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# Preliminary Investigation of Profiling Tools and Methods

Wendy Sullivan-Kwantes

Quan Lam
Karen Richards
Andrea Hawton
Christina Powlesland
Peter Kwantes
Debbie Kerrigan-Brown

Canada

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## Defence R&D Canada – Toronto

Principal Author

*Original signed by Wendy Sullivan-Kwantes*

Wendy Sullivan-Kwantes

Group Leader, Individual Behaviour and Performance Section

Approved by

*Original signed by Stephen Boyne*

Stephen Boyne

Section Head, Individual Behaviour and Performance Section

Approved for release by

*Original signed by Stergious Stergiopoulis*

Stergios Stergiopoulis

Acting Chair, Knowledge and Information Management Committee , Acting Chief Scientist

# Abstract

The purpose of this Technical Memorandum is to outline the proposed component of the project : Canadian Forces (CF) Enhanced Influence Operations and the preliminary investigation of profiling tools for CF application and purposes. There are several different types of profiling, each with their various uses, unique foci, tools, methods and skill sets. In this report, we focus on three classes of profiling: Criminal, Geographic, and Leader. A team of six people from Defence Research and Development Canada (DRDC) - Toronto reviewed and summarized relevant information that was accessed in the public domain on these three classes of profiling, behavioural prediction, and personality assessment. The key articles were summarized in an extensive annotative bibliography (see **Annex A**). After reviewing the three types of profiling, we conclude that all forms of profiling require more scientific support. As discussed in the following report, there are, at least, *possible* uses for criminal/investigative, geographical and leader profiling and all may have potential interest and application to the CF. However, it is highly recommended that further theoretical and empirical evidence is found to ensure their scientific validity before DRDC or the CF invest in these tools and methods.

# Résumé

Le présent rapport a pour objet de tracer les grandes lignes de la composante proposée du projet 15ag : Opérations d'influence améliorées des FC et examen préliminaire des outils de profilage aux fins d'application dans les FC. Il existe plusieurs types de profilage ayant chacun leurs usages, thèmes, outils, méthodes et ensembles de compétences particuliers. Le présent rapport porte surtout sur trois classes de profilage : le profilage criminel, le profilage géographique et le profilage des dirigeants. Une équipe de six personnes de RDDC Toronto a examiné et résumé tous les renseignements pertinents accessibles dans le domaine public portant sur trois classes de profilage, la prédiction des comportements, la persuasion et l'évaluation de la personnalité. Les articles clés ont été résumés dans une longue bibliographie commentée (voir l'annexe A). Après avoir examiné les trois types de profilage, nous en sommes venus à la conclusion que toutes les formes de profilage doivent faire l'objet d'un plus grand nombre d'études scientifiques. Comme on peut le lire dans le rapport qui suit, il y a, tout au moins, certains usages *possibles* pour le profilage criminel/ d'enquête, géographique et des dirigeants. Cependant, il est fortement recommandé de recueillir plus de données théoriques et empiriques en vue d'en confirmer la validité scientifique avant que RDDC ou que les FC investissent dans ces outils et méthodes.

# Executive summary

## Preliminary Investigation of Profiling Tools and Methods:

### Wendy Sullivan-Kwantes DRDC Toronto TM 2011-106; Defence R&D Canada – Toronto; June 2011.

The purpose of this Technical Memorandum is to outline the proposed component of the project 15AG: Canadian Forces (CF) Enhanced Influence Operations and the preliminary investigation of profiling tools for CF application and purposes. A team of six people from Defence Research and Development Canada(DRDC) - Toronto reviewed and summarized all relevant information on three classes of profiling, behavioural prediction and persuasion, and personality assessment. The key articles were summarized in an extensive annotative bibliography (see **Annex A**).

There are several different types of profiling, each with their various uses, unique foci, tools, methods and skill sets. In this report, we focus on three classes of profiling: Criminal, Geographic, and Leader. Criminal Profiling (CP) is the prediction of characteristics of undetected offender(s) from characteristics of the offence(s) and the victim(s). Geographic profiling (GP) can be defined as a criminal investigative methodology that analyses the locations of connected crimes to determine the most probable area of an offender's residence. Leader Profiling (LP) employs the political personality profile, which is a comprehensive psychological representation of the leader in context.

CP "is a technique for identifying the major personality, behavioural, and demographic characteristics of offenders based on an analysis of the crimes they committed". CP is a process that is typically applied to investigations involving serial murders, sexual assaults and arson. To date, there is very little support for CP from the scientific research literature but it is noted that theoretically, the underlying concepts of criminal profiling are underdeveloped, the methods are unreliable and overall, CP is lacking empirical support.

GP bases its results on two theories: circle theory and distance decay. GP supporters/users claim that GP is helpful when investigating criminal activity such as suspect prioritization, patrols, surveillance, neighbourhood canvassing, police record system, and Department of Motor Vehicle searches. Similar to CP, the research on GP suggests the applicability of this technique is limited and is also lacking empirical support.

LP, as it is practiced in the domain of politics, seeks to understand a political leader's personal characteristics as a means of predicting his or her future political decisions and behaviours. Two approaches were investigated. The first method is empirically-driven and seeks to predict political leader behaviour by examining the effect of one, or a set of discreet, leader characteristics on a behavioural outcome. The second method profiles a leader as a "whole", by taking into account psychological and biographical information to come up with a comprehensive understanding of the individual. The first method is supported by research data, but it gives a fairly narrow perspective of a leader. The second approach is more comprehensive in its approach to leader profiling, but it is difficult, if not impossible, to validate. As such, there are currently no ideal methods for leader profiling.

After reviewing the three types of profiling we conclude that all forms of profiling require more scientific support, in theory and in empirical evidence. Profiling has been popularized to the point where we think only experts can be profilers, when there is a lack of empirical data to support that notion. All types of profiling may have potential interest and application to the CF. More insight would be needed from the CF to determine whether it is worth investing resources and time to test if there actually *is* empirically support for profiling or not. As discussed in the following report, there are, at least, *possible* uses for criminal/investigative, geographical and leader profiling.

It is recommended that DRDC engage in more discussions with the CF to determine which type(s) of profiling, if any, may be of value to the Forces. Such background work is necessary because a systematic evaluation of even any *one* type of profiling would be a great endeavour. This is not to say that profiling is not a potentially valuable tool for the CF, but that there is currently, surprisingly little amount of conclusive evidence to support it.

# Sommaire

## Examen préliminaire des outils et des méthodes de profilage

### Wendy Sullivan-Kwantes, DRDC Toronto TM 2011-106; R&D pour la défense Canada – Toronto; novembre 2011.

Le présent rapport a pour objet de tracer les grandes lignes de la composante proposée du projet 15ag : Opérations d'influence améliorées des FC et de l'examen préliminaire des outils de profilage aux fins d'application dans les FC. Une équipe de six personnes de RDDC Toronto a examiné et résumé tous les renseignements pertinents portant sur trois classes de profilage, la prédiction des comportements, la persuasion, ainsi que l'évaluation de la personnalité. Les articles clés ont été résumés dans une longue bibliographie commentée (voir l'annexe A).

Il existe plusieurs types de profilage ayant chacun leurs usages, thèmes, outils, méthodes et ensembles de compétences particuliers. Le présent rapport porte surtout sur trois classes de profilage : le profilage criminel, le profilage géographique et le profilage des dirigeants. Le profilage criminel (PC) consiste à prédire les caractéristiques d'un ou de plusieurs délinquants non repérés à partir des caractéristiques du ou des délits et de la ou des victimes (Devery, 2010). On pourrait définir le profilage géographique (PG) comme une méthodologie d'enquête criminelle fondée sur l'analyse des lieux où ont été commis des crimes reliés dans le but de déterminer l'emplacement le plus probable de la résidence d'un délinquant. Le profilage des dirigeants (PD) se fonde sur le profil de la personnalité politique, qui est une représentation exhaustive de la psychologie du dirigeant mise en contexte (Post, 2003).

Le PC « est une technique visant à recenser les principales caractéristiques démographiques des délinquants, ainsi que celles liées à leur personnalité et à leur comportement en s'inspirant de l'analyse des crimes qu'ils ont commis » (traduction libre) (Cook & Hinman, 1999, p. 231). Le PC est une méthode appliquée normalement aux enquêtes sur des agressions sexuelles, des incendies criminels et des meurtres en série. Jusqu'à présent, on trouve très peu de documents de recherche scientifique appuyant le PC (Devery, 2010; Bourque, Mauer, Riemann, Spinath, & Angleitner, 2009; Snook, Eastwood, Gendreau, Goggin, & Cullen, 2007; Snook et autres, 2008). Devery (2010) & Snook et autres (2008) observent qu'en théorie, les concepts sous-jacents du profilage criminel ne sont pas assez développés, les méthodes ne sont pas fiables et, dans l'ensemble, on manque de données empiriques sur le PC.

Le PG se fonde sur deux théories : la théorie des cercles et celle de la diminution en fonction de l'éloignement. Les adeptes/ utilisateurs du PG prétendent que ce type de profilage est utile dans le cadre des enquêtes sur des activités criminelles, p. ex. priorisation des suspects, patrouilles, surveillance, étude du voisinage, système de casiers judiciaires, et les recherches effectuées dans les dossiers du service des véhicules automobiles (Rossmo, 2008). Comme dans le cas du PC, la recherche sur le PG semble indiquer que cette technique n'est applicable que dans un nombre limité de situations et qu'on manque également de données empiriques sur ce type de profilage.

Le profilage des dirigeants (PD), tel qu'il est pratiqué sur la scène politique, vise à comprendre les caractéristiques personnelles d'un chef politique afin de prédire les décisions qu'il prendra ou les comportements qu'il aura dans l'avenir. On s'est penché sur deux approches. La première est

axée sur des données empiriques et vise à prédire le comportement d'un dirigeant politique en étudiant l'effet d'une ou de plusieurs caractéristiques distinctes de dirigeant sur un certain comportement. La deuxième méthode trace le profil d'un dirigeant « dans son ensemble », c'est-à-dire qu'elle examine les données psychologiques et biographiques pour acquérir une compréhension exhaustive de la personne. La première méthode s'appuie sur des données expérimentales, mais présente une perspective plutôt étroite du dirigeant. La deuxième approche crée un profil plus exhaustif du dirigeant, mais il est difficile, voire même impossible, de le valider. Il n'existe donc actuellement aucune méthode idéale pour établir le profil d'un dirigeant.

Après avoir examiné les trois types de profilage, nous en sommes venus à la conclusion que toutes les formes de profilage doivent faire l'objet d'un plus grand nombre d'études scientifiques qui permettront de recueillir des données théoriques et empiriques. On est porté à croire que le profilage ne peut être effectué que par des experts, alors qu'il n'y a pas assez de données empiriques pour appuyer cette notion. Tous les types de profilage pourraient intéresser les FC, qui pourraient en faire l'application. Il faudrait que les FC fournissent plus d'indications pour nous permettre de détermine s'il vaut la peine de consacrer des ressources et du temps à vérifier s'il *existe* oui ou non des données empiriques appuyant le profilage. Comme vous pourrez le lire dans le rapport qui suit, il y a, tout au moins, certains usages *possibles* pour le profilage criminel/ d'enquête, géographique et des dirigeants.

Il est recommandé que RDDC poursuive les discussions avec les FC en vue d'établir quel(s) type(s) de profilage, le cas échéant, pourrait avoir un intérêt pour les forces. Ces travaux préliminaires sont nécessaires parce que l'évaluation systématique ne serait-ce que d'*un seul* type de profilage représente une tâche d'envergure. On n'entend pas par là que le profilage ne pourrait pas s'avérer un outil utile pour les FC, mais plutôt qu'il n'existe actuellement, et étonnamment, peu de données concluantes à l'appui.

# Table of contents

# List of figures

# Introduction

There are several different types of profiling, each with their various uses, unique foci, tools, methods and skill sets. In this report, we focus on three classes of profiling: Criminal, Geographic, and Leader. Criminal Profiling (CP) is the prediction of characteristics of undetected offender(s) from characteristics of the offence(s) and the victim(s) (Devery, 2010). CP is typically applied to investigations involving serial murders, sexual assaults and arson. Geographic profiling (GP) can be defined as a criminal investigative methodology that analyses the locations of connected crimes to determine the most probable area of an offender's residence. Geographic profiling is generally used in cases of serial murder or rape, but can be used for cases involving arson, bombing, robbery, and other crimes. This technique can help police detectives prioritize information when they are faced with large-scale major crime investigations that often involve numerous suspects and tips. Leader Profiling (LP) employs the political personality profile, which is a comprehensive psychological representation of the leader in context (Post, 2003).

In addition to criminal, geographic and leader profiling, we also review scientific literature on the methods and theoretical frameworks of personality assessment and behavioural prediction. Although not directly related to profiling, knowledge in each of these two areas will aid the broader goal of predicting target intent and interdicting and mitigating or influencing target behaviour.

In this report, we review the research and arguments made for and against each of the three profiling types introduced above. Key articles in each of these three areas were summarized and are included in an extensive annotative bibliography (see Annex A).

## Criminal Profiling (CP)

CP "is a technique for identifying the major personality, behavioural, and demographic characteristics of offenders based on an analysis of the crimes they committed" (Cook & Hinman, 1999, p. 231). CP is a process that is typically applied to investigations involving serial murders, sexual assaults and arson. The goal of profiling is to identify characteristics of the unknown offender by examining the details of a crime scene and victim characteristics. The results are then supplemented by information from similar cases and working backwards, using a logical process adding data from crime scenes and witness accounts (Devery, 2010; Crighton, 2010). The role of a profile is to serve as a guide to investigators, to help either match the profile with a pool of suspects, or to help create descriptors from which a pool of potential suspects can be generated (Kocsis, 2003). CP is also known as psychological profiling, offender profiling, criminal investigative analysis, and crime action profiling. For the past few decades, profiling has been under scrutiny by many researchers who claim that it lacks both theoretical and empirical support (Devery, 2010; Crighton, 2010; Risinger & Loop, 2002; Snook, Cullen, Bennell, Taylor, & Gendreau, 2008).

Criminal profiling owes its popularity to the Federal Bureau of Investigation (FBI) (Snook, Gendreau, Bennell, & Taylor, 2008). In the 1970s, with the establishment of the FBI Behavioural Science Unit, the uses, research and popularity of the American model of profiling increased among law enforcement agencies. By the early 1980s, it began being widely used in the general law community. At that time, it appears that much of the profiling research was based on small unrepresentative samples. These early researchers advised caution when using profiling, stating that profiling was not a science, was limited in its uses, and that it should not replace other investigative procedures (Devery, 2010). However, that message appears to have been lost with the buy-in from many police agencies. The research conducted by the FBI in the 1980's on profiling concluded that, "it is imperative that this be viewed as demonstrating

only that profiling is an objective possibility". Their research does not claim that profiling can actually be done; only that further study on the topic is reasonable and appropriate (Devery, 2010).

There are a number of methods that profilers use to create their profiles. Crighton (2010) discusses four common approaches to CP: Diagnostic Evaluation (the use of clinical models and methods), Criminal Investigative Analysis (the method developed by the FBI), Crime Action Profiling (similar to crime investigation analysis but uses sophisticated statistical methods such as multidimensional scaling), and Investigative Psychology (uses empirical approach to profiling crimes by using ideographic analysis of crime-related behaviours and offender characteristics). The approaches profilers use to create their profiles appear to be shaped by their training. For example, profilers who focus on clinical/psychological perspectives tend to draw on their psychological training without corroborating their conclusions using any of the other approaches (Snook et al., 2008).

Over the past few decades, profiling has gained popularity in investigations as well as popular culture through its portrayal in the media and fictional work (Crighton, 2010; Kocsis, 2003). As a result of increased exposure, profiling has gained credibility - a credibility that should actually be earned by passing rigorous tests of its validity. In our review of the literature, we found that many of the articles written on the topic of profiling, and much of the work on the topic cited by authors, refer to the same cadre of names: Kocsis, Taylor, Snook, Canter, and Bennell. These authors, who can be considered the "main players" in the profiling domain, publish articles debating whether profiling is possible and whether or not there is any evidence. Parenthetically, it is worth noting that there is a suspicion in the academic community that Dr. Kocsis misrepresented himself, his academic and work qualifications (Turvey, 2007).

There are a number of professionals and academics who claim that there is, at least, some merit to CP. CP supporters argue that over the past two decades a body of empirical evidence has been developed from quasi-experimental studies testing the predictive capabilities of profilers. Pinizzotto and Finkel (1990) found that professional profilers significantly outperformed non-profilers on a sexual assault case (but not on other cases involving murders) and as a group, professionals (profilers, psychologists, and detectives) outperformed students. These studies often followed a similar design of having profilers and non-profilers complete a "profiling" questionnaire designed by the experimenter, in which the subject is asked questions about the offender being profiled. The results are then compared. The other common technique is to make presumptions about what psychological capabilities a profiler must have or use to perform well in his/her job, and test them. To date, there is no agreement about what psychological abilities underpin successful profiling.

Even Kocsis, Middledorp & Karpin et al. (2008), one of the main CP supporters, stated that there are difficulties in trying to measure the capabilities of criminal profilers. One of the difficulties is recruiting profilers to partake in experiments. Therefore, Kocsis (2003) attempted to make empirical judgements by reviewing the results of other studies of which the sample size was only 11 participants. Even he acknowledged that a sample size of 11 profilers across several articles could, in no way be representative, or statistically powerful enough, to draw any conclusions with confidence. Kocsis et al. (2008) noted other difficulties in trying to empirically measure profiling. These difficulties included random sampling, lack of cooperation of profilers to have their work assessed, problems with reliably measuring predictions, problems with ensuring sound methodology, issues with language and definitions (e.g., criminal profile vs. profiling and what exactly constitutes a profile), and differences in the amount of information found in profiles. Overall, in the current literature there are very mixed results and none that are conclusive. Articles that claim to have empirical evidence favouring profiling often have small sample sizes and show mixed results. The studies also focus on limited types of criminal behaviour without adequate consideration of other types for which the process might not be as effective (Crighton, 2010).

A review of empirical evidence has noted the following issues:

1. "within the CP domain, negligible quantitative differences have been found between the predictive ability of professional profilers and non-profilers." (Snook et al., 2008, p. 44). One of the first academic articles investigating the accuracy of profilers, by Pinizzotto and Finkel (1990), found that there were no significant differences between trained profilers, police detectives, clinical psychologists and college students in predicting the characteristics of a murderer. In fact, the professional profiler group scored the lowest among the groups (Kocsis, 2003).

2. There is also little evidence indicating that CP has made substantial contributions to solving challenging criminal cases involving serial homicide or rape. In fact, profiling appears to have hurt a number of criminal cases where it has sidetracked an investigation or contributed to the arrest of innocent persons (Devery, 2010; Snook et al., 2008). In 1993, expert members of an American Psychological Association panel expressed concern about the lack of reliability and validity in profiling because of its potential to cause law enforcement to incorrectly target suspects and violate their rights (Cook & Hinman, 1999).

3. Devery (2010) concluded from his extensive review that the use of CP in criminal investigations "should be approached cautiously, if at all." (p. 406). Profiling has been regarded as an "unregulated free market" with "little quality control" (Crighton, 2010, p. 155) and there does not appear to be any consensus about who is trained to be a profiler (Snook et al., 2008).

4. There is little consideration for cultural diversity and its role in judging behaviour.

5. There is a lack of uniform definitions within the field of CP in general (Crighton, 2010).

6. A majority of the research uses an artificial context of a multiple-choice questionnaire to measure profilers' skills and abilities (Kocsis, 2003).

