

Impact case study (REF3b)

<p>Institution: University of Dundee</p>
<p>Unit of Assessment: 5: Biological Sciences</p>
<p>Title of case study: The impact of perpetrator identification investigations on child sexual abuse and the judicial system.</p>
<p>1. Summary of the impact (indicative maximum 100 words)</p> <p>Research at the University of Dundee has substantially enhanced the conviction of perpetrators of child sexual abuse. Innovation in forensic human anatomical identification has directly influenced the investigation of 29 cases of child sexual abuse from 21 police forces across the UK and has resulted in two life sentences and over 90 years of incarceration sentencing, thereby removing dangerous predators from society. This work has impacted significantly on the judicial world, criminal investigations and victim management. Its public value has been commended at the highest level in the Scottish Justice system.</p>
<p>2. Underpinning research (indicative maximum 500 words)</p> <p>Innovative research at the University of Dundee exploits the relationship between human anatomy and forensic anthropology. In many paedophile related investigations, the perpetrator will photograph his/her hands or genitalia during the process of sexual assault. Prof Sue Black OBE FRSE (Professor of Anatomy and Forensic Anthropology at the Centre for Anatomy and Human Identification at the University of Dundee) has been at the forefront of developing new methods that exploit current information on biometrics and the inherent lack of symmetry in the human body to provide a statistical likelihood as to whether the suspect and the perpetrator are the same individual (1). A database of hand images from >500 participants was created to enable research into anatomical variability through forensic processes and help combat the sexual exploitation of children. This research has been funded by the European Commission Directorate-General (DG) Home Affairs under their Prevention of and Fight against Crime (ISEC) programme. This comprehensive database has allowed Prof Black and her team to build up a classification of anatomical features related to hands and genitalia that can aid the identification of individuals perpetrating child sexual abuse. Two examples are detailed below:</p> <ul style="list-style-type: none"> (a) Development of methods for the analysis and quantification of the extent of variances of scarring on the dorsum of the hand (2,3). The location, size, position and nature of scarring has been shown to be of significant value in personal identification and utilising likelihood ratios provides evidence of the strength of the feature comparison. (b) Comprehensive quantification and incidence of a family of lesions containing nevus cells in the skin of hands and genitalia for the purposes of forensic human identification (4). Nevi (moles) are either congenital or acquired but their random nature ensures that their presence in an image is a powerful indicator of individuality. <p>The issue of admissibility of evidence based on the methods developed by Prof Black has been accepted in court and was analysed rigorously in a successful suite of workshops funded by the Scottish Universities Insight Institute 2011 (5). This has resulted in a legal paper for publication by two law Professors supporting the new approach and recognising its legal admissibility and probative value (6). Prof Black and her team are the only researchers undertaking this work in the UK and Europe (and perhaps globally) and all relevant cases referred to the National Policing Improvements Agency come to this team at Dundee. The work has also crossed into the EPSRC funded Superidentity project where hands have been introduced as a prominent and important biometric. Prof Black has been invited to present her research to the Child Exploitation and On-line Protection Centre (CEOP) that is a UK cross agency department of the National Crime Agency.</p>

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3. References to the research (indicative maximum of six references)

Publications:

1. **Black, S.M.**, Mallett, X., Rynn, C. and Duffield, N. (2009). Forensic hand image comparison as an aid for paedophile investigations. *Police Professional*, 184, 21-24.
2. **Black, S.M.**, MacDonald-McMillan, B. and Mallett, X. (2013). The incidence of scarring on the dorsum of the hand. *International Journal of Legal Medicine*. 1-9. doi: 10.1007/s00414-013-0834-7 (open access).
3. Jackson, G. and **Black, S.** (2013). Use of data to inform expert evaluative opinion in the comparison of hand images – the importance of scars. *International Journal of Legal Medicine*. 1-9. doi:10.1007/s00414-013-0828-5 (open access).
4. **Black, S.M.**, MacDonald-McMillan, B., Mallett, X., Rynn, C. and Jackson, G. (2013). The incidence of melanocytic nevi for the purposes of verification of identity. *International Journal of Legal Medicine*. 1-9. doi: 10.1007/s00414-013-0821-z (open access).
5. Scots Law of Evidence report.
<http://www.scottishinsight.ac.uk/Portals/50/ScotsLawEvidence.pdf>
6. Raitt, F.E. and Ferguson, P.R. (2013). 'If a picture paints a thousand words ...': the development of human identification techniques in forensic anthropology and their implications for human rights in the criminal process. *The International Journal of Evidence & Proof*, 17, 127-156. doi: 10.1350/ijep.2013.17.2.422.

Key research grants relevant to this case study:

European Commission, Directorate General Home Affairs (2011) Innovation in forensic anatomical identification – combating the sexual exploitation of children. Value: €126,327. Grant Ref. HOME/2010/ISEC/AG/04230-CE-0447216/00-71. Principal Grant Holder: Prof Sue Black.

