

SUÇ SORUŞTURMALARINDA PSİKOLOJİNİN ROLÜ

The Role of Psychology in Investigations

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ABSTRACT

The current paper will review the ways psychology, particularly Investigative Psychology, contributes to investigations. The three broad types of contributions are; investigative inferences, the investigation process and the assessment and improvement of investigative information. Psychology can provide useful decision support tools to facilitate the investigation processes and help investigators to give more appropriate decisions. The application of psychological principles is also beneficial in the evaluation process of the accuracy of the investigative information. Grounded on the actuarial evidence, psychology is able to generate answers to many questions raised in different stages of police investigations.

Key words: Crime, Investigation, Profiling, Investigative Psychology.

ÖZET

Bu yazının amacı psikolojinin, özellikle suç ve soruşturma psikolojisinin (Investigative psychology), polis soruşturmalarındaki rolünü ve katkısını derlemektir.

Psikolojinin polis soruşturmalarına sağladığı katkılar üç ana başlıkta incelenebilir: soruşturmaya dair çıkarımlar, soruşturma süreci ve bu süreçte toplanan bilgilerin değerlendirmesi ve geliştirilmesi. Psikoloji, soruşturma sürecini iyileştirmek ve soruşturma ile ilgilenen polis kuvvetlerinin daha uygun kararlar vermelerinde yardımcı olmak için etkin 'karar destekleme araçları' sunar. Soruşturma sürecinde elde edilen bilgilerin doğruluğunu değerlendirmede psikoloji ilkelerinin kullanılması faydalıdır. Aktüeryal kanıt dayanarak, psikoloji, soruşturmanın farklı evrelerinde ortaya çıkan sorulara cevap üretmede başvurulabilecek bir alandır.

Anahtar kelimeler: Suç, soruşturma, profilleme, psikoloji, suç ve soruşturma psikolojisi.

INTRODUCTION

Crime has always been an issue that evokes societal attention. Particularly violent crimes hurt the societal conscience deeper and put more pressure on the law enforcement officers to apprehend the offenders which might force them to a quick arrest of an innocent person, or the actual perpetrator with not enough hard evidence tying him up to the crime itself which in return allow him to walk out of the courtroom as a free man.

Considering the difficulty of information gathering and its evaluation, engaging in appropriate decisions and making inferences about the offender, the use of psychology in police investigations has valuable contributions. There is a commonsense assumption which stems from current crime drama or Hollywood movies that only serious offences and particularly serial murder are the main focus of psychology. However, psychology is a very useful tool in investigations whilst drawing inferences about a wide spectrum of crimes including but not limited to burglary, insurance fraud, murder, sexual crimes, arson, terrorism etc.

The contributions of psychology to police investigations can be categorized in three broad terms:

Investigative Inferences (e.g. actions-characteristics equations, offender profiling, geographical profiling, modelling offence styles, psychological correlates of offence style)

Investigative and legal process (e.g. investigative strategy, interviewing, prediction of violence, detective decision making)

Assessment of investigative and legal information (e.g. false allegations, eyewitness testimony, detecting deception, psycholinguistic authorship attribution)(1).

1. Investigative Inferences

Crime scene evidence can lead to the answers to the questions of how, when, and where a crime has occurred

and with forensic evidence the question of who committed the crime can also be answered. In more unfortunate cases, where there is no hard evidence to collect, organize, store and analyze where should the law enforcement officers start the investigation? How about the cases where there is no tangible evidence? In all cases of crimes, but specifically in these situations psychology can be beneficial in helping the investigators in the prioritization of suspects and evidence and showing a direction to turn to whilst starting the investigation and looking for the perpetrator.

History

One of the early attempts of such inferences were made in the case of Jack the Ripper, who evoked immense societal attention and fear because of the brutal nature of his murders. The utility of offender profiling in law enforcement started with the foundation of FBI's Behavioral Analysis Unit. The rather unstructured and non-systematical nature of the interviews conducted by the serial killers and/or sexual offenders formed the base of this approach. The unstandardized way of reporting the results caused the generalizations drawn from these interviews to be faulty (2, 3).

As shown by Pinizzotto and Finkel the accuracy and effectiveness of the inferences about the perpetrators suggested by professional profilers were not very different than detectives, psychologists and college students (4).