7. Finally, a critical concern is that profiling data (retrospective classification) is unreliable as much of it is based on past crimes (contained in written records, witness accounts and information from the offenders themselves) which may or may not be accurate or truthful (Crighton, 2010; Cook & Hinman, 1999).

8. The most recent research in CP is found within the domain known as, investigative psychology (Canter, 2011), where a "profiling equation" or framework is proposed. In the framework, the investigator looks at inferences, actions in an offense, and the characteristics of the offender. Canter claims that the popular, *radex* model is empirically robust. A *radex* model "gives a conceptual interpretation of these data by identifying groups or 'regions' of highly co-occurring behaviours that instantiate a single explanation for offending (Taylor, Donald, Jacques & Conchie, 2012). Taylor et al. dispute the claim and find that the popular *radex* models of offender behaviour are falsifiable and they are not built on a foundation of good science. They found it was virtually impossible to empirically test a modular facet when using Jaccard coefficients[1] because variables will structure themselves around the frequency of variables in the model, not the co-occurrences, which the model uses.

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[1] Jaccard coefficient is a unique mathematical way to measure behaviour co-occurances

To date, there is very little support for CP from the scientific research literature (Devery, 2010; Borkenau, Mauer, Riemann, Spinath, & Angleitner, 2009; Snook, Eastwood, Gendreau, Goggin, & Cullen, 2007; Snook et al., 2008). Snook et al. (2008) claim that after a review of the CP literature, the majority of CP approaches are based on outdated theories and lack empirical support. A majority of the CP approaches make the assumption that underlying traits determine the criminal offenders' behaviour and these offenders will display similar behaviours in their crimes and in their lives. More recent research shows that it is a mistake to rely on traits as the primary explanation for predicting criminal behaviour. In conclusion, the search for theoretical and empirical evidence is ongoing. Police agencies and other investigative institutions continue to train and use profiling methods regardless of the lack of scientific evidence.

Military Application:

Criminal profiling, should it be actually possible, does have many potential military applications. The ability to create profiles of key persons of interest and identify major personality, behavioural, and demographic characteristics may aid in catching terrorists or help in predicting future actions of key persons of interest. Profiling may also be useful to the military should they want to use these tools to aid in counter terrorism techniques, such as trying to find out whether or not local nationals can be trusted as informants. The problem is that the people they may want as informants would generally not have a history of illegal behaviour. Profiling (a combination of CP and GP) may also be useful for investigating Combat Improvised Explosive Devices (IEDs) scenes by providing a more detailed picture -- for example, what does it look like, what are the parts (supply chain), is there a pattern in location, who may have created the IED? (Bennell & Corey, 2007).

Recommendation:

Is criminal profiling more of an art or a science? No person, theory or experiment has been able to answer this question. Current research (Devery, 2010; Snook et al., 2008; Crighton, 2010; Kocsis, 2003) suggests more theory and empirical support is needed, there should be professional regulation of profilers, more evidence-based practice, and more cross-cultural research. Nevertheless, we agree with Lilienfeld (2005) that there are at least three reasons for researchers to conduct proper scientific evaluations of practices that currently lack scientific support. First, CP may actually work. As Lilienfeld has argued, extraordinary claims may be shown to contain a core of truth that should not be automatically dismissed. In our opinion, the burden is on profilers, who make extraordinary claims about their abilities, to prove their worth by actually participating in controlled experimental studies. Second, people deserve to have an accurate view of CP. Conducting and disseminating scientific research is the best method to ensure that this occurs. Third, the effect of CP on police investigations is unknown. Research will be able to determine these effects, whether positive or negative. We anticipate that police officers might argue that they do not have time to wait for scientific evidence from CP research because they have to use something to assist them in their investigations. Such a response is justified, but, according to Lilienfeld, it is likely to cause tension between those who are sceptical about CP and those who believe that CP can contribute to an investigation."

It is our recommendation to support the academics who strongly claim that there is no theoretical and/or empirical evidence supporting the capabilities of CP and more research is required. Overall, we think there is a possibility that some aspects of CP may be valid. We think that should any researcher, institution or department be interested in pursuing CP, it would be necessary to start at first principles and develop basic empirical tests of profiling abilities. We also recommend if possible, to investigate the profiling methods currently taught, ideally starting when the profilers are trainees. We believe it is

*possible* that people can profile given the right techniques and any inabilities may be a reflection of the methods that are currently in use.


## Geographic Profiling (GP)


GP was developed in the 1990's by an ex-Vancouver Police Officer, turned academic, Dr. Darcy Kim Rossmo.  GP "is an investigative support technique for serial violent crime investigations.  The process analyzes the locations connected to a series of crimes to determine the most probable area of offender residence.  It should be regarded as an information management system designed to help focus an investigation, prioritize tips and suspects, and suggest new strategies to complement traditional methods" (Rossmo, 2000, p. 216).

GP bases its results on two theories: circle theory and distance decay. Circle theory is a way of distinguishing whether the perpetrator is a marauder or a commuter.  An "offence circle" is the region enclosed by a circle, the diameter joins the two most distant crimes (Rossmo, 2000, p. 150). A *marauder* is an individual who resides in a location that is a focus for his/her crime(s), whereas, a *commuter* is an individual who travels away from his/her place of residence, into another area to commit offences.  In other words, a marauder lives within the "offence circle" and a commuter lives outside of the offence circle (Rossmo, 2000, p. 150). GP also uses distance decay,  a search model that starts from "the sites and routes that compose the activity space and then decreasing as distance away from the activity space increases" (Rossmo, 2000, p. 119).  In turn, these theories are based in spatial analysis, which is a notable and widely used tool in criminal investigations (Kent, Leitner & Curtis, 2006).  Arguably, most GP measures and theoretical interpretations are grounded in environmental criminology (Brantingham & Brantingham 1981), including the theoretical interpretations of Rossmo (2000).

Brantingham & Brantingham (1981) advance a number of theoretical concepts, such as, *Routine Activity, Crime Pattern, Rational Choice* and the idea of a *Buffer Zone*.  Since Rossmo (2000) is the primary source used in all GP support material, it is appropriate to define these concepts using Rossmo's (2000) definitions. *Routine Activity Theory* is the study of the processes and patterns of regular legal activities and their relationship to the illegal acts of the perpetrators. *Crime Pattern Analysis,* developed by the British police, is a computer database in the National Criminal Intelligence Service (NCIS), which conducts comparative analysis on all murder, rape and abduction cases within the system to understand, in various ways, if the crimes committed share similar geographic or mapped patterns. *Rational Choice Theory* looks at criminal behaviour and crime and views them as the outcomes of choices of the perpetrator.  These decisions, it is believed, are based on the perpetrator's ability to weigh the rewards and costs of carrying out the act rationally.  The final theoretical concept used in most GP theory is the *Buffer Zone* theory.  This theory suggests that there is an area, usually around the perpetrator's home, in which victims are less desirable due to the level of risk involved with the proximity to the perpetrator's residence. Overall, these principles and factors are then entered into a distance decay algorithm in a GP program.

GP supporters/users claim that GP is helpful when investigating criminal activity such as "suspect prioritization, patrol and surveillance, neighbourhood canvassing, police record system, and Department of Motor Vehicle searches" (Rossmo, 2008, p. 37). However, the chance of success increases when a number of conditions are met. These conditions include that there is only one offender (if there are two they reside in the same area); the offender is a local *hunter[2]*, and not a *poacher[3];* there is ample and

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[2] A hunter is "an offender who sets out specifically to search for a victim, basing the search from his or her residence" (Rossmo, 2000, p. 139).

reasonably complete evidence; and the offender's search area has not changed during the period of the crimes (Rossmo, 2008, p. 36-37).

According to the Crime Mapping and Problem Analysis Laboratory's report (2006), there are 160 different versions of software used in GP analysis. The system called *Rigel Analyst* (Rossmo, 1997, currently version 10.0)*, ,* is most widely used and is the system that is recognized by authorities in Canada. Other commonly cited programs include *CrimeStat* (Levine, 2010, currently version 3.3) and *Dragnet*, (Canter, 2000). In each system, there are a set of agreed upon assumptions that need to be met to enter all of the pertinent information into any of the systems' algorithms, (O'Leary 2009, p. 254):

a. The method should be logically rigorous.

b. There should be explicit connections between assumptions on offender behaviour and the components of the model.

c. The method should be able to take into account local geographic features; in particular, it should be able to account for geographic features that influence the selection of a crime site and geographic features that influence the potential anchor points of offenders.

d. The method should be based on data that are available to the jurisdictions(s) where the offences occur.

e. The method should return a prioritized search area for law enforcement officers.

Stakeholders & Applied Field Argument:

Known users of GP methods, as a tool for criminal investigation, are the Canadian Intelligence Agency (CIA), Federal Bureau of Investigation (FBI), Royal Canadian Mounted Police (RCMP), Ontario Provincial Police (OPP), Sécurité de Québec (SQ) and various regional police forces in Canada and the United States. Rossmo himself travels around the world to aid in criminal investigations. In most cases, GP also requires a CP in order to enter all of the data into the computer system. The Canadian Police Research Centre (CPRC), which is a part of the Government of Canada, published an article about GP in its bulletin and referred to it as a "Success Capsule". Although this article is not academic in nature, does not provides statistics and does not provide evidence to support GP, it suggests that GP has a "proven track record here in Canada" and that "Rigel has been able to locate an unknown suspect's home within a few blocks".

The CPRC is a partnership between the RCMP, the Canadian Association of Chiefs of Police (CACP) and the National Research Council of Canada (NRC). This clearly indicates that the CPRC supports *Rigel* as the GP system of choice in Canada. Furthermore, GP was highlighted in a 1999 publication, *The Police Chief*, which discusses how GP was a crucial component in an RCMP rape case (MacKay, 1999). It also offers three very compelling anecdotes of GP successes in criminal investigation cases. Clearly, there is an invested interest of the Canadian police forces across the country as they are already using GP systems in their investigations.

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[3] A poacher is "an offender who sets out specifically to search for a victim, basing the search from an activity site other than his or her residence, or who commutes or travels to another city during the victim search process" (*Ibid*, p. 139-140).

Many police forces across North America are training and using GP in practice for criminal investigations. Supporters of GP tend to use very persuasive anecdotes to support the GP claim to success. For example, one such anecdote indicates that:

"A series of 11 sexual assaults during a 35-day period in 1998 were attributed to a single offender. Extensive media coverage of the crime produced approximately 300 possible suspects. The geographic profile limited the area under consideration to 0.03 square miles (2.2 percent) and prioritized the list of suspects. "The Peel Regional Police Service in Mississauga, Ontario, Canada, began obtaining deoxyribonucleic acid (DNA) samples from the most probable suspects on the prioritized list. DNA identified the offender; he was number one on that list" (MacKay, 1999, pg. 59).

There are some criticisms regarding the practice of GP, outlined in the academic argument below. As such, the main supporter of GP, Rossmo (2005), also takes a critical look at Snook , Taylor & Bennell (2004), one of the main critics of GP, suggesting that the research study is faulty on four points:

a. Data selection did not meet geographic profiling assumptions outlined in Rossmo (2000).

b. Samples only have three locations, which are too low for pattern detection.

c. The use of nonlinear error measured linearly in the methods.

d. Geographic profiling strategies were distorted.

What this means, generally, is that Rossmo (2005) does not believe that Snook et al. (2004) can replicate real criminal investigations in a labortory setting and therefore he attempts to nullify that study. This is the mainstay of the policing community: that laboratory experimentation or in-house research design studies are unable to replicate "real life" situations and are thus, unable to test GP empirically.

Current academic research on the other hand, does not support, in general, the use of CP, GP or Rossmo's findings. Brent Snook, from the Psychology Department at Memorial University, St. John's Newfoundland, Canada, Craig Bennell from the Department of Psychology, Carleton University, Ottawa, Canada and Paul J. Taylor, from the Department of Psychology, Lancaster University, Lancaster, United Kingdom, are the most published academics in the field of GP and CP studies. In a 2008 publication, they concluded that, "CP should not be used as an investigative tool because it lacks scientific support" (Snook, Bennell, and Taylor, 2008, p. 1257), although the support for GP tends to be slightly more inconclusive, and the same researchers indicate the need for further investigations to be able to support or negate the usefulness of GP.

The critique of GP suggests that "results show that training significantly improved predictive accuracy, regardless of the number of crime locations or topographical detail presented" in their study (Bennell, Snook, Taylor, Corey & Keyton, 2007, p. 119) and "in addition, trained participants are as accurate as the geographic profiling system" used in the study (*Ibid*.). In other words, participants who are completely untrained and unknowledgeable about GP principles and methods are taught a few heuristics (that are the basis for the mathematical algorithms used in GP systems) these individuals perform just as well as the system *CrimeStat* in predicting where the offender may live. The finding that GP, to date, has yet to be validated empirically is also reiterated in another study (Snook et al., 2007).

Another study "indicates that some of the most frequently cited results in the research literature on offender spatial behaviour can be summarized as simple heuristics that can be quickly understood and utilized by people without any special training in criminal behaviour or experience of criminal

investigations" (Snook, Canter, & Bennell, 2002, p. 116). This provides support for the two heuristic devices used: distance decay and circle hypothesis. Also, participants, "on average, were able to make as accurate predictions as a geographic profiling system" and the results also indicate that "if the basic processes underlying offender spatial behaviour are understood, prerequisite qualifications may not be required to make accurate geographic predictions" (*Ibid*, p. 117).

Research by Snook et al. (2004) and Snook, Zeto, Bennell, and Taylor ( 2005) finds that individuals with a small amount of training predicted the geographies of the offender's homes just as well as the computer GP tool called *Crimestat* and that GP is not positively related to accuracy. This is also true of tasks that ranged in complexity and this challenges the assumption that complexity equals accuracy. This article compares GP strategies and how some programs perform better than others. This study tests eleven geographic profiling strategies, six of which are "spatial distribution strategies" and five are 'probability distance strategies.

Military Application:

Only one article addressed a possible military application. Bennell & Corey (2007) discussed the possibility of GP techniques on terrorist attacks. They claim that GP may be useful in the terrorist context *but* only under particular conditions and most likely only useful in investigating domestic terrorism as opposed to international terrorist activity. Overall, they concluded that more research would be required to determine under what exact conditions GP may be useful. There are many assumptions that need further evaluation in order to discuss a military application.

Recommendation:

Before being able to apply GP to any investigation or problem space, there needs to be a study conducted where GP is supported with empirical evidence, i.e., if we are to continue on the route that GP is a "scientific" endeavour. If we continue on the route that GP is a holistic method of data interpretation with unsystematic methodologies, practices and varying mathematical principles, then anecdotes of GP successes may be able to cross the police - military boundary. There is obviously a large-scale, whether political, or application-based, buy-in to the strategy that is, perhaps, worth further investigation. At this point however, since there is no scientific evidence supporting GP, a recommended use of its principles would be unwarranted, and borderline unethical, for our scientific purposes at DRDC.

## Leader Profiling (LP)

First employed by the CIA in the 1960s, LP, as it is practiced in the domain of politics, seeks to understand a political leader's personal characteristics as a means of predicting his or her future political decisions and behaviours. There are typically two types of models used in LP. The American model typically gathers as much information as possible about a leader and creates a profile using all this information, while the British model of leader profiling is more similar to personality assessment and behavioural prediction.

Given that access to political leaders is restricted, British LP is accomplished using information that has already been gathered. More specifically, the material used to create leader profiles include such data as interviews given to reporters, speeches, conferences, and publicly - available biographical data including memoirs and biographies, etc. Once obtained, these data are then analysed in order to develop some form of understanding of the leader. The depth of understanding will depend on how the profiling is completed.

Looking through the literature on LP will reveal several key people doing work in the area. These people can, broadly, be separated into two groups. The first group is empirically-driven and seeks to predict political leader behaviour by examining the effect of one, or a set of discreet, leader characteristics on a behavioural outcome (e.g., how a leader's score on achievement, affiliation-intimacy, and power motive affects his or her political decisions). Researchers who fall into this category include Winter (1991); Suedfeld (2010); Hermann (1980); and Simonton (1986) (see **Annex A** for details of their work).

The second group profiles a leader as a "whole", by taking into account psychological and biographical information to come up with a comprehensive understanding of the individual. For instance Post's integrated personality profiling focuses on 5 major themes: psychobiographic information (which includes looking at the individual's family origins and early years, education, socialization, professional career, family and friends), personality (including intellectual capacity and style), emotional reactions, drives and character structure, and interpersonal relationships (Post, 2003). This personological approach affords a much more comprehensive understanding of a leader.

There are pros and cons to each of these approaches. Empirically-driven methods are, almost by necessity, constrained to a set of very limited and specific variables, which can be concisely operationalized and tested. However, because they are limiting the investigation of a political leader's personality into a handful of variables, it is improbable that these variables capture all the relevant aspects of a leader's personality that contribute to their decisions. Thus, understanding a leader in such a limited fashion does not afford us sufficient knowledge about the leader to confidently make predictions about all of his/her major future decisions - only the decisions that are directly related to the variables under study. For example, Winter (1991) might be able to tell us about a leader in regards to how his/her scores on achievement, affiliation-intimacy, power motive and any behavioural outcomes have been found to be associated with these three variables because he studies them, but he cannot tell us aspects of a leader that are outside of the realm of these three variables. Thus, although the empirically-driven approach can help us make predictions with more confidence, we are limited to predictions related to the variables that have already been studied by the various researchers using this approach. Admittedly, empirically-driven researchers would argue that the purpose of their work is not to understand a leader, as a whole, but to understand how a specific leader characteristic (or set of characteristics) contributes to a political decision or outcome. Advantages to this approach include the fact that profiling a leader can be much faster, due to the fact that we are limiting our profiles to a discreet number of variables. This reduces the amount of data that may need to be collected as well as the time required to analyse the data. Additionally, in methods where individuals are assigned a score on a variable, quick comparisons can be made across individuals. In addition, there is less subjectivity in the development of profiles due to the fact that there are specific coding schemes, which coders must use.

The strength of the personological approach is that, if we can comprehensively profile a leader and understand him/her in a multi-dimensional fashion (i.e., how he/she thinks, his/her motivations, how he/she relates to others, deals with conflict, etc.), it may be possible to anticipate his/her reactions and behaviours to a wide variety of events. To the extent that this is possible, it would seem that the personological approach is a more powerful tool than the currently available empirically-supported theories. Having said this, a downside of the personological approach is that it is much more time-consuming to do because a large amount of biographical and psychological data must be collected. Additionally, scientifically validating such an approach would be quite difficult. As Tetlock (1998) describes it, it is difficult to set standards of evidence and proof for causal claims in a domain where: 1) key events occur only once, 2) there are typically many plausible causal candidates/variables, and 3) experimental control is impossible and statistical control is often problematic. Thus, given a political outcome, X, determining the necessary and sufficient antecedents leading up to outcome X can be

problematic, in and of itself, without then subsequently determining what aspects of an implicated individual's personality motivated that person's role in outcome X.

<u>Military Application:</u>

Despite some of the methodological issues with the way LP is being done, the military setting is one where the use of it could yield very useful information. In cases where the decisions of a foreign country's political leader have bearing on its military action, the ability to anticipate the leader's decisions can help our forces in anticipating their actions and planning our own response.

<u>Recommendation:</u>

As discussed above, there are two main approaches to LP, the empirically-driven approach and the personological approach. Although the former is supported by research data, it gives a fairly narrow perspective of a leader. The personological approach on the other hand, although more comprehensive in its approach to LP, is difficult, if not impossible, to validate. As such, there are currently no ideal methods for LP.