4. Details of the impact (indicative maximum 750 words)

Beneficiaries (benefit/impact):

- (a) The courts (through the provision and analysis of forensic biometric information relevant to sexual abuse).
- (b) The victims of sexual abuse and society at large (through the conviction of dangerous paedophiles)

Impact:

The success of the research by the University of Dundee to devise identification methods of perpetrators of child sexual abuse has resulted in a heavy active forensic caseload consisting of 29 cases from police forces in England (15 forces) and Northern Ireland and Scotland (6 forces) during the period 2008-2013 (examples are highlighted in references 1-5). Moreover this work has also resulted in the conviction of perpetrators of adult sexual abuse (6). This is a clear indication of the confidence of the investigative agencies in the research and its interpretation to secure a court room hearing. The research by Prof Black directly helped to secure a change of conviction leading to the first ever case of identification of a paedophile from his hands for the Metropolitan Police Force (1 and 7). Furthermore, the methodologies developed from the research in this area now underpin Prof Black's professional practitioner evaluations of evidence. These evidence-based evaluations are sufficiently compelling that they have led to 78% of the accused changing their plea to 'guilty' (7). In addition, this work has resulted in two life sentences and over 90 years of incarceration sentencing.

The cost to the taxpayer of a trial by jury on every criminal case has recently been expressed as a concern. A conservative estimate for trial by jury is £3,000 per day but some trials will run to several million of pounds. Therefore a change of plea in relation to the casework surrounding forensic identification by hands is estimated to have saved the taxpayer >£2.5 million to date. It also frees court time to allow other cases to be heard more swiftly. In some regards, a greater impact is on the stress, anxiety, fear and shame that has been removed from the victims and their families who would have all the details of the case displayed for dissection in the court in the presence of the media. The psychological impact on victims being forced to relive their trauma in a public forum is immense and has been shown to be a significant factor in on-going physical and mental illness long after the trial is complete.

This work has led to a healthy symbiotic relationship between the police and the scientists with the importance of this work highlighted by the media. A documentary surrounding the first conviction of a paedophile by using this form of evidence was broadcast in a documentary screened by ITV 22nd Sept. 2009 <http://www.youtube.com/watch?v=NUCVdL5ZNRM> (8). Following the transmission, 4 other victims came forward to accuse the perpetrator of abuse and he was tried for these crimes and given an additional 10 years imprisonment for crimes committed between 1984 and 1991 that were previously unknown to the police.

This research has a financial, health and welfare, judicial and a humanitarian impact at both a personal and a societal level. This work has consequently resulted in Prof Black and her team being approached by other countries to assist them in what is becoming the crime with the highest rate of increase globally. Prior to this research, there was no admissible means whereby a perpetrator could be identified from images of their hands. This work has greatly benefitted the war against paedophilia and transformed the tools available to the judicial system to allow a greater number of paedophiles to either be found guilty or to persuade them to admit to their guilt.

The work has been of great interest to a range of non-academic organisations and Prof Black and her team have been invited to present their work to the Home Office (23.3.10), to the Scottish Scientific Advisory Council (7.6.11), The Scottish Parole Board (23.11.11), to the Child Exploitation and Online Protection Agency (13.3.13) and other intelligence organisations. Moreover the work of this team in public outreach has been recognised through two awards – Brian Cox award for Outreach 2011 and inaugural Stephen Fry award for Excellence in Public Engagement with Research, 2012 (9).

Note: In March 2013, the Centre for Anatomy & Human Identification applied for the 2013 Queen's Anniversary Prize for Higher Education (awarded 22 November 2013) for their study and application of human anatomy, forensic human identification, disaster victim identification and forensic and medical art. This award recognised the Centre as being an international leader in craniofacial identification and forensic facial reconstruction for the identification of the living and the dead.

5. Sources to corroborate the impact (indicative maximum of 10 references)

1. Peter Zinner QC of the CPS confirmed that this approach was a first for the UK courts - <http://www.dstics.co.uk/investigatorJune2009.pdf> p29.
2. Press release: <http://www.heraldscotland.com/news/crime-courts/hand-of-child-abuser-identified-in-images.22453754>
3. Paedophile who claimed innocence until confronted with evidence. Press release: <http://www.bbc.co.uk/news/uk-scotland-tayside-central-16654504>
4. Forensic investigation: successful conviction of a ring of paedophiles from Scotland – Prof Sue Black, Dr Chris Rynn and Dr Xanthe Mallett. <http://www.dailyrecord.co.uk/news/scottish-news/eight-members-paedophile-ring-found-1021731>

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5. Extensive media coverage e.g. <http://www.scotsman.com/news/scotland/top-stories/nursery-worker-gets-eight-years-for-vile-abuse-of-young-boys-1-2410585>. Over 70 media articles have mentioned this casework.
6. Not all cases are sexual abuse against children. <http://www.dailyrecord.co.uk/news/scottish-news/pervert-timothy-robson-jailed-1262958>
7. Corroboration of information regarding this data can be obtained from the Team Leader, Operational Delivery, Victim Identification, Child Exploitation and Online Protection Centre, London, SW1V 2WG.
8. To catch a paedophile - documentary BBC, Sept 2009 – Prof Sue Black, Dr Chris Rynn and Dr Xanthe Mallett <http://www.youtube.com/watch?v=NUCVdL5ZnrM> and Who do we trust? Documentary, ITV. Nov 2009. Prof Sue Black, Dr Chris Rynn and Dr Xanthe Mallett.
9. Stephen Fry award for Public Engagement with research. <http://www.youtube.com/watch?v=q11NV2uAOL8>