Despite the lack of theoretical guidance of the FBI's interviews resulting in invalid assumptions especially regarding serial killers, in terms of understanding the criminal processes from the mouths of offenders opened up new directions in the scientific way of investigating offender characteristics (5).

Inferences based on personal judgments are faulty in nature. The inaccuracy of conclusions reached merely using personal experience, such as depicted in popular culture which is an approach borrowed from former FBI agents, showed the necessity of a more scientific way of studying offender behaviors which is based on actuarial evaluations (1).

Investigative psychology

Investigative psychology utilizes data obtained from various offender groups from different cultures. Furthermore, differentiation in types of offenders makes it possible to evaluate each case separately and apply the general patterns drawn from the actuarial data. David Canter, a British psychologist, is the pioneer of

Investigative psychology, started with the goal of transforming 'criminal profiling' from intuitive and strongly experience based inferences to a more scientifically based theory generation.

One main objective is to study the similarities and differences within/between offender groups, creating patterns and applying these patterns to individual cases.

IP can be briefly summarized as: (6) The scientific discipline concerned with the psychological principles, theories and empirical findings that may be applied to investigations and the legal process. The focus is on the ways in which criminal activities may be examined and understood in order for the detection of crime to be effective and for legal proceedings to be appropriate. As such, Investigative Psychology is concerned with psychological input to the full range of issues that relate to the management, investigation and prosecution of crime.

Canter presented 5 important questions to focus on during the analysis of a specific crime (3). The main inference questions that need to be asked with the objective of improving criminal and civil investigations are:

- Linking – which crimes are the same offender?
- Salience – what distinguishes the offender?
- Characteristics – How might we identify him?
- Location – where might he be based?
- Prediction – what might he do next?

A>C Equations



Fig 1. The action-characteristics (A C) equation, a model of what is involved in "profiling" an unknown offender. Inference must be made about offender from information about how the crime was committed, including its location, time, and the victim details. To make such inferences, appropriate psychological theories and models must be drawn upon.

One important role of psychology in criminal investigations is to define the relationship between offender's behaviors and his/her characteristics which will assist the investigators where and what type of person to look for (8, 3). Whilst deriving inferences, every available information related to a crime, including witness/victim accounts, crime scene evidence, offender's actions during the offence, his/her interaction with the crime setting has to be evaluated under the light of psychological principles (7).

When there is no physical evidence gathered from the crime scene or any witness/victim accounts regarding the perpetrator's identity, a thorough analysis of certain details of the crime in terms of the "psychological traces" left by the perpetrator is the only way to reach inferences about the characteristics of the offender.

Profiling equations proposed by Canter (8) "capture the scientific perspective for inferring associations between the actions that occur during the offence – including when and where they happen and to whom-and the characteristics of the offender, including the offender's criminal history, background, base location, and the relationships to others" (1).

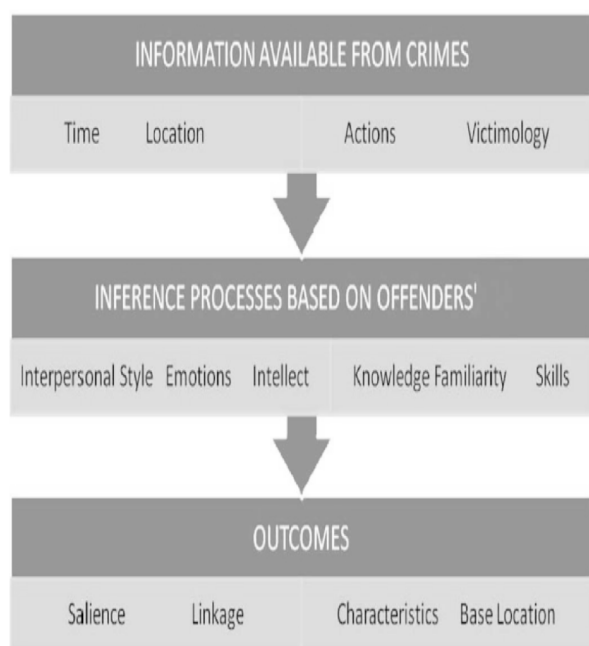


Fig 2. A developed framework for he profiling equations. This is more detailed elaboration of Figure 1, listing the main classes of information available about the crime and the forms of psychological that are relevant for making inferences relevant to an investigation. The various forms of conclusion that are relevant beyond merely describing the likely characteristics of the offender are also indicated (under "Outcomes")

