation, it is argued, in line with Wilson and Leith (2001), that each was consistent in finding themes of hostility, criminality, and pseudo-intimacy. The hostility theme is characterized by expressive, non-strategic, aggression beyond that necessary to commit the offense. Here, the offender wants to hurt the victim and may perform brutal sexual (sadistic) acts. For the criminal offender the sexual assault is one among many antisocial behaviors where he steals sexual intercourse rather than money or property. Whereas for stranger rapists the pseudo-intimacy theme may represent deviant sexual fantasies involving the victim receiving intense pleasure during the offense and falling in love with the offender, for the acquaintance rapist this theme may represent the misperception of the victim's sexual intent. However, during the offense both offender types show behaviors frequently present in consensual relationships.

Similarly, studies employing BTA of child molestation offenses have found the presence of three (Canter, Hughes, & Kirby, 1998) or four (Bennell, Alison, Stein, Alison, & Canter, 2001) offense themes. Here, it is argued that these themes can be summarized as fixated (i.e., love, intimate), regressed (i.e., autonomy), aggression (i.e., hostility), and criminality (i.e., control, criminal-opportunist). The themes of criminality and aggression show considerable overlap with the offense behaviors of rapists. The theme of fixation describes offenders actively creating opportunities to offend by grooming potential victims with attention, affection, and gifts and actively seek suitable targets. The theme of regression describes offenders motivated by non-paraphilic sexual excitation and victim availability, who could choose children as an alternative to age-appropriate partners. Although not all the theoretical implications of the fixated/regressed distinction (e.g., Burgess et al., 1978) are fully endorsed by the author this terminology is retained, because it clearly describes distinct patterns of sexual offenses against children. For example, in more recent terminology, these

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patterns have been labeled committed, situational, and opportunistic (Wortley & Smallbone, 2006). Interestingly, the proposed behavioral themes have clear parallels in multifactorial theories of child sexual offending and rape (Ward et al., 2005).

4   Theories of sexual offending

4.1   Hall and Hirschman's Quadripartite Model

Hall and Hirschman formulated a quadripartite model as an explanation of rape (Hall & Hirschman, 1991) and revised the theory to also account for child sexual abuse (Hall & Hirschman, 1992). In particular, they proposed that inappropriate sexual arousal, distorted cognitions, affective dyscontrol, and specific personality problems could lead independently or in combination to sexual aggression. Whereas each of the four factors may contribute to sexual offending, one factor usually constitutes the primary motive. Based on previous research on differences in sexual arousal to rape and child visual and auditory stimuli between offenders they hypothesized that *physiological sexual arousal* is a significant component in sexual offending. Here, they note that sexual fantasies involving children were often associated with the diagnosis of pedophilia. Therefore, this component seems to overlap with the behavioral theme of fixation. As regards the second factor, they assumed that *cognitive distortions* (e.g., rape/child sexual abuse is enjoyable for the victim) would allow offenders to be sexually aggressive. Interestingly, Hall and Hirschman argue that offenders are more likely to act on the distorted beliefs if the benefits of sexual aggression (e.g., sexual gratification) outweigh its appraised threats (e.g., risk of being punished). Hence, this component seems to be related to the behavioral themes of regression in cases of child sexual abuse and pseudo-intimacy in rape. According to Hall and Hirschman incestuous behavior and acquaintance rape may be common types of sexually aggressive acts for the cognitive subtype. In terms of

the third factor, *affective dyscontrol*, negative emotional states are hypothesized to be associated with child sexual abuse whereas anger and hostility are supposed to be associated with sexual aggression against adults. Here, ineffective strategies to reduce negative emotions could increase the negative emotional state (e.g., affect-disinhibiting alcohol abuse). According to Hall and Hirschman key clinical features of such offenders are high levels of violence and opportunistic offenses. Therefore, this component seems to be related to the themes of hostility and (sexualized) aggression, respectively. The fourth factor is enduring *personality problems*, which may result in traits such as the selfish and exploitative use of others and antisocial lifestyle. This could also lead to problematic interpersonal strategies such as using threats to force people to give them what they want (Ward et al., 2005). Consequently, this component seems to be related to the criminality theme.

4.2   Ward and Siegert's Pathways Model

On the basis of previous models (Finkelhor, 1984; Hall & Hirschman, 1992; Marshall & Barbaree, 1990), Ward and Siegert (2002) formulated a comprehensive etiology theory including several distinct pathways that culminate in child sexual abuse. Here, the clinical phenomena evident among child sexual offenders are explained by four distinct, but interacting types of psychological mechanisms (Ward & Siegert, 2002): pathway 1: multiple dysfunctional mechanisms, pathway 2: deviant sexual scripts, pathway 3: intimacy deficits, pathway 4: emotional dysregulation, and pathway 5: antisocial cognitions. Pathway 1 describes individuals with distortions in all the primary psychological mechanisms resulting in the creation of "pure pedophiles" (Ward et al., 2005). This pathway seems to have clear parallels to the proposed behavioral theme of fixation on child victims. Pathway 2 describes individuals seeking impersonal sex when feeling aroused with this pathway having no clear parallel to the behavioral thematic model of child sexual abuse. The third pathway contains

individuals with normal sexual scripts, which in certain situations substitute a child when a preferred adult partner is not available. Hence, this pathway seems to be related to the behavioral theme of regression in cases of child sexual abuse. Pathway 4 describes individuals having problems regulating their emotions (e.g., anger) or calming themselves. The negative mood could result in a loss of control. Also, these offenders could sexually abuse children as a way to punish their partner. Therefore, this pathway seems to be related to the theme of (sexualized) aggression. The Pathway 5 contains individuals holding antisocial attitudes and which are characterized by having a criminal history across multiple domains. Therefore, the sexual offense may not reflect an enduring deviant preference for children. Accordingly, this pathway seems to be related to the criminality theme.

5   Taxometric categories versus dimensions

Deciding between categorical and dimensional models of latent variables is a critical issue in psychology. Whereas taxometric models are defined by a single discrete causal factor with real category boundaries, dimensional models result from the additive effects of multiple causal factors with no boundaries (Haslam, Holland, & Kuppens, 2012). Hence, the relevant question would be whether or not sexual offenders differ from each other by a matter of degree or a matter of kind on specific propensities. Recent research assessing personality disorders (Kernberg, 2012; Tyrer, Crawford, & Mulder, 2011) has begun to support a dimensional rather than a typological, taxometric approach. Haslam et al. (2012) argue that most latent variables of interest to personality and clinical psychologists are dimensional and estimate the true prevalence of taxonic findings in personality and psychopathology at only 14%.

In terms of early investigative-focused models, the FBI adopted clinical taxometric classification system (e.g., Groth, 1979). However, recently the FBI, likely in recognition that

the offender types were often found to not be mutually exclusive in offenses, have proposed a new model by Lanning (2010) that places all sex offenders along a motivational continuum (situational to preferential). Similarly, the clinically-focused MTC classification system, which assigned offenders to distinct categories in its previous revisions, in its most recent incarnation describes individuals high or low on various model dimensions (Knight, 2010; Knight & King, 2012). Also, recent research has found strong empirical support for dimensional latent structural approaches in the measurement of a number of forensically-relevant latent variables such as psychopathy (Guay, Ruscio, Knight, & Hare, 2007), hypersexuality (Knight & Guay as cited in Knight, 2010), sexual sadism (Mokros, Schilling, Weiss, Nitschke, & Eher, 2013), and antisocial and other externalizing behavior (Markon & Krueger, 2005). However, the fixation on child victims seems to be an exception and to constitute a taxonic construct (Knight & King, 2012; Schmidt, Mokros, & Banse, 2013). In regard to crime scene behavior-focused classifications recent research indicates that dimensional models of latent variables outperform previous qualitatively based categorical classification methods (Goodwill, Stephens, et al., 2013).

Even though, in the described multifactorial theories of sexual offending proposed by Hall and Hirschman (see above), one factor constitutes the primary motive, this factor nonetheless interacts with the other factors, potentially increasing their effect. Similarly, in Ward and Siegert's pathways model, the four relevant factors are described as distinct, but interacting. Given the recent research, the propensities proposed in this study are thought to constitute behavioral dimensions that may be related to one another and therefore should not be confused with categorical offender 'types'. Therefore, offenders, under the current studies, are not "grouped" under specific theme headings, but instead are described as ranging from high to low on each propensity simultaneously.