## Personality Assessment

The assessment of personality can be accomplished in several ways. The following is a short summary of various methods of personality assessment:

*Self-report, Objective Tests* require individuals to provide answers to short questions/statements using rating scales. Examples include the Minnesota Multiphasic Personality Inventory (Hathaway & McKinley, 1943) and the Big Five Inventory (John & Srivastava, 1999).

*Subjective Tests* require individuals to provide a narrative to or interpret ambiguous images - i.e., to project their personality onto ambiguous stimuli. Examples include the Thematic Apperception Test (TAT; Morgan & Murray, 1935) and the Rorschach Inkblot Test (Rorschach, 1921).

*The Implicit Associations Test* (IAT; Greenwald & Banaji, 1995) was originally designed to measure people's implicit attitudes, which were said to evade traditional paper and pencil measures. It was subsequently adapted for measuring implicit personality (specifically, the Five Factor Model of Personality - openness to experiences, extraversion, conscientiousness, neuroticism, and agreeableness).

*Content Coding of Verbal/Written Information*. Personality can be assessed by coding a target's verbal/written information. Depending on the personality dimension of interest and its theoretical/operational definitions, the method of coding will differ.

*Computational* methods use mathematical algorithms to analyse written text, the outcome of which is a set of "themes" found within the text. The currently most widely used method in Social Psychology is the Linguistic Inquiry and Word Count (LIWC; Pennebaker & King, 1999).

*Thin Slices of Behaviour* (Borkenau, Mauer, Riemann, Spinath, & Angleitner, 2004). In this method, a "coder" is shown brief video clips of an unknown target's behaviour or appearance, and rates the target on the personality dimension of interest. Research has shown that coders' ratings are significantly correlated with targets' self-ratings of various personality dimensions.

## Behavioural Prediction and Persuasion

It is common for the CF to carry out missions on foreign soil where it is forced to rely on the assistance and cooperation of the local population in order to effectively and efficiently complete a task. For instance, Canada's participation in the Reconstruction Mission in Afghanistan has meant that troops have had to gain the trust and support of locals in order to keep the Taliban insurgency and warlords from overtaking stabilized territory and to forge ahead in a new battleground (Smith, 2007). In such situations, the CF's ability to anticipate the behaviour of those working for and against them, as well as persuade those whose cooperation is critical to the mission, is vital to their success.

The Theory of Planned Behaviour, the Elaboration Likelihood Model and the social influence literature within Social Psychology all offer a scientific basis from which a program of behavioural prediction and influence could be developed.

The Theory of Planned Behaviour (TBP; Ajzen, 1991) links attitude and behaviour through intentions (i.e., the attitudes related to a target object will affect an individual's intentions towards that target, which, in turn, will affect the behaviour towards the target object). The TPB also accounts for subjective norms and perceived behavioural control in looking at intentions toward behaviour. See the Figure below for a graphic representation of the TPB.
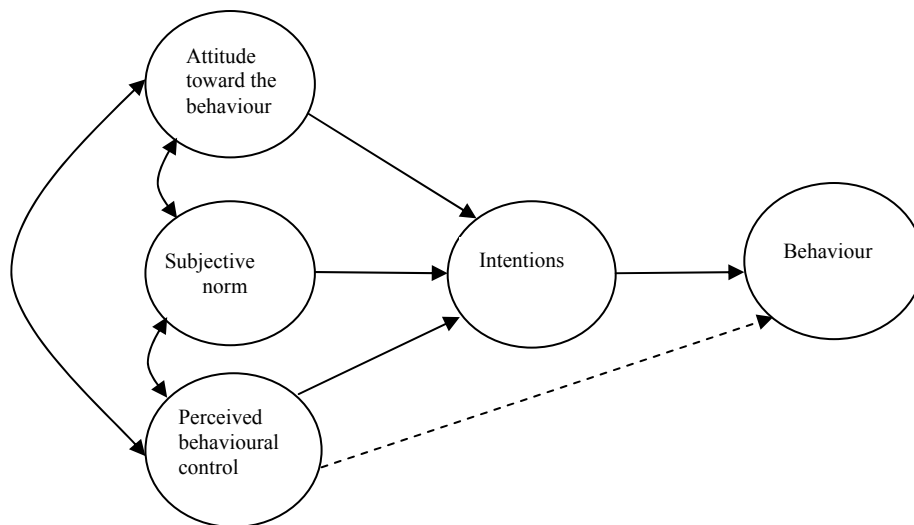


*Figure 1: This Theory of Planned Behaviour (from Ajzen, 1991)*

The TPB is widely cited in the research literature and has been applied to research in promoting positive health behaviour (e.g., Shapiro, Porticella, Jiang, & Gravani, 2011), to understand engagement in unsafe activities (e.g., Yang, McComas, Gay, Leonard, Dannenberg & Dillon, 2010; Norman, 2011), marketing (e.g., Ferdous, 2010; Picazo-Vela, Chou, Melcher, & Pearson, 2010 ), and self identity (for a review, see Rise, Sheeran, & Hukkelberg, 2010), among other areas.

The Elaboration Likelihood Model of Persuasion (ELM; Petty & Cacioppo, 1986) is a theory of attitude change. In its simplest from, the ELM posits that there are two routes to persuasion, the central route and the peripheral route. The route that people use to process information is dependent on two things: motivation and cognitive ability. People low in motivation to process information and or lacking the cognitive ability to process it will use the peripheral route. Processing through the peripheral route

involves the use of information not directly relevant to the content of the message or involves the use of shallow processing. Examples of peripheral route processing include using the prestige of a message's author to evaluate a message, or considering only a subset of all the presented facts related to an argument. Central route processing entails deeper, more thorough processing of message content in order to arrive at a conclusion. The ELM has been frequently applied to the business and marketing settings (for reviews see Petty, Briñol, & Priester, 2009; Wegener, Sawicki, & Petty, 2009). An example of the application of the ELM includes using it as a framework for interpreting and predicting the impact that health communications have on subsequent attitudes and behaviour (Petty, Barden, & Wheeler, 2009). This research showed that using techniques that increase the perceived relevance of the communication and the quality of the arguments would promote achievement of a health promotion program's goals.

The social influence literature contains many techniques that have been found to increase the likelihood of compliance to a specific request. Examples of such techniques include the *foot-in-the-door*, *that's-not-all, door-in-the-face* and *reciprocation* (for a review, see Cialdini and Goldstein, 2004). The *foot-in-the-door* technique involves first asking a target individual to comply with a small request with which the target is almost certain to comply. After securing compliance, either the initial requester or an associate of the requester makes a larger, often related request. The *that's-not-all* technique works by presenting a target with an initial request, followed by an almost immediate improvement of the deal - either by reducing the cost or by increasing the benefits of compliance - before the message recipient has an opportunity to respond. The *door-in-the-face* technique works by first requesting a more extreme request that will likely be rejected followed by the real request. Finally, reciprocation works by appealing to people's desire to reciprocate favours. An example of reciprocity is demonstrated by corporations giving out free samples, to which some will reciprocate the perceived generosity by purchasing the item.

Recommendation:

Each of these theories has demonstrated utility in understanding and influencing behaviour. The compliance and conformity techniques are somewhat more restricted in the type of behaviour that they elicit, namely, compliance and conformity. The ELM and TPB, however, can be used alone or in conjunction with one another to understand how people think about target behaviours (TPB) and how to change their attitude towards a target (ELM).

# Recommendations

After reviewing the three types of profiling, we conclude that all forms of profiling require more scientific support, in theory and in empirical evidence. All may have potential interest and application to the CF. More insight would be needed from the CF to determine whether or not it is worth investing resources and time to test whether there actually *is* empirically support for profiling or not. As discussed in the report, there are, at least, *possible* uses for criminal/investigative, geographical and leader profiling.

It is recommended that DRDC engage in more discussions with the CF to determine which type(s) of profiling, if any, may be of value to the Forces. Such background work is necessary because a systematic evaluation of even any *one* type of profiling would be a great endeavour. This is not to say that profiling is not a potentially valuable tool for the CF, but that there is currently, surprisingly very little conclusive evidence to support it.

A recommendation would be to create a working group within DRDC that would spend time examining "Profiling" and conducting some basic experiments to determine whether this is an area worth exploring or not.

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# Annex A    Annotative Bibliography: Profiling

## Criminal Profiling

1.      **Alison, L., Goodwill, A., Almond, L., van den Heuvel, C. & Winter, J. (2010). Pragmatic solutions to offender profiling and behavioural investigative advice. *Legal and Criminological Psychology,* 15, 115-132.**

Argument:
This article describes the traditional term *offender profiling* and demonstrates the, "lack of empirical support" (p. 116). Introduces "a more pragmatic, interdisciplinary practitioner-academic model" (p. 115), called *Behavioural Investigative Advice* (BIA) that is "based on replicable, transparent and valid knowledge and research" (p. 127).

Value:
This article defines and compares offender profiling and BIA. It provides a thorough examination of research on both approaches and highlights areas where future research is needed.

Limitations:
This is not a study, but a review of research on offender profiling and BIA.

Author Details:
Alison: University of Liverpool, UK.
Goodwill: University of Birmingham, UK.
Almond: University of Liverpool, UK.
Van den Heuvel: University of Liverpool, UK.
Winter: Vrije Universiteit Brussel, Belgium.

2.      **Beauregard, E., Proulx, J., Rossmo, D.K., Leclerc, B. & Allaire, J.F. (2007). Script Analysis of the Hunting Process of Serial Sex Offenders. *Criminal Justice and Behavior*, 34 (8), 1069-1084.**

Argument:
This article adds a new term to the discussion of "hunter/hunting" in the criminal profiling jargon called *hunting process*.  This is unique because it "includes hunting patterns as well as cognitive, behavioral, and geographic aspects of sexual aggression" (pg. 1070) which was first proposed in Rossmo (2007).  "The results of the study indicate that environmental variables, suchs as the nature (indoor versus outdoor locations) and familiarity with the offense location, are important in serial sex offenders' hunting processes" (pg. 1081).

<u>Value:</u>

This article defines specific hunter/hunting related patterns of serial sex offender habits or characteristics.  The list of defined terms include:

*Hunter* – "generally commits his crimes within his city of residence…set out from their home base and search for suitable victims in the area within their awareness space."

*Poacher* – "commits crimes by traveling outside his city of residence or by operating from an activity node other than his home base."

*Troller* – "is an opportunistic offender who encounters his victims in the course of his routine activities. Although his crimes are often spontaneous, the troller may in some cases have fantasized about or planned his offenses and so is ready when opportunities present themselves."

*Trapper* – "have an occupation or a position that brings potential victims to them, or they use subterfuge (e.g., placing want ads, taking in boarders) to entice suitable victims into their home or to a location they control."

*Raptor* – "attacks his victims almost immediately on encountering them."

*Stalker* – "follows or watches his victims and waits for an opportune moment to attack. The attack, murder, and victim-release sites are thus strongly influenced by the victim-activity space."

*Ambusher* – "are committed at locations at which they offender has a great deal of control, such as his residence or workplace.  This offender sometimes hides the bodies of the victims, most often on his property." (All excerpts from pg. 1070).

This article also evaluates crime as 'script' which dictates the decision-making process of the offender, and is useful and practical for crime prevention and CP.

<u>Limitations:</u>

The sample used in the study included only incarcerated offenders and therefore if hunting processes are different for those who have avoided detection so far, may alter the results and profiles provided in sex-offenders offered here.  It is also noted that only one type of strategy was defined for each perpetrator and therefore if the offender had used more than one strategy, it would not be included in the data set.  This article is also written 'matter-of-fact' in terms of the definitions for each "type" or profile for each type of "hunter".  They are interesting categories that may not be as clear cut as perceived.

<u>Author Details:</u>

Beauregard: Is a Professor at Simon Fraser University, Vancouver, BC and member of the American Society of Criminology and the Association for the Treatment of Sexual Abusers.

Proulx: is the Director of the School of Criminology at the Université de Montréal, QC.

Rossmo: is currently in the Department of Criminal Justice at Texas State University, Texas, U.S.A. He worked as a Vancouver, B.C. city police for 20 years before returning to school for his Master's and Ph.D.  In 2003 he was a consultant by police forces all around the world

and was the Director of the American Police Foundation in Washington, D.C.  He pioneered
the 'geographic profiling' science and has used the
strategy in more than 150 criminal investigations around the world.
Leclerc: is a criminologist in the School of Criminology and Criminal Justice at Griffith
University (Australia). From 2001 to 2005, he has been involved in various large-scale
research projects on juvenile and adult sexual offending completed with the assistance of the
Correctional Service of Canada and offender treatment institutions in the province of
Québec.
Allaire: Experienced statistician in both academic and corporate sectors, responsible for the
Statistical Consulting Group (SCG) from the Centre de recherche de l'Institut Philippe-Pinel
de Montréal. Over 10 years of experience in applied statistics in the fields of scientific
research (Criminology, Psychology and Psychiatry) and in the private sector (database
marketing, geomarketing, crime mapping and data mining).

3. **Bennell, C., Cory, S., Taylor, A. & Ecker, J. (2008). What skills are required for
   effective offender profiling? An examination of the relationship between critical
   thinking ability and profile accuracy.** *Psychology, Crime, and Law*, **14, 143-157.**

Argument:
That critical thinking is a necessary skill for profiling. An experiment was conducted using
students (who are thought and other experiments have claimed to have critical thinking ability).
No significant relationship was found between critical thinking ability and profile accuracy.

Value:
Authors suggests more "improved" research should be conducted on how the various skill sets
relate to profiling.

Author Details:
Bennell: Department of Psychology, Carleton University, Ottawa, ON. He was a research
assistant and Ph.D. candidate at the Centre for Investigative Psychology.

4. **Bennell, C. & Cory, S. (2007). Geographic profiling of Terrorist Attacks. In R. N.
   Kocsis (Ed.), Criminal Profiling: International Theory, Research, and Practice. NJ:
   Humana Press.**

Argument:
Investigating whether geographic profiling can be used to help predict the location of terrorist
attacks. They conclude that it *may* be possible to help make predictions about terrorist but only

under certain conditions (such as domestic terrorist but more empirical support would be needed.)

Author Details:
Bennell: Department of Psychology, Carleton University, Ottawa, ON. He was a research assistant and Ph.D. candidate at the Centre for Investigative Psychology.

**5.      Bennell, C.,  Jones, N.J.,  Taylor, P.J. & Snook, B. (2006). "Validities and Abilities in Criminal Profiling: A Critique of the Studies Conducted by Richard Kocsis and His Colleagues".** *International Journal of Offender Therapy and Comparative Criminology***, 50 (3), 344-360.**

Argument:
This is a response to the study conducted by Kocsis et al. on CP.  The article suggests ways in which Kocsis's research may be improved.  It basically suggests that Kocsis uses subjectivity in his questions, such as 'height' and suggests that "short", "medium" and "tall" are different depending on individual perspectives and heights of the respondents themselves, and thus the scale for height used in the study is erroneous.  Other examples of problems with Kocsis' study are also outlined in detail.  The main argument is that Bennell et al. believe that Kocsis' argument "creates a bias in favor of certain groups, namely profilers and students" (pg. 349).

Value:
This article is part of a large-scale theoretical and methodological debate between CP supporters and academics.  It outlines the schism between the two schools of thought, which is institutional in understanding the problems of CP in general.

Limitations:
This article does not have its own independent study in CP and outlines, yet again, the need for such studies.

Author Details:
Bennell: Department of Psychology, Carleton University, Ottawa, ON. He was a research assistant and Ph.D. candidate at the Centre for Investigative Psychology.
Jones: B.A. (Honours), Department of Psychology, Carleton University, Ottawa, ON.
Taylor: Was at the School of Psychology, University of Liverpool, Liverpool, UK, and is now in the Department of Psychology, Lancaster University, Lancaster, UK.
Snook: is currently an Assistant Professor, Psychology Department at Memorial University of Newfoundland, Canada.  His area of interest is the study of bounded rationality in forensic settings.  He was a PhD. Candidate, Department of Psychology at The University of Liverpool, England.

**6.     Crighton, D. (2010). Offender Profiling.** *Forensic Psychology*, **148-158.**

Argument:
In this chapter he reviews this history of offender profiling going back to credit Sherlock Holmes as one of the first profilers.  He supports that "theoretically" profiling should be possible and discusses four approaches: diagnostic evaluation; criminal investigation analysis; crime action profiling and investigative psychology.

Value:
Overall, Crighton is optimistic about the possibilities of CP but in his chapter there are more concerns/critiques than empirical support.

**7.     Cooley, C.M. (2008). Criminal profiling on trial: The Admissibility of Criminal Profiling Evidence, in Turvey, B. (Ed.), Criminal Profiling: an introduction to behavioral evidence analysis, Burlington, MA: Elsevier, 689-715.**

Argument:
This chapter discusses the admissibility of profiling evidence in United States courts.  Courts typically admit profiling evidence when the central facts from which the examiner's opinions were drawn can be evaluated independently.  Ultimately, courts have been inconsistent in how they deal with profiling evidence; with UNSUB evidence typically being excluded, but motivational and linkage analysis sometimes being admitted.   Motivational analysis evaluates the physical evidence and characteristics of the crime scene to detect the offender's likely motive.  Linkage analysis uses evidence law's doctrine on using evidence from other crimes where there is a distinct modus operandi or behavioral signature to link them.  The behavior from two or more crime scenes are evaluated, where at least one offence can be associated with a particular individual.

Value:
This is an American assessment, but it is worth understanding how the courts view various types of profiling evidence, as it speaks to the perceived credibility of the profile.

Author Details:
Cooley: "is a Staff Attorney with the Innocence Project in New York, New York. He received his JD from Northwestern University School of Law in 2004.  He completed his M.S. in forensic science at the University of New Haven in 2000" (p. xlix).
Turvey: received a Bachelor of Science degree from Portland State University in Psychology, with an emphasis on Forensic Psychology, and an additional Bachelor of Science degree in History. He went on to receive his Masters of Science in Forensic Science after studying at

the University of New Haven, in West Haven, Connecticut.  Since graduating in 1996, Brent has consulted with many agencies, attorneys, and police departments in the United States, Australia, China, Canada, Barbados and Korea on a range of rapes, homicides, and serial/ multiple rape/ death cases, as a forensic scientist and criminal profiler. He has also been court qualified as an expert in many areas, including criminal profiling, forensic science, crime scene analysis, victimology, and crime reconstruction. He has also authored numerous texts on these subjects used in colleges and universities around the world.  He is currently a Forensic Scientist, Criminal Profiler, and Instructor with his private company, Forensic Solutions. He is also an Adjunct Professor of Justice Studies at Oklahoma City University.

**8.     Devery, C. (2010). Criminal Profiling and Criminal Investigation. *Journal of Contemporary Criminal Justice,* 26(4), 393-409.**

Argument:

 This article is a review of the development of criminal profiling and the author claims that criminal profiling has never been a scientific process. Devery claims that  profiling is based on a compilation of common sense, intuitions and faulty theoretical assumptions and the practice appears to consist of educated guesses and wishful thinking. He claims that few cases exist where profiling has significantly contributed to an investigation. However, there are many cases where profiling has damaged and contributed to serious mistakes. He recommends that police agencies carefully reconsider the development of in-house profiling capability or the use of external consultants.