These equations aim to form consistent relationships between A and C with the application of psychological theories. There is no one-to-one relationship between Actions (A) and Characteristics (C). Instead, the relationship between A and C is canonical which refers to the high number of possible associations between different sets of actions and mixture of characteristics under different circumstances (1). The same action can be indicative of different characteristics based on the context and/or the criminal background of the perpetrator. For instance, using an accelerant in an arson can imply an above average IQ in a young arsonist but the same action will not indicate the same characteristic in an experienced arsonist. Also, different actions can indicate the same characteristic. For example, having a burglary related conviction can be seen both in rapists and robbers (3).

In the A>C equation, the characteristics are inferred from the actions during the offence by applying a theory or argument based on scientific evidence. In order to achieve a scientific way of identifying the relationships between actions and characteristics, a theoretical framework has to be formed based on research findings (5, 1).

Various factors contributing to variations in criminal behavior such as personality, modes of interpersonal interactions, socio-economic factors etc. should be subject to careful examination.

Canter presented the profiling equation as (3):

$$F1A1 + \dots + FnAn = F1C1 + \dots + FnCm$$

In this equation the most prominent component is the F which refers to the values of weightings which are the 'functions' (F) in the relationship between As and Cs.

The theoretical framework for drawing inferences is based on certain principles.

a. The consistency hypothesis

One major assumption of profiling equations is the consistency between the actions of the offender during the time of offence and in his 'normal' life. The characteristics of the offender inferred based on the crime scene behaviors can be observed in the perpetrator's outside-crime behaviors. Hereby the criminal behavior is explained as a set of behaviors occur within the behavioral repertoire of the offender. This theory is specifically important in terms of linking offence behaviors and inferring characteristics. Whilst taking the effects of criminal development and situational factors into consideration studies have shown a level of trans-situational consistency in behavioral patterns of offenders (1).

There is a close relationship between the daily routines of the offenders and their behaviors during the act of crime. Just like anybody else, offenders develop heuristics and mental representations through their observations from which later they benefit while committing an offence.

b. Differentiation hypothesis

The differentiation among sets of offenders is an important step whilst engaging in investigative inferences about the characteristics of the perpetrator.

The Radex of Criminality

A need to identify the commonalities and the differences across any type of crime has arisen due to the recognition of inappropriateness of previous theories claiming to categorize the offenders in distinct groups. The simple categorization of assigning each crime/criminal to one of the crime types cannot capture the complex nature of criminality and overlooks the overlapping themes observed among different types of crimes.

A radex model, first proposed by Guttman (1954; cited in 7) as a new method of factor analysis, was utilized in criminal context in order to explore the typicality and the salience of behaviors across various crimes.

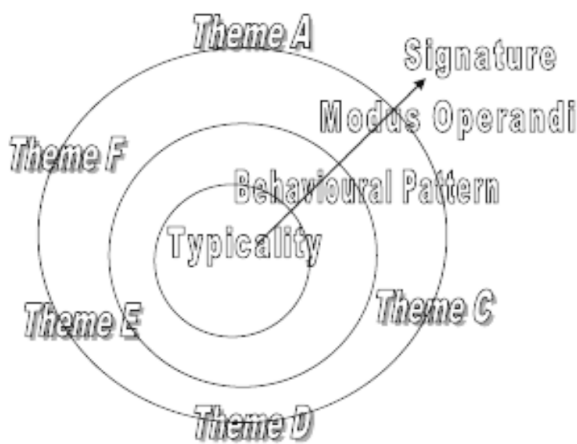


Fig 3. Schematic representation of variations in offence actions.

Smallest Space Analysis, a nonmetric multidimensional scaling procedure is used to generate the circumplex by representing each action as a point on the resulting configuration. The actions located close to each other on the configuration are the ones co-occurring in the same crime. Furthermore, actions located in the innermost circle are the ones common to many crimes whereas as moving towards the outermost regions the

actions become more salient and more specific to each crime.