6   Purpose of current PhD project

In the literature, the investigation of crime scene behavior as an indicator of constructs relevant for sexual recidivism is insufficient, unsystematic, and neglecting factors theoretically relevant to sexual recidivism (e.g., explicit planning). Also, the variability in predictive accuracy as well as the small effects suggests that it is necessary to give a more nuanced examination to the relevant variables, to further identify which specific indicators are most important and which have a negligible predictive relationship (see section 2.1.1). Further, inferences concerning psychological meaning of the crime for the offender need to be informed and justified by both theory (see sections 3.1.2 and 4.1-4.2) and evidence. In terms of empirical evidence the construct validity of crime scene behavior-led classifications was never sufficiently tested (see section 3.1.3).

To date there is no reliable and valid actuarial risk assessment instrument based on the analysis of crime scene behavior to inform police, expert witnesses, and forensic practitioners about the baseline recidivism risk of sexual offenders. Also, there is no approach to risk assessment which helps to inform expert witnesses as well as forensic practitioners about risk-relevant offender propensities based on crime scene behavior, which could be applied as a means of quality control of the CSA. Although crime scene analysis and sexual violence research has for the most part existed as separate entities it is argued that the two disciplines have considerable overlap and thus may be able to inform one another. Hence, the cohesive theme of the current PhD project was to unify the two often disparate domains of risk assessment (see Chapter 2) and crime scene analysis (see Chapter 3).

To address the shortcomings in respect to the analysis of crime scene behavior a cooperative venture between the Institute for Forensic Psychiatry Berlin and the State Office of Criminal Investigations in Berlin was set up. Hereon, the Institute of Forensic Psychiatry

Berlin launched an extensive review of the literature on sexual offending in general (e.g., M. Cohen et al., 1969; Groth, 1979; Prentky & Knight, 1991) and both on sexual offending behavior (e.g., Beauregard, Proulx, Rossmo, Leclerc, & Allaire, 2007; Bennell et al., 2001; Canter et al., 2003; Anne Davies, 1992) and on theories of sexual offending (e.g., Ward et al., 2005) in particular. The purpose of this larger German project was to conceptualize the sexual offending process in a comprehensive and systematic way. Consequently, based on the literature review and through discussion a coding form consisting of more than 300 crime scene variables was developed, which included the variables of the Violent Crime Linkage Analysis System (Collins, Johnson, Choy, Davidson, & Mackay, 1998).

The main goal of the first study was to develop a reliable and valid actuarial risk assessment instrument based on the analysis of crime scene behavior to help the State Office of Criminal Investigations in Berlin prioritize released sexual offenders for police supervision. Further, the intended Crime Scene Behavior Risk measure (CBR) should be easy to score using commonly available information (e.g., offense history, police reports, and demographic characteristics). As the development of a risk scale should involve cross-validation, the resulting scale was tested on a second independent sex offender sample. In sum, the scale development strategy was guided by concerns of criterion-referenced validity (i.e., maximizing predictive accuracy) as well as ease of administration.

Although actuarial risk assessment methods have been shown to provide adequate empirical risk prediction, criterion-keying approaches are, due to the selection methods, inherently devoid of theory (Strauss & Smith, 2009). In an effort to improve on Study 1, which developed the CBR measure based on the empirical relationship of variables with recidivism, three additional studies were conducted following a more theory-driven approach and tried to link sexual recidivism to organized pattern of crime scene behavior. The aim was

to improve on the first study by investigating the underlying psychological meaning of crime scene behaviors to infer offender propensities based on both theory and empirical evidence. In particular, the studies were trying to bridge the gap between CSA and risk assessment by using Behavioral Thematic Analysis.

The sexual violence literature as well as the German jurisdiction draw a basic distinction between sexual assault and child molestation (Egg, 2008). Further, offense behavior is expected to be confounded with offense type (Goodwill, Lehmann, Andreei, & Beauregard, 2013). Hence, for the current studies the overall sexual offender sample was divided into cases of sexual assault and child molestation. Further, previous research applying a BTA approach to CSA focused on stranger rape, because in cases of acquaintance rape the offender is already known limiting the contribution of CSA to the police investigation. Therefore, the current project used previous empirical studies on stranger rape as a starting point before extending the BTA approach to cases of acquaintance rape and child sexual abuse.

The primary objective of the studies 2 to 4 was to identify and test the validity of psychologically meaningful propensities from CSA of sexual offenses. According to Foster and Cone (1995) validity assessment should involve representational validity (i.e., content, convergent, and discriminant validity) as well as elaborative validity (i.e., criterion-related and incremental validity). Based on a review of the literature content relevant to the proposed targeted themes was identified and systematically sampled (content validity). Therefore, the purpose of the second study was to replicate the BTA structure of previous studies of crime scene variables within stranger rape (specifically, hostility, criminality, and pseudo-intimacy) with a German sample. Study three extended the BTA approach to a sample of acquaintance rape cases. Due to the paucity of research in acquaintance rape, particularly at the multivariate

level, following the second study broad themes related to sexual offending were used: hostility, criminality, and pseudo-intimacy. The aim of the fourth study was to identify themes of psychologically meaningful propensities from CSA in child sexual abuse cases. Theories on child sexual abuse (e.g., Burgess et al., 1978; M. Cohen et al., 1969) as well as empirical research on the behavioral thematic analysis of child sexual abuse (e.g., Bennell et al., 2001) suggest that there are at least four broad behavioral pattern (themes) of crime scene behaviors within child sexual abuse: fixation, regression (sexualization), criminality, and (sexualized) aggression. Following previous research (e.g., Canter & Heritage, 1990) in studies 2 to 4 crime scene data were subjected to multivariate dimensional analysis to determine congruence with the hypothesized themes.

Because it is expected that the themes reflect particular offender *propensities*, specific testable hypotheses among observables were generated based on previous research findings (Cronbach & Meehl, 1955). Hence, the construct validity of the themes actually found was tested by investigating the relationship of the themes with conceptually related (convergent validity) and unrelated (discriminant validity) measures (Campbell & Fiske, 1959). Because the behavioral themes are proposed to indicate enduring offender propensities they should manifest over a variety of situations (e.g., history of criminal behavior). The examination of the hypothesized propensities using different sources of data is a crucial part of the construct validation process, because construct validity cannot be inferred from a single set of observations (Campbell & Fiske, 1959; Clark & Watson, 1995; Strauss & Smith, 2009). Therefore, all three studies investigated the relationship between the identified themes and the offender's criminal history and the subscales of the Static-2002 risk assessment measure (Phenix, Doren, Helmus, Hanson, & Thornton, 2008). Further, studies three and four examined the relationship between the expected themes and global ratings of offender

motivation (i.e., sexual, power, anger, and sadism). In addition, study four explored the relationship between the hypothesized themes and theoretically relevant offense characteristics.

To further develop the conceptual meaning of the themes each were empirically related to a criterion of practical value, namely, the likelihood of committing a new sexual offense (i.e., predictive validity). Further, themes identified as significant risk factors were then tested for potential additive improvement in the prediction of sexual recidivism (Hunsley & Meyer, 2003). In detail, the incremental validity of the identified behavioral themes in predicting sexual recidivism beyond the most commonly used sex offender risk assessment tool in Canada and the United States (Static-99; Hanson & Thornton, 1999) was tested.

7　　Method

7.1　　Samples

7.1.1　Study 1

The starting sample was comprised of all 1,083 sex offenders reported and subsequently convicted for a violent or abusive sexual offense during the years 1994-2001 in Berlin, Germany. Offenders were then excluded if they did not meet the measure's intended population (i.e., were female [$n = 3$]), had insufficient information regarding their behavior at the index offense [$n = 54$], or had no follow-up [$n = 71$]). The final sample included 955 convicted adult, male sex offenders. Approximately 77% of the sample was German citizens, 20% was foreign nationals, and 3% had a dual citizenship. At the time of the index offense, their ages ranged from 14 to 77 years ($M = 35$; $SD = 11.7$). The offenders were convicted of sexual abuse of children or adolescents in 42% of cases; of sexual assault, rape, or similar sexual offenses towards adults in 51% of cases, and of both in 7% of cases. The independent

cross-validation sample ($N = 77$) for the development of the CBR measure consisted of a sample of sex offenders with severe sexual offenses released from a Berlin high security prison between the years 1995-1998 after serving a sentence of at least two years. At the time of the index offense sex offenders in this sample ranged in age from 19 to 50 years ($M = 32.1$; $SD = 8.24$). Similar to the development sample, approximately 57% were convicted of sexual assault, rape, or similar sexual offenses towards adults and 43% were convicted of sexual abuse of children or adolescents or of both.

Due to principles embodied in German jurisdiction it is possible that offenders can be convicted for both sexual assault and child molestation (e.g., if the victim is younger than 14 years old *and* the offender uses violence to commit the offense the offender will be convicted for child molestation *and* sexual assault). For the first and fourth study offenders with both offense types were included in the sexual abuse subgroup for further analyses to use victim age as the central grouping criterion. The samples of studies 2 to 4 are subsamples (i.e., stranger rape, acquaintance rape, and child molestation) of the overall development sample (N = 955) used in study 1.

