

Summary

This study identified a cluster of 7 Key critical skills that set top-performing CSEs apart from their peers. These skills were identified regardless of whether the CSE was a police or civilian CSE, or the jurisdiction in which the CSE worked, whether a larger or smaller jurisdiction or a regional or a capital location. Of the 18 top-performing CSEs 12 had a bachelor degree and all had the equivalent of a crime scene diploma. Good CSEs were recognised as having a sound scientific knowledge underpinning their work. What seemed important was that they used this knowledge to think in a holistic way, often 'outside the square' to inform their decision making. Higher cognitive ability seems critical to high performance. Previous life experience was seen as being important in preparing CSEs to deal with the often difficult circumstances present at crime scenes. In addition to the previous three key skills, our study identified a cluster of social aspects which reflected on the individual personality characteristics of high performing CSEs. These were work orientation, communication skills, professional demeanour and overall approach to life. Taking these together a typical high performing CSE would come across as a modest but self confident individual, interested in other people and an active listener and effective negotiator, a realistic and positive person with a good work/life balance reflected in outside interests and strong family support.

Future Directions

This was the first project in Australia to identify the critical skills associated with top-performance in CSE. In future projects we will develop a recruitment strategy informed by these findings.

For further information about future work into top-performance in crime scene examination please contact either Associate Professor Roberta Julian - Phone: +061 3 62262217 , Roberta.Julian@utas.edu.au
Dr Sally Kelty - Phone: +061 3 62262320 , Sally.Kelty@utas.edu.au

Acknowledgments

We would like to acknowledge the support of the Australian Research Council (LP0882797) and our industry linkage partners, Victoria Police, Australian Federal Police Forensic and Data Centres, and the National Institute of Forensic Science for funding the collaborative research project "The Effectiveness of Forensic Science in the Criminal Justice System".

The authors gratefully acknowledge the cooperation of the participants who gave up their time to talk to us about their experiences of working alongside CSEs. Specifically we acknowledge police members and staff of the Australian Federal Police Forensic and Data Centres, Australian Capital Territory Policing, Victoria Police, Tasmania Police, New South Wales Police Force, South Australian Police, University of Technology, Sydney, and the Canberra Institute of Technology.

Selected Publications



Kelty, S.F., & Julian, R. (2011). *What makes a Good Crime Scene Examiner?* (Invited paper) Royal Canadian Mounted Police Gazette, 73 (1), 24-25.

Kelty, S.F., & Julian, R. (2010). *Identifying the Skills and Attributes of Good Crime Scene Personnel* (Invited paper) Australasian Policing, Vol. 2, No. 2, Summer 2010: 40-41

Julian, R.D., Kelty, S.F., Roux, C., Woodman, P., Robertson, J et al (2011). *What is the value of forensic science? An overview of the effectiveness of forensic science in the Australian criminal justice system project.* Australian Journal of Forensic Sciences, 43, 217-229.

References

British Home Office (BHO: 2007). Summary Report of the Scientific Work Improvement (SWIM) Package. London: BHO.

Cassell, C, & Gillian, S. (2004). Essential guide to qualitative methods in organisational research. London: Sage Publications.

National Academy of Sciences (NAS: 2009). Strengthening Forensic Science in the United States: A path forward. Washington, DC: National Academies Press.

Smith, J. A. (1995). Semi-structured interviewing and qualitative analysis. In J. A. Smith, R. Harré & L. Van Langenhove (Eds.), *Rethinking Methods in Psychology*. (pp. 9-27). London: Sage.

More about the project, visit: www.utas.edu.au/tiles

Design and typesetting by Paula Broucek, EO TILES

The Effectiveness of Forensic Science in the Criminal Justice System The 7 Key Attributes of Top-Performing Crime Scene Examiners

Authors

Sally Kelty (BCom, BAHons, PhD)
Research Fellow, Tasmanian Institute of Law
Enforcement Studies (TILES)
University of Tasmania
Private Bag 22, Hobart, Tasmania, 7001
Phone: (+61) 3 6226 2320
E-mail: Sally.Kelty@utas.edu.au

Roberta Julian (BA, BAHons, PhD)
Associate Professor, Tasmanian Institute of Law
Enforcement Studies (TILES)
University of Tasmania
Private Bag 22, Hobart, Tasmania, 7001
Phone: (+61) 3 6226 2217
E-mail: Roberta.Julian@utas.edu.au

Abstract

The crime scene is a critical element of criminal investigations and where forensic science begins. Inadequately managed scenes lead to poor evidence and risk of wrongful convictions. Reports from the US and UK highlight that some crime scene examiners (CSEs) outperform their peers leading to less unsolved cases. What neither report explained was why some CSEs excel. We identified the attributes of top-performing CSEs using job analytical techniques with 72 police investigators, forensic scientists, senior police managers and 18 top CSEs from across Australia. We analysed the data finding 7 distinct critical skill sets for top performance in CSE: knowledge, life experience, professionalism, approach to life, communication, cognitive abilities and stress management. In this summary we present the critical skills and discuss the multiple ways that top CSEs positively impact on the work of criminal investigators, other CSEs as well as the impact upon efficiencies within forensic laboratories.