The style of offending refers to a more specific pattern of offender behaviors. The examination of offending style will yield interpretable groupings with the identification of co-occurring behaviors. The comparison of criminals who act on his impulses and commit opportunist crimes vs. the ones who go through a detailed planning and preparation phase is an example of the evaluation of offending styles.

Modus Operandi (MO), is a set of specific actions which are relatively unusual that an offender engages in whilst committing the offence. MO refers to the set of actions that is typical to an offender. Choice of a weapon is an action considered as part of an offender's MO.

Signature is the most distinct pattern of actions which are unique to a particular offender. It is relatively unusual for an offender to leave a specific "behavioral fingerprint" in every crime (3, p.95). One problem is the difficulty in identifying the actions that are unique to an offender, and to make sure it is not an action shared by other individuals. Another problem is the risk of other offenders copying the 'signature' of a particular offender if the information about the signature becomes publicly known. In addition, the rarity of encountering a signature left by a perpetrator adds up to the difficulty in deriving inferences based on signatures (3).

Another significant line of research in IP whilst understanding the associations between offender actions and his characteristics is the study of offender narratives. The social context of a crime and the roles offenders adapt and play during an offence are crucial aspects of Narrative Action System (NAS).

Narrative Theory

One of the most significant researchers within the narrative theory, McAdams defines narrative identity as "individual's internalized, evolving, and integrative story" which starts to develop by the adolescence and early adulthood and continues to evolve thorough out the life span (9).

Narrative Themes

The studies conducted by McAdams revealed that the life stories feature two central themes, namely communion and agency (9). The theme of agency is organized around the power and achievement motives. People high in power motive have a desire to feel strong and create an impact on the world; they work to increase their prestige and the influence on others. People with high achievement motive have a desire to feel competent

and they focus on doing their tasks better and gaining a sense of mastery. Whereas people with high achievement motivation are interested in working effectively in tasks dealing with things, for people with high power motivation other people are the objects of tasks through having an impact and control over others' lives (10).

The narratives of individuals who are high in power motivation have themes related to responsibility, mastery, success, status and etc. Also their narratives are richer in terms of separations and disagreements compared to the narratives of who are low in power motivation. People with high intimacy motive create narratives featuring love, friendship and dialogue high in similarities and connections (9).

Narrative Theory in Criminology

In narrative theory, narrative teller casts to play the leading role in the act of crime and the theory emphasizes the agency of the offender. In that sense it draws psychology closer to law (2)

Through the new interpretations of narrative and its application to criminology, the temporal relationship between crime and narrative has shifted dramatically (11, 12). A new understanding of narrative has emerged with a claim that "offending is the enactment of a narrative rather than the narrative being an interpretation of the context out of which the offence has emerged" (13). The narrative has started to be perceived as a script prepared before the staging rather than a critic, or a review of the play (11, 3, 13, 14).

The major contribution of the recent application of narrative theory to criminology is to challenge the meaning and the function of narratives of offenders and present a new angle to look at it. Narratives are strongly linked to the selves. They are not mere means of sharing the actual or interpretative experience anymore. "P(ersons) think, feel, act and make moral choices according to narrative structures" (15).

Why should we study offence narratives?

In order to understand and make inferences about an offender's offence pattern, the related psychological processes need to be uncovered, and a solid database of the links between offence styles and offender characteristics should be available for future reference. The importance of examining the offence narratives comes from its use to "understand offender's actions in a crime" and to identify the salient actions which in turn will help in the investigation process (12).

Also offender narrative approach is an important tool in the interviewing process of suspects. The inferred

offender/suspect characteristics from the narrative roles are very helpful while forming the initial contact, determining the approach and the strategies that are going to be used during the interview (20, 16).

The development of narrative roles

Canter being one of the first to draw attention to the significance of the stories of offenders and the link between these stories and the actions and the characteristics of offenders, defines these stories as "inner narratives" (8). These narratives are shaped by the protagonist's view of his/her self in interaction with the immediate as well as the broad social surrounding, culture. Ward describes narrative role as "a set of beliefs about the self" revolving around "dynamic themes" and based upon a person's awareness about one's emotions, cognitions and behaviors and is distinct from the 'real self' (17).