7.1.2 Study 2

The stranger rape sample consisted of 167 cases ($N = 167$) committed by lone male offenders in Berlin between 1994 and 2001. The 167 cases represent 167 unique offenders; only offenders of solved crimes were included as offender identities were necessary for collecting recidivism information. All offenders had a fixed time at risk of five years after release from prison or forensic psychiatric sentence for the determination of sexual recidivism. The offenders have been convicted of the index offense of rape. Of the 167 offenders, 10% had prior convictions for a sexual offense and 14% of the sample committed a new sexual offense within 5 years after release. For the purpose of this study, a "stranger

rape" was defined as a rape where the offender and victim were not known to each other, or known only for a brief period of time (less than 24 hours; e.g., met in a bar) prior to the assault (Goodwill et al., 2009). The age of the offender was recorded as the age at the time of the index offense. The range of the offender`s age at the time of the offense was 16 to 64 ($M =$ 31.2; $SD = 9.5$).

7.1.3 Study 3

The acquaintance rape sample consisted of 247 solved cases committed in Berlin, Germany, between 1994 and 2001. All offenders had a fixed time for sexual recidivism of 5 years from their release from prison or forensic psychiatric services. All offenders were convicted for the index offense of rape. Of the 247 offenders, 24% had prior charges for sexual offenses, whereas only 6% had prior convictions. According to the central registry, 8% of the sample committed a new sexual offense, whereas 15% had new charges presented against them. For the purpose of this study an "acquaintance rape" is defined as forced sexual intercourse that occurs between persons who are acquainted or romantically involved - anyone who is not a stranger. The age of the offender was recorded at the time of the index offense and ranged from 14 to 64 ($M = 32.3$; $SD = 11.4$).

7.1.4 Study 4

The child molester sample consisted of 424 cases committed in Berlin between 1994 and 2001. The offenders have been convicted for the index offense of child molestation. The range of the offender`s age at the time of the index offense was 14 to 77 ($M = 38.3$; $SD =$ 12.23). All offenders in the study are male. At the time of the offense the age of the youngest victim ranged from 2 to 14 years ($M = 9.5$; $SD = 2.9$). Of the 424 offenders, 49% had prior charges for sexual offenses and 28% had prior convictions. According to the central registry,

25% of the sample were re-convicted for a new sexual offense with a mean time-at-risk of 15.85 ($SD = 8.44$) years.

7.2 Data

In the context of the aforementioned cooperative venture between the Institute for Forensic Psychiatry Berlin and the State Office of Criminal Investigations in Berlin the data used in this study was derived from computerized police databases and paper records. The computerized police databases contained information about the offender, the victim, and the crime. In the majority of the cases, the paper records included a verbatim transcript of the police interrogation of the offender, and victim interviews. On occasion, they also included witness statements, court decisions and official expert opinion(s).

7.3 Recidivism criteria

Recidivism data were collected from the National Conviction Registry (NCR) in Germany. Sexual recidivism was defined as any reconviction for a sexual offense (including hands-off sexual offending) during the follow-up period.

7.4 Coding

In Study 1 the initial pool of potential predictor variables was rationally selected from the dataset (with over 300 coded variables) based on previous *meta-analytic reviews* (e.g., Gerhold et al., 2007; Hanson & Bussière, 1998; Hanson & Morton-Bourgon, 2004; McCann & Lussier, 2008) and *theories* of sexual offending (e.g., Ward et al., 2005). On the basis of the theoretical and empirical considerations it was concluded that the study must capture eight content areas: hunting pattern, victim selection criteria, victim approach strategy, offender communication, and seriousness of sexual offense, degree of violence, modus operandi, and

victim injury. Then 25 (behavioral) indicators of these content areas were derived from the data (see Appendix 12.1).

For the Study 2, Study 3, and Study 4 variables were identified that related to at least one of the hypothesized behavioral themes on the basis of *theoretical* considerations. Further, to increase the content validity (Cronbach & Meehl, 1955) of this process only variables used and considered relevant by previous *empirical* research were included. Study 2 variables were selected from the corpus of over 300 variables if the variable was utilized in previous studies on stranger rape by Canter and Heritage (1990), Canter (1994), Alison and Stein (2001), Canter et al. (2003), or Häkkänen et al. (2004). Likewise, Study 3 only used crime scene variables included in previous studies of sexual offending (e.g., Canter et al., 2003) to maximize content validity, with the exception that additional variables from the Severe Sexual Sadism Scale (SeSaS) were used to improve the assessment of sexual sadism (Nitschke, Osterheider, & Mokros, 2009). However, some low frequency variables ($< 1\%$) and variables *specific* to stranger rape (e.g., offender implies knowing the victim) were excluded. Similarly, for Study 4 variables used and considered relevant by previous researchers (e.g., Bennell et al., 2001; Canter et al., 1998) were included. Consequently, 45 variables were identified and selected for the study on stranger rape, 44 variables were selected for the study on acquaintance rape, and 39 variables were identified for the analysis of cases of child sexual abuse.

7.5   Reliability

To assess the reliability of the crime scene characteristics coding in the overall sample ($N = 955$) two research assistants trained to use the coding manual independently coded a random subsample of 42 cases. The proportion of overall agreement (p_0) – the proportion of cases for which both raters agree – as well as Cohen`s Kappa (κ) were calculated (J. Cohen,

1960). Further, intraclass-correlation (ICC; type absolute agreement) were used for the

intended Crime Scene Behavior Risk (CBR) measure total score (Shrout & Fleiss, 1979).

The percent agreement for the crime scene variables was generally high, with median

values ranging from 94 to 95. For a few variables Kappa could not be computed due to lack of

variance (e.g., method of coercion, victim masturbates, and offender drugged victim).

Additionally, for a few variables (e.g., offender makes sexual comment, weapon from crime

scene, offender steals clothing, and offender steals valuables), Kappa's were low ($< .45$),

although percent agreement was generally high ($\geq 76\%$). However, these items were retained

in order to replicate previous research and because they were considered essential for the

current hypothesis.

The ICC for the CBR total score ranged from moderate ($ICC = .60$) in the

development sample to excellent ($ICC = .89$) in the cross validation sample (Fleiss, 1981).

7.6   Measures

The Screening Scale for Pedophilic Interest (SSPI; Seto & Lalumiére, 2001) is a 4-

item scale designed to identify pedophilic interests from criminal history variables (e.g.,

number of child victims of sexual offenses).

Static-99 and Static-99R (Hanson & Thornton, 2000; Helmus, Thornton, Hanson, &

Babchishin, 2012) are 10-item actuarial risk scales that assesses recidivism risk of adult male

sex offenders. The items and scoring rules of the Static-99R are identical to Static-99 with the

exception of updated age weights. Static-99/R contains all the RRASOR items (Hanson,

1997) as well as additional items concerned with relationship history (ever lived with a lover),

sexual offence history (stranger victims, non-contact sexual offences), and general criminal

history (number of prior sentencing occasions, index non-sexual violence, prior non-sexual

violence). Previous studies have found a moderate accuracy in predicting sexual recidivism (Hanson & Morton-Bourgon, 2009; Helmus, Thornton, et al., 2012).

Static-2002 (Hanson & Thornton, 2003) is a 14-item actuarial measure that assesses recidivism risk of adult male sex offenders. Static-2002 was created with the aim of improving Static-99 by adding new items, standardizing coding rules, and organizing the items into meaningful subscales. Three subscales were used in the current study: deviant sexual interests, persistence of sexual offending, and general criminality. The deviant sexual interests subscale contains three items: non-contact sexual offenses, male victims, 2 or more victims less than 12 years of age. The persistence of sexual offending subscale also contains three items: prior sentencing for sexual offenses, any arrest for a juvenile sexual offense and an adult conviction for a separate sexual offense, and rate of offending. The general criminality subscale contains 5 items: any prior involvement with the criminal justice system, number of prior sentencing occasions, community supervision violation, prior non-sexual violence, and time since last involvement with the criminal justice system. The Static-2002 and Static-99 provide similar levels of discrimination for the prediction of sexual recidivism (Hanson, Helmus, & Thornton, 2010; Hanson & Morton-Bourgon, 2009).

SSPI, Static-99, and Static-2002 scores were determined for each offender based on the NCR, police databases and paper records adhering to the official manuals (Harris, Phenix, Hanson, & Thornton, 2003; Phenix et al., 2008).

Also, offender motivation (i.e., sexual, power, anger, and sadism) was rated by the same research assistants for 42 cases on a 1-to-4 rating scale (1-not at all; 4-completely) based on the definitions in the coding manual, which were loosely based on previous clinical conceptualizations (e.g., Groth, 1979). The inter-rater reliability for the judgments of offender motivation was moderate (Fleiss, 1981) ranging from ICC = .45 to ICC = .74.

