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The Criminal Profiling Illusion: What's Behind the Smoke and Mirrors?

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Abstract

There is a belief that criminal profilers can predict a criminal's characteristics from crime scene evidence. In this article, we argue that this belief may be an illusion and explain how people may have been misled into believing that criminal profiling (CP) works despite no sound theoretical grounding and no strong empirical support for this possibility. Potentially responsible for this illusory belief is the information that people acquire about CP, which is heavily influenced by anecdotes, repetition of the message that profiling works, the "expert profiler" label, and a disproportionate emphasis on correct predictions. Also potentially responsible are aspects of information processing such as reasoning errors, creating meaning out of ambiguous information, imitating "good" ideas, and inferring fact from fiction. We conclude that CP should not be used as an investigative tool because it lacks scientific support.

The Criminal Profiling Illusion: What's Behind the Smoke and Mirrors?

Criminal profiling (CP) is the practice of predicting a criminal's personality, behavioral, and demographic characteristics based on crime scene evidence (Douglas, Ressler, Burgess, & Hartman, 1986; Hicks & Sales, 2006).[1] This practice is being utilized by police agencies around the world despite no compelling scientific evidence that it is reliable, valid, or useful (Snook, Eastwood, Gendreau, Goggin, & Cullen, 2007). This disparity between use and the lack of empirical support leads one to consider the question: Why do people believe CP works despite the lack of evidence? We explain this *criminal profiling illusion* in terms of the information about CP that is presented to people and how they process that information.

Our article is divided into five sections. First, we outline current knowledge of CP techniques, the frequency with which CP is used in criminal investigations, and the extent to which police officers and mental health professionals perceive CP as a valuable tool. Second, we argue that CP has no basis in scientific theory and has meager empirical support as an investigative tool. Third, we devote two sections to a consideration of how the discrepancy may have arisen between the lack of evidence supporting CP practices and beliefs about its effectiveness. In the first of these two sections, we discuss some of the ways that information about CP is distorted as it is conveyed. In the second, we discuss some cognitive tendencies that are useful for learning and reasoning, but appear to have led police officers, profilers, and the rest of us to form an illusory belief about CP. We conclude by arguing that CP should not be used as an investigative tool until it receives adequate scientific support.

The Criminal Profiling Environment

Constructing a profile of an unknown criminal typically involves three stages (Hicks & Sales, 2006; Homant & Kennedy, 1998). Police officers collect crime scene data (e.g.,

photographs, detective reports, and autopsy results). These data are then forwarded to a profiler who makes predictions about the personality, behavioral, and demographic characteristics of the likely criminal. These predictions are then reported to investigating officers.

Although there are no standardized techniques for making these predictions, the different approaches to CP can be broadly classified as having a "clinical" or "statistical" orientation.[2] Clinically-oriented profilers draw on their training, knowledge, experience, and/or intuition to predict offender characteristics (e.g., Ault & Reese, 1980; Copson, Badcock, Boon, & Britton, 1997; Douglas & Munn, 1992; Holmes & Holmes, 1996; Keppel & Walter, 1999; Turvey, 1999; West, 2000). By contrast, statistically-oriented predictions are derived from an analysis of offenders who have previously committed crimes that are judged as similar to those being investigated (e.g., Canter & Fritzon, 1998; Davies, Wittebrood, & Jackson, 1997; Farrington & Lambert, 1997; Jackson, van den Eshof, & de Kleuver, 1997; Keppel & Weis, 1993; Santtila, Häkkänen, Canter, & Elfgren, 2003).

Published accounts testify to the prolific growth in the utilization of CP techniques. For example, between 1971 and 1981, the FBI provided CP assistance on 192 occasions (Pinizzotto, 1984). A few years later, Douglas and Burgess (1986) indicated that FBI profilers were being asked to assist 600 criminal investigations per year. A more recent account indicated that CP was applied by 12 FBI profilers in approximately 1000 cases per year (Witkin, 1996). Police officers in the United Kingdom also appear to be incorporating CP into their investigations more frequently. Copson (1995), for instance, reported that 29 profilers were responsible for providing 242 instances of CP advice between 1981 and 1994, with the prevalence of CP increasing steadily during that period. Other professionals, such as police psychologists, are also becoming involved in CP (Bartol, 1996). Although we do not have exact estimates of CP prevalence

elsewhere, its use has been documented in numerous countries, including Canada, Finland, Germany, Sweden, and The Netherlands (Åsgard, 1998; Clark, 2002; Jackson, Herbrink, & van Koppen, 1997).