Author Details:

Christopher Devery: PhD,  is the manager  of executive development and research, education and training command of  New South Wales Police Force College in Goulburn Australia. He is also a senior academic associate in the School of Policing Studies, Charles Stuart University.

**9.     Doan, B. & Snook, B. (2008). A Failure to Find Empirical Support for the Homology Assumption in Criminal Profiling. *Journal of Police Criminal Psychology*, 23, 61-70.**

Argument:

The goal of this study was to test the 'homology assumption', which suggests that, "criminals who exhibit similar crime scene actions have similar background characteristics" (p. 61).  The results indicate that 73% of the effect sizes for the associations between crime type and background characteristics were low to moderate, meaning that this study does not support the homology assumption.

Value:

This article uses two studies, one for arsons and one for robberies and evaluates the current support for the homology assumption as being "weak". Since Snook is well published in the area of geographic profiling and psychological studies, his argument is compelling in the academic community that the homology assumption is not a method to follow.

Limitations:
There are three major limitations to the studies appearing in this article. 1) "No attempt was made to verify that the themes proposed in Allison et al. (2000)" (an article used to identify the themes for this study) "actually existed in the data collected by the" Royal Newfoundland Constabulary (RNC). 2) "In Study 2, Alison et al.'s (2000) content dictionary was not used to code the original police robbery files", making the findings and coding potentially inconsistent. 3) The "fact that there were few variables upon which to calculate the percentages in each type of robbery" so with such a reduced number of variables, the accuracy of classification may have been compromised.

Author Details:
Doan: a Memorial University Graduate Student, Newfoundland, Canada. Studies under Dr. Snook.

Snook: is currently an Assistant Professor, Psychology Department at Memorial University of Newfoundland, Canada. His area of interest is the study of bounded rationality in forensic settings. He was a PhD. Candidate, Department of Psychology at The University of Liverpool, England.

**10.    Douglas, J.E. & Burgess, A.E. (1986). Criminal Profiling: A Viable Investigative Tool Against Violent Crime. *FBI Law Enforcement Bulletin*, 55, 9-13.**

Argument:
Supports CP using brief steps for analysis and highlights CP success stories.

Value:
Gives a good indication of FBI buy-in. why and how.

Limitations:
Reads a bit like a propaganda message than an academic paper. Was probably widely read in the 80's by the department.

Author Details:
Douglas: is a former special agent with the U.S. Federal Bureau of Investigation (FBI), one of the first criminal profilers, and criminal psychology author. A veteran of four years in the United States Air Force (1966–1970), he holds several degrees: B.S. (Eastern New Mexico

University); M.S. (University of Wisconsin-Milwaukee), Ed.S. Educational Specialist (University of Wisconsin-Milwaukee) and a doctorate in Adult Education (Nova Southeastern University, Ft. Lauderdale, Florida). Douglas examined crime scenes and created profiles of the perpetrators, describing their habits and attempting to predict their next moves. In cases that his work helped to snare the criminals, he built strategies for interrogating and prosecuting them, as well.

Burgess**:** FBI Criminal Profiler. Details unavailable.

**11.** **Godwin, M. (2002). Reliability, Validity, and Utility of Criminal Profiling Typologies. *Journal of Police and Criminal Psychology*, 17 (1), 1-18.**

Argument:
Critiques the current (2002) methods of CP and traces the origins of profiling back to the FBI in the 1970's. Basically suggests that CP is based on a study involving 36 incarcerated offenders of whom 25 were defined as serial murderers. This study involved the interviewing of these individuals between 1979 and 1983 with guided by an unstructured checklist of questions. The only detailed information released from this study was limited to dividing offenders into two groups: organized and disorganized types.

Value:
Gives a very poignant (and slightly comical) and critical perspective on CP and its various limitations.

Limitations:
I have yet to find a source that references this paper… also potentially biased since Godwin owns the consulting firm that provides criminal profiling services.

Author Details:
Godwin: From the Methodist College, and owns the Godwin Trial & Forensic Consultancy Inc. He is a Forensic Profiler and Criminal Profiler.

**12.** **Kocsis, R.N. (2010). Crinimal Profiling Works and EVERYONE Agrees. *Journal of Forensic Psychology Practice*, 10, 224-237.**

Argument:

CP works and Snook, Eastwood, Gendreau, Goggin and Cullin (2007)'s meta-analysis is flawed based on flawed logic (using already claimed faulty studies in their own analysis), sampling techniques used for determining 'expert' criteria and addresses several of the comments made by Snook, Eastwood, Gendreau and Bennell (2010) which was a rebuttal to Kocsis et al. (2008)… and the argument continues.

Value:
A very engaging 3-year back-and-forth academic argument between supporters and non-supporters.

Limitations:
The author has a sketchy relationship with many of the writers on the subject of CP.  He is actively involved in a heavy debate with Snook et al (2007)…they do not add too much more to the argument for supporting CP, or not supporting CP.

Author Details:
Kocsis: Leading profiling expert − Potentially conflicting evidence to suggest his false credentials? See Link: http://www.corpus-delicti.com/Kocsis.txt.

**13.    Kocsis, R.N., Middledorp, J. & Karpin, A. (2008). Taking Stock in Criminal Profiling: The Theoretical Quandary for Investigative Psychology. *Journal of Forensic Psychology Practice*, 8(3), 244-261.**

Argument:
The article presents and overview of the "quasi-experimental"  research investigating CP. Kocsis claims that empirical evidence does support the capabilities of expert "profilers" who are able to accurately predict and surpass non-profilers.

**14.    Kocsis, R.N. (2006). Validities and Abilities in Criminal Profiling The Dilemma for David Canter's Investigative Psychology. *International Journal of Offender Therapy and Comparative Criminology*, 50 (4), 458-477.**

Argument:
" This article discusses misconceptions in Bennell, Jones, Taylor and Snook's (2006) critique of Kocsis (2003a) concerning the validities and abilities surrounding criminal profiling" (p. 458). In other words, the author responds in detail to specific criticisms of validity and experimental design presented by Bennell et. al. The article briefly describes the  investigative psychology approach to criminal profiling, while asserting  that the findings of Kocsis (2003a), the article in question, conflict with the view by subscribers of investigative psychology  that "their approach to criminal profiling it the only scientifically valid method for effective profiling because it

employs methods that they believe are superior to other approaches' (p. 460).The author stated that "The findings of Kocsis (2003a) do not lend support to the contention that effective and valid profiling is the exclusive domain of those employing investigative psychology techniques or any others for that matter" (p. 460). The article seems to imply that the Kocsis (2003a) article was highly criticized by Bennell et. al. because they are subscribers of the investigative psychology approach.

Value:
Nicely points out that many of the publications in the field of criminal profiling do not contain original data, therefore highlighting the need for further studies with original data.

Limitations:
This is not a study, but a rebuttal to the Bennell et. al. article.

Author Details:
Kocsis: Forensic Psychologist in Private Practice, Australia.

15.     **Kocsis, R.N. (2003). Criminal psychological profiling: Validities and abilities.** *International Journal of Offender Therapy and Comparative Criminology*, **47(2), 126-144.**

Argument:
This is another article where Kocsis reviews the literature on CP looking for empirical evidence to support CP and the skills of profilers.  He concludes that *some* support can be found showing the professional profilers can produce a more accurate prediction of an unknown offender compared to other study groups.

Value:
Reviewed many studies and the skill sets that profilers may use.

Limitations:
No experimental data. Only review of other studies, some of which were conducted by him.

Author Details:
Kocsis: Forensic Psychologist in Private Practice, Australia.

16.     **Mokros, A. & Alison, L.J. (2002). Is offender profiling possible? Testing the predicted homology of crime scene actions and background characteristics in a sample of rapists.** *Legal and Criminological Psychology*, **7(1), 25-43.**

Argument:

This study investigates whether conventional approaches to offender profiling assumes a homology of characteristics.  This study looks at a sample of 100 British males stranger rapists and looked at the similarities in their crime scene actions and compared it with socio-demographic features. They found there is *no positive linear relationship*. They concluded that there is *no evidence for the assumption of homology between crime scene actions and background characteristics.* They argue that the homology assumption is too simple to provide a basis for offender profiling.

Limitations:

100 rapists

## 17.    Muller, D.A. (2011). Qualitative Approaches to Criminal Profiling as Ways of Reducing Uncertainty in Criminal Investigations. *Policing*, 5 (1), 33-40.

Argument:

This article argues that criminal profiling does not improve uncertainty in unknown serious crimes. It is discussed that criminal profiling is "experience based insight that should be communicated with explicit reference to its limitations" (p. 39). The article suggests that "evidence-based profiling is a concrete avenue for empirical research on serious crimes" (p. 39).

Value:

The author points out the lack of knowledge on how criminal profiling is used.

Limitations:

This article is not a study, but a review of research on criminal profiling. This article does not contain a lot of new information.

Author Details:

Muller: Research Fellow, ARC Centre of Excellence in Policing and Security, National Centre for Epidemiology and Population Health, ANU College of Medicine and Health Sciences

## 18.    Muller, D.A. (2000). Criminal Profiling Real Science or Just Wishful Thinking. *Homicide Studies*, 4(3), 234-264.

Argument:

This article argues that when comparing the two main approaches to criminal profiling: Crime Scene Analysis (CSA) and Investigative Psychology (IP), IP is more scientific; however more investigation is needed to determine how effective the both methods are.

Value:
Good description of criminal profiling and interesting examination of methods.

Limitations:
This article is not a study, but a discussion about the methods of criminal profiling. It may be out of date (from 2000).

Author Details:
Muller: University of Melbourne

**19.     Rossmo, D.K. (2006). Criminal Investigative Failures: Avoiding the Pitfalls.** *FBI Law Enforcement Bulletin*, **September, 1-8.**

Argument:
This brief bulletin outlines investigator limitations in profiling cases and the consequences of making these errors.  The article outlines cognitive biases, like perception and memory limitations as well as the use of intuition as well as specific biases like 'anchoring', 'tunnel vision and satisficing', 'availability', 'framing', and 'representativeness'.  It also touches on evaluation biases with evidence.

Value:
This article uses very 'boots on the ground'-type wording and an applied perspective and is very informative but brief.  The article supports the real-world perspective that profiling is not like in the movies and investigators should be aware of their own perceptions, memory limitations and biases.  This is an excellent example of what the military might want to see in a profiling briefing.

Limitations:
Based on experience and Rossmo's own judgments and biases rather than on empirical study or data.  Based more on case examples and quotes than on overall and supported evaluations.

Author Details:
Rossmo: is currently in the Department of Criminal Justice at Texas State University, Texas, U.S.A. He worked as a Vancouver, B.C. city police for 20 years before returning to school for his Master's and Ph.D.  In 2003 he was a consultant by police forces all around the world and was the Director of the American Police Foundation in Washington, D.C.  He pioneered the 'geographic profiling' science and has used the strategy in more than 150 criminal investigations around the world.

**20.** **Snook, B., Eastwood, J., Gendreau, P. & Bennell, C. (2010). Commentary Part 1: The Importance of Knowledge Cumulation and the Search for Hidden Agendas: A Reply to Kocsis, Middledorp, and Karpin (2008).** *Journal of Forensic Psychology Practice,* **10, 214-223.**

Argument:
Further discusses the ongoing argument between 'Team Kocsis' and 'Team Snook'.

Value:
Clearly outlines some faults within Kocsis' argument in support of CP.

Limitations:
No new information, only a commentary on a long hashed out debate.

Author Details:
Snook: is currently an Assistant Professor, Psychology Department at Memorial University of Newfoundland, Canada. His area of interest is the study of bounded rationality in forensic settings. He was a PhD. Candidate, Department of Psychology at The University of Liverpool, England.

Eastwood: M.Sc., PhD. Candidate, Memorial University of Newfoundland, Canada.

Gendreau: Over the past decade, Dr. Gendreau has analysed and combined the results of earlier studies, using a statistical technique called meta-analysis, to obtain an accurate description of research findings. This research technique has involved synthesizing the findings of literally hundreds of research articles. From this synthesis he is able to advise policy-makers on the factors that make the criminal justice system work. The success of Dr. Gendreau's research is shown by the esteem in which he is held around the world. Institutions and organization in a variety of jurisdictions have invited him to give advice on their criminal justice systems, and he has received numerous awards from national and international organizations. Other indicators of his phenomenal success include the number of research grants and contracts he has received and the number of undergraduate and graduate students who have studied with him while conducting thesis research. The sheer number of publications he has to his credit is also most impressive. As a University Research Professor Dr. Paul Gendreau has put together an ambitious program of development for the future of his chosen field of investigation — one he hopes to achieve through the Centre for Criminal Justice Studies at UNB Saint John.

Bennell: Department of Psychology, Carleton University, Ottawa, ON. He was a research assistant and Ph.D. candidate at the Centre for Investigative Psychology.

**21.** **Snook, B., Taylor, P.J., Gendreau, P. & Bennell, C. (2009). On the Need for Scientific Experimentation in the Criminal Profiling Field: A Reply to Dern and Colleagues.** *Criminal Justice and Behavior*, **36 (10), 1091-1094.**

Argument:

Further supports and argues for the need for scientific contributions validating Criminal Profiling (CP), such as the need to provide a set of methods to facilitate the systematic testing and development of CP techniques. They also suggest how ethnographic techniques can evaluate the reliability of the process and that statistical techniques can test the accuracy of inferences made. They even suggest that content analysis can assess the rigor of reporting. It supports the idea that the academic community remains skeptical on peer-reviewed journals demonstrate how these approaches are effective.

Value:

This article outlines the direction and areas of study requiring more discussion and scientific experimentation.

Limitations:

It is only a response/ commentary article to a critique of their 2008 article ""The Criminal Profiling Illusion" What's Behind the Smoke and Mirrors?"

Author Details:

Snook: is currently an Assistant Professor, Psychology Department at Memorial University of Newfoundland, Canada. His area of interest is the study of bounded rationality in forensic settings. He was a PhD. Candidate, Department of Psychology at The University of Liverpool, England.

Taylor: Was at the School of Psychology, University of Liverpool, Liverpool, UK, and is now in the Department of Psychology, Lancaster University, Lancaster, UK.

Gendreau: Over the past decade, Dr. Gendreau has analysed and combined the results of earlier studies, using a statistical technique called meta-analysis, to obtain an accurate description of research findings. This research technique has involved synthesizing the findings of literally hundreds of research articles. From this synthesis he is able to advise policy-makers on the factors that make the criminal justice system work. The success of Dr. Gendreau's research is shown by the esteem in which he is held around the world. Institutions and organization in a variety of jurisdictions have invited him to give advice on their criminal justice systems, and he has received numerous awards from national and international organizations. Other indicators of his phenomenal success include the number of research grants and contracts he has received and the number of undergraduate and graduate students who have studied with him while conducting thesis research. The sheer number of publications he has to his credit is also most impressive. As a University Research Professor Dr. Paul Gendreau has put together an ambitious program of development for the future of his chosen field of investigation — one he hopes to achieve through the Centre for Criminal Justice Studies at UNB Saint John.

Bennell: Department of Psychology, Carleton University, Ottawa, ON. He was a research assistant and Ph.D. candidate at the Centre for Investigative Psychology.

**22.    Snook, B., Gendreau, P., Bennell, C. & Taylor, P.J. (2008). Criminal Profiling: Granfalloons and Gobbledygook.  *Skeptic*, 14 (3), 42-47.**

Argument:

The article discusses the notion that criminal profiling has an unjustified reputation with the media, the public, and with police officers as a well-practiced and reliable investigative technique.  The authors purport that that this reputation is at odds with the reality of an absence of scientific evidence to confirm its reliability or validity.  Five aspects of criminal profiling are discussed (What is profiling, Who are profilers, When is it used, Where is it used, and Why is it used).  Profiling is defined as the derivation of inferences about an unknown offender's characteristics; and a 2001 study (Alison, Smith, Eastman, and Rainbow 2003) is referenced which indicates that only 25% of statements in profiles were inferences about offender characteristics, with 82% of those inferences being unsubstantiated.  It is noted that there is no regulatory body that provides a criminal profiling designation, and no consensus about who is qualified to be a profiler.  Their analysis of when profiling is used indicates that it is primarily used for crimes where there is likely to be psychopathology exhibited by the offender, such as homicides and sexual assaults committed by strangers.   According to the article, profiling has primarily been used in the United States and the United Kingdom, although it has been documented in other countries, including Canada.  The most widely reported reason why criminal profiling is used is a belief by police officers that it "works".  The practice of CP is 'put to the test' through a review of the literature which reveals that (a) the majority of CP approaches are based on an outdated theory of personality that lacks strong empirical support, and (b) professional profilers have a dismal performance record when the accuracy of their profiles have been examined.

Value:

Provides a quick summary of criminal profiling, including a look at two 2007 meta-analysis.  One showed that when self-declared profilers were compared to non –profilers the overall accuracy of the profilers was better, but their predictive accuracy was marginally worse or no better than non-profilers.

Author Details:

Snook: is currently an Assistant Professor, Psychology Department at Memorial University of Newfoundland, Canada.  His area of interest is the study of bounded rationality in forensic settings.  He was a PhD. Candidate, Department of Psychology at The University of Liverpool, England.

**23.** **Snook, B., Cullen, R.M.,  Bennell, C., Taylor, P.J. & Gendreau, P. (2008). The Criminal Profiling Illusion: What's Behind the Smoke and Mirrors?** *Criminal Justice and Behavior***, 35 (10), 1257-1276.**

Argument:
"The authors conclude that CP should not be used as an investigative tool because it lacks scientific support" (p. 1257).

Value:
Outlines the next steps required in the evaluation and academic testing of CP.  We need more studies in order to validate CP as a science, or to make it clear that it is not.  "CP may actually work.  As Lilienfeld has argued, extraordinary claims may be shown to contain a core of truth that should not be automatically dismissed.  In our opinion, the burden is on profilers, who make extraordinary claims about their abilities, to prove their worth by actually participating in controlled experimental studies" (p. 1270).

Limitations:
There are a ton of assumptions and discussion of cognitive psychological terms used which leads to a difficult read and adds complexity to their argument, where it is not required.  This study also mentions the limitation of a meta-analysis of studies that have many faults with them.  Ultimately, this study is inconclusive and only leads to the requirement that more studies are needed in the field of CP.

Author Details:
Snook: is currently an Assistant Professor, Psychology Department at Memorial University of Newfoundland, Canada.  His area of interest is the study of bounded rationality in forensic settings.  He was a PhD. Candidate, Department of Psychology at The University of Liverpool, England.
Cullen: Memorial University of Newfoundland, St. John's, NL, Canada.
Bennell: Department of Psychology, Carleton University, Ottawa, ON. He was a research assistant and Ph.D. candidate at the Centre for Investigative Psychology.
Taylor: Was at the School of Psychology, University of Liverpool, Liverpool, UK, and is now in the Department of Psychology, Lancaster University, Lancaster, UK.
Gendreau: Over the past decade, Dr. Gendreau has analysed and combined the results of earlier studies, using a statistical technique called meta-analysis, to obtain an accurate description of research findings. This research technique has involved synthesizing the findings of literally hundreds of research articles. From this synthesis he is able to advise policy-makers on the factors that make the criminal justice system work. The success of Dr. Gendreau's research is shown by the esteem in which he is held around the world. Institutions and organization in a variety of jurisdictions have invited him to give advice on their criminal justice systems, and

he has received numerous awards from national and international organizations. Other indicators of his phenomenal success include the number of research grants and contracts he has received and the number of undergraduate and graduate students who have studied with him while conducting thesis research. The sheer number of publications he has to his credit is also most impressive. As a University Research Professor Dr. Paul Gendreau has put together an ambitious program of development for the future of his chosen field of investigation — one he hopes to achieve through the Centre for Criminal Justice Studies at UNB Saint John.