The analyses of fictional characters in literary work, lead to 4 types of major narrative themes, namely tragedy, comedy/romance, irony and adventure (18), later modified by Canter and Youngs to apply to criminal narratives (3). Especially with the efforts of McAdams (10,19) major themes in the narratives of non-criminal individuals are identified, revolving around two dimensions, namely power and intimacy with increases and decreases in each axis creating combinations and yielding these four narratives.

The major narratives and narrative roles formed based on the level of these main themes, potency are re-defined to fit in a criminal context. The roles might have different connotations in the life of an offender, so as part of the adaptation process Canter and Youngs changed the Frye's comedy/romance to quest (3, 18). McAdams shows that the narratives of people with high intimacy motive feature love, friendship and dialogue and also high in similarities and connections (9). However the way of expressing intimacy might change in the criminal context. For an offender, the meaning of intimacy might be different than love and care for other people and/or the way he shows this intimacy might be different even called as brutal or hurtful to others.

Narrative Roles

Narrative roles are derived from the narratives of the offenders. Narrative research in criminology proposed four main themes, namely adventure, quest, irony and tragedy based on the narratives of offenders. These yield four main roles enacted by the offender during the act of offence, namely professional, hero, victim and revenger. These narratives and roles are applicable to offenders

with a broad range of crime types. Each narrative will be discussed shortly based on the Narrative Action System model proposed by Canter and Youngs (3). These roles are the antecedents of criminal actions and offenders engage in certain behaviors based on the enactment of their narrative role.

Adventure

The offender with an Adventure Narrative is 'high in potency and low in intimacy' and he tries to achieve control over his environment and acts in a certain way to acquire emotional satisfaction and solid rewards. He enacts the role of the Professional and during the offence he acts in a calm manner and in control of the environment (14, 20, 3). This narrative is mostly "provided by burglars and robbers" (14). The victim is irrelevant to the offender's actions, he acts like a professional, takes responsibility of his actions, and experiences pleasure out of the fulfillment of his goal (e.g. monetary gains). The results of the SSA analysis of the 33-item Narrative Roles Questionnaire administered to 71 offenders reveal that the professional role is associated with the feelings of satisfaction, (e.g. fun, excitement, interesting). The offence is perceived like a task (e.g. usual day's work, doing a job). His actions are pre-planned and he has control over the situation (e.g. all to plan, routine, in control, knew what doing) and he is aware of the risks associated with the offence (e.g. taking a risk) (13). There is a distinction between the offenders with the role of professional. Some see the crime as an adventure and focus on the aspects of it as being fun and interesting whilst others focus on being in control (12).

Irony

The offender with the Irony narrative is 'low in potency and high in intimacy'. He adopts the Victim role. He feels confused and helpless, he has no control over the situation and against his will and consent he is being drawn into the offence by external parties who are significant to him. He cannot make sense of things and he feels like there are no rules. He thinks that he is involved in the crime because of his powerlessness, and confusion which makes him the "main victim of the event" rather than the offender (3, p. 129). The responsibility of his actions is attributed to others. The items on NRQ that are associated with the victim role are parallel to their narratives, as they state to feel 'helpless, confused and that they wanted it over' (3, 13, 14).

Quest

The Quest Narrative is associated with the Revenger role and the person who is enacting this role is 'high both

in intimacy and potency'. The offender believes that he has been treated unfairly, deprived and wronged and he feels that there is nothing else to do but to take his revenge and make the ones who wronged him pay for it. He seeks vengeance for what has been done to him or to significant others, as a reaction to a built-up anger against the victim who is significant to him. His offences are justified and he has no choice other than taking his revenge. Based on the responses on NRQ, offenders with this role state that 'it was the only thing to do, he had to do it, it was his only choice, it was right and he was getting his own back' (3, 13, 14, 20).

Tragedy

The person with the Tragedy narrative enacts the role of the Hero. He is 'low both in potency and intimacy'. For the tragic hero, his actions are justified, and the responsibility of his actions is attributed to others. He sees the offence as the only way out for him and he believes that he is driven by the fates. He sees himself on a heroic mission, he seeks recognition and engages in criminal act to defend his honor and show his manly pride. The victim is not significant to him. On NRQ, he states that 'he was on a mission, looking for recognition and he couldn't stop' (3, 13, 14, 20).