As the prevalence of CP has increased, there has been a simultaneous increase in the volume of published literature concerning the practice. For example, in a recent quantitative review of 130 CP articles, it was found that the number of published CP articles has increased from 5 articles between 1976 and 1980, 9 between 1981 and 1985, 10 between 1986 and 1990, 22 between 1991 and 1995, 56 between 1996 and 2000, 27 between 2001 and 2005, and 1 in 2006 (Snook et al., 2007; see also Dowden, Bennell, & Bloomfield, in press). Moreover, the authors of many of these articles promote CP as a useful investigative tool. For example, an examination of the articles reviewed by Snook et al. (2007), which was not included in their article, indicated that 52% were overtly positive about the value of CP and just 3% were negative.

These results of Snook et al.'s (2007) examination accord well with the views expressed by a significant number of police officers and mental health professionals. These views were identified from surveys about whether or not CP advice is valuable. In the earliest survey, Douglas (as cited in Pinizzotto, 1984) found that solving cases was attributed to CP advice in 46% of the 192 instances where FBI profiling was requested. Similarly, Jackson, van Koppen, and Herbrink (1993) found that 5 out of 6 surveyed police officers in The Netherlands reported some degree of usefulness for advice given by an FBI trained profiler. Likewise, Copson (1995) found that 82.6% of a sample of 184 police officers in the United Kingdom claimed that CP was operationally useful and 92.4% reported that they would seek CP advice again. Consistent with these results, Trager and Brewster (2001) showed that a significant portion of police officers in the United States believe that CP has value. Finally, Torres, Boccaccini, and Miller's (2006)

recent survey of 92 forensic mental health professionals indicates that the vast majority of respondents (86%) believe that CP is a useful law enforcement tool.

The Lack of a Scientific Basis to Criminal Profiling

Having established that CP is in widespread use and that people generally believe that CP works, we now present a critical review of the CP literature. This review reveals the blunt reality that: (a) the majority of CP approaches are based on an outdated theory of personality that lacks empirical support, and (b) there is no compelling evidence that predictions made by professional profilers are significantly more accurate than those made by non-profilers.

Is CP Based on an Empirically Supported Theory?

In a similar way to the classic trait theory that was popular in personality psychology up until the late 1960s (Alison, Bennell, Mokros, & Ormerod, 2002; Mischel, 1968), the majority of CP approaches assume that behavior in criminal and non-criminal domains is determined by underlying dispositions within offenders that make them behave in a particular way (e.g., Åsgard, 1998; Badcock, 1997; Boon, 1997; Canter, 1995; Douglas, Burgess, Burgess, & Ressler, 1992). The assumptions that emerge from this theory are fundamental to CP (Woodhams & Toye, 2007). For example, the theory leads to the assumption that offenders will exhibit similar behaviors across their offences (i.e., temporal stability) since their traits, which are stable across situations, are the determinants of their behavior. Perhaps more important for the practice of CP, the theory also suggests that there should be meaningful and stable relationships between offenders' crime scene behaviors and the behaviors they exhibit in other non-criminal situations (i.e., cross-situational consistency).

Take, for example, the FBI's popular organized-disorganized dichotomy that forms the basis of many current CP approaches. This model of CP assumes that offenders are driven to

behave either in an organized (controlled) or disorganized (spontaneous) fashion, both in their criminal and non-criminal lives. This then supposedly allows the crimes committed by an individual to be accurately linked (i.e., a criminal committing an organized crime [e.g., use of restraints, little evidence at scene, vehicle involved in the crime] would continue to commit organized crimes). This assumption also supposedly allows the criminal committing a series of crimes to be profiled accurately (i.e., crime scenes consisting of organized behaviors reflects the fact that the offences were committed by an organized individual [e.g., reasonably intelligent, in a skilled job, living with a partner]) (Ressler, Burgess, Douglas, Hartman, & D'Agostino, 1986).

How valid are these assumptions? Given the demise of the classic trait approach in personality psychology and the importance of situational factors in shaping behavior, evidence supporting either assumption is limited. For example, some research studies have found a reasonable degree of temporal stability, but typically only for specific subsets of behavior. In Bennell and Canter's (2002) study of serial commercial burglary, very low levels of stability were observed for the behaviors related to items stolen and entry methods. However, a high level of stability was found for crime site selection behaviors. Similar results (i.e., relatively high levels of stability for some behaviors, but low levels for many others behaviors) have been reported for other crimes, such as residential burglary (Bennell & Jones, 2005), armed robbery (Woodhams & Toye, 2007), and sex offences (Sjostedt, Langstrom, Sturidsson, & Grann, 2004). Unfortunately, for CP practitioners, other studies have reported no stability in criminal behavior. For example, even when using liberal definitions of stability and multiple methods for classifying and analyzing behaviors, Bateman and Salfati (2007) found no evidence of temporal stability amongst serial killers.