**24.    Snook, B., Eastwood, J., Gendreau, P., Goggin, C. & Cullen, R.M. (2007). Taking Stock of Criminal Profiling: A Narrative Review and Meta-Analysis. *Criminal Justice and Behavior*, 34(4), 437-453.**

Argument:
Basically offers empirical evidence that a) experienced profilers outperform non-experienced profilers; b) profilers are not better at predicting behaviour than comparison groups, but they did outperform these groups when they were predicting overall offender characteristics.  In the meta-analysis of all the literature on CP to date, they found that 60% of these articles use anecdotes as their source of proof; 45% use testimonials; 42% use authoritative proof - like statements from Rossmo; 42% use scientific evidence and 23% use intuition.  The article also indicates that "commonsense arguments were used more than empirical arguments 58% of the time" (p. 441).

Value:
Emphasizes the need for scientific validation in the field of CP and seriously hinders the argument in support of CP use, at least in terms of a scientific endeavor.  This article has a huge impact on the scientific community and instigated a large-scale written retaliation between Snook et al. and CP supporters.

Limitations:
Uses self-proclaimed faulty and problematic studies in their analysis, further suggesting the requirement of better and more sound academic studies in the CP realm.

Author Details:
Snook: is currently an Assistant Professor, Psychology Department at Memorial University of
    Newfoundland, Canada.  His area of interest is the study of bounded rationality in forensic
    settings.  He was a PhD. Candidate, Department of Psychology at The University of
    Liverpool, England.
Eastwood: M.Sc., PhD. Candidate, Memorial University of Newfoundland, Canada.
Gendreau: Over the past decade, Dr. Gendreau has analysed and combined the results of earlier
    studies, using a statistical technique called meta-analysis, to obtain an accurate description of
    research findings. This research technique has involved synthesizing the findings of literally

hundreds of research articles. From this synthesis he is able to advise policy-makers on the factors that make the criminal justice system work. The success of Dr. Gendreau's research is shown by the esteem in which he is held around the world. Institutions and organization in a variety of jurisdictions have invited him to give advice on their criminal justice systems, and he has received numerous awards from national and international organizations. Other indicators of his phenomenal success include the number of research grants and contracts he has received and the number of undergraduate and graduate students who have studied with him while conducting thesis research. The sheer number of publications he has to his credit is also most impressive. As a University Research Professor Dr. Paul Gendreau has put together an ambitious program of development for the future of his chosen field of investigation — one he hopes to achieve through the Centre for Criminal Justice Studies at UNB Saint John.

Goggin: Memorial University of Newfoundland, St. John's, NL, Canada.
Cullen: Memorial University of Newfoundland, St. John's, NL, Canada.


**25.    Snook, B., Wright, M., House, J.C. & Alison, L.J.  (2006). Searching for a Needle in a Needle Stack:  Combining criminal careers and Journey-to-crime Research for Criminal Suspect Prioritization.** *Police Practice and Research*, 7(3), 217-230.


Argument:
This article considers an eight-step suspect prioritization technique which involves mapping the reported crime; generating a list of suspects; mapping the suspects home location; measuring the distances between the crime and each suspects home; rank listing suspects based on the distance; searching the suspects in order of priority; and deciding if each one is the responsible perpetrator. The final 2 steps are repeated until the offender is identified.   The validity of the technique is tested using a sample of commercial armed robberies, with effectiveness being measured by the percentage of ranked suspects that need to be searched before the offender is identified.  Using this technique, the offender was identified in the top 10% of ranked suspects in 65% of the cases.

Value:
"Results demonstrated that a notable majority of offenders were located in the top tenth percentile of all ranked suspects, thus, providing preliminary support of combining criminal career and journey-to-crime research for suspect prioritization."

 Limitations:
The technique is only as good as the information available for analysis, and is dependent upon the police knowing the current address of the offender, and it not being the criminals first offence.

Author Details:

Snook: is currently an Assistant Professor, Psychology Department at Memorial University of Newfoundland, Canada.  His area of interest is the study of bounded rationality in forensic settings.  He was a PhD. Candidate, Department of Psychology at The University of Liverpool, England.

## Geographical Profiling

**1.      Bennell, C., Bloomfield, S., Snook, B., Taylor, P. & Barnes, C. (2010). Linkage analysis in cases of serial burglary: comparing the performance of university students, police professionals, and a logistic regression model.  *Psychology, Crime & Law*, 16 (5), 507-524.**

Argument:
Results of the study showed that "students outperformed police professionals, that training increased decision accuracy, and that the logistic regression model achieved the highest rate of success" in terms of predicting the home locations of serial burglars (p. 507).

Value:
This is an original study indicating that the logistic regression math behind Geographic Profiling is, at least, somewhat useful.  The article suggests that, "it might be useful for police to adopt a statistical approach for linkage analysis" purposes (p. 520).

Limitations:
There were distinct age and gender gaps between the trained professional groups and the untrained groups used in the experiment. The researchers are unsure if these gaps are pertinent or not.   It is a suggestive, but inconclusive article.

Author Details:
Bennell: Department of Psychology, Carleton University, Ottawa, ON. He was a research
    assistant and Ph.D. candidate at the Centre for Investigative Psychology.
Bloomfield: Department of Psychology, Carlton University, Ottawa, ON.
Snook: is currently an Assistant Professor, Psychology Department at Memorial University of
    Newfoundland, Canada.  His area of interest is the study of bounded rationality in forensic
    settings.  He was a PhD. Candidate, Department of Psychology at The University of
    Liverpool, England.
Taylor: Was at the School of Psychology, University of Liverpool, Liverpool, UK, and is now in
    the Department of Psychology, Lancaster University, Lancaster, UK.
Barnes: Department of Psychology, Carlton University, Ottawa, ON.

**2.      Bennell, C., Snook, B., Taylor, P.J., Corey, S. & Keyton, J. (2007). It's No Riddle, Choose the Middle: The Effect of Number of Crimes and Topographical Detail on Police Officer Predictions of Serial Burglars' Home Location. *Criminal Justice and Behavior,* 34(1), 119-132.**

"Results show that training significantly improved predictive accuracy, regardless of the number of crime locations or topographical detail presented" in GP, and that "trained participants are as accurate as the geographic profiling system" called *CrimeStat,* tested in the study (p. 119).

Value:

Uses statistical variables to demonstrate that "there was no significant differences found between CrimeStat and the control" (not given any training) "or circle group" (given a small amount of information on the circle theory heuristic) (p. 124). However, "CrimeStat did perform significantly better than the decay group" (those given a small amount of information on the distance decay heuristic) (p. 124). This article also plugs into the claim that GP systems perform better when there are more than five crimes in a series of crimes than if there are less. However, CrimeStat, when retested, "performed significantly worse than the circle" group, "and decay groups" (p. 125).

Limitations:

The article is slightly "self-supporting" in nature. It seems that Snook is involved in every study that does not support GP and therefore can start to appear biased in his analysis. Other non-involved researchers are required to continue the investigation. The comments to and from Snook about his research (the commentaries are spanning years) are tending, now, to get personal and unprofessional, in nature.

Author Details:

Bennell: Department of Psychology, Carleton University, Ottawa, ON. He was a research assistant and Ph.D. candidate at the Centre for Investigative Psychology.

Snook: is currently an Assistant Professor, Psychology Department at Memorial University of Newfoundland, Canada. His area of interest is the study of bounded rationality in forensic settings. He was a PhD. Candidate, Department of Psychology at The University of Liverpool, England.

Taylor: Was at the School of Psychology, University of Liverpool, Liverpool, UK, and is now in the Department of Psychology, Lancaster University, Lancaster, UK.

Corey: Carleton University, Ottawa, ON.

Keyton: University of Liverpool, Liverpool, UK.

**3.     Bernasco, W. & Nieuwbeerta, P. (2005). How Do Residential Burglars Select Target Area? *British Journal of Criminology*, 44, 296-315.**

Argument:

In The Hague, according to the study, "a higher percentage of single-family dwellings increases the odds of a burglar's selecting that neighbourhood" (p. 308). The "results also confirm that

proximity to the burglar's home has a positive effect on the likelihood that a burglar will select it for committing his offence" (p. 309).

Value:
The approach used in the study might also be useful in geographic profiling, based on the findings. It encourages other researchers to use the mathematical techniques (p. 302-304) in other cities.

Limitations:
The results of this paper "requires information on the age, ethnicity and residence of the offender, it is based on less than 7 percent of all police-registered cases of burglary, i.e. only on solved cases" (p. 310). Furthermore, "only burglaries committed in the city of The Hauge itself were taken into account, wheres burglaries committed in more distant areas were left out (about 15 percent)" (p. 310). No one really discusses or sites this study in North America. We are not sure if geographic principles or patterns in The Hague are applicable elsewhere until there are further studies are carried out.

Author Details:
Bernasco: studied social psychology at Leiden University, focusing on suicide in jails and prisons and on the handling of native and non-native juveniles by the juvenile police. He was a graduate student and subsequently a post-doc at the department of Sociology at Utrecht University. Before joining the NSCR in 2000, he worked at the Institute for Labour Studies (OSA) in Tilburg, at the Department of Psychology of Leiden University, and at the Research and Documentation Centre of the Dutch Ministry of Justice (WODC). He is a senior researcher within the NSCR Mobility and Distribution of Crime group. His current work focuses on spatial aspects of criminal activities, including variations in crime and delinquency between neighbourhoods, offender travel behaviour and target selection, and crime displacement. He is also involved in research on recidivism and organized crime.

Nieuwbeerta: From 1995 until 2000 he was a researcher and lecturer at the Sociology Department of Utrecht University. Since 2006 he has worked one day a week as Professor of Criminology at the Sociology Department of Utrecht University, where he his teaching commitment was: *theoretical and empirical analysis of the effects of criminal interventions*. In July 2009 2009 he was appointed Professor of Criminology at the Institute for Criminal Law & Criminology of Leiden University.

4. **Canter, D. & Youngs, D. (2009). Chapter 8 – Criminal Psychogeography. In Investigative Psychology, Jon Wiley & Sons Ltd., West Sussex, UK, 167-198.**

Argument:
Reads like a textbook rather than a discussion or theoretical article. The chapter outlines GP principles.

<u>Value:</u>
Uses an interesting example for testing/ study purposes on page 169. This chapter is an excellent overview of theories and principles used in practice for GP. Does discuss the challenges and weaknesses of the study of 'Criminal Geography' and cautions the reader to certain biases and other limitations.

<u>Limitations:</u>
Brief and has a very limited 'further reading' section…mostly Canter documents.

<u>Author Details:</u>
Canter: Director International Centre for Investigative Psychology President International Academy for Investigative Psychology. The internationally renowned applied social researcher and world-leading crime psychologist, is perhaps most widely known as one of the pioneers of "Offender Profiling" being the first to introduce its use to the UK. Professor Canter played a crucial role in establishing another sub-discipline: Environmental Psychology. He continues to lecture around the world on developments in this field.

Youngs: currently works with Professor Canter directing a series of recently won research projects looking at a variety of crimes and criminals. These studies explore a range of Investigative topics from the Geographical Profiling of Burglary, to Street Robbery, Youth Crime and Antisocial behaviour, Fraudulent Crime Reporting, Insurance Fraud and the Social Networks of Prolific Offenders. Youngs has been a part of the Centre for Investigative Psychology since the early days, joining shortly after Professor Canter had first begun helping the police and defining the scientific discipline of Investigative Psychology- and establishing the Centre for Investigative Psychology as the first place in the world where this can be studied.

**5.     Canter, D. (2005). Confusing Operational Predicaments and Cognitive Explorations: Comments on Rossmo and Snook et al.** *Applied Cognitive Psychology*, **19, 663-668.**

<u>Argument:</u>
Canter acknowledges there is some value in the experimental paradigm put forward by Snook et al. in their discussion of geographical profiling according to a set of geometric rules. "In essence, they gave their subjects a straightforward set of geometric rules and asked them to apply those rules to a set of points drawn on a sheet of paper. Broadly these rules amount to asking respondents to mark the spot where they estimate the centre of gravity to be for all the points" (p. 663). Also according to Canter, in the view of Snook, et al., simple–to-use computer models can allow relatively untrained individuals to carry out geographical profiling. Canter then goes on to express the views of Rossmo – an ex-police officer who expresses the counter-claim that this is an oversimplification of the process and that their experiments "ignore the practical limits to the

application of geometrical principles derived from criminals' spatial behavior" (p. 663) and represents an operational limitation.

Value:
Canter reconciles the opposing views with regard to the effectiveness of geographic profiling computer models by stating, "Rather than regarding these limits as merely practical restriction on selecting the offences that can be subjected to computer analysis it is more productive to regard them as areas in which hypotheses need to be developed of the reasons for the limitations of current systems"(p. 667). Thus, he is suggesting the possibility for a way forward in the method development of geographical profiling.

Limitations:
Canter is presenting his own construct on the work of others and may have some bias as Snook and his colleagues were students of Canter at one time.

Author Details:
Canter:   is the Director of Centre for Investigative Psychology and Professor of Psychology at The University of Liverpool.


**6.      MacKay, R. (1999). Geographic Profiling: A New Tool for Law Enforcement. *The Police Chief,* December, 51-59.**

Argument:
The article argues that GP works and has three very persuasive anecdotes to support the GP claim to success. One of these anecdotes for example says that a "series of 11 sexual assaults during a 35-day period in 1998 was attributed to a single offender. Extensive media coverage of the crime produced approximately 300 possible suspects. The geographic profile limited the area under consideration to 0.03 square miles (2.2 percent) and prioritized the list of suspects. The Peel Regional Police Service in Mississauga, Ontario, Canada, began obtaining DNA samples from the most probable suspects on the prioritized list. DNA identified the offender; he was number one on that list"(p. 59).

Value:
Gives a clear indication of the buy-in and overall suggestion that GP works.

Limitations:
Reads like propaganda, with advertisements right on the page (somewhat police-related).

Author Details:
MacKay: is a retired RCMP Inspector. Was the Officer-in-charge of the Violent Crime Analysis Branch at RCMP Headquarters in Ottawa, Ontario at the time of publication.

**7.     O'Leary, M. (2009). The Mathematics of Geographic Profiling.** *Journal of Investigative Psychology and Offender Profiling*, **6, 253-265.**

Argument:
See Mathematics of GP section in Geographic Profiling

Value:
Highlights the mathematics and perhaps more 'scientific' side to GP.

Limitations:
Does not apply the mathematical equations in a study setting to test them out.

Author Details:
O'Leary:  is the Director, Center for Applied Information Technology, Professor Department of Mathematics and the Department of Computer and Information Science.  He joined the faculty in the Mathematics Department at Towson University in 1998. He earned his Ph.D. in mathematics from Northwestern University in 1995, studying conduction-convection problems with changes of phase. His work in computer security has continued, and in 2005 he received a joint appointment in the Department of Computer and Information Sciences. He was appointed Director of the Center for Applied Information Technology in November 2007. In Summer 2008 he was appointed as the graduate director for the Integrated Homeland Security Management program.

**8.      Paulsen, D.J. (2006). Connecting the dots: assessing the accuracy of geographic profiling software.** *Policing: An International Journal of Police Strategies & Management*, **29(2), 306-334.**

Argument:
This study performed an "independent analysis of all existing geographical profiling software packages" (p. 306) to answer the question , "how accurate are these various geographical profiling software systems and are they any more accurate than simple spatial distribution measures?"(p. 307). this study also looked at "the impact of crime type and number of crimes in a serious upon accuracy" (p. 307). The "results indicate that not only are the different profiling software systems no more accurate than the spatial distribution control methods, but the accuracy in general was marginal at best" (p. 306). Also, "certain crimes, such as commercial robbery, were particularly difficult to profile and that the number of crimes in a series was not by itself a good indicator of success of a profile" (p. 306).

Value:

"This research was the first to independently analyze all of the existing geographical profiling systems against control methods for the purpose of accuracy" (p. 306). This study questions the use of these software packages by law enforcement for accurate home locations of offenders.

Limitations:
"The paper shows that future research needs to focus more on determining how various factors such as city type, crime type, road network and spatial aspects of a crime serious (dispersion and search area) impact profiling accuracy" (p. 306)

Author Details:
Paulsen: Eastern Kentucky University, Kentucky, USA.

9. **Rossmo, D.K., Thurman, Q.C., Jamieson, J.D. & Egan, K. (2008). Geographic Patterns and Profiling of Illegal Crossings of the Southern U.S. Border.** *Security Journal,* **21, 29-57.**

Argument:
The goal of the study was to find out any physical and human geographic features related to the probability of illegal border crossings, because it is believed that having a better understanding of the spatial behavior of illegal immigrants can help the U.S.A. Border Patrol anticipate and respond to illegal activity. What were found were the desirability of certain locations and times that reflect the rationale choices of illegal border crossers to the opportunities and risks presented by the physical and human environments.

Value:
Gives an excellent summary of GIS and mapping technology that can be used in geographic profiling. It is a study done by Rossmo to support the use of GIS in an other context than just murderers and vandals.

Limitations:
This is a completely American context for which a pattern is not useful in a Canadian border crossing issue. The patterns are specific to the Mexican-American border and are not applicable in other geographies.

Author Details:
Rossmo: is currently in the Department of Criminal Justice at Texas State University, Texas, U.S.A. He worked as a Vancouver, B.C. city police for 20 years before returning to school for his Master's and Ph.D. In 2003 he was a consultant by police forces all around the world and was the Director of the American Police Foundation in Washington, D.C. He pioneered

the 'geographic profiling' science and has used the strategy in more than 150 criminal investigations around the world.

Thurman: Department of Criminal Justice at Texas State University, Texas, U.S.A.
Jamieson: Department of Criminal Justice at Texas State University, Texas, U.S.A.
Egan: Geography Department, San Marcos, Texas State University, TX, U.S.A.

**10.    Rossmo, D.K. & Velarde, L. (2008). Chapter 5: Geographic profiling analysis: principles, methods and applications in Crime Mapping Case Studies: Practice & Research, Eds. Spencer Chainey & Lisa Tompson: John Wiley & Sons, Ltd.**

Argument:

This chapter outlines the theories, assumptions and software utilized in 'geographic profiling'. "There is a strong relationship between an offender's search base and the location of their crime sites. For a crime to occur there must be an intersection in both time and place between offender and victim… [criminals] have their regular routine activities, such as commuting to work, shopping, and visiting friends and family…the travel routes between them make up a person's activity space or comfort zone. Criminals typically commit crimes in those areas where their activity space overlaps suitable targets" (p. 36). "The most important influence on where criminals offend is where they go during their non-criminal activities" because, "most, (but not all) crimes occur less than two miles from an offender's residence" (p. 36). "Predatory criminals are less likely to commit their crimes too close to home because of a desire for anonymity" (p. 36). This article also outlines the assumptions made in geographic profiling which are listed below:

The linkage analysis for the crime series is accurate and reasonably complete;
The offender is a local hunter, not a poacher
If there is more than one offender, they reside together or in the same area;
The offender's search base has not changed during the time period of the crime series. (p. 36-37). Investigative strategies outlined are: suspect prioritization, directed patrol and surveillance, neighbourhood canvassing, police record system, other data sources and Department of motor vehicle (DMV) searches (p. 37).

Value:

Based on the underlying theories above, this article explains that there is a mathematical representation of it encoded in the Criminal Geographic Targeting (CGT) algorithm used in geographic profiling.