7.7 Data analyses

The item selection and the development of the CBR measure (Study 1) involved two steps. First, the ability of the crime scene characteristic to discriminate between recidivists and non-recidivists was indexed using the hazard ratios (HR) derived from cox regression survival analysis (Allison, 1984; Singer & Willett, 2003) controlling for offense type (i.e., sexual assault versus sexual abuse). Offense type was included as a covariate because child molesters showed a higher recidivism rate compared to rapists. Further, offense behavior is expected to be confounded with offense type (Goodwill, Lehmann, et al., 2013). Additionally, by adopting this approach it was intended to ensure that the predictive validity of the crime scene variables applied to both offender groups. To decide whether a particular crime scene variable significantly predicted the outcome (i.e., sexual recidivism), χ^2-tests based on the log of the likelihood ratio (LR) statistic were used ($p < .05$). In the second step overly redundant predictors were eliminated. A multivariate cox regression analysis (backward stepwise LR method) was used to assess the incremental addition of each item (including offense type) to the prediction of sexual recidivism. A unit weight sum score was computed by adding the incrementally valid items, because simple weights seem to perform equal to more complicated approaches (Dawes, 1979; Silver, Smith, & Banks, 2000).

To identify the underlying structure of the crime scene variables (Studies 2 to 4), a non-metric Multi-Dimensional Scaling (MDS) analysis using the PROXSCAL module from SPSS for Windows (ver. 19) at an ordinal level of measurement not allowing for ties, was used. MDS analysis represents associations between variables (e.g., crime scene variables) as distances in an *n*-dimensional space (Borg & Groenen, 1997). The distances between variables in the MDS solution can be interpreted as an approximation of their similarities, the closer they are together the more they can be assumed to relate to the same underlying

propensity (e.g., sexualized aggression). To ensure that the mutual non-occurrence (e.g., both items scoring a zero, or "absent") of behaviors did not increase the similarity between two behavioral variables, a Jaccard measure of association (Jaccard, 1908) was used to transform the data into a similarity coefficient matrix. To test the internal consistency of variables within themes the Kuder-Richardson 20 (*KR-20*) coefficient was calculated for each of the hypothesized themes. In an effort to increase the construct validity of the BTA in the current studies, interpretation of the MDS plot was achieved using theoretical considerations, *a priori* inter-rater agreement, the original intent of the items, and the analyses of internal consistency.

Hereon, a continuous score of crime scene behaviors from each theme called the *Thematic Sum Score* (TSS) was computed. The TSS score for an offender is derived by summing all the offense behaviors that were present (e.g., performed) by that offender across each theme. According to latent variable theory it is argued that variation in a construct causes variation in test scores (Borsboom, Mellenbergh, & van Heerden, 2003) and that each item of the TSS is an indicator of the construct of interest. This means, for example, that variation in hostility among offenders will be revealed in variation of the sum scores for hostility across offenders. Therefore, it is necessary to stress the fact that the hypothesized themes are not to be confused with offender 'types', but propensities that may be related to one another. For example, an offender may be high (or low) simultaneously on hostility, criminality, and pseudo-intimacy. Hence, the TSS approach is in line with the emerging research supporting a dimensional rather than a typological approach for the assessment of personality disorders and sexual offending behavior (see Chapter 5).

7.7.1 Predictive validity

The ability of the CBR measure and the Thematic Sum Scores to discriminate between recidivists and non-recidivists was indexed using two approaches. The first approach used

logistic (fixed time at risk) or cox regression (variable time at risk) analyses. The second approach used the area under a receiver operating characteristic curve (AUC) or the c (for concordance) index. In cases with binary observed outcome (e.g., sexual recidivism) and a fixed follow-up, the c index is identical to the AUC with the estimated probability of recidivism as the predicted response. However, the c-index can be considered a more general discrimination index, which is also applicable to time censored data (e.g., variable follow-up period; Harrell, Lee, & Mark, 1996; Kremers, 2007). In correspondence to effect size definitions of AUC values by Rice and Harris (1995), c indexes of .56, .64, and .71 were considered as small, medium, and large.

7.7.2 Incremental validity

Incremental validity was also examined using logistic and cox regression, respectively. Specifically, incremental contributions to risk prediction were tested by entering the Static-99/R sum scores and the CBR and TSS scores respectively into an overall model.

8 Results and Discussion

The purpose of this PhD project was to investigate the predictive validity of crime scene behavior for the prediction of sexual recidivism. The studies analyzed, for the first time, the predictive validity of crime scene behavior in a sufficient and systematic way by including factors empirically and theoretically relevant for the prediction of future sexual offenses. Therefore, two approaches to the development of risk assessment instruments were applied. The first study followed a criterion-keying approach to develop an actuarial risk assessment instrument (i.e., Crime Scene Behavior Risk measure) based on crime scene characteristics whereas the studies 2 to 4 applied a theory-driven behavioral thematic approach to identify risk-related offender propensities within meaningful pattern of crime scene behavior.

8.1 The Crime Scene Behavior Risk measure

The aim of the first study was to examine the predictive validity (i.e., sexual recidivism) of crime scene characteristics for sex offenders and, given that predictive validity was observed, to develop a brief, reliable, and valid behaviorally-based measure of risk of sexual recidivism. In particular, the Crime Scene Behavior Risk (CBR) measure was developed in response to a mandate by the State Office of Criminal Investigations in Berlin to develop a risk tool based on the analysis of crime scene behavior to prioritize released sexual offenders for police supervision. On the basis of previous empirical findings and theoretical considerations eight relevant domains (i.e., hunting pattern, victim selection criteria, victim approach strategy, offender communication, seriousness of sexual offense, degree of violence, modus operandi, and victim injury) were identified comprising 25 crime scene characteristics as potential predictors. Ten items showed predictive validity while controlling for offense type. After the statistical combination (i.e., multiple cox regression) of the crime scene characteristics to predict sexual recidivism, seven variables accounted for unique variance (i.e., explicit planning, actively seeking victim, approach-explicit, male victim at index-offense, visual-sexual offender arousal, sexualized language, and no multiple young offenders). A unit weight sum score was computed by adding the incrementally valid items, because simple weights seem to perform equal to more complicated approaches (Dawes, 1979; Silver et al., 2000). One point was assigned for the presence of each of the seven items. Accordingly, the CBR could range from 0 to 7 points. Reliability analyses in two independent samples attested to the reliability of raters using the CBR.

The predictive validity of the risk measure was high in both the development and cross-validation sample (*c* indexes: .72-.74). The hazard ration of the model was 1.89, which indicates that the hazard increased by a factor of 1.89 for each one-score increase on the CBR,

or 89%. The hazard ratios for the prediction of sexual recidivism were not significantly different in both samples. Thus, if one compares the predictive accuracy of the CBR to those reported for other available actuarial risk measures for sexual offense recidivism (e.g., Static-99R), then one will find that they also typically give AUCs in the 0.7s (Hanson & Morton-Bourgon, 2009). Further, the new behaviorally-based risk measure (LR-χ^2[1] = 53.25, $p <$ .001) added incrementally to the Static-99R (LR-χ^2[1] = 33.18, $p < .001$) for the prediction of sexual recidivism. This could indicate that the CBR is adding new domains of risk factors to the prediction of sexual recidivism or improving the measurement of domains already included (i.e., age, sexual deviance, general criminality).

The CBR identified a substantial subsample of sexual offenders (approximately 10%) with an observed sexual recidivism rate of almost 50% or above after 10 years (CBR score $\geq$ 5). Also, the CBR identified a subsample (approximately 15%) with observed recidivism rates of only 5% or lower after 10 years (CBR score $\leq$ 1). Differences in sexual recidivism of this magnitude should be meaningful to many applied contexts (Hanson & Thornton, 2000). For example, the application of the CBR can give the expert witness an impression of the expected baseline recidivism risk based on the crime scene behavior of a particular offender. Hitherto, existing actuarial risk scales are highly dependent on the analysis of the criminal history of a particular offender. However, in cases of first-time or foreign offenders where no criminal history is available such a risk assessment can be problematic. Here, the assessment of the baseline recidivism risk can benefit from the application of the CBR measure, which is solely based on the analysis of the index-offense behavior. In contrast to the criminal history crime scene information about a particular index-offense should be commonly available. Therefore, the CBR may provide additional range to a comprehensive risk assessment.