The state of affairs for cross-situational consistency is even bleaker. At best, small "pockets" of consistency have been identified, whereby a specific crime scene behavior is found to relate to a specific background characteristic. For example, Davies, Wittebrood, and Jackson (1998) found that rapists who engaged in forced entry were four times more likely to have prior convictions for property offences than those who did not engage in that behavior. Similarly, striking the victim twice or more during the rape indicated that the offender was three times more likely to have a prior conviction for a violent offence than those who did not display this degree of aggression. However, other research has failed to find similar relationships. House (1997), for instance, tested the hypothesis that rapists who exhibit a high degree of criminality in their rapes (e.g., overt criminal acts indicative of attempts to conceal identity and avoid apprehension) would be more likely than other types of rapists (e.g., sadistic, aggressive, or pseudo-intimate) to exhibit background characteristics related to criminality (e.g., previous incarceration). This was found not to be the case. Even when ignoring the requirement for an underlying theoretical account for a behavior-characteristic relationship, Mokros and Alison (2002) and Woodhams and Toye (2007) were still unable to find compelling evidence of consistency.

Can Professional Profilers Make Accurate Predictions?

Douglas et al. (1986) stated that:

> The process used by an investigative profiler in developing a criminal profile is quite similar to that used by clinicians to make a diagnosis and treatment plan…Investigators traditionally have learned profiling through brainstorming, intuition, and educated guesswork. (p. 405)

This clinically-based process is reminiscent of psychoanalytic approaches to therapy where mental health professionals diagnose their clients through subjective interpretations and

unsupported methods (Dawes, 1997). However, empirical research has shown that clinical experience has a limited effect on the accuracy of psychologists' and psychiatrists' judgments across a range of tasks (e.g., Garb, 1998; Garb & Boyle, 2003; Meehl, 1997). In addition, Faust and Ziskin (1988) found low intra- and inter-clinician consistency in judgments of mental health status and argued that when clinicians' predictions are compared against objectively determinable, hard data, it is shown that their error rate often exceeds their accuracy rate.

A similar trend exists within the CP domain, where negligible quantitative differences have been found between the predictive ability of "professional profilers" and non-profilers. The accuracy of profiler predictions has been tested by comparing the performance of so-called professional profilers with that of non-profiler groups in mock profiling scenarios (Kocsis, Irwin, Hayes, & Nunn, 2000; Kocsis, Hayes, & Irwin, 2002; Kocsis, 2004; Pinizzotto & Finkel, 1990). In a typical experiment, profilers and non-profiler groups are asked to review details of a solved crime (or crime series) and then make predictions about the likely offender (via a multiple choice questionnaire). Predictions are typically divided into four categories: cognitive processes, physical attributes, offence behaviors, and social history/habits (the results from these four categories are also combined to form an overall profile performance measure). The accuracy of these predictions is then checked against the actual perpetrator's characteristics.

Because of a lack of clear agreement on who should be considered a profiler, Snook et al. (2007) conducted two meta-analyses of these studies. The first analysis compared the predictive accuracy of a group of self-labeled profilers and experienced investigators against non-profilers (e.g., college students and psychologists). The profilers/investigators were more accurate than non-police personnel on an overall measure of profile accuracy (r = .24) and on the physical attribute category (r = .10). In contrast, the predictive accuracy of the profilers/investigators was

marginally worse or no better than the non-profilers when it came to predictions of cognitive processes (r = -.06), offence behaviors (r = .00), and social history/habits (r = -.09). With respect to all comparisons, because the 95% confidence intervals (*95% CIs*) about the point estimates were wide (e.g., two to five times the acceptable limit of .10), and often included 0, the estimates of the effect sizes were deemed imprecise.

In the second analysis, the experienced investigators were included in the non-profiler group. In this analysis, the results favored the profilers across all five predictor categories, but again the *95% CIs* were unacceptably wide. The best result came when the overall profile was considered (r = .32, *95% CI* = .10 to .54). Even if one assumes that this optimistic result could be replicated, it warrants consideration that many variables included in this analysis are well known in the criminological literature (e.g., the likelihood that a serial offender will be of a particular age, have particular convictions, suffer substance abuse problems, etc.). This means, in our view, that any police professional with a good knowledge of the criminological literature should be able to achieve this level of success simply by relying on base rate information. In other words, success in CP may not be based on specialized knowledge of the peculiarities and idiosyncrasies found at a given crime scene.