If the person is high in the power motive as explained earlier, he has a desire to feel strong and create an impact on the world and the others. They prefer other people as the objects of tasks in order to have control over others' lives (10). Based on the information provided, it is reasonable to expect someone high in power motive to commit crimes against people by using force and imposing his will, and 'create an impact' on his victim's life. On the other hand people who are high in achievement motive have an urge to do things better, feel competent and reach mastery and are interested in working effectively in tasks dealing with things. In a criminal population a person with a major theme of mastery is expected to commit property crimes, as he will be dealing with things rather than people. He will also be expected to do his job efficiently and be goal-oriented (14).

Victimology

Another significant aspect of any investigation especially whilst examining the differentiation among set of offenders is the study of victimology. Besides the intrinsic characteristics of the offender, the interpersonal aspects seem to be associated with the offence styles.

There is an overt or covert interaction with the offender and the victim. In order to evaluate the nature of

these interactional patterns and how, where, why the offender's and the victim's paths have crossed, an in-depth investigation of the victim's life and history is essential. For instance, if the person has been targeted either by an on-site assault or kidnapping whilst following his/her routine, a possibility of pre-meditation, and stalking rises and it might decrease the chances of an opportunist crime unless the target is living a high profile life which makes him/her an easy target. Evaluating the ease of accessibility and personal or environmental factors contributing to the victim's vulnerability is a critical element of every investigation.

The verbal and physical interaction of the perpetrator with the victim is a key indicator of the perpetrator's personality and psycho-social characteristics. Style of the interaction yield important clues about the perpetrator's interpersonal characteristics. The ways of offending have a relationship with the roles each perpetrator assigned to his victims.

Victim Roles Model

Considering the interpersonal nature of criminal action, Canter introduces the Victim Roles Model, the roles that offenders assign to their victims, which has a high discriminatory power among offence types and styles (8). These roles are shaped by the offender's way of interaction with the victim. Canter and Youngs propose three main roles, namely object, vehicle, and person that are assigned to victims by their offenders during the offence (14).

The offender, who sees his victim as an 'object' uses physical control over him/her, approaches with possession and subjugation, lacks humanity and objectifies the victim. The offender who sees his victim as 'vehicle' controls his victim with psychological means, applies abuse and exploitation. The victim's humanity is accepted, however the offender perceives him/her as a means to express and satisfy his needs. The offender lacks compassion, therefore the victim's suffering is not acknowledged. The offender who sees his victim as a 'person', despite recognizing the victim's humanity, still will devalue the victim and approach with coercion and use behavioral and social means to form control over the victim, and use manipulation as a means of interaction (12).

1. The investigation process

In addition to providing scientific advice in regards to offender profiling, psychology helps investigators in the obtaining, handling, prioritizing, and evaluating the information gathered throughout the investigation which

are important steps in reaching appropriate decisions.

Common challenges encountered at investigations include but are not limited to the massive amount of information, the variety of the evidence, the issues regarding the collection, recording, organizing, storage of the information related to a crime; as well as contaminated/disturbed crime scenes and reliability issues of victim/suspect/witness statements due to biases, problems related to memory, intentional and unintentional distortions.

Managing the issues encountered at a crime investigation requires an extensive amount of man power, effort and time which might result in the loss and contamination of essential evidence and incorrect elimination of suspects.

Investigative processes are a series of decisions. Each decision leads up to a path and eliminates the others, each decision has a profound impact on the outcome of the investigation. Right actions can result in gathering further information which can be helpful in the investigation process. As mentioned above, the mass of the information is hard to handle in an investigation just as the lack of information makes it very difficult for the investigation to proceed. One important step in handling information gathered throughout an investigation is to eliminate the unrelated information and prioritize the relevant ones.

Youngs (1) points out two possible ways psychology can be helpful in investigations and in investigative decision making processes. The first one is the evaluation of the utility of the information and the second one is the evaluation of the validity and the reliability of the information. The initial phase of an investigation is specifically important as they lead investigators in a certain way which determines the direction of the entire investigation. A wrong decision based on incomplete or inaccurate information may result in a failed investigation. Psychologists can be most helpful during the initial phases of the investigation whilst gathering information regarding the psychological characteristics of the crime and evaluating the location of the crime and behaviors of the offender which are the 'psychological traces' left at the crime scene (8).