As indicated previously criterion-referenced risk assessment instruments have a major limitation as they have no theoretical basis. They are strictly evidence-based, which means items are included solely on the basis of their relationship with the criterion (e.g., sexual recidivism) even if the reasons for the association are not fully understood (Hanson, Babchishin, Helmus, & Thornton, 2013). Hence, the construct validity of the actuarial risk items (i.e., Static-99R) as well as the construct validity of the CBR is largely unknown. Therefore, one can only speculate about how to integrate the current findings into the literature on sexual offender recidivism. For example, the three CBR items of *explicit planning, actively seeking victim*, and *explicit approach* may be linked to the self-regulation model of the relapse process (Ward & Hudson, 1998) and to the approach-explicit pathway in particular. This pathway involves conscious, explicit planning and well-crafted strategies (e.g., actively seeking victims) that result in a sexual offense (Ward & Hudson, 1998). Webster (2005) found that the approach-explicit pathway was the predominant pathway to sexual offense recidivism. Further, previous research has found that sexual offenders of the approach-explicit type score higher than average on Static-99 (Yates & Kingston, 2006).

8.2 Crime scene analysis using a behavioral thematic approach

To improve on the CSA methods applied in the first study, Study 2, Study 3, and Study 4 investigated the underlying psychological meaning of crime scene behaviors to infer offender propensities based on both theory and evidence. In line with Andrews and Bonta (2010) it is argued that improvements of risk assessment can be made with a more comprehensive assessment of factors that are theoretically and empirically associated with criminal behavior (criminogenic needs or risk-related offender propensities). In terms of sexual recidivism Mann et al. (2010) identified several empirically supported and promising

psychologically meaningful risk factors, for example, sexualized violence, hostility, lifestyle impulsiveness, and offense-supportive attitudes in their meta-analysis.

The purpose of the second study was to replicate, for the first time in a German sample, the Behavioral Thematic Analysis (BTA) structure of previous studies of crime scene variables for stranger rapists. Further, the link between these themes and sexual recidivism risk was explored. The Multi-Dimensional Scaling (MDS) analysis revealed a two-dimensional MDS solution with a Stress-1 index of 0.19 in 55 iterations indicating a fair MDS solution (Kruskal, 1964). As hypothesized and in line with previous studies (e.g., Canter et al., 2003), *vaginal penetration* of the victim and having their *clothing disturbed* constituted the core features of sexual offending according to the MDS analysis. Additionally, the use of a *low level of force* by the offender and *physical resistance* by the victim were also found at the core of the MDS plot. This seems comprehensible, as to control a victim to carry out an offense some level of force (e.g., strategic violence) is likely to be employed by the offender (Felson & Krohn, 1990). It is further posited that the level of physical force employed by the offender will be related to the level of physical resistance by the victim, unless of course, the offender is motivated by gratuitous violence or sadism.

In line with previous research (Alison & Stein, 2001; Canter, 1994; Canter et al., 2003; Häkkänen, Lindlöf, et al., 2004) the study identified the three themes of criminality, hostility, and sexual exploitation within stranger rape offenses. The sexual exploitation theme encompassed nine "pseudo-intimacy" type variables, five "sexuality" variables (Canter & Heritage, 1990), and the variables offender demeans the victim and offender binds the victim suggesting a theme of sexually driven behaviors. The criminality theme involved variables indicating an experienced offender living a criminal lifestyle with the offender knowing how to control a victim (verbal threats, physical restraints, and weapon use), how to not leave

physical evidence or trace (e.g., being forensically aware, using a condom), and stealing from victim. The hostility theme was characterized by an aggressive victim-offender interaction (e.g., physical force, blitz attack, and offender threatening to kill the victim), where the use of alcohol may elicited the aggression. Generally, Felson and Krohn (1990) state that rape has three major outcomes: sexual intercourse ("sexual exploitation"), harm to the victim ("hostile assault") and domination of the victim ("control"). Interestingly, the variables *offender extends time* (e.g., typical of abduction and/or confinement of the victim), *offender bites the victim*, and *offender uses physical force* were found along the sexuality-hostility partition of the MDS plot suggestive of sexually motivated violence, such as sexual sadism.

The aim of the third study was to replicate, for the first time, the BTA structure of previous studies on stranger rape with a sample of acquaintance rape cases. In line with the results of the second study, the four variables *vaginal penetration* of the victim, having their *clothing disturbed*, the use of *force to control* the victim and *physical resistance* by the victim constituted the core features of rape according to the MDS analysis. Given the consistency with the second study's findings for stranger rape, it appears that these behaviors are key elements that identify sexual intercourse as not consensual.

The interpretation of the MDS plot into radial thematic regions was also guided by *a priori* hypothesis based on the original intent of items, theory, previous empirical findings, and the results of a reliability study. Here, a two-dimensional MDS solution with a Stress-1 index of 0.18 in 20 iterations also indicating a fair MDS solution was revealed (Kruskal, 1964). In accordance with previous research on stranger rape (Alison & Stein, 2001; Canter, 1994; Canter et al., 2003; Canter & Heritage, 1990; Häkkänen, Lindlöf, et al., 2004) the three themes of hostility, criminality, and pseudo-intimacy were replicated. This corresponds to Canter et al. (2003) who hint at a more general division of sexual assaults into overtly violent

rapes (e.g., hostility) and those that are less violent (e.g., pseudo-intimacy). Further, the

criminality theme overlaps relatively well with the criminality theme identified in the

previous BTA analysis of stranger rape cases (e.g., offender threatens victim, offender is

forensically aware, offender uses weapon, offender steals from victim). Similarly, the pseudo-

intimacy theme overlaps very well with the pseudo-intimacy type variables of the stranger

rape study (e.g., offender kisses, fondles, and reassures the victim). Also, the hostility themes

in both studies were very similar (e.g., physical force, blitz attack, clothing torn, offender is

intoxicated). To follow up on the sexual sadism hypothesis generated based on the findings of

the second study indicators of the Severe Sexual Sadism Scale (SeSaS; Nitschke et al., 2009)

where included in the third and fourth study. Interestingly, in the acquaintance rape study the

behaviors indicating sexual sadism were found at the outer edge of the hostility theme (i.e.,

low frequency), which could indicate sexual sadism being an extreme manifestation of

sexualized violence (Mokros, 2013).

Building on the results of the second study, the study on acquaintance rape showed

that objective crime scene behavior could help to infer the psychological meaning of the

crime for the offender. In particular, the third study showed that previous patterns of crime

scene variables in stranger rapes are transferable to cases of acquaintance rape. This could

hint at a reasonable stability of the findings within and across samples of rapists. Furthermore,

these patterns are similar to the existing and abundant general literature on sexual offender

types. Especially, the three behavioral themes identified in Study 2 and Study 3 resemble the

three major components of the revised structure of the MTC rape classification (Impulsivity,

Sexualization, and Violence) proposed by Knight (2010) as well as the four factors of

antisocial lifestyle, affective dysregulation, physiological sexual arousal (i.e., stranger rape),

and cognitive distortions (i.e., acquaintance rape) of the Hall and Hirschman (1991) model.

After the analysis of sexual assault offenses (i.e., stranger and acquaintance rape) the purpose of Study 4 was to identify psychological meaningful patterns within crime scene behaviors of child molesters to indicate individual offender propensities. The MDS analysis showed a two-dimensional MDS solution with a Stress-1 index of 0.25 in 20 iterations. According to Spence and Ogilvie (1973) good data will yield solutions with stress values much below expected stress values for random ranking in nonmetric multidimensional scaling. The expected stress value for random ranking with 39 variables and two dimensions is 0.35, which is substantially bigger than the observed value of 0.25. Further, when evaluating the Stress index it is important to consider that the Stress grows if the number of points (n) grows, the dimensionality (m) becomes smaller, and the data does not contain ties (Borg & Groenen, 1997) as was the case in the current study. In line with previous theories on child sexual abuse (e.g., Burgess et al., 1978; M. Cohen et al., 1969; Groth & Birnbaum, 1978; Ward & Siegert, 2002), four themes of fixation, regression (sexualization), criminality, and (sexualized) aggression were identified. Even though the variables included in the behavioral analyses of cases of sexual assault and child molestation differ due to theoretical considerations and previous empirical findings, there was some overlap between the identified themes. The regression (sexualization) theme and the sexual exploitation theme seem to have some overlap with regard to sexual crime scene behaviors (e.g., ejaculation, fellatio, offender performs oral sex on victim). Further, for all three samples the criminality themes seem to describe offenders who use strategic violence to enforce their demands. Accordingly, the themes include attempts to control the victim by verbal threats (e.g., threatens no report), intimidation (e.g., initial force), restraints (e.g., safety precautions), and weapon threat, rather than non-strategic, expressive violence. Furthermore, as hypothesized the themes of hostility (i.e., acquaintance rape) and (sexualized) aggression included indicators of the SeSaS.