In sum, there is no compelling scientific evidence to support the positive view of CP that dominates popular opinion. Far from cutting edge science, CP approaches are often naïvely built on an outdated understanding of human behavior, and professional profilers often produce predictions that are not significantly more accurate than non-profilers. Given this state of affairs, one might wonder why police officers continue to request the assistance of profilers. Whereas some police officers report using CP because they believe that it works (e.g., Copson, 1995; Jackson et al., 1993; Pinizzotto, 1984), there are likely other officers who use CP but do not

believe that it works. We suspect that some of these officers might use CP because they believe (or are instructed) that it is their duty to use all available investigative techniques. Others may believe that they have nothing to lose in seeing what a profiler can offer to an investigation. It is not known, however, whether CP is helpful or harmful to police investigations.

Because positive beliefs about the validity and reliability of CP are not supported by empirical evidence, the rest of this paper is devoted to explaining why people might believe that CP works. We address eight reasons that can explain why criminal profilers, the police, and the public might believe CP works in the absence of scientific support. These reasons are divided into two categories: the first four are elements of the message that people receive about CP and the second four relate to human cognition. These reasons are neither exhaustive, nor mutually exclusive.

The Message

Research shows that second-hand knowledge, such as that acquired from the media, often does not reflect the actual state of affairs (Sprott, 1996). Thus, unless people adopt a critical approach to information consumption, their judgments about the viability of practices like CP can be contaminated by the inaccurate or biased information that is being conveyed (Stanovich, 1992). The following are four aspects of information from the CP environment (i.e., messages about CP) that have the potential to convince people that CP works.

1. The Power of N =1

Personal stories about exceptional incidents and experiences can be very seductive because they are concrete, vivid, and memorable (Borgida & Nisbett, 1977; Stanovich, 1992). However, their seductiveness has no relation to their credibility. A cornerstone of the scientific method is that conclusions should not be drawn from anecdotes that have no way of being

replicated or understood in a way that permits generalization (Fearon, 2003; Wallston, 1983). Yet, because anecdotes hold appeal in their concrete example, and because most people are not trained to seek objective facts and reliable evidence (Carroll, 2003; Gilovich, 1991; Sagan, 1996; Shermer, 2003), people may automatically allow information obtained from anecdotes to form the foundation of their beliefs.

Unfortunately, many published accounts of CP have relied on anecdotal evidence to illustrate how the technique is useful in catching criminals (e.g., Canter, 1994; Douglas & Olshaker, 1995, 1997; Ressler & Schactman, 1992). Indeed, Snook et al. (2007) found that 60% of the 130 CP articles they reviewed used at least one anecdote as a source of knowledge. The most popular and widely cited anecdote is undoubtedly that of New York's "Mad Bomber", George Metesky (Brussel, 1968). In their attempts to catch the bomber, investigators requested the assistance of psychiatrist James A. Brussel to profile the criminal. Among other things, Brussel (1968) reportedly predicted that the bomber was a regular man, of ordinary fashions, who was foreign born and attended church regularly, and that he would be wearing a buttoned double-breasted suit when apprehended by authorities. It is often reported that Brussel correctly predicted a number of factors such as Metesky's demeanor, social activities, health condition, and even the double-breasted suit. However, certain details of this case are typically overlooked when it is discussed in CP accounts. For example, rarely is it mentioned that Brussel's profile was published in the *New York Times* during the investigation ("16-year," 1956), and it was acknowledged that he followed the media reports (Berger, 1957b), thus opening up the possibility that Metesky consciously or unconsciously altered his behavior based on what he had read. In addition, the profile did not actually solve the case as is commonly believed. Information

found on disgruntled employees in personnel files led investigators to inquire into Metesky (Berger, 1957a).

Of course, it is not the use of case studies per se that necessarily bias peoples' views of CP. Rather, it is the way case studies are used by advocates of CP that can result in problems. For example, nearly every published case study we have come across reports a success story, where a profiler provided an accurate profile that helped resolve a difficult criminal investigation. Many of these case studies have extremely seductive qualities, such as those highlighted by the Mad Bomber description provided above (e.g., extremely specific and seemingly accurate predictions, which are made with access to very limited information). In short, there is no element of balance in the presentation of case studies, despite the fact that much could be learned from cases where CP was employed unsuccessfully. Under such biased conditions it is not difficult to see why many people would believe that CP works. They simply generalize from the many success stories they read to the field of CP more generally.