Project Overview

Processing a crime scene is considered to be one of the most critical aspects of effective criminal investigations.



The crime scene is where good forensic science begins and, when a scene is processed well, where accurate and high quality evidence is gathered. Inadequately managed scenes can result in poor quality forensic evidence being used and increases the risk of ineffective investigations and/or wrongful convictions, such as in the cases of Madeline McCann (UK), Chamberlain and Stafford (Australia) and Moran (Canada).

Several in-depth reports from the US (the National Academies of Sciences (NAS) report) and UK (Scientific Work Improvement Model (SWIM) report) have highlighted that some CSEs noticeably outperform their peers in the quality of their work. The UK SWIM report noted that high performing CSEs attend more scenes and gather higher quality traces that are more likely to be successfully processed in laboratories and more likely to lead to positive identifications. Higher performance of CSEs appears to allow forensic science to contribute to more positive justice outcomes and leave fewer cases unsolved. However, what neither of these reports explained was why some CSEs excel.

If photographing, documenting, and collecting high-quality and accurate traces from a scene are so vital, what are the attributes of top-performing CSEs? The purpose of this study is to help answer this question by identifying the key attributes of Australian CSEs who excel in their role.

Method

Through a series of in-depth interviews and job analytical techniques across four Australian states we asked 18 top-performing CSEs and 72 senior detectives, senior police managers with direct CSE supervisory responsibilities and forensic science academics and practitioners to identify the personality traits, education, cognitive attributes, professional and interpersonal skills of high performing crime scene personnel. We used two established methods for identifying attributes associated with high performance: Repertory Grid (Rep/Grid) analysis and semi-structured interview questions (Cassell & Gillian, 2004).

Key Findings

We analysed the interviews using Smith's (1995) content analysis approach to identify the critical skills of top performing CSEs. We then clustered the critical skills into meaningful skill categories. We identified seven critical skills that set top-performing CSEs apart from their peers.

TABLE 1 - Summary of Critical Skills within each Skill-Set Category for Top-Performing CSEs

Skill category	Critical skills
Cognitive Abilities	<ul style="list-style-type: none"> Lateral thinker, open, curious to new ideas and alternative methods High level multi-tasking abilities, short and long term planning skills High level consequential thinking
Knowledge base	<ul style="list-style-type: none"> University degree (not necessarily sciences/ forensic science) Legal, police culture and police investigation (holistic) knowledge Sound knowledge of scientific principles (including hypothesis testing using the hypothetico-deductive method)
Experience	<ul style="list-style-type: none"> Crime scene to court (real life experience) Worked in highly charged situations (real life experience) Age, maturity, work experiences (lived experiences, not closeted)
Work orientation	<ul style="list-style-type: none"> Good time-management Genuine interest / dedication to role (goes beyond job description) Self-motivated learners, persistent and results driven
Communication skills	<ul style="list-style-type: none"> Active listeners with good negotiation/ assertive interpersonal skills Inclusive and team orientated (teacher/trainers and mentors) High level written and verbal skills
Professional demeanour	<ul style="list-style-type: none"> Unassuming and modest, respected, high credibility, ignores pettiness and internal politics Willing to defend decisions Self confident in own abilities but not arrogant, admits when wrong, learns from mistakes, not judgemental
Approach to life	<ul style="list-style-type: none"> Fitness and health orientation Positive worldview/positive about life, realistic about life events, uses black humour Consistent and stress resilient, clear life/work separation, strong social/family support

Overview of the Critical Skill Sets

- Cognitive abilities.** We were told that one difference between good and average CSE/Os was their ability to think on their feet, to respond quickly when things changed at the scene and to make reasoned rather than rash decisions.
- Knowledge base.** Our interviewees said that good CSE/Os have a holistic understanding of where CSI fits into the criminal justice process; they understand the legal aspects of evidence they collect; and they have a sound scientific knowledge that underpins their work.
- Experience.** We were told about the importance of having life experience and managing difficult situations, such as talking to a victim's children at a suicide scene, or attending the home of someone who has been deceased for weeks.
- Work orientation and approach to life.** We were told that good CSE/Os have great amounts of energy and are passionate in what they do.
- Communication skills.** Our interviewees stressed that good CSE/Os are good communicators and can "talk to anyone", not just performing well as expert witnesses in court.
- Professional demeanour.** Good CSE/Os are known as positive people who rarely complain and act in a professional manner doing their work to the best of their ability.
- Approach to life.** Higher performing CSE/Os have a clear work life separation, have a busy and active out of work life, and have good family/friend support.