The analysis of cases of child sexual abuse revealed a fourth theme indicating the fixation of the offender on child victims (e.g., offender searches of victims, offender grooms victims, and offender performs "immature" sexual acts). Here, recent research indicates that fixation on child victims seems to be a distinct and taxonic clinical construct (Knight & King, 2012; Schmidt et al., 2013). In the structural Massachusetts Treatment Center: Child Molester model (MTC:CM4; Knight & King, 2012) the high fixation/low social competence type constitutes an explicit taxon, whereas all other proposed discriminations are dimensional. Therefore, future research could examine whether child molesters differ from each other by a matter of degree or a matter of kind on the theme of fixation. Also, the behavioral indicators of this theme show considerable overlap with the items of the Screening Scale of Pedophilic Crime Scene Behavior (Dahle, Lehmann, & Richter, 2013). Therefore, future research could examine the relationship between the theme of fixation and the clinical diagnosis of pedophilia.

8.2.1 Construct validity of the behavioral themes

Because the behavioral themes are proposed to indicate enduring offender propensities they should manifest over a variety of situations (e.g., criminal history). As hypothesized the behavioral themes indicating criminality were reliably related to previous criminal offenses. Similarly, the hostility and (sexualized) aggression themes were consistently related to previous violent offending. Also, the theme of fixation was related to previous sexual offenses (e.g., child molestation). Further, the themes that might indicate some kind of deviant sexual interest (sexualization, hostility, and fixation) were consistently related to the Static-2002 subscale of sexual deviance. McCabe and Wauchope (2005a) argue that to determine the reliability and validity of offender classifications it is important to examine the behavioral *and* motivational factors associated with each type separately. Therefore, studies 3 and 4 included

ratings of offender motivation (see 7.6). In line with *a priori* hypotheses the themes of

pseudo-intimacy, fixation, and regression (sexualization) were positively related to a sexual

offender motivation. Further, the themes of criminality showed a moderate relationship with

power motivation. Also, the hostility and the (sexualized) aggression themes showed the

strongest relationship to anger and sadistic offender motivation. Generally, all relationships of

the themes with conceptually related (convergent validity) and unrelated (discriminant

validity) measures (Campbell & Fiske, 1959) were in the expected directions, albeit some

relationships were small (see Chapters 13 to 15). However, given that the theoretical

predictions and empirical results were in apparent harmony, it is argued that the crime scene

derived thematic sum scores are quantitatively and theoretically indicative of the proposed

offender propensities.

8.2.2 Predictive validity of the behavioral themes

The three studies examined the extent to which the behavioral thematic themes

constitute psychological meaningful risk factors. Specifically, the ability of detailed crime

scene analysis (by means of a BTA) to predict an offender's future sexual offenses was

assessed. The bivariate analyses of the study on stranger rape showed that the criminality

theme is a moderate predictor of sexual recidivism ($AUC = .64$). Hanson and Bussière (1998)

found that general criminality was significantly related to sexual recidivism. Habermeyer,

Passow, Puhlmann, Vohs, and Herpertz (2009) found that sexual offenders with a high risk of

reoffending had a history of versatile delinquency and antisocial personality traits or

disorders. Also, the study found significant correlations between the criminality theme and the

criminal and sex offending persistence subscales of the Static-2002 indicating a relationship

between criminality and a history of antisocial behavior. In sum, the results show that specific

"criminal" crime scene behavior within a stranger rape is significantly associated with an

increased chance of future sexual offending. Interestingly, potential indicators of the CBR item explicit planning (e.g., offender is forensically aware, offender uses a disguise, offender brings a weapon to the crime scene, and offender uses a condom) were found to be part of the criminality theme.

Moreover, the ability of detailed CSA using BTA to predict an acquaintance rapists' risk of sexual recidivism was assessed. In particular, the results indicate that the behavioral themes of hostility (AUC = .66) and pseudo-intimacy (AUC = .69) moderately predicted sexual recidivism. This contrasts with the findings for strangers rapists, in which only the criminality theme was significantly related to sexual recidivism. This variation could be simply due to sampling error associated with small effects. However, it may have implications for different contributing factors for different types of offenses. In comparison to acquaintance rape, the rape of a stranger is a more prototypical crime. Consequently, those factors that are associated with a general propensity for rule violation may have particularly strong associations to stranger rape. In contrast, certain men who force sex on acquaintances may have genuine difficulty recognizing their behavior as wrong, believing that their victims wanted or deserved what they got.

Again, the behavioral indicators of the CBR item explicit planning were found in the criminality region, but seem to be particularly important for the prediction of recidivism in stranger rape cases. However, in cases of acquaintance rape the CBR related items of confidence approach and offender makes sexual comment (see pseudo-intimacy theme) and offender is filming the victim and blitz attack (see hostility theme) seem to be more significant predictors.

Ultimately, the bivariate results indicated that themes of fixation (AUC = .65) and to a lesser degree (sexualized) aggression (AUC = .59) constitute psychological meaningful risk

factors for sexual recidivism in cases of child sexual abuse. In line with a recent meta-analysis by Mann et al. (2010), the fixation and (sexualized) aggression themes represent psychologically meaningful risk factors for future sexual offending, whereas the criminality theme seems a predictive risk factor for general criminal offending. This could indicate that the themes of fixation and (sexualized) aggression are more indicative of enduring deviant sexual preferences (i.e., prepubescent children, sexual sadism), whereas the themes of criminality and regression (sexualization) may be influenced more strongly by the criminogenic needs plus the situational context (e.g., opportunity to offend, lack of age-appropriate partner), although this remains a topic for future research.

Further, the analysis of child molestation offenses revealed that the risk-relevant theme of fixation includes the CBR items of male victim, offender making a sexual comment, and explicit planning (i.e., grooming the victim) whereas the risk-relevant theme of (sexualized) aggression includes indicators of visual-sexual offender arousal (i.e., filming the victim, victim must pose).

8.2.3 Incremental validity of the behavioral themes

The development of actuarial risk assessment instruments, such as the Static-99, is accomplished through the theoretical accumulation and statistical integration of crime and offender related aspects or variables that have a supposed predictive value in predicting recidivism. Therefore, variables can contribute incrementally by either assessing new risk-relevant constructs, or by improving the measurement of constructs already included. Previous research has shown that Static-99 predicts recidivism through the three major constructs of age, sexual criminality, and general criminality (Babchishin, Hanson, & Helmus, 2012; Barbaree, Langton, & Peacock, 2006; Janka, Gallasch-Nemitz, & Dahle, 2011).

In the analysis of stranger rape offenses the criminality theme was the only theme to show incremental validity ($B = 0.36$, $p < .05$) and to significantly improve the predictive accuracy of the Static-99 ($B = 0.46$, $p < .01$). This means that the twelve crime scene variables of the criminality theme seem to improve the measurement of the construct of general criminality. In this regard, Rettenberger, Gaunersdorfer, Schilling, and Eher (2009) suggest that actuarial risk assessment instruments may have limited effectiveness with antisocial sex offenders; however, this finding is yet to be replicated.

Further in Study 3, the level (e.g., TSS score) of apparent pseudo-intimate offending behavior ($B = 0.52$, $p < .01$) was found to provide incremental validity and to improve the predictive accuracy of the Static-99 risk assessment tool ($B = 0.42$, $p < .01$). Although loosely connected to the construct of sexual criminality, the construct of pseudo-intimacy may be sufficiently distinct to warrant further research as a risk factor in its own right. In particular, this theme could be an indicator of misperception of sexual intent (e.g., Marx, Van Wie, & Gross, 1996). Therefore, it seems to be related to cases of early date rape (Shotland, 1992) occurring after several dates but before sexual ground rules are established.

Finally in Study 4, the TSS scores of the themes of (sexualized) aggression ($B = .19$, $p = .01$) as well as fixation ($B = .11$, $p = .0498$) provided incremental predictive ability of sexual recidivism, after controlling for Static-99 score ($B = .29$, $p < .001$). Here, the theme of (sexualized) aggression seems to be loosely connected to the construct of sexual deviance, but sufficiently distinct to add incrementally to the constructs assessed by the Static-99. Firestone, Nunes, Moulden, Broom, and Bradford (2005) showed that hostility, as measured by the Buss-Durkee Hostility Inventory, contributed uniquely to the prediction of sexual recidivism after controlling for a modified version of the RRASOR risk assessment tool. Moreover, the fixation theme seems to improve the assessment of the construct of sexual deviance.

Therefore, it is argued that the actuarial prediction of sexual recidivism within child molestation may be enhanced by the additional analysis of crime scene behavioral information beyond what is currently included (Walters, 2011).

9   General discussion

Psychological evaluators, whether assessing general clinical constructs or specific forensic-related measures, routinely collect diverse information (e.g., self-reports, actuarial instruments) to inform their assessments. According to Andrews et al. (1990), offender assessment within forensic settings should reflect the risk and need principle. The current results indicate that crime scene analysis (CSA) may contribute to a more comprehensive and accurate assessment of recidivism risk as well as of factors empirically and theoretically associated with criminal conduct (i.e., risk-relevant propensities).