Limitations:

Very non-descript section on "theory". I would say inadequate and unscientific. There are no quantitative values to support "a strong relationship" statements. There are no sources indicating

where the assumptions or the investigative strategies have been developed/ taken from. This is not an academic chapter.

Author Details:

Rossmo: is currently in the Department of Criminal Justice at Texas State University, Texas, U.S.A. He worked as a Vancouver, B.C. city police for 20 years before returning to school for his Master's and Ph.D. In 2003 he was a consultant by police forces all around the world and was the Director of the American Police Foundation in Washington, D.C. He pioneered the 'geographic profiling' science and has used the strategy in more than 150 criminal investigations around the world.

Velarde: is a crime analyst with the Garden Grove Police Department in California, and in 2004 (at least) taught the geographic profiling courses for the department. She is a trained geographic profiling analyst and regularly makes presentations at law enforcement conferences on the topics of geographic profiling and crime mapping.

**11.    Rossmo, D.K. (2005). Geographic Heuristics or Shortcuts to Failure? Response to Snook et al.** *Applied Cognitive Psychology*, **19, 651-654.**

Argument:

A critique to Snook et al. (2004) suggesting that the research study is faulty on four points of contention. 1) Data selection did not meet geographic profiling assumptions outlined in Rossmo (2000). 2) Samples only have three locations, which are too low for pattern detection. 3) The use of nonlinear error measured linearly in the methods, and 4) Geographic profiling strategies were distorted. Basically Rossmo does not believe that Snook et al. can replicate real criminal investigations in a lab setting and therefore attempts to nullify Snook et al.'s study.

Value:

Rossmo coined the term 'geographic profiling' and is a leading, and applied, academic in this field of study and gives the definition of geographic profiling. It offers a very important critique of 'everyone can do it' appeal of Snook et al.'s work and implies that the science is more difficult than it first appears.

Limitations:

It is only a small article in the commentary section of the journal. It is difficult, as Rossmo himself suggests, to replicate "real life" in a lab setting in order to test his hypotheses, but does not offer up solutions to do so.

Author Details:

Rossmo: is currently in the Department of Criminal Justice at Texas State University, Texas, U.S.A. He worked as a Vancouver, B.C. city police for 20 years before returning to school

for his Master's and Ph.D.  In 2003 he was a consultant by police forces all around the world and was the Director of the American Police Foundation in Washington, D.C.  He pioneered the 'geographic profiling' science and has used the strategy in more than 150 criminal investigations around the world.

**12.      Rossmo, D.K. (2000). Geographic Profiling. CRC Press LLC: Boca Ratan, U.S.A.**

Argument:
Basically argues for the use of Geographic Profiling for police investigations of serial crime.  It also focuses on other aspects of criminal investigation and criminal profiling.

Value:
This text had and still has a huge impact on the GP literature and serves as a 'go-to' guide when citing GP, in general.  Without the use of this text, the evaluation of GP would not be relevant to the current GP literature or debate.

Limitations:
For a book about GP, it looks at all sorts of aspects of criminal investigation and discusses the differences between serial rape, serial arson etc… and their different profiles and tendancies based on models and Rossmo's own experiences, rather than on statistical evaluations and evidence.

Author Details:
Rossmo: is currently in the Department of Criminal Justice at Texas State University, Texas, U.S.A. He worked as a Vancouver, B.C. city police for 20 years before returning to school for his Master's and Ph.D.  In 2003 he was a consultant by police forces all around the world and was the Director of the American Police Foundation in Washington, D.C.  He pioneered the 'geographic profiling' science and has used the strategy in more than 150 criminal investigations around the world.

**13.      Rossmo, D.K. (1993). A Methodological Model.  *American Journal of Criminal Justice*, 17(2), 1-21.**

Argument:
This early article by Rossmo, formalizes and discusses the geographic profiling requirements based in ten major problems with current criminal investigations.  There are five parts to these requirements: 1) Crime Data must include case summaries and data regarding "locations, directions, movements, and other spatial data" pertinent to each crime believed to be part of a series. 2) Geographic data for all relevant sites, as in where victims were last seen, "first contact sites, crime sites, victims/body/property/vehicle dump sites, evidence recovered sites, etc" (p.

15). Other details in the data should include exact location, location type, neighbourhood demographics, maps and photos. 3) Victimology for all victims such as "sex, race, age, risk level assessment, residence, business, social, transportation methods and routes" should be included (p. 15). 4) A Criminal/Psychological Profile. 5) Suspect Data should be included, if available.

Value:
This type of formalized methods for conducting geographic profiling can formulate prioritized lists of suspects. These lists of suspects, leads and tips are often huge in real-world situations, and thus a prioritized list produced by the profiling system can condense the resources and time needed in an investigation.

Limitations:
This is an early and thus, untested and not validated methodology to criminal investigations. Although written by a leader in the field, other studies indicate that we should not be so confident with the system's technology to do anything better than human judgment and analysis can also produce.

Author Details:
Rossmo: is currently in the Department of Criminal Justice at Texas State University, Texas, U.S.A. He worked as a Vancouver, B.C. city police for 20 years before returning to school for his Master's and Ph.D. In 2003 he was a consultant by police forces all around the world and was the Director of the American Police Foundation in Washington, D.C. He pioneered the 'geographic profiling' science and has used the strategy in more than 150 criminal investigations around the world.

14.     **Snook, B., Wright, M., House, J.C. & Alison, L. (2006). Searching for a Needle in a Needle Stack: Combing Criminal Careers and Journey-to-Crime Research for Criminal Suspect Prioritization.** *Police Practice and Research*, **7 (3), 217-230.**

Argument:
Results show that 65% of robbers identified in the top 10% of ranked suspects in a 'suspect prioritization technique employed in a type of geographic profiling called 'journey-to-crime' research. The argument is made that there are consistent findings that suggest that serious offences are often preceded by less serious offences and that violent offenders have been in contact with the law over an extended period.

Value:
This argument may be able to provide some foundation to such a suspect prioritization technique used in geographic profiling cases.

<u>Limitations:</u>

The two scenarios that "add a certain level of artificiality to this study" are that the data series used in the CSPS[4] system ceased after 1997 and therefore the search parameters for the suspects were always between 1987 and 1997. Therefore, if the robbery occurred after 1997, there would be a limited number of suspects provided from the generated list. Secondly, if the robbery occurred before 1997, then that number of suspects would be far greater, adding years after the robbery for those suspects. For instance, a 1999 robbery would only yield suspects in the data system between 1987 and two year's prior to the robbery, in 1997. If a robbery happened in 1995 however, then suspects generated from 1987 to two year's after the robbery, in 1997 would still be included in the list. This would leave police and other investigators to deal with "false alarms" built within the CSPS system itself.

<u>Author Details:</u>

Snook: is currently an Assistant Professor, Psychology Department at Memorial University of Newfoundland, Canada. His area of interest is the study of bounded rationality in forensic settings. He was a PhD. Candidate, Department of Psychology at The University of Liverpool, England.

Wright: is a PhD candidate in the school of Psychology at the University of Liverpool. Her research interests include criminal consistency and offender spatial behaviour.

House: is a Sergeant in the Royal Newfoundland Constabulary, Canada in charge of major crime. His academic interests include offender profiling, evidence-led policing, and major case leadership.

Alison: is a Professor in the School of Psychology at the University of Liverpool, UK. His research interests include critical incident management, the use of experts, and deviant and/or criminal sexual behaviour.

**15.    Snook, B., Cullen, R.M., Mokros, A. & Harbort, S. (2005). Serial Murderers' Spatial Decisions: Factors that Influence Crime Location Choice. *Journal of Investigative Psychology and Offender Profiling*, 2, 147-164.**

<u>Argument:</u>

Results of the study showed that 63% of murderers live within 10 kilometers of their crime locations regardless of age but that IQ score does affect the distance travelled. Results also indicate that mode of transportation used by murders effected their special decisions. Snook also speculated that serial murderers may increase their spatial knowledge by learning from their criminal experiences which may alter their spatial decision-making over time.

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[4] CSPS was developed by House (1997) and has been "used to test the utility of the proposed suspect prioritization technique." It "contains information on over 10,000 previous arrests from 1978 to 1997" (Snook et al., 2006: 221).

Value:

Findings suggest that age does not play a part in murderers' spatial decisions, in other words, how far away their crimes are committed from where they live. Results indicated that more intelligent murderers do travel farther from their homes than those with lesser IQ scores. If teamed with other qualitative factors, such as motive, this type of information can be used to hone in on a more specific list of suspects than in past investigative efforts.

Limitations:

The sample was taken from Germany and many studies using only one national sample have yielded various different, and often conflicting results. This means that murderers in the U.S. may not behave the same way as those appearing in the German sample in this study. This limits the applicability of the sample chosen for the study, and requires further investigation and studies to verify the findings.

Author Details:

Snook: is currently an Assistant Professor, Psychology Department at Memorial University of Newfoundland, Canada. His area of interest is the study of bounded rationality in forensic settings. He was a PhD. Candidate, Department of Psychology at The University of Liverpool, England.

Cullen: Memorial University of Newfoundland, St. John's, NL, Canada.

Mokros: The University of Regensburg, Regensburg, Germany.

Harbort: Police Headquarters of the City of Duesseldorf, Germany.

**16.    Snook, B., Taylor, P. J. & Bennell, C. (2005). Shortcuts to Geographic Profiling Success: A Reply to Rossmo (2005). *Applied Cognitive Psychology*, 19, 655-661.**

Argument:

The objective of this article is to build an argument against the confidence researchers have in computerized geographic profiling systems due to the lack of strong empirical evidence to support the use of this technology. This is a response to Rossmo's (2005) critique of Snook et al's (2004) article. "To put it bluntly, geographic profiling is an investigative tool, and to test it using data that are selected on the basis of post-investigation criteria is not to test it at all. Instead, geographic profiling strategies must be tested under conditions that are not ideal (e.g. with commuting offenders) since these are the conditions that profilers will face in actual investigations. Only in this way can accurate measures of how well a geographic profiling strategy works be obtained" (p. 656).

Value:

Further supports the argument made in Snook et al (2004) that individuals with a small amount of training predicted the geographies of the offenders homes just as well as the computer

geographic profiling tool called Crimestat. Meaning that there may be more cost effective and valuable tools available that predict the whereabouts of criminals to the same accuracy of more expensive computerized geographic profiling systems.

Limitations:
Snook et al.'s theory and study is still highly contradicted in the writings of Rossmo, the individual responsible for coining the term "geographic profiling" and a well-known profiling investigator in the applied field of police investigations. His knowledge is applied in the real-world setting, unlike Snook et al.'s (2004) lab studies.

Author Details:
Snook: is currently an Assistant Professor, Psychology Department at Memorial University of Newfoundland, Canada. His area of interest is the study of bounded rationality in forensic settings. He was a PhD. Candidate, Department of Psychology at The University of Liverpool, England.
Taylor: Was at the School of Psychology, University of Liverpool, Liverpool, UK, and is now in the Department of Psychology, Lancaster University, Lancaster, UK.
Bennell: Department of Psychology, Carleton University, Ottawa, ON. He was a research assistant and Ph.D. candidate at the Centre for Investigative Psychology.

17.    **Snook, B., Zito, M., Bennell, C. & Taylor, P.J. (2005). On the Complexity and Accuracy of Geographic Profiling Strategies.** *Journal of Quantitative Criminology*, **21(1), 1-26.**

Argument:
The results indicate that the complexity of the strategy used in geographic profiling is not positively related to accuracy. This is also true of tasks that ranged in complexity and challenges the assumption that complexity equals accuracy. This article compares geographic profiling strategies and whether some perform better than others. This study tests eleven geographic profiling strategies, six of which are 'spatial distribution strategies' and five are 'probability distance strategies.

Value:
Comparing the eleven strategies attempts to give police and other investigators information about the validity and value of the various strategies used in geographic profiling. The results demonstrate that the 'Center of the Circle' method yielded the best mean accuracy overall, but yielding less positive results on tasks that involve nine and 10 crimes, rather than on fewer crimes (5, 6, 7 and 8). Overall, this study showed that all probability distance strategies are more complex than all spatial distribution strategies but they are not more accurate. Thus, the complexity of the crime does not mean it will yield better results using different methods and

therefore, low-cost, easy-to-implement geographic profiling strategies may be extremely useful for 'in the field' investigators.

Limitations:
This article leaves out all of the qualitative components and details that Rossmo suggests that training and experience provides profilers. Qualitative data is bound to have some impact on assessment strategies.

Author Details:
Snook: is currently an Assistant Professor, Psychology Department at Memorial University of Newfoundland, Canada. His area of interest is the study of bounded rationality in forensic settings. He was a PhD. Candidate, Department of Psychology at The University of Liverpool, England.
Zito: Department of Computer Science, University of Liverpool, Liverpool, UK.
Bennell: Department of Psychology, Carleton University, Ottawa, ON. He was a research assistant and Ph.D. candidate at the Centre for Investigative Psychology.
Taylor: Was at the School of Psychology, University of Liverpool, Liverpool, UK, and is now in the Department of Psychology, Lancaster University, Lancaster, UK.

**18.     Snook, B. (2004).  Individual Differences in Distance Traveled by Serial Burglars.  *Journal of Investigative Psychology and Offender Profiling*, 1, 53-66.**

Argument:
Results show "that serial burglary is a localized activity. Differences between serial burglars in distances they travel are related to the burglar's age, method of transportation and value of property stolen" (p. 53).

Value:
The results suggest that the procedures followed in this article can aid police or other investigators to predict home location of serial offenders.

Limitations:
In the sample, a "burglar who committed five crimes and had two homes would have two burglary series in the same (i.e. one for each home)" which "may distort the results to some extent, in terms of application to" investigations" (p. 58).

Author Details:
Snook: is currently an Assistant Professor, Psychology Department at Memorial University of Newfoundland, Canada. His area of interest is the study of bounded rationality in forensic settings. He was a PhD. Candidate, Department of Psychology at The University of Liverpool, England.

**19.    Snook, B., Taylor, P.J. & Bennell, C.  (2004). Geographic Profiling: The Fast, Frugal, and Accurate Way.** *Applied Cognitive Psychology*, **18, 105-121.**

Argument:
"Results indicated that participants introduced to a 'Circle' or 'Decay' heuristic showed a significant improvement in the accuracy of predictions, and that their post-training performance did not differ significantly from the predictions of one leading actuarial technique" (p. 105).  In other words, the results of the study demonstrated that individuals with a small amount of training predicted the geographies of the offenders homes just as well as the computer geographic profiling tool called Crimestat.

Value:
This article is useful for police foundations but also builds upon Snook et al. (2002) to replicate the pilot study's results.  It further supports the idea that extensive training may not be necessary in order to make these types of geographic profiling decisions and that high-tech or expensive geographic profiling systems may not be necessary to purchase because non-trained humans may be just as likely to predict the home locations of serial offenders.  This means that it is a cost effective method, yet also does not limit the outcome of the predictions.   Geographic Profiling Program used as a comparison in the study is *Crimestat*.

Limitations:
Part of a critique dialogue between D. Kim Rossmo and the authors on four points of contention: the data selection did not meet geographic profiling assumptions (see Rossmo, 2000); samples only have three locations, which is too low for pattern detection; nonlinear error were measured linearly in the methods; and geographic profiling strategies having been distorted, according to Rossmo.

Author Details:
Snook: is currently an Assistant Professor, Psychology Department at Memorial University of Newfoundland, Canada.  His area of interest is the study of bounded rationality in forensic settings.  He was a PhD. Candidate, Department of Psychology at The University of Liverpool, England.
Taylor: Was at the School of Psychology, University of Liverpool, Liverpool, UK, and is now in the Department of Psychology, Lancaster University, Lancaster, UK.
Bennell: Department of Psychology, Carleton University, Ottawa, ON.  He was a research assistant and Ph.D. candidate at the Centre for Investigative Psychology.

**20.    Snook, B., Canter, D. & Bennell, C. (2002). Predicting the Home Location of Serial Offenders: A Preliminary Comparison of the Accuracy of Human Judges with a Geographic Profiling System.** *Behavioural Sciences & the Law*, **20, 109-118.**

Argument:

"This study indicates that some of the most frequently cited results in the research literature on offender spatial behavior can be summarized as simple heuristics that can be quickly understood and utilized by people without any special training in criminal behavior or experience of criminal investigations" (p. 116). This provides support for the two heuristic devices used: distance decay and circle hypothesis. Also, participants, "on average, were able to make as accurate predictions as a geographic profiling system" and the results also indicate that "if the basic processes underlying offender spatial behavior are understood, prerequisite qualifications may not be required to make accurate geographic predictions" (p. 117).

Value:

This is applicable to military, non-trained individuals needing to make predictions in the field, quickly. It supports the idea that extensive training *may* not be necessary in order to make these types of geographic profiling decisions. Also, high-tech or expensive geographic profiling systems may not be necessary to purchase because non-trained humans *may* be just as likely to predict the home locations of serial offenders. This means that it is a cost effective method, yet also does not limit the outcome of the predictions. Geographic Profiling Program used as a comparison in the study was: **Dragnet.**

Limitations:

This is a pilot study and involves only 21 participants, thus it is not conclusive.

Author Details:

Snook: is currently an Assistant Professor, Psychology Department at Memorial University of Newfoundland, Canada. His area of interest is the study of bounded rationality in forensic settings. At the time of publication of this article, he was a PhD. Candidate, Department of Psychology at The University of Liverpool, England.

Canter: Director International Centre for Investigative Psychology President Int. Academy for Investigative Psychology. the internationally renowned applied social researcher and world-leading crime psychologist, is perhaps most widely known as one of the pioneers of "Offender Profiling" being the first to introduce its use to the UK. Professor Canter played a crucial role in establishing another sub-discipline: Environmental Psychology . He continues to lecture around the world on developments in this field.

Bennell: At the time of publication of this article, he was a research assistant and Ph.D. candidate at the Centre for Investigative Psychology. Bennell is now in the Department of Psychology, Carleton University, Ottawa, ON.

**21.** **Strano, M. (2004). A Neural Network Applied to Criminal Psychological Profiling: An Italian Initiative.** *International Journal of Offender Therapy and Comparative Criminology***, 48(4), 495-503.**

Argument:
The article introduces a database called the Italian Neural Network for Psychological Criminal Profiling (NNPCP) project and discusses the advantages of using a , "psychological criminal profiling model based on a neural network and data mining" (p. 502).

Value:
The article contains a summary of general critiques of traditional criminal profiling, and introduces an interesting new database.

Limitations:
This article has a few limitations:
1. It discusses the general critiques of traditional criminal profiling and then introduces the NNPCP project but does not discuss how this new technique addresses these general problems.
2. The discussion about the NNPCP project is very brief with only a few paragraphs discussing the main premise of the tool, how it works and its advantages.
3. There is no evidence or studies cited backing up the claims of this technique

Author Details:
Strano: Italian State Police, Italy.

**22.** **Taylor, P.J., Bennell, C. & Snook, B. (2009). The Bounds of Cognitive Heuristic Performance on the Geographic Profiling Task.** *Applied Cognitive Psychology***, 23, 410-430.**

Argument:
This study suggests that students "performance did not decrease under greater information load and was not improved by adding a descriptive qualifier to the taught heuristic" (p. 410).

Value:
An original study, using a sample of 200 students, to validate or disqualify GP tasks.

Limitations:
It does not support or not support Snook et al's previous attempts to qualify GP methods.