2. Repetition of the Message "Profiling Works"

Empirical research shows that the likelihood of an individual agreeing with a message generally increases as the message is repeated (Cacioppo & Petty, 1979). Thus, repeating the message that CP is an effective investigative tool may contribute to the CP illusion. In addition to repeated messages that CP works, people are often told that more and more people are becoming trained in CP. For example, one proponent of profiling stated that "As more and more personnel become trained and experienced in the application of the investigative technique of CP, more agencies will believe in its use" (Davis, 1999, p. 293). Repeated suggestions that police officers seek CP input for investigations because they find it helpful can also persuade people that CP is viable (Kocsis, 2003).

It is not uncommon to read statements testifying to the value of CP, such as "criminal personality profiling has been used by law enforcement agencies with success in many areas…" (Douglas & Burgess, 1986, p. 9), "more and more cases are being successfully analyzed, and criminal profiles are being constructed with remarkable accuracy" (Depue, 1986, p. 5), and "profiling has proven time and time again to be a valuable investigative tool in the arsenal of today's modern law enforcement cadre" (Davis, 1999, p. 293). While such statements may provide an uncritical reader with the impression that CP works, the unfortunate reality is that those statements have yet to be verified and are not a sound basis for a belief. More importantly, as highlighted above, such statements simply do not correspond to research that has specifically examined the predictive ability of profilers (Snook et al., 2007).

3. Inappropriate Reliance on Correct Predictions

Profilers can create the impression that their trade is viable by over-emphasizing their correct predictions (e.g., Canter, 1988; Douglas & Olshaker, 1995; Pinizzotto, 1984; Ressler & Schachtman, 1992) and by conducting studies that only measure accuracy as the number rather than the proportion of correct predictions (Kocsis, 2004; Kocsis et al., 2000; Kocsis et al., 2002; Pinizzotto & Finkel, 1990). When all the necessary and pertinent information is not reported, readers may form beliefs based solely upon the information that is presented to them (Gilovich, 1991; Paulos, 1988; Plous, 1993). Previous research in the judgment and decision making domain (Chapman & Chapman, 1967; Crocker, 1981, 1982; White, 2003) suggests that the exclusive presentation of correct predictions can lead people to overestimate the accuracy and potential utility of profiles.

An article by Douglas et al. (1986) illustrates nicely how correct predictions are accentuated to promote the belief that CP is beneficial. Douglas and his colleagues presented a

profile that predicted 29 criminal characteristics, but when discussing the accuracy of the profile, the authors emphasized just the 11 correct predictions (10 *hits* and 1 *correct rejection*). With some effort, one can collect all the evidence that is necessary (and should have been presented) for a reader to sufficiently assess the validity of that profile. If there were 11 correct predictions (*hits* and *correct rejections*), then there were 18 incorrect predictions (*false alarms* and *misses*). The profile was only 38% accurate! Because profilers focus their attention on their successes, they (and potentially the consumers of their profiles) appear to over-attribute the causality of solved cases to their CP predictions (Lassiter, Geers, Munhall, Ploutz-Snyder, & Breitenbecher, 2002). Police officers using such a profile to identify a criminal might also be misled by the incorrect predictions.

4. The Myth of Profiling Experts

Experts are people who have professional competence in a specialized area, usually acquired in the course of extensive theoretical and practical training (Kurz-Milcke & Gigerenzer, 2004). Because of this, people often accept information that is communicated to them by apparent authority figures or experts as being correct (Bochner & Insko, 1966; Milgram, 1964). This has been referred to in the literature as the use of an "expertise heuristic" (i.e., that experts' statements can be trusted; Reimer, Mata, & Stoecklin, 2004). Evidence for usage of the expertise heuristic is already available in the CP domain. For example, police officers viewing a profile rated it as more accurate when the production of the profile is attributed to an expert rather than a consultant (Kocsis & Hayes, 2004; Kocsis & Heller, 2004).

Experts in a criminal investigative context ought to provide the police with specialized skills or knowledge beyond that of the ordinary police officer (Gudjonsson & Copson, 1997). Some profilers claim that they possess accumulated wisdom, investigative and behavioral

science experience, and training and/or knowledge of abnormal behavior that provides them with the necessary skills to predict offender characteristics from crime scene data; which is presumably beyond the ability of the average police officer and layperson (e.g., Ault & Reese, 1980; Blau, 1994; Cook & Hinman, 1999; Douglas & Burgess, 1986; Hazelwood, et al., 1995). Other profilers claim their skills and knowledge have come from a long, formal scientific education that trained them to identify the statistical relationships between crime details and criminal personality and background characteristics (e.g., Canter, 1994; Godwin, 1999; Kocsis, Cooksey, & Irwin, 2002a, 2002b; Salfati & Canter, 1999). To date, however, profilers have failed to show that their training improves their ability to develop accurate profiles.