Andrews and Bonta (2010) argue that criminal behavior is predictable and that it is possible to identify high risk offenders who may profit the most from effective treatment services (risk principle). Even though forensic practitioners and expert witnesses agree on the importance of CSA for risk assessment (e.g., face validity), there is little empirical evidence concerning what is the relevant crime scene information to identify high risk offenders. However, certain features of offending behavior are already included in existing risk scales (e.g., relationship to victim). Nevertheless, so far the included information is insufficient, unsystematic, and neglecting factors theoretically relevant to sexual recidivism (e.g., explicit planning). Therefore, the current dissertational project evaluated the predictive validity of crime scene behavior for the prediction of sexual recidivism in a holistic and systematic way based both on theory and empirical evidence.

9.1   Implications for risk assessment

Generally, the results suggest that the crime scene provides rich information about recidivism potential and risk-related propensities. Currently static risk assessment instruments rely on the analysis of an offender's criminal history to provide behavioral antecedents for risk. The results of this thesis indicate that risk assessment based on the analysis of commonly available crime scene information provides the ability to not only assess risk based on actual behavior, but also, perhaps more importantly, in cases where no criminal history is available (i.e., first-time offenders) or is simply unknown (e.g., foreign offenders). Likewise, the Crime Scene Behavior Risk (CBR) measure may provide an estimation of baseline recidivism risk for expert witnesses in cases where little is known about the criminal history of an offender. However, static risk scales are solely evidence-based neglecting factors theoretically relevant for criminal conduct (e.g., hostility, antisocial attitudes). Indeed, actuarial risk instruments based on static factors can tell us who is at the highest risk to reoffend and who should be treated, but they do not tell us what should be treated (need principle). Consequently, offender risk assessment instruments should also include the assessment of risk-related offender propensities (risk/need instruments; Andrews & Bonta, 2010).

To improve on the empirical criterion-keying approach, theoretically and empirically relevant offender propensities associated with sexual recidivism were identified by CSA following a behavioral-thematic approach to adhere to the need principle. Specifically, the results showed that it is possible to identify three theoretically loosely related offender propensities of hostility/sexualized aggression, sexualization/pseudo-intimacy, and criminality across sexual offense types (i.e., stranger rape, acquaintance rape, and child molestation). Additionally, in the child molestation sample a fourth risk-relevant behavioral theme relating to offender fixation on child victims was identified. The empirically and theoretically derived

offender propensities based on the analysis of crime scene behavior may inform the evaluator about the empirically and theoretically factors associated with sexual recidivism. Hence, this information can yield content-wise hypotheses regarding risk-relevant criminogenic offender needs and therefore be used to control for content-wise completeness and consistency of the crime scene analysis conducted in the context of a clinical-idiographic risk assessment.

9.2   Implications for treatment

According to the risk principle, the brief actuarial CBR assessment instrument based on crime scene information could help forensic practitioners to match levels of treatment services to risk levels (Andrews & Bonta, 2010). Therefore, offenders scoring high on the CBR should receive more treatment services compared to offenders scoring low on the CBR.

Furthermore, the results of Study 2, Study 3, and Study 4 indicate that different risk-related propensities emerged from CSA dependent on the offense type analyzed. These findings could have important implications for an effective offender treatment. Specifically, these propensities could help to achieve clarity about the possible underlying causes of sexual offending. Therefore, they could help therapists "to design appropriate treatment programs to modify their effects and thereby reduce the likelihood on individuals reoffending" (Ward & Siegert, 2002, p. 319). Given the studies constitute a first attempt to identify psychological meaningful propensities from crime scene behavior of sexual offenders, definitive claims regarding practical implications for offender treatment are not possible. However, in cases of stranger rape the criminality theme indicating a general propensity for rule violation was related to sexual recidivism. Hence, promising intermediate targets of change should be, for example, supporting non-criminal behaviors in high-risk situations (Andrews & Bonta, 2010). In contrast, in acquaintance rape cases the pseudo-intimacy and hostility themes were risk-related, which could indicate the offenders believed that their victims wanted or deserved

"what they got". Accordingly, future research should investigate, whether offenders scoring high on pseudo-intimacy may benefit from cognitive interventions targeting sexual entitlement attitudes, whereas offenders high on hostility may benefit from therapy targeting emotional dysregulation to reduce conflict and built up positive relationships (Andrews & Bonta, 2010). The grooming strategies evidenced in the crime scene behavior of fixated child molesters are key elements of relapse prevention models (e.g., Ward & Hudson, 1998) and should be addressed in offender therapy accordingly.

Also, by identifying offender propensities based on crime scene behavior forensic practitioners could verify subjective offender self-reports, for example, about existent deviant sexual preferences (e.g., fixation on child victims, sexualized aggression). Additionally, therapists could confront offenders with (dissimulated) propensities in therapy and assist offenders to recognize the propensities to prevent themselves from recidivism with a sexual offense (Leclerc, Proulx, & Beauregard, 2009). Given the overlap between the behavioral indicators of the theme of fixation and the items of the Screening Scale of Pedophilic Crime Scene Behavior (Dahle et al., 2013) as well as findings related to the Severe Sexual Sadism Scale (Nitschke et al., 2009) future research should expand on the relevance of crime scene behavior for clinical diagnoses.

9.3   Implications for police

The Crime Scene Behavior Risk measure was developed to be used for prioritizing released sexual offenders for police supervision in Berlin. At this stage, the State Office of Criminal Investigations in Berlin has implemented the CBR in addition to the Static-99R. To avoid capitalization on chance characteristics of the data used for the development of the CBR averaging or other purely data driven models as suggested by previous researchers (e.g., Lehmann, Hanson, et al., 2013) were not used to combine both measures. Instead, the

published nominal risk categories of the Static-99R (Helmus, Thornton, et al., 2012) were used as an initial assessment of recidivism risk as the Static-99R has shown its predictive accuracy in numerous independent studies (Hanson & Morton-Bourgon, 2009). Additionally, the CBR was able to increase but not to decrease the initial Static-99R risk level as the State Office of Criminal Investigations focuses on sensitivity for the assessment of recidivism risk (correct identification of recidivists). In particular, four risk categories were generated to evaluate the priority for supervision: highest priority (Static-99R high risk AND CBR score $\geq$ 4), high priority (Static-99R high risk OR CBR score $\geq$ 4), moderate priority (Static-99R moderate-high OR CBR score 2,3), and low priority (Static-99R moderate-low, low AND CBR score $\leq$ 1). Similarly, the results of the studies 2 to 4 could help the police to match levels of supervision according to risk levels (Andrews & Bonta, 2010).

Besides helping the police prioritizing offenders for police supervision the results of the study on stranger rape could also help to prioritize suspects in the context of an ongoing investigation. Here, the results suggested that the criminality theme is significantly associated with prior sexual offense history. Empirical results such as these offer investigators the scientific warrant needed to support their decisions when prioritizing suspects (Goodwill et al., 2009). The stranger rape study showed that as the TSS for the criminality theme increased by one unit (e.g., the presence of an additional behavior in that theme), the odds of the offender having a previous conviction for a sexual offense increased by 1.4 times.

Future research should also investigate the relevance of the current finding for case linkage (Woodhams, Hollin, & Bull, 2007). As the current results indicate that it is possible to identify offender propensities through behavioral crime scene analysis it would be interesting to investigate their cross-situational consistency. Specifically, given that the behavioral

themes are supposed to indicate *enduring* offender propensities, offenders should be more or less consistent in the way they behave across their sexual offenses.

9.4   Implications for research

Actuarial risk assessment instruments predict recidivism because they are markers for enduring, psychologically meaningful offender propensities, such as lifestyle impulsivity, attitudes tolerant of sexual offending, and deviant sexual interests (Mann, Hanson & Thornton, 2010). Given the incremental validity of the CBR assessment measure as well as the risk-related propensities of criminality (i.e., stranger rape), pseudo-intimacy (i.e., acquaintance rape), and (sexualized) aggression/fixation (i.e., child molestation), it may be that current actuarial risk assessment *methods* (e.g., Static-99/R), in general, may be improved by utilizing crime scene behavioral indicators suggestive of an offenders underlying propensities. According to Lehmann, Hanson, et al. (2013) perhaps the most important step forward for forensic risk assessment would be to clearly identify the constructs responsible for recidivism risk, because it would be of considerable utility for prevention and intervention efforts to have psychometrically sound measures of the core risk-relevant constructs. Whereas future research need to identify the constructs assessed by the CBR, the current results demonstrate the construct validity of the identified behavioral themes by considering the predictive validity (e.g., sexual recidivism), the convergent validity (e.g., criminal history, offender motivation), the content validity (e.g., crime scene variables), and their intercorrelations.