Author Details:
Taylor: School of Psychology, University of Liverpool, Liverpool, UK.

**23.**     **Wilson, C. (2003). Mapping the Criminal Mind, Section: Interview in *New Scientist*, 178(2392), 46-49.  Accessed online: February 23, 2011: http://search.ebscohost.com/login.aspx?direct=true&db=aph&AN=9750232&site=e host-live.**

Argument:
An interview with criminal profiler, D. K. Rossmo.  Basically outlines and increases the "sexy" nature of geographic profiling and profiling in general.  Highlights Rossmo's applied background and world-renowned reputation and experience.

Value:
The interview characterizes Rossmo's expertise in the field.  Also supports Snook's argument that we have popularized profiling to the point where we think only experts can be profilers, when there is a lack of empirical data to support the notion.

Limitations:
This is only a brief interview with a little known interviewer.

Author Details:
Wilson: has been medical features editor for *New Scientist* for seven years. Before that, she was a reporter on *Hospital Doctor*, a UK medical magazine, and *Scrip*, a newsletter for the pharmaceutical industry. Clare has a first-class degree in cell biology from the University of Manchester.

## Leader Profiling
*Personological Approaches*

1.      **Immelman, A. (1993). The assessment of political personality: A psychodiagnostically relevant conceptualization and methodology. *Political Psychology*, 14, 725-741.**

Author details:

Ph.D., Nelson Mandela Metropolitan University, 1991

Immelman's research focuses on personality in politics, political leadership, and criminal profiling. He is the research director of the Unit for the Study of Personality in Politics at St. John's University in Minnesota. He has been contacted by the American Department of Defense, and the CIA currently uses his method of leader personality profiling. From my limited contact with him, he appears to be quite approachable and interested in disseminating information regarding his profiling method (much more approachable than some other academics).

Scope of work/research:

Immelman argues that the assessment of leader personality has been hampered by inadequate transposition of personality theory and psychodiagnostics to the target discipline of contemporary political psychology. He proposes that Theodore Millon's Inventory of Diagnostic Criteria (MIDC) offers a viable integrative framework for the study of political personality and uses Millon's personality patterns as the basis for a taxonomy of politically relevant personality patterns. This taxonomy contains 10 political personality types: dominant, dauntless, ambitious, outgoing, accommodating, aggrieved, contentious, conscientious, reticent, and retiring. These personality types are derived from the combination of 3 polarities: pain/pleasure (ie, the degree to which the individual's aim of existence is to reduce pain or achieve pleasure), passive/active (ie, is the individual's mode of adaptation to the environment active or passive?) and other/self (ie, is this individual focused on nurturing and valuing the needs of others or does he have an individuating self-orientation that is focused on satisfying personal needs). See the table below for how the 3 polarities are related to the personality patterns.

### Millon's Three Domains of Evolution and Associated Personality Valences

| Personality Pattern | Aims of Existence: Pain/Pleasure Polarity | | Modes of Adaptation: Passive/Active Polarity | | Strategies of Replication: Other/Self Polarity | |
|---|---|---|---|---|---|---|
| | **Pain** | **Pleasure** | **Passive** | **Active** | **Other** | **Self** |
| **Dominant** | High | Medium | Low | High | Low | Medium |
| **Dauntless** | Low | High | Low | High | Low | High |
| **Ambitious** | Medium | Medium | High | Low | Low | High |
| **Outgoing** | Medium | High | Low | High | High | Low |
| **Accommodating** | Medium | Medium | High | Low | High | Low |
| **Aggrieved** | High | Low | High | Medium | Medium | Low |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Contentious** | Medium | Low | Medium | High | Low | Medium |
| **Conscientious** | Medium | Low | High | Low | High | Low |
| **Reticent** | High | Low | Low | High | Medium | Medium |
| **Retiring** | Low | Low | High | Low | Low | Medium |

For a given leader, a profile consists of the identification of the primary and secondary personality patterns as well as scale scores on the Millon Inventory of Diagnostic Criteria.

Summary of conclusion:
Immelman has been quite prolific in using this technique to profile many contemporary political leaders. For profiles of leaders who have been analysed using his method, visit his website. Immelman has also used this method, cross-culturally, to profile Kim Jong Il, Mahmoud Ahmadinejad, Osama bin Laden, etc.

Strengths:
This method attempts to understand a leader in a much more comprehensive and holistic manner, which provides a more well-rounded understanding of a leader. To the extent that we can understand a leader comprehensively and deeply, the better able we are to anticipate his/her behavior and in a wider variety of circumstances.

Weaknesses:
1. Theoretical issue - Widiger (1999) argues that there is no proof that the 3 polarities necessarily translate into the 10 personality types on which Immelman's profiling work is based. Piersma and colleagues (2002) ran an investigation to test whether the 11 personality types are linked to the 3 polarities. Although results showed that the personality types and polarities were correlated, the magnitude (high, low or medium) with which they were correlated were not consistent with those specified by the model.
2. Questionable face validity—can someone with a retiring personality sustain enough motivation to become president?
3. Millon's Inventory has been criticized for lack of reliability and validity. Concerning the reliability issue, Immelmans argues that demonstrating reliability, in the form of an interrater reliability coefficient, is unnecessary because the MIDC relies on replicability, whereby all diagnostic criteria must be documented by at least two independent sources. This argument really does not make sense to me. Replicability and reliability are 2 different concepts and satisfying the replicability criterion DOES NOT necessarily deal with the lack of demonstrated interrater reliability. For example, a profiler might identify 2 pieces of biographical information suggesting that Barack Obama lead an unusually happy childhood (thus satisfying the replicability criterion). However, this does not answer the question of whether a different profiler, reading the same 2 pieces of biographical information will make the same determination—that Obama had an unusually happy childhood (the issue of interrater reliability). The second profiler could possibly conclude that Obama had a normal childhood.
4. This is a fairly time-consuming method. Immelman admits that the Millon-based process of extracting psychodiagnostically relevant content from biographical source materials requires weeks or months of bibliographic research.

Utility of work:
Although this method is being applied by the CIA, given that it is based on little, if any, scientific work, more research would have to be done in order to establish the utility of this method.


**2.      Post, J.M. (2003). Assessing leaders at a distance: The political personality profile. In J.M. Post (Ed.),** *The psychological assessment of political leaders: With profiles of Saddam Hussein and Bill Clinton***. Ann Arbor: University of Michigan Press, 69-104.**

Author details:
M.D., Yale University; Received graduate training at the Johns Hopkins School of Advanced International Studies.  Post developed the *Center for the Analysis of Personality and Political Behavior* unit for the CIA. He remained there for 21 yrs (1965-1986). He was also a founding member of the International Society of Political Psychology. Currently, Professor of Psychiatry, Political Psychology and International Affairs and Director of the Political Psychology Program at The George Washington University.

Scope of work/research:
This chapter describes Post's political personality profiling. This method is similar to the clinical case study method, in which a longitudinal and cross-sectional view of the person is taken. The longitudinal view attempts to understand life events that influenced core attitudes, political personality, leadership, and political behaviour. The cross-sectional examination looks at characteristic adaptive styles and aspects of cognition, attitudes, affect, and interpersonal relations that bear on specific elements of leadership functioning, such as leadership style, crisis decision-making, negotiating style, as well as the identification of those political issues that are especially salient for the subject's psychology.  The chapter contains a detailed outline of the longitudinal and cross-sectional elements taken into consideration when constructing a political personality profile. See here for the outline.

Strengths:
Similar to Immelman's method, Post attempts to capture a holistic picture of a leader. Analysis of the leader starts with his/her childhood experiences and progresses to adulthood, looking as aspects of the leader's decision-making, worldview, outlook, emotional reactions, etc.

Weaknesses:
1.  I have not found any published reports demonstrating the validity and reliability of this method.
2.  This is probably the most subjective method for leader profiling. It consists of collecting leader information and then somehow coming up with a profile. Given the seemingly unstructured nature of this approach (i.e., no coding scheme to follow, no step-by-step method of analysis, at least none that I came across), it would seem to be highly dependent on the skill of the individual profiler to make sense of the vast amount of information on a leader.
3.  This method is highly time-consuming, requiring the collection of a large and varied amount of personal information in order to properly develop a proper leader profile.

Utility of work:
As stated, this method is both subjective and time-consuming. Combine this with the fact that, this is, essentially, a case-study method whereby each profile is high individualized, makes the demonstration of its psychometric properties highly difficult, if not impossible. It would seem that the best way to validate this method would be to test its *predictive validity*—whether or not profiles developed from this method can predict a leader's future behavior. Although there is anecdotal evidence indicating that it does, there are no scientific studies that have tested this systematically.

Given that the CIA seems to have employed this method for some time, there is, at least, a perceived utility to this method. However, given that the CIA now appears to also be using Immelmann's profiling method, perhaps they identified some insufficiencies to Post's method?

## *Empirically-driven Approaches*

1.    **Hermann, M.G. (1980). Explaining foreign policy behavior using the personal characteristics of political leaders. *International Studies Quarterly*, 24, 7-46.**

Author details:
Ph.D.(Psychology), Northwestern University, 1965
Director of the Moynihan Institute of Global Affairs at Syracuse University. Her research focuses on political leadership, foreign policy decision making, and the comparative study of foreign policy.

Scope of work/research:
Hermann content analysed interview material from 45 heads of government on 6 personal characteristics (nationalism, belief in one's own ability to control events, need for power, need for affiliation, conceptual complexity, and distrust of others).

Summary of conclusion:
Results showed that these 6 characteristics combined to form 2 orientations to foreign affairs: interest in foreign affairs and training in foreign affairs. Hermann then related the 2 orientations to 6 foreign policy behaviors: professed orientation to change, independent/interdependence of action, commitment, direction of affect, intensity of affect, and positive feedback.

Strengths:
Unlike other profiling methods, placing focus on 6 discreet characteristics narrows down the amount of information that needs to be collected, and thus, not as time-consuming as other profiling methods.

Weaknesses:
This looks at a very narrow aspect of a political leader—foreign policy behavior.

Utility of work:

Hermann's research may be useful for those who are, specifically, interested in looking at a leader's foreign policy behavior, but limited in usefulness for those who are interested in studying other aspects of a leader's behavior.

**2.      Simonton, D. (1986). Presidential personality: Biographical use of the Gough Adjective Check List. *Journal of Personality & Social Psychology*, 51, 149-160.**

Author details:
Ph.D., Harvard University
Currently professor of Psychology at the University of California, Davis. Simonton does not specialize in politics-related research or leadership.

Scope of work/research:
Used the Gough Adjective Check List to measure the personality differences among 39 American presidents. The original 300 adjectives were reduced to 110, and subsequently collapsed into 14 dimensions, namely, Moderation, Friendliness, Intellectual Brilliance, Machiavellianism, Poise and Polish, Achievement Drive, Forcefulness, Wit, Physical Attractiveness, Pettiness, Tidiness, Conservatism, Inflexibility, and Pacifism.
Ratings on adjectives could be made using a 7-point scale, from *definitely not applicable* (1) to *definitely applicable* (7). Alternatively, a dichotomous rating method could also be employed whereby a leader is assigned a *present* or *absent* rating for each adjective.

Summary of conclusion:
All but one of these factors featured respectable internal consistency reliability coefficients. The factor scores were further validated by correlating them with (a) previous content-analytical and observer-based assessments and (b) indicators of developmental antecedents and performance criteria, including ratings of presidential greatness – the Intellectual Brilliance factor contributed to the prediction of presidential greatness.

Strengths:
Does not rely on the case study method, but instead, rates a group of leaders on a series of characteristics. This provides a basis for which to make comparisons across leaders.

Weaknesses:
1.  Although perhaps not as time-consuming as the methods used by Immelman and Post, this method is somewhat resource-heavy in that it requires at least 2 content raters to rate individuals on 110 adjectives. It is possible that a large amount of information must be collected in order to make rating for all 110 adjectives.

2.  I have not found any other papers that have attempted to use this rating scale to study leaders. Therefore, how well these adjectives predict leader behavior is unknown.

Utility of work:
Knowing how a leader scores on specific adjectives may be helpful in guiding expectations about the leader's social behavior in a future meeting. However, whether this method will provide sufficient information for predicting a leader's decision in any major political issue is unknown.

**3.     Suedfeld, P. (2010). The cognitive processing of politics and politicians: Archival studies of conceptual and integrative complexity. *Journal of Personality*. 78(6), 1669-1702.**

Author details:
Ph.D., Princeton University, 1963.
Currently, professor of Psychology at UBC. Appears to have a broad area of research interests, with political psychology being one aspect of his research. His current politics-related research heavily (but not exclusively) focuses on changes in levels of *integrative complexity* following changes in a leader's political circumstances.

Scope of work/research:
This paper reviews research on complexity and politics. Integrative complexity refers to the structure (how people think), and not the content (what people think about), of people's thinking. As an example, the statements "Rules should always be obeyed" and "Rules are made to be broken" are contradictory in content, but are the same in structure.

Measurement of integrative complexity is indirect, in that instead of the use of a self-report method, integrative complexity scores are derived from content analysis of an individual's written text. Scores can range from 1 to 7, with higher numbers representing higher levels of integrative complexity in thinking.

The basic unit of scoring is the paragraph. Scorers must be trained and pass a training course in order to work independently. A detailed manual is used when scoring.

Research on integrative complexity and leaders has found that low-complexity leaders use analogies differently than high-complexity leaders. Leaders low in complexity used analogies that came from their own generation and culture (Dyson & Preston, 2006). Looking at individual leaders, Saddam Hussein's level of integrative complexity dropped shortly before his attack on Kuwait and rose as his victory was consolidated (Suedfeld, Guttieri, & Tetlock, 2003). Similarly, Gen Robert E. Lee, who was scored as very high on integrative complexity, showed a temporary drop when the Civil War was imminent (Suedfeld, Corteen, & McCormick, 1986). These studies suggest a pattern of integrative complexity decreasing during times of stress.
In terms of political strategizing, Suedfeld and Bluck (1988) found that strategic surprise attacks were consistently preceded by a major decrease in integrative complexity of statements given by leaders of the attacking side, but not that of the attacked side.

Strength(s):
1.  This method is fairly well-studied and demonstrates a link to various political behaviors and outcomes.
2.  The fact that determinations of integrative complexity are not content-dependent makes scores less prone to intentional deception or impression management motives, as these are usually manipulated in the content, and not the structure, of what leaders say. Indeed, discrepancies between content and structure of speeches could even suggest dishonest intentions in the speaker (see Conway et al., 2008 and Suedfeld, Tetlock, & Jhangiani, 2007).
3.  With the exception of the requirement of scorers to take and pass a training course, this method is fairly efficient, as scoring a leader's level of integrative complexity can be done using one paragraph of text and does not require that vast amounts of information be

collected.
4.  Making within-person assessments across different time periods is definitely useful because it:
    a.  Takes away the requirement of profiling other leaders, whom we may not be interested in, just so that we could have a point of comparison.
    b.  Allows us to track changes in a leader before and after important political events.

Weakness(es):
1.  It appears that studies looking at integrative complexity have done so on a within-person basis, whereby levels of integrative complexity from 2 time points are compared. It is not clear what the criterion is for determining whether 2 scores are different.

Utility of work:
This is a unique way of looking at personality because it does not focus on what a leader says, but how he says it. As such, it lends another type of information to our understanding of an individual. However, on its own, it is not likely that integrative complexity can give sufficient information about a leader.

**4.      Winter, D.G. (1991). Measuring personality at a distance: Development of an integrated system for scoring motives in running text. In A. J. Stewart, J. M. Healy, Jr., & D. J. Ozer (Eds.), Perspectives in personality: Approaches to understanding lives (pp. 59-89). London: Jessica Kingsley.**

Author details:
Ph.D., Harvard University
Currently a professor of Psychology at the University of Michigan. Amongst other things, his research focuses on political psychology, including measurement of personality at a distance and psychological factors in war and peace; he also studies authoritarianism.

Scope of work/research:
Winter uses the 3 motives of *achievement, affiliation-intimacy* and *power* to assess leader personality. See Table 1 for a description of each motive. He presents a new way of scoring the 3 motives so that scoring of running text is more easily achieved (original scoring system was developed for scoring the Thematic Apperception Test).

This new scoring system can only be applied to verbal material that is imaginative or "aspirational" or contain statements about goals, actions or wishes. Facts are not scored. The unit of analysis is the sentence. A single sentence can be scored only once for a particular motive, but more than one motive can be scored for a sentence.

Research on U.S. presidents (Winter, 2002), using these 3 motives, has found that power motive is positively correlated with historian-rated greatness and with US entry into war. Additionally, affiliation motive was positively correlated with political scandals. On an individual level, research into President Kennedy's work habits during his first 6 months in office showed that the higher his power affiliation, the earlier he arrived at the oval office each day, the more unscheduled time he spent in the oval office, and the more scheduled appointments he had with friends. Additionally, the higher his achievement motivation, the fewer midday breaks he took in his living quarters (Winter, 2002).

Strength(s):
1. Winter (1991) has shown that this method demonstrates very good interrater reliability (above .85 for all 3 motives) moderate rest-retest reliability (.71 to .63 across the motives) and moderate convergent validity with the previous method of scoring (.54 to .64). Although most of these reliability and validity estimates are not high, at least there is psychometric information about this method.
2. Scoring seems fairly straightforward and does not require large amounts of information to be collected.

Weakness(es):
1. Similar to some of the other methods that have been discussed, this method gives us a limited view of a leader.

Utility of work:
If the variables that Winter studies are of interest, then this method may be a good starting off point.

**5. Borkenau, P., Mauer, N., Riemann, R., Spinath, F.M., & Angleitner, A. (2004). Thin slices of behavior as cues of personality and intelligence. Journal of Personality and Social Psychology, 86, 599–614.**

Author details (Peter Borkenau):
Ph.D. in Psychology (Universität Heidelberg, Germany).
Currently at the Psychology department at Martin-Luther University Halle-Wittenberg. His research interests include Behavior Genetics, Accuracy in Person Perception, Consistency of Personality, Personality Structure, and Personality-Congruent Information Processing.

Scope of work/research:
This study collected self-reports, peer reports, intelligence tests, and ratings of personality and intelligence from 15 videotaped episodes for 600 participants. The average cross-situational consistency of trait impressions across the 15 episodes was .43. Shared stereotypes related to gender and age were mostly accurate and contributed little to agreement among judges. Agreement was limited mainly by non-shared meaning systems and by non-overlapping information. Personality inferences from thin slices of behavior were significantly associated with reports by knowledgeable informants. This association became stronger when more episodes were included, but gains in prediction were low beyond 6 episodes. Inferences of intelligence from thin slices of behavior strongly predicted intelligence test scores. A particularly strong single predictor was how persons read short sentences.

Strength(s): This method, potentially, allows researchers to covertly measure personality without the target individual being aware of it.

Weaknesses:
1. This method is dependent on the availability of appropriate behavioral videos showing individuals engaged in specific behaviors that are related to the personality dimension of interest. For instance, in order to assess extraversion, we would require videos of people engaged in situations that would reveal their level of extraversion. It may not necessarily be the case that such videos are always available.
2. It may not be possible to measure certain personality dimensions using this method.

3. Assessing an individual based on behavioral information that range in length from a few seconds to a few minutes gives a fairly context-dependent glimpse of that person.

Utility of work:

Although demonstrating people's ability to discern another individual's personality is interesting, this approach is limited in use as it is commonly the case that we have more information about an individual than simply a few moments of visual behavioral information.