The second area where psychology can be helpful is during the later phases of the investigation where vast amount of information is gathered and waiting to be evaluated which overwhelms the investigators and puts an immense cognitive load on them. It can lead to biased/distorted evaluation of the information and decisions given under so much pressure tend to be based

on heuristics rather than systematic evaluation of the information which can result in inappropriate decisions (1, 3).

Investigative psychology can provide efficient 'decision-support tools' with the goal of simplifying and enhancing the evaluation of the information by presenting scientific guidance to investigators to reduce the negative effects of the cognitive load.

These contributions rely on certain aspects of IP namely; linking crimes, prioritization of suspects and the assessment of offender's geo-behavioral profile, generating further offences taken into consideration, exploring co-offending networks, identifying locations for intelligence gathering, mapping crimes and performing hotspot analysis (1). Decision-support centralizes around two main areas: linking cases and the evaluation of offender's geo-behavioral profile (3).

Linking crimes to a common offender is a very crucial step in investigations. It provides more information which result in more inferences. In order to link crimes to a common offender, forensic evidence (i.e. DNA, hair, fingerprint) belonging to the same perpetrator recovered in different crime scenes and other circumstantial evidence tying the perpetrator to different crimes have great importance. However, when there is no tangible evidence left at the crime scene to link the crimes, evaluation of the actions of the perpetrator gains more importance. Furthermore, it is possible to identify a forensically aware perpetrator by linking his previous crimes in one of which forensic evidence was left. Linking crimes to a common offender might lead to the recovery of tangible evidence, witness accounts or circumstantial evidence which would have been missed otherwise (20).

The second important contribution of IP in decision support is through geographical profiling. One assumption in the evaluation of the offender's geo-behavioral patterns is that the choice of crime locations are not random. Geographical profiling systems based on two lines of studies, namely propinquity and geographical morphology.

Propinquity refers to the proximity of the locations of crimes to significant places in offender's life (i.e. home). Geographical morphology is the examination of the pattern or geometry of distribution of the crime locations in relation to the internal maps of possible locations of crime (3). The analysis of geo-behavioral patterns are helpful in investigations as they provide an area to focus. Certain software programs for geographical profiling are

developed and are being used as investigative decision support and research tools whilst studying the patterns of crime locations.

Dragnet designed by David Canter and developed by International Research Centre for Investigative Psychology is a widely used geographical profiling system. Dragnet "provides a 'probability surface' to show the relative likelihood of an offender being based at any of a range of locations within the area of the crime" (3, p.405). Dragnet is a useful decision support tool and widely accepted and adopted by police forces in many countries.

2. Assessment and improvement of investigative information

In addition to providing new ways to gather information, psychology contributes to investigations through providing guidance in the evaluation of the validity and the reliability of the information that was already gathered in the previous phases of an investigation.

Gathering information is not sufficient without evaluating the accuracy of it. The use of scientific exploration of the information with the help of psychology is a crucial step in the investigation process.

In order to obtain detailed information related to the crime and the perpetrator, witness and victim accounts are essential parts of an investigation. However, especially in offences including violence the effect of the psychological and emotional factors have to be taken into consideration and interviewers need to be extra vigilant to cues of stress and memory blockage/distortion. Event-related memories might not be uncovered easily. Certain strategies should be adopted in order to improve the quantity and the quality of the information gathered from the witnesses and/or the victims.

In the criminal context, cognitive interview, developed by Fisher and Geiselman, which is used to recreate the event with the use of different cues such as smell, sound, images that were part of the event and if necessary by returning to the crime scene, is the most widely used and efficient interviewing technique.

Another contribution of psychology is in the evaluation of the accuracy and the credibility of the information gathered through interviews. Witness or victim testimonies can be intentionally or unintentionally biased and/or distorted due to the impact of the event on the individual who experienced or witnessed the offence as the event might evoke strong emotions in these individuals.

Table 1. Operational applications of investigative psychology.