Other than the possession of specialized skills or knowledge, profilers might also be viewed as experts because they have testified as expert witnesses in court (McCann, 1992). Legal scholars, however, have been quick to challenge this notion because CP is not a generally accepted scientific technique, is not reliable, cannot prove the guilt of the defendant, and does not provide explanations that are outside the normal understanding of the jury (Ormerod, 1996a, 1996b; Risinger & Loop, 2002). Indeed, profile-based evidence has, on occasion, been found unacceptable by the courts because it is has been considered "junk science" (e.g., *State v*. *Fortin*, 1998). Also challenging the expert profiler label is the lack of consensus about who can be a profiler and a generally accepted regulatory body that provides professional profiling designations.[3]

The Mind

People believe all kinds of strange things that are uncorroborated by scientific evidence. Prescient examples include the occurrence of alien abductions, the "hot hand" phenomenon in basketball, reincarnation, remote viewing, and the mystical power of the Egyptian pyramids

(Hines, 1988; Gilovich, 1991; Vyse, 1997). Researchers have spent a great deal of time investigating how and why people might believe in unproven things. According to Shermer (2002), a consensus among many of these scientists is that the human mind evolved to identify patterns among environmental occurrences, a process that is believed to have been adaptive for the species, but which can lead to the identification of meaningless patterns. The identification of meaningless patterns can explain to a certain degree why people might believe that things like psychic predictions, past-life regressions, and CP predictions are valid. Note that it is not our contention in this paper to claim that these beliefs are irrational. Beliefs are merely a product of processing information from the environment. When the information is bogus, so will be the belief. Four aspects of human cognition that contribute to the CP illusion are discussed below.

1. Reasoning Errors

People may believe in CP because of misguidance by natural human reasoning processes. People attempt to find order and meaning in an uncertain world and then form beliefs that can guide future behaviors (Gigerenzer, 2002; Shermer, 2003). From an evolutionary perspective, such cognitive processes allowed people to adapt to and control changing environments. However, in attempting to find useful patterns, people sometimes observe meaningless patterns. For example, a baseball player who does not shave before a game in which he hits two home-runs may infer that not shaving increases his performance, and consequently never shave again before a game. This type of natural reasoning is often labeled superstition (Vyse, 1997). In the psychological literature, a variety of ways in which natural cognitive processing can lead to erroneous inferences have been documented (see Myers, 2002 for an overview of cognitive distortions). A consideration of these cognitive tendencies can help explain why profilers, police officers, and the public might believe CP works.

Judgment and decision-making research (e.g., Gilovich, 1991; Myers, 2002) suggests that profilers might assign more personal responsibility to investigative success than to investigative failure (i.e., self-serving bias), and be more confident in their ability to make accurate predictions than they should be (i.e., overconfidence). In addition, profilers and the public may attribute perceived successes to the profiler's abilities and discount the importance of the police officers' contribution (i.e., fundamental attribution error). Furthermore, profilers, police officers, and the public might be susceptible to misperceiving a profiler's competence if they evaluate the accuracy of a profile after the apprehension of the criminal (i.e., hindsight bias), or perceive a relationship between a profiler's predictions and the resolution of a case where one does not exist (i.e., illusory correlation).

After-the-fact reasoning is one particularly good example of how natural reasoning can lead to the detection of meaningless patterns (Carroll, 2003; Gilovich, 1991; Pope & Vasquez, 2005; Sagan, 1996; Shermer, 2002). Many events follow sequential patterns without being causally related; "after this" does not necessarily mean "because of this." In some cases, criminal profiles appear to be the primary cause of the successful resolution of an investigation simply because a profile was obtained before the case was solved (e.g., Copson, 1995; Tenten, 1989; Wilson, Lincoln, & Kocsis, 1997). It might be the case that people believe in CP due to the inability to distinguish between meaningful and meaningless patterns.

2. Finding Meaning in Ambiguous Information

Clinical and personality research has consistently demonstrated that people exhibit an inclination to accept ambiguous, vague, and general statements as accurate descriptions of their own personalities (e.g., Dickson & Kelly, 1985; Johnson, Cain, Falke, Hayman, & Perillo, 1985; Sundberg, 1955). This phenomenon has been coined the Barnum effect, and within the

psychological field it is believed to be especially problematic for the acceptance of clinical diagnoses (Snyder, Shenkel, & Lowery, 1977). Some researchers attribute the considerable acceptance rate of high base-rate feedback to human gullibility, whereas others note the importance of factors such as social desirability, situational insecurity, and interpreter prestige (Piper-Terry & Downey, 1998). Furthermore, Snyder, Larsen, and Bloom's (1976) results suggest that people are more inclined to accept a bogus personality description when it is believed to be based on a psychological assessment procedure rather than an alternate technique such as astrology, although in that study, differences in the degrees of acceptance were marginal.