9.5   Limitations and future directions

The current results are exclusively based on archival data of individuals convicted in a single federal (city) state in Germany limiting the generalizability of the findings. Although

the CBR showed predictive validity in both the development and cross-validation sample and the empirical results of Study 2, Study 3, and Study 4 supported the construct validity of the themes, validation is a process and not an outcome (Strauss & Smith, 2009). Therefore, the results need replication in national samples, including rural areas, as well as other countries. In particular, there is some evidence that the current sample may not be representative of other routine samples because the current sample was higher risk (as measured by the median value of the Static-99) than routine samples in other settings (Hanson, Lloyd, Helmus, & Thornton, 2012).

Even though the crime scene variables included in Study 2, Study 3, and Study 4 were chosen based on previous research and theoretical considerations to increase content validity, some of the internal consistency scores are lower than desirable. Typically, scale construction is an iterative process involving several periods of item writing, and future research should supplement the number of variables marking each of these behavioral themes. As well, attention to the scaling may improve the interpretation of the scales; in the current studies, the items were simply summed, which could give the appearance of different offender profiles based on arbitrary decisions concerning the number of items marking each theme. Also, other researcher might want to explore additional content areas than to those considered for the development of the CBR.

Also, future research needs to investigate the relationship between offender propensities assessed using crime scene behavior (e.g., criminality) and related psychological meaningful risk factors (e.g., antisociality; Psychopathy Checklist – Revised, Hare, 2003). In the current studies theoretical links between the CSA-derived themes and other classification systems for sexual offenders were provided. However, additional research is needed to directly investigate the relationship between the themes identified in the current studies and

other potential constructs, such as those in the MTC:CM4 (Knight & King, 2012), MTC:R4 (Knight, 2010), the self-regulation model of the offending process (Ward & Hudson, 1998), and the implicit theories (Ward & Keenan, 1999) in sexual offending.

Moreover, future research needs to investigate the constructs assessed by the CBR. If the constructs assessed by the CBR would be clearly identified more advanced strategies for the combination of risk assessment instruments could be applied (Lehmann, Hanson, et al., 2013). In this regard, future research should also investigate if the combination of current actuarial risk measures such like the Static-99 with crime scene variables would yield a more precise assessment of the underlying constructs relevant for recidivism.

10 Summary

10.1 Summary

For more than twenty years investigative psychologists examine the relationship between crime scene actions of sexual offenders (e.g., Canter & Heritage, 1990) and offender characteristics with notable success (e.g., Mokros, 2007). More recently, researchers investigated crime scene behavior as a complement for the clinical diagnosis of sexual paraphilia. Nitschke et al. (2009) developed a file-based observer rating of crime scene behaviors associated with the diagnosis of sexual sadism whereas Dahle et al. (2013) developed a screening scale of pedophilic crime scene behavior. However, this dissertational project constitutes the first attempt to investigate the predictive accuracy (i.e., sexual recidivism) of crime scene behavior in a structured and holistic way.

Two approaches to risk assessment were adopted following second and third generation risk assessment (Andrews & Bonta, 2010). First, an actuarial risk tool was developed following a criterion-keying approach and cross-validated using a second

independent sample. Second, theoretical relevant enduring offender propensities were inferred from sexual crime scene behaviors. In the development of the behavioral propensities weaknesses of the previous research were addressed. Specifically, the reliability as well as the validity of the proposed propensity themes was tested. The studies coherently showed the construct validity of the proposed themes by considering the predictive validity (e.g., sexual recidivism) and convergent validity (e.g., previous offenses),

The results indicate that it is possible to predict future sexual offending using the Crime Scene Behavior Risk (CBR) measure as well as by the assessment of enduring offender propensities evidenced in offending behavior. Also, the CBR measure as well as offender propensities added incrementally to a commonly used risk assessment instrument (i.e., Static-99). Hence, the assessment of risk-relevant constructs by static and dynamic risk assessment instruments in combination with so far neglected crime scene behavior related indicators of these constructs could yield more psychometrically sound measures of future sexual offending.

10.2 Zusammenfassung

Seit mehr als zwanzig Jahren wird der Zusammenhang zwischen dem Tatverhalten von Sexualstraftätern (e.g., Canter & Heritage, 1990) und Tätereigenschaften (e.g., Mokros, 2007) untersucht. In letzter Zeit wird das Tatverhalten zusätzlich als ergänzende Datenquelle für die klinische Diagnostik sexueller Paraphilien erforscht. Nitschke et al. (2009) entwickelten ein aktenbasiertes Beurteilungsinstrument von Tatverhaltensweisen, welche mit der klinischen Diagnose von sexuellem Sadismus assoziiert sind. Ferner stellt die durch Dahle et al. (2013) entwickelte *Screening Skala Pädophilen Tatverhaltens* einen vielversprechenden Ansatz als diagnostisches Hilfsmittel für die Diagnose einer Pädophilie dar. Im Gegensatz zu den diagnostischen Potentialen der Tatbildanalyse wurde deren prognostische Relevanz bisher

jedoch vernachlässigt. Die vorliegende Doktorarbeit stellt einen ersten Versuch dar, Tatverhalten als Indikator für Rückfälligkeit von verurteilten Sexualstraftätern zu untersuchen.

In Anlehnung an die zweite und dritte Generation der Risikoprognose (Andrews & Bonta, 2010) wurden zwei verschiedene Ansätze der Entwicklung von Prognoseinstrumenten verfolgt. Erstens wurde basierend auf nomothetischen (oder auch aktuarischen, statistischen) Methoden der Kriminalprognose ein statistisches Prognoseinstrument entwickelt, wobei hier der Fokus auf dem empirischen Zusammenhang der Tatbildvariablen mit dem Kriterium „Rückfall mit einem Sexualdelikt" lag. Der Tatbild-Risiko-Score konnte nach der Entwicklung an einer zweiten unabhängigen Stichprobe kreuzvalidiert werden. Zweitens wurden theoretisch bedeutsame, überdauernde Täterneigungen anhand des Tatverhaltens operationalisiert und daraufhin empirisch die prognostische Validität dieser Tatthemen untersucht. Dabei wurden Schwächen früherer Studien adressiert. Speziell wurde die Reliabilität sowie die Validität der verhaltensbasierten Tatthemen untersucht. Über drei Studien an verschiedenen Gruppen von Sexualstraftätern (Fremdvergewaltiger, Vergewaltiger bekannter Opfer, Kindesmissbrauchstäter) hinweg konnte kohärent die Konstruktvalidität sowie die prognostische Validität verschiedener Tatthemen belegt werden.

Die Ergebnisse der Doktorarbeit zeigen, dass es möglich ist, Rückfälligkeit mit einem Sexualdelikt mittels des Tatbild-Risiko-Scores sowie anhand von risiko-relevanten Tatthemen vorherzusagen. Ferner waren der Tatbild-Risiko-Score sowie verschiedene risiko-relevante Tatthemen gegenüber dem Static-99 inkrementell valide. Somit kann festgehalten werden, dass die Erfassung von rückfallrelevanten Konstrukten mittels statischer Prognoseinstrumente durch die Kombination mit bisher vernachlässigten tatverhaltensbasierter Indikatoren zu einer besseren Erfassung dieser Konstrukte führt.

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12   Appendix

The Appendix contains the publications included as part of the PhD project. The series includes four papers written for publication in academic journals. The publications are presented in the format in which they have been submitted for publication. Three papers are published and one paper is accepted for publication. Please cite as:

Dahle, K.-P., Biedermann, J., Lehmann, R. J. B., & Gallasch-Nemitz, F. (2014). The Development of the Crime Scene Behavior Risk measure for Sexual Offense Recidivism. *Law and Human Behavior*. doi: 10.1037/lhb0000088

Lehmann, R. J. B., Goodwill, A. M., Gallasch-Nemitz, F., Biedermann, J., & Dahle, K.-P. (2013). Applying crime scene analysis to the prediction of sexual recidivism in stranger rapes. *Law and Human Behavior, 37*(4), 241-254. doi: 10.1037/lhb0000015

Lehmann, R. J. B., Goodwill, A.M., Hanson, R. K, & Dahle, K.-P. (2014). Acquaintance Rape: Applying crime scene analysis to the prediction of sexual recidivism. *Journal of Sexual Abuse.*

Lehmann, R. J. B., Goodwill, A. M., Hanson, R. K., & Dahle, K.-P. (2014). Crime Scene Behaviors Indicate Risk-Relevant Propensities of Child Molesters. *Criminal Justice and Behavior*. doi: http://dx.doi.org/10.1177/0093854814521807