

“What is normal behaviour? How might ‘gut feeling’ help us to identify suspicious behaviours?”

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Overview

RESTRAIL

Shades of Grey

'Gut feeling'

Suspicious behaviours in rail



Photograph by Rhydgaled, Xpert



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RESTRAIL (REduction of Suicide and Trespass in RAIL)

- International Union of Railways
- VTT Technical Research Centre of Finland
- Swedish Transport Administration
- French Institute of Sciences and Technology for Transport, Development and Networks
- Mass Transit and Railway Security Services & Solutions
- Research and Development Center in Transport & Energy, Spain
- HelmholtzZentrum München. German Research Center for Environmental Health
- Karlstad University Sweden
- Spanish Railways Foundation
- Turkish State Railway Administration
- Deutsche Bahn AG
- Polish Railway Institute
- Dutch Railway Infrastructure Manager
- Nice Systems Ltd
- Ansaldo STS
- University of Nottingham
- Belgian Railway Infrastructure Manager



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RESTRAIL and UNOTT role

WP1: Qualitative analysis of suicide and trespass on railways properties

WP2: Assessment of measures targeted to reduce railway suicides

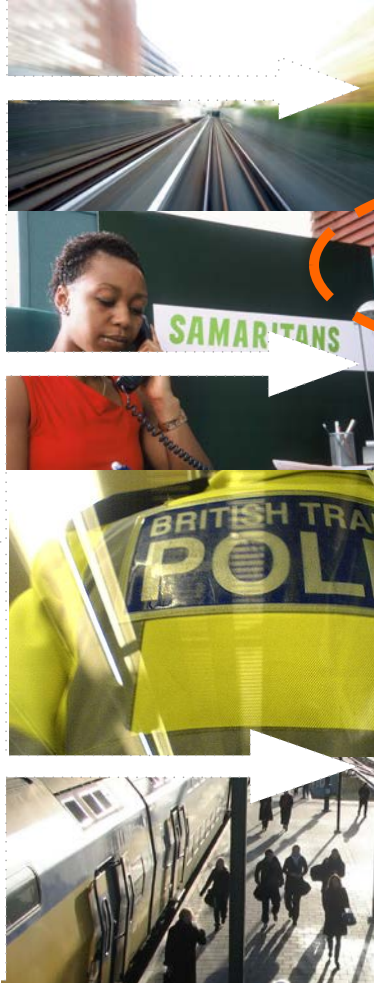
WP3: Assessment of prevention measures targeted to reduce railway trespasses

WP4: Mitigation of Consequences by Improving Procedures and Decision Making

WP5: Field pilot tests and evaluation

WP6: Dissemination and exploitation of the results

WP7: Administrative and Financial Management



- Liaison with GB stakeholders (BTP, NR, RSSB, Samaritans) and provision to the project of relevant GB statistics, practices and processes

- Leading the analysis of behaviours of people before suicide and trespass events

- Developing and applying methodology for the evaluation of known preventative measures for suicide and trespass

- Contributing to the field testing of promising measures for prevention

- Dissemination of research findings through conferences and publications



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Research on behaviour for RESTRAIL