In the CP context, a similar effect can occur when individuals evaluate whether or not an ambiguous profile describes a suspect accurately. Many profiles are so ambiguous that they can appear to describe any suspect (Alison, Smith, Eastman, & Rainbow, 2003). For example, Alison et al. (2003) analyzed 21 criminal profiles that were used in major criminal investigations and found a total of 3090 statements. Of the 880 statements that contained predictions about the characteristics of the unknown criminal, 82% were unsubstantiated, 55% were unverifiable, 28% were falsifiable, and 24% were ambiguous. In a related study, Alison, Smith, and Morgan (2003) examined police officers' propensity to estimate the accuracy of an ambiguous profile. Two groups of officers were given the same ambiguous profile but substantially different descriptions of the criminal that the profile supposedly described (only one being that of the genuine offender). Accuracy judgments for both groups averaged 5.3 out of 7, suggesting that when a criminal is apprehended, any profile might retrospectively appear to describe him or her accurately.

A phenomenon related to the Barnum effect, known as the personal validation effect (e.g., Collins, Dmitruk, & Ranney, 1977), is concerned with changes in participants' attitudes

when taking part in Barnum experiments. Personality research suggests that faith in psychological assessment methods and perceptions of diagnosticians' skills may increase as a result of exposure to ambiguous personality descriptions. For instance, Snyder et al. (1976) presented participants with a bogus personality interpretation and asked them to rate the acceptance of this interpretation as being personally relevant. As in previous studies, Snyder et al. found evidence for the Barnum Effect. The more interesting contribution from this study, however, was that both faith in the assessment procedure and diagnostician's perceived skill was found to increase significantly after the participants evaluated the interpretation, regardless of whether the assessment procedure was based on astrology, graphology, or psychology. Their findings suggest that beliefs about CP methods and profiler skills may become more favorable after people are exposed to ambiguous profile material, even when the CP method is not actually valid and the profiler is not actually skilled.

3. Imitation and Social Contagion

People believe things, or do things a certain way, because they were believed or done that way by others (Dawkins, 2003). Dawkins contends that people form some beliefs without ever connecting them to evidence of their veracity. Simon (1990) has similarly argued that a large amount of what we know is naturally acquired from other people's behavior and instructions, and the tendency to accept the beliefs of others allows people to obtain knowledge and skills that may be useful in many of life's activities. Imitating others is adaptive because people do not need to expend much time or cognitive resources to carefully evaluate the consequences of everything they have observed (Simon, 1990). Believing things through imitation is the outcome of bounded human rationality in a complex world (Simon, 1990), but the consequence of uncritical acceptance of ideas is that people sometimes accept unhelpful information.

Police officers may believe CP is a valid investigative technique because they observe other police officers using it, and accept messages promoting its effectiveness. Support for this argument comes from the results of a survey by Jackson et al. (1993). They found that police officers who used CP learned about it through informal policing networks within their police force and contact with colleagues who possessed knowledge about CP. Other ways by which officers learn about CP are through lectures, articles in police publications, and technical training at police academies and colleges (Jackson & Bekerian, 1997). As we have already described, most of these information sources present CP as a viable investigative tool.

Related to imitation is the phenomenon of social contagion. Social contagion research suggests that people will adopt others' beliefs after observing behavior that appeared to work. For example, suicide often occurs in clusters and is therefore thought to be "contagious" (Stack, 2000). According to Gould, Jamieson, and Romer (2003), fictional and non-fictional portrayals of suicide may make taking one's own life appear as an "effective tool" for achieving personal gain. Social contagion has also been documented for such phenomena as burnout among teachers (Bakker & Schaufeli, 2000), violence and aggression (Berkowitz & Macaulay, 1971; Goldstein, Arnold, & Rosenberg, 2001), military coups (Li & Thompson, 1975), mood (Neumann & Strack, 2000), and scratching in Japanese monkeys (Nakayama, 2004). Using CP and believing it works is likely contagious as well.

The importance of contagion to an account of why CP is believed to be a good idea is evidenced by numerous instances of public popularity. For example, according to Egger (1999), the Mad Bomber case ignited the notion that CP is a viable tool, but it was developments made by the FBI (e.g., training programs, extensive publications, television appearances) that led to the rapid growth in CP activities in the United States. In the United Kingdom, it appears that the

apparent success of David Canter's profile in the Railway Rapist case led to an upsurge in both the interest and usage of CP. Indeed, Copson (1995) found a tripling of the number of profile requests in the year following that case. Although it may be difficult to assess whether CP contagion exists, it is indisputable that there has been a steady rise, with intermittent dramatic increases, in CP use (e.g., see Copson, 1995, for data from the United Kingdom). This suggests that both imitation and social contagion may be contributing to the CP illusion.