Impacts of top-performing CSEs on police investigations and forensic laboratories

During the interviews it became apparent that highly-proficient CSEs impact positively in five ways upon police investigations, their own peers, and upon efficiencies within forensic laboratories.

Higher quality evidence

Several managers and police supervisors of CSEs told us that their top CSEs collect higher quality evidence that is less likely to be rejected at the laboratory because the sample/s could not be analysed. Further, that where top-performing CSEs collect DNA from a scene the swabs are more likely to lead to identification or be of a quality that can result in the data being uploaded to the database. These comments by supervisors were verified by their nominated CSEs having the highest fingerprint and DNA hit rates (where that level of personnel benchmarking was available).

It was noted that top-performing CSEs were not always quicker at processing a scene; often they took much longer as they were more thorough relative to their peers. Further, they did not collect less samples on average, but the selection of evidence taken was based on careful and reasoned decisions. In one jurisdiction the top-two CSEs achieve ten-fold better results than their peers regardless of their years in service.

From the police investigators' perspective we were told that usually the evidence collected by good CSEs made sense from both a probative value perspective but also from an investigation viewpoint and was often more likely to influence the direction of the investigation and determine the outcome of the case.

Impacts on CSE's direct colleagues

The CSEs who took part in this project described what it was like to work with poor performing peers (poor at their work or the "lazy" CSEs, (described as 'slackers', or those who cannot be bothered to work)¹). Poor or lazy CSEs were seen as a burden and placed greater demands on colleagues. Often at major scenes two or more CSEs would attend. If one or two of the team are poor or lazy¹ the others have to deal with the impact on resources. When two or more CSEs have differing performance levels but the same number of years experience the share of the responsibility for processing the scene is not evenly shared. The better CSE not only assumes the management of the scene but also has to supervise and manage the work of poorer CSEs. We were told that at some scenes good CSEs send the poorer CSEs (especially lazy ones) on errands (for coffee/to fetch more resources/to call people); having them out of the scene is considered better than having them in. This does, we were told, impact on staff morale, increases the managerial burden of good CSEs and increases the amount of perceived occupational stress and time-pressure. We were told that employing poor CSEs directly increased the felt stress of good CSEs.

Impacts on police investigators

The detectives in this study said that good CSEs (compared with poorer CSEs) had an enormous impact upon their

resource allocation in the vital first stages of major investigations. Many senior detectives said they came to know who the best CSEs are. The good CSEs are seen working at scenes by their police colleagues. These same colleagues then read CSE's reports and watch them present evidence in court. After a few years the police say they know who the good CSEs are and they gain a working respect for their opinion. Poor CSEs gain a reputation as being unreliable and not to be depended on. One senior homicide investigator said that: 'when you go to a scene you don't know who turns up, you wait and see so and so get out of the van and you think "oh no, might as well go home, we'll get nothing'. When good CSEs arrive at scenes they appear to instil confidence in the investigators who feel they can leave the scene in the CSE's hands and start other tasks, such as door-knocks or debriefings with other investigators. With poor CSEs in attendance, investigators overwhelmingly believe they have no confidence that the scene will be processed well and feel they cannot leave the CSEs "unmanaged". This can lead to tensions and conflicts that create difficulties for crime scene management.

Impacts on the laboratory, and why university level science knowledge is considered vital

The managers and forensic scientists who took part in this study noted that good CSEs reduce resource use and staff time in forensic laboratories because they collect better evidence. Samples brought to the lab are usually not identified as poor until examined. Poor samples require staff time to tag, triage and store, supervisor job allocation time, the scientist's time to analyse them, and finally to return them. For example, clothing found at a scene is sent to the lab for a residue trace analysis, but the residue would have been lost at the scene due to the time erosion of the trace. A good CSE would look at the clothing and say, "shame but the trace will have been lost, been outside too long, we won't take this to the lab".

Impacts at the scene and wider implications

Good CSEs are described as wanting to join the dots, are persistent and have an enquiring mind. They want explanations for anomalies in scenes rather than not worry about them. For example, they will not just accept that a homicide weapon, not present in the sealed scene itself, was taken away by the offender; they will look longer and more thoroughly for it. The scene for a good CSE can be "mentally" far wider than the cordoned off scene. The implication of this can be that a good CSE will be more likely to find evidence at serious crimes and this can save resources later. For example, a good CSE who puts in the extra mile and thinks more laterally and uncovers the weapon could save a more time consuming search later. In financial terms this can equate to large manpower savings such as by avoiding broader searches where volunteer state emergency services or police officers with dogs are called out.

¹ Of note, this does not apply to new recruits being mentored/apprentices.