**6.     John, O.P., & Srivastava, S. (1999). The Big Five trait taxonomy: History, measurement, and theoretical perspectives. In L. A. Pervin & O. P. John (Eds.), Handbook of personality: Theory and research (2nd ed., pp. 102-138). New York: Guilford Press.**

Author details (Oliver John):
Ph.D., University of Oregon.
Currently at the Psychology department at the University of California, Berkley. His research interests include self-concept; self-perception accuracy and biases; personality development and assessment across the life span; emotion experience and expression; cultural differences.

Scope of work/research:
The big five personality traits are:
1. Extraversion or Surgency (talkative, assertive, energetic)
2. Agreeableness (good-natured, cooperative, trustful)
3. Conscientiousness (orderly, responsible, dependable)
4. Emotional Stability versus Neuroticism (calm, not neurotic, not easily upset)
5. Culture (intellectual, polished, independent-minded)

The Big Five structure does not imply that personality differences can be reduced to only five traits. Rather, these five dimensions represent personality at the broadest level of abstraction, and each dimension summarizes a large number of distinct, more specific personality characteristics. Indeed some have argued that the use of the big five traits in research reduces the ability to find associations with other variables due to broadness of these traits (Paunonen & Ashton, 2001).

The Big Five traits have been well-studied in academic and applied areas of research including various aspects of business including, job performance (Tett & Burnett, 2003), leadership (Judge & Piccolo, 2004), and job satisfaction (Staw & Cohen-Charash, 2005).

Strength(s):
1. The method is easy to administer as most self-report methods are paper-and-pencil or computer-based.
2. The data obtained are easy to analyze.
3. The various measures of the Big Five traits have been well-studies and demonstrate good psychometric properties.

1. As a self-report method, the Big Five is susceptible to issues of self-presentation, whereby participants may give inaccurate responses about themselves as a means of appearing more socially desirable.

Utility of work:

Due to the fact that the Big Five dimensions have been shown to successfully predict a variety of outcomes, they can certainly be useful in certain areas of research. However, depending on the goals of a study, the Big Five (or any other self-report method) may not be relevant. For instance, in situations where the target individual is not available or not able to make self ratings, a different assessment method must be used.

**7.      Pennebaker, J.W. & King, L.A. (1999). Linguistic styles: Language use as an individual difference. Journal of Personality and Social Psychology, 77, 1296-1312.**

Author details (James Pennebaker):
Ph.D. (Psychology), University of Texas, Austin, 1977
Pennebaker is currently a professor of Psychology at the University of Texas at Austin. His main research focuses on the links between traumatic experiences, expressive writing, natural language use, and physical and mental health. He developed the Linguistic Inquiry and Word Count method of text analysis, which has become the most popular method of analysing written texts amongst Social Psychologists.
LIWC: LIWC is a word frequency counter that categorizes words into one of 72 linguistic dimensions. The linguistic dimensions range from psychological processes (such as affective or emotional processes, insight and certainty) to standard linguistic dimensions (such as the number of prepositions and pronouns used).

Scope of work/research:
This paper introduces the LIWC method and presents the results of 4 studies, which examined the reliability, factor structure, and validity of written language using a word-based, computerized text analysis program called linguistic inquiry and word count (LIWC). Daily diaries from 15 substance abuse inpatients, daily writing assignments from 35 students, and journal abstracts from 40 social psychologists demonstrated good internal consistency for over 36 language dimensions. Analyses of the best 15 language dimensions from essays by 838 students yielded 4 factors that replicated across written samples from another 381 students. Finally, linguistic profiles from writing samples were compared with Thematic Apperception Test coding, self-reports, and behavioral measures from 79 students and with self-reports of a 5-factor measure and health markers from more than 1,200 students. Despite modest effect sizes, the data suggest that linguistic style is an independent and meaningful way of exploring personality.

Strength(s):

This method indirectly assess personality by way of counting various types of words used by an individual.

This method is still fairly new and, for the most part, still in the validation stages. Studies using LIWC as a method for assessing different personality dimensions have also used behavioural or self-report benchmarks (e.g., ) assessing . Thus, although it has been shown that LICW can detect differences between

Utility of work:

LIWC has given researchers another tool for measuring personality. Similar to the other methods of personality assessment, the purpose of the research will determine whether or not LIWC is suitable.

8. **Slatcher, R.B., Chung, C.K., Pennebaker, J.W., & Stone, L.D. (2007). Winning words: Individual differences in linguistic style among U.S. presidential and vice presidential candidates. Journal of Research in Personality, 41, 63-75.**

Author details (James Pennebaker):
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Pennebaker is currently a professor of Psychology at the University of Texas at Austin. His main research focuses on the links between traumatic experiences, expressive writing, natural language use, and physical and mental health. He developed the Linguistic Inquiry and Word Count method of text analysis, which has become the most popular method of analysing written texts amongst Social Psychologists.

Scope of work/research:
The present study examined the personalities and psychological states of the 2004 candidates for U.S. president and vice president through their use of words. The transcripts of 271 televised interviews, press conferences, and campaign debates of John Kerry, John Edwards, George W. Bush, and Dick Cheney between January 4 and November 3, 2004 were analyzed using a computerized text analysis program. Distinct linguistic styles were found among these four political candidates, as well as differences between political parties and candidate types. Drawing on previous research linking word use and personality characteristics, the results suggest that the candidates had unique linguistic styles variously associated with cognitive complexity, femininity, depression, aging, presidentiality, and honesty.

Strength(s):

LIWC allows for a new and systematic method of assessing people's personal characteristics through the analysis of their verbal communication.

Weaknesses:

Because LIWC requires a large corpus of texts to be collected, this method may not be the most efficient way of obtaining personality information.

Utility of work:

This work applies the LIWC method of text analysis to presidential speeches and demonstrates that there are detectable differences in linguistic styles between political leaders.

*Behavioral Prediction*

**1. Ajzen, I. (1991). The theory of planned behavior. Organizational Behavior and Human Decision Processes, 50(2), 179-211.**

Author details:
Ph.D., Social Psychology, University of Illinois at Urbana-Champaign, 1969.
Currently, a member of the Division of Personality & Social Psychology at the University of Massachusetts at Amherst. His research deals with the concept of attitudes and, in particular, the relation between verbal attitudes and overt behavior.

Scope of work/research:
The Theory of Planned Behavior (TPB) is an extension of the Theory of Reasoned Action, but also accounts for behaviors over which people do not have complete control. According to TPB, performance of a behavior is a joint function of intentions and perceived behavioral control. Intentions, in turn, are influenced by 3 conceptually independent determinants: attitude towards the behavior (ie, the degree to which a behavior is judged as favorable or unfavorable), subjective norms (ie, the percieved social pressure to perform the behavior or not), and the degree of perceived behavioral control. Research on the TPB has found that, in order for behavioral predictions to be accurate 1) intentions and perceptions of control must be assessed in relation to the particular behavior of interest, and the specified context must be the same as that in which the behavior is to occur 2) intentions and perceived behavioral control must remain stable in the interval between their assessment and observation of the behavior 3) prediction of behavior from perceived behavioral control should improve to the extent that perceptions of behavioral control realistically reflect actual control. See Table 1 for a diagram of the TPB.

Strength(s):
This theory provides a broad approach in which to conceptualize the relation between attitude and behaviour.

Weaknesses:

None.

Utility of work:

The TPB can be a good jumping off point as a framework to aid in hypothesis formation regarding how people will behave in a given situation.

**2. Cialdini, R.B., & Goldstein, N.J. (2004). Social influence: Compliance and conformity. Annual Review of Psychology, 55, 591-621.**

Author details (Robert Cialdini):
Ph.D., (Social Psychology) University of North Carolina, 1970.
Currently at the Department of Psychology at Arizona State University. Dr. Robert Cialdini has spent his entire career researching the science of influence, earning him an international

reputation as an expert in the fields of persuasion, compliance, and negotiation. In the field of influence and persuasion, Dr. Cialdini is the most cited living social psychologist in the world today. He has done consulting work for such companies as Google, Microsoft, Cisco Systems, Bayer, Coca Cola, KPMG, AstraZeneca, Ericsson, Kodak, Merrill Lynch, Nationwide Insurance, Pfizer, AAA, Northern Trust, IBM, Prudential, The Mayo Clinic, GlaxoSmithKline, Harvard University - Kennedy School, The Weather Channel, the United States Department of Justice, and NATO.

Scope of work/research:
Cialdini and Goldstein describe a group of influence techniques that have been found to increase the likelihood of compliance or conformity. Three human motivations are said to drives these effects: the desire to be accurate, to affiliate, and to maintain a positive self-concept.

Accuracy Goal:
- Affect and arousal
- That's-not-all technique
- Disrupt-then-refrain
- Authority and Obedience
- Social norms

Affiliation:
- Liking
- Reciprocation
- Door-in-the-face technique

Maintaining a positive self-concept:
- Foot-in-the Door
- Consistency and commitment -- Individuals are driven to be consistent not only with their trait self-attributions, but with their previous behaviors and commitments as well. The extent to which one's commitments are made actively is one powerful determinant of the likelihood of request compliance (Cialdini & Trost 1998).
- Conformity
- Perceived consensus
- Dynamic systems
- Automatic activation
- Behavioral mimicry
- Gaining social approval
- Majority and minority influences
- Deindividuation effects

Strength(s):
Many of these techniques seem fairly easy to implement.

Weaknesses:

1. Some of these methods are fairly popular, especially in the business world (e.g., frequent viewers of infomercials may be familiar with the *that's-not-all* technique). Thus, they may not work in people who are already familiar with them as they may no longer come across as genuine.
2. These techniques likely only work for situations where individuals are leaning towards conforming and not in situations where individuals are not interested in conforming to the behavior being elicited.

Utility of work:

The techniques discussed in this paper have been shown to successfully increase the likelihood of conformity. They are probably most useful in situations where individuals are more likely to use shallow processing when determining whether or not to engage in a behaviour.

3.      **Petty, R.E., & Cacioppo, J.T. (1986). The Elaboration Likelihood Model of persuasion. In L. Berkowitz (Ed.), Advances in experimental social psychology (Vol. 19, pp. 123-205). New York: Academic Press.**

Author details (Richard Petty):

Ph.D. (Social Psychology), Ohio State University, 1977.
Currently professor of Psychology at Ohio State University. Much of his current work is aimed at examining the implications of the Elaboration Likelihood Model of persuasion for understanding prejudice, consumer choices, political and legal decisions, and health behaviors. He has received many awards and distinctions and his Elaboration Likelihood Model is one of the most well-studied and theories in Social Psychology.

Author details (John Cacioppo):

Ph.D., Psychology, Ohio State University, 1977.
Cacioppo is currently a faculty member at of the Psychology department at the University of Chicago. His specialized in the areas of Social Neuroscience, Social Isolation & Connection, and Evaluative Processes.

Scope of work/research:
The Elaboration Likelihood Model (ELM) was initially developed as a framework for understanding persuasive communications, but has subsequently been applied to other areas of research, such as decision-making. According to ELM, people are 1) motivated to hold correct attitudes and 2) the degree to which people will engage in issue-relevant elaboration (processing of the information) when evaluating a message will depend on individual and situational factors.

The ELM is a theory of attitude change. According to the ELM there are 2 routes to persuasion, the central route and the peripheral route. The route that people use to process information is dependent on 2 things: motivation and cognitive ability. Central route processing entails deep processing of message content to arrive at a conclusion regarding a target. People low in motivation to process information or lacking the cognitive ability to process it will not use the

central route, but instead, use the peripheral route. Processing through the peripheral route, however, involves the use of peripheral cues (i.e., information not directly relevant to the content of the message) or the use of shallow processing. For instance, examples of peripheral route processing include using the prestige of a message's author to evaluate a message, or considering only a subset of all the presented facts when arriving at a conclusion.

Strength(s):

The ELM is a well-articulated theory that makes clear predictions about how an individual will behave, given a set of known conditions.

Weaknesses:

None.

Utility of work:

Applying the ELM, if we know whether an individual is more likely to process through the peripheral versus the central route, then it is possible to tailor communications so as to increase the changes of persuasion or attitude change.

### Conceptual Framework and Organization Design for an Integrated Political Personality Profile (from Post, 2003)

Part I. Psychobiographic Discussion: The Development of the Individual in the Context of the Nation's History (use parallel time lines)*

1. Cultural and historical background. Describe constraints of the political culture on the
   role of leaders.

2. Family origins and early years

   a. Family constellation—grandparents, parents, siblings; relationships—politics of family

   b. Heroes and models

3. Education and Socialization

   a. Climate in country

   b. Student years, examples of leadership

4. Professional career

   a. Mentors

   b. Early career

   c. Successes and failures

5. The subject as leadership

   a. Key events

   b. Crises

       c. Key political relationships, influences

  6. Family and friends

Part II. Personality

  1. General personal description

       a. Appearance and personal characteristics (include description of lifestyle, work/personal, life balance, working hours, hobbies, recreation)

       b. Health (including energy level, drinking, drug use)

  2. Intellectual capacity and style

       a. Intelligence

       b. Judgement

       c. Knowledge

       d. Cognitive complexity

  3. Emotional reactions

       a. Moods, mood variability

       b. Impulses and impulse control

  4. Drives and character structure

       a. Identify personality type (if possible)

       b. Psychodynamics

          i. Self-concept/self-esteem

         ii. Basic identification

        iii. Neurotic conflicts

       c. Reality (sense of/ testing/ adaptation to)

       d. Ego defence mechanisms

       e. Conscience and scruples

       f. Psychological drives, needs, motives (discriminate to degree possible among drive for power, for achievement, for affiliation)

       g. Motivation for seeking leadership role (to wield power, to occupy seat of power, to achieve place in history)

  5. Interpersonal relationships

       a. Identify key relationships and characterize nature of relationships

          i. Inner circle, including unofficial advisers, "Kitchen cabinet"

ii. Superiors

iii. Political subordinates

iv. Political allies, domestic and international

v. Political rivalries, international adversaries

Part III. Worldview

1. Perceptions of political reality (include cultural influences/biases)

2. Core beliefs (include concept of leadership, power)

3. Political philosophy, ideology, goals, and policy views (domestic, foreign, and economic policy views and view of U.S. Include discussion of which issues most interest the leader, in which issue areas his or her experience lies, and which issues are particularly salient for leader's political psychology). Note that not all leaders have a core political philosophy or body of governing political ideas.

4. Nationalism and identification with country.

Part IV. Leadership Style

1. General characteristics (including discussion of the role expectations—both general public and elite—placed in the individual, emphasizing the leader's political and cultural determinants and skill in fulfilling them)

   a. How subject defines his or her role

   b. Relationship with public

   c. Oratorical skill and rhetoric

2. Strategy and tactics—goal-directed behavioural

3. Decision-making and decision implementation style

   a. Strategic decision making

   b. Crisis decision-making

   c. How does leader use staff/inner circle? Does the leader vet decisions or use them
      only for information? How collegial? Does the leader surround himself or herself
      with sycophants or choose self-confident subordinates?

   d. Dealing with formal and informal negotiating style

Part V. Outlook

1. Not particularly political behaviour closely related to personality issues. Relate personality to key issues, emphasizing in which direction the psychological factors point. Estimate drives, values, and characteristics that are the most influential.

2.  Attempt to predict how the individual will interact with other political figures, including
    opposition leaders and other key foreign leaders.


*The analyst is required to develop 2 time lines, one indicating key events in the life of the subject, the second indicating key events in the nation's history. By moving these lines parallel, a visual representation of the impact of historical events on individual development.


Table 1: Brief Outline of the Integrated Running Text System for Scoring

Motive Imagery

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Achievement Imagery

- Reference to a standard of excellence, either directly by adjectives which evaluate performance or quality, or indirectly by actions which clearly suggest a concern with excellence.

- Negative affect or counteraction in reaction to failure or a lack of excellence.

- Success in competition with others.

- Unique accomplishment.

Affiliation-Intimacy Imagery

- Expression of warm, positive, friendly feelings towards others.

- Negative affect about separation or disruption of a friendly relationship.

- Affiliative, compassionate activities.

- Friendly nurturant acts.

Power Imagery

- Strong vigorous actions which have impact on others: force, attempts to convince or persuade, unsolicited help, attempts to monitor or control.

- Actions which directly arouse a strong positive or negative emotional state in others.

- Concern for reputation or prestige.

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# List of symbols/abbreviations/acronyms/initialisms

| | |
|---|---|
| CACP | Canadian Association of Chiefs of Police |
| CF | Canadian Forces |
| CIA | Canadian Intelligence Agency |
| CP | Criminal Profiling |
| CPRC | Canadian Police Research Centre |
| DNA | Deoxyribonucleic acid |
| DND | Department of National Defence |
| DRDC | Defence Research & Development Canada |
| DRDKIM | Director Research and Development Knowledge and Information Management |
| ELM | Elaboration Likelihood Model of Persuasion |
| FBI | Federal Bureau of Investigation |
| GP | Geographical Profiling |
| IAT | The Implicit Associations Test |
| IED | Leader Profiling |
| LIWC | Linguistic Inquiry and Word Count |
| LP | National Research Council |
| NCIS | Ontario Provincial Police |
| NRC | National Research Council |
| OPP | Ontario Provincial Police |
| R&D | Research & Development |
| RCMP | Royal Canadian Mounted Police |
| SQ | Sécurité de Québec |
| TAT | Thematic Apperception Test |
| TBP | Theory of Planned Behaviour |

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The purpose of this technical memorandum is to outline the proposed component of the project : Canadian Forces Enhanced Influence Operations and the preliminary investigation of profiling tools for CF application and purposes. There are several different types of profiling, each with their various uses, unique foci, tools, methods and skill sets. In this report, we focus on three classes of profiling: Criminal, Geographic, and Leader. A team of six people from Defence Research and Development Canada- Toronto reviewed and summarized relevant information that was accessed in the public domain on these three classes of profiling, behavioural prediction, and personality assessment. The key articles were summarized in an extensive annotative bibliography (see **Annex A**). After reviewing the three types of profiling, we conclude that all forms of profiling require more scientific support. As discussed in the following report, there are, at least, *possible* uses for criminal/investigative, geographical and leader profiling and all may have potential interest and application to the CF. However, it is highly recommended that further theoretical and empirical evidence is found to ensure their scientific validity before DRDC or the CF invest in these tools and methods.


Le présent rapport a pour objet de tracer les grandes lignes de la composante proposée du projet 15ag : Opérations d'influence améliorées des FC et examen préliminaire des outils de profilage aux fins d'application dans les FC. Il existe plusieurs types de profilage ayant chacun leurs usages, thèmes, outils, méthodes et ensembles de compétences particuliers. Le présent rapport porte surtout sur trois classes de profilage : le profilage criminel, le profilage géographique et le profilage des dirigeants. Une équipe de six personnes de RDDC Toronto a examiné et résumé tous les renseignements pertinents accessibles dans le domaine public portant sur trois classes de profilage, la prédiction des comportements, la persuasion et l'évaluation de la personnalité. Les articles clés ont été résumés dans une longue bibliographie commentée (voir l'annexe A). Après avoir examiné les trois types de profilage, nous en sommes venus à la conclusion que toutes les formes de profilage doivent faire l'objet d'un plus grand nombre d'études scientifiques. Comme on peut le lire dans le rapport qui suit, il y a, tout au moins, certains usages *possibles* pour le profilage criminel/ d'enquête, géographique et des dirigeants. Cependant, il est fortement recommandé de recueillir plus de données théoriques et empiriques en vue d'en confirmer la validité scientifique avant que RDDC ou que les FC investissent dans ces outils et méthodes.

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