4. Mistaking Fiction for Fact

People are particularly attracted to phenomena that appeal to fantasy by focusing on the powers that ordinary people lack but desire (Sagan, 1996). Green, Brock, and Kaufman (2004) assert that individuals generally want to be entertained and tend to seek out fiction rather than nonfiction to achieve this entertainment. They suggest that the main reason people appear to be attracted to the media is the desire to "escape" from the real world. They also maintain that people are susceptible to adopting beliefs about real world events that are entirely based on fictional accounts.

Because people are often intrigued by the criminal mind, CP activities tend to generate a lot of public fascination. This observation is evidenced by the number of books, films, and television programs that deal with CP, as well as the recent growth in college and university courses that address CP issues. Grubin (1995) has also suggested that CP appeals to fantasy because it conjures up the image of "the cerebral sleuth relying solely on his acute powers of observation and deductive reasoning to identify an elusive and much feared serial rapist" (p. 262). Indeed, some researchers have actually attributed, or at least associated, the origins of CP to fictional detectives such as Edgar Allan Poe's C. Auguste Dupin, Agatha Christies's Hercule Perioit, and Sir Arthur Conan Doyle's Sherlock Holmes (Blau, 1994; Campbell, 1976; Canter,

2000; McCann, 1992; Muller, 2000). The profiling fantasy is also the result of journalists who write about profilers with mystical powers of deduction, thereby increasing the public's belief in the validity of an unproven investigative method (Alison & Canter, 1999).

Conclusion

There is growing belief that profilers can accurately and consistently predict a criminal's characteristics based on crime scene evidence. This increased belief is evident from the fact that CP is becoming prevalent as an investigative technique, that positive opinions of CP are being communicated in published literature, and that police officers and mental health professionals support the use of CP. We contend that this belief is illusory because a critical analysis of research on CP showed that the field lacks theoretical grounding and empirical support. We proposed that belief in such a pseudoscientific practice is due to an interaction between the message and mind - that is, the interaction between the information that people receive about CP and the way they process that information.

Since CP has the potential to mislead criminal investigators, and thereby either hinder the apprehension of guilty criminals or result in wrongful convictions, it is a practice that must be approached critically. Various information sources present fictional or non-fictional anecdotes involving the invaluable help of expert profilers in solving serious cases. The expert profilers use *post hoc* analysis of ambiguous predictions to create the impression that they reduced a detective's uncertainty about how to proceed with an investigation by providing a simple solution to a complex case. This has the potential of generating a reliance on a process that does not advance an investigation.

The belief that CP works is troubling because of the meager scientific evidence to support the practice. 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 skeptical about CP and those who believe that CP can contribute to an investigation.

More than 50 years of CP practice have passed without much rigorous scientific evaluation. We contend that it is now time to remove the shroud of secrecy in the CP field, evaluate it, and put the burden back on profilers to prove their worth.[4] We explored the CP illusion with the intention of providing a natural explanation for a belief that lacks scientific support. The next logical step is to test the various claims that we have made in this article. All currently uncorroborated statements we have made are testable and falsifiable by scientific research. Until this occurs, we advocate that readers approach CP, and even our article, with a critical mind.

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Footnotes

[1]Although the scope of CP practice now goes beyond this original definition to include advice on interview strategies, media strategies, prioritizing resources, statement analysis, and so on, we believe that predicting offender characteristics remains the primary goal of CP. All of this additional advice is dependent upon the type of person that the profiler believes committed the crime. Some CP advocates will no doubt argue that there are newer approaches to profiling that are based on empirical science (or that the field has "moved on"). However, research demonstrating how these new approaches are superior to existing profiling methods, or data illustrating their improved predictive validity, is nonexistent (see Hicks & Sales, 2006, for a similar view).

[2]These two types are not necessarily mutually exclusive.

[3]There is an existing regulatory body, the International Criminal Investigative Analysis Fellowship (ICIAF), which trains and accredits profilers. However, this organization has yet to gain widespread acceptance within the profiling and research communities.

[4]Whether or not criminal profilers will readily come forward in sufficient numbers to have their skills assessed is questionable. Kocsis et al. (2000) reported that he requested 40 active profilers to take part in his experiments but only five agreed to participate. We hope that profilers who read this article will contact us about participating in experimental tests of their abilities.