Investigators' question	Informed by psychologists' understanding of:
What type of crime is this?	The differentiation of criminal action
What are the likely characteristics of the sort of individual who might commit a crime such as this?	Investigative inferences
Which of the possible suspects is most likely to have committed the crime?	Investigative inferences
Where is the offender most likely to live in relation to the crime?	Geographical offender profiling
Which other crimes are likely to have been committed by the same perpetrator(s)?	The consistency of criminal action
Are the decisions made during the investigation free from distortion and bias?	Decision-making under stress/cognitive load
Have the lines of enquiry pursued been determined systematically?	Decision-support tools
Can we get the witness to remember more?	How to interview a witness
Can we tell if a suspect is lying?	The detection of deception
Can we tell who wrote something?	Forensic psycholinguistics
Did this crime really happen?	False allegations
Did this person really do the crime they say they did?	False confessions

The accuracy of the memories of emotionally charged episodes have always been a topic of debate. The salience of the emotional experience to the subject can cause the consolidation of memory and the registration of peripheral details to be weakened (21, 22).

Based on the previous literature Reisberg summarizes the effect of strong emotions on memory by stating that emotions have two main effects on the recollection of an emotionally charged event (21). Emotions can be perceived as putting a spotlight on the main scene at the expense of leaving the periphery in dark.

Both real life examples and lab studies reveal three main features of emotional memories; compared to the unemotional memories they are more "complete, longer-lasting, and more accurate (21, p.17).

Exactly where the spotlight has been turned is a topic of debate as well. The focus of emotional registration is related to the conceptual, spatial and temporal

relationships to the emotionally charged event.

The experience of the crime causes arousal in most people who witness or experience the criminal event. Arousal is an important component in attentional processes which might lead to remembrance of the event with detail in the future. However, the way people perceive, interpret, relate and attribute a meaning to the event play a more profound role on memory than the mere experience of arousal.

The possible distortions that can occur in the recollection of emotional memories are found to be different not in number but in nature compared to the neutral events. The subjects tend to remember the latent elements in the story, such as unmentioned feelings, motives etc. In the case of witness testimonies, the risk of peripheral details to be distorted and/or omitted is a major limitation.

An important problem in witness accounts arises

when they are asked to recognize the details rather than to recall. One example for this problem can be seen in lineup identifications. Witnesses are prone to engage in 'unconscious transference' which result in false identification of people as suspects whom they have a familiarity in a context which is unrelated to the crime.

Suspect interview is another important part of investigations. The possibility of deliberate deception is very high whilst gathering information from suspects. During these interviews detection of deception has an essential role while investigating the validity of the information. Certain psycholinguistic and behavioral cues are found to be helpful. One well-known and widely used technique used in the context of criminal investigations is the polygraph, which measures the physiological indicators of arousal, is more helpful in the elimination of false positives than false negatives. It is found to be more helpful in detection of innocence than deception. Two main procedures used in polygraph tests are the control question and guilty knowledge tests.

In addition, developing and applying interview strategies based on the psychological characteristics of the offender is an important contribution of IP in gathering crucial information from the suspect.

The inferred offender characteristics from the offence style and actions during the time of offence are very helpful while forming the initial contact, determining the approach and the strategies that are going to be used during the interview with a possible suspect (20, 16).

The issue of false allegations is another problem encountered in investigations in addition to possible distortions in recall due to psychological mechanisms as mentioned above. False allegations are mostly encountered in crimes that are interpersonal in nature.

One of the most widely used technique is criteria-based content analysis (CBCA) (Undeutsch, 1989; cited in 1). CBCA relies on the assumption that certain features, such as "appropriate emotionality or irrelevant detail that are different from fabricated account" will be present in honest statements (1, p.188). The effectiveness of CBCA was shown in false-rape allegations (23) whereas CBCA wasn't found as a valid assessment tool for the children's sexual abuse statements (24).

Psychology provides useful guidelines rather than reaching absolute conclusions regarding the accuracy of the allegations. Future research should address this issue using case studies to increase the ecological validity of the findings.

Summary

Investigative psychology is grounded on scientific evaluation of the information related to an offence in order to provide valid inferences regarding the characteristics of the offender. Furthermore, psychology provides useful guidelines in gathering information, evaluation of the credibility of the present information and in the decision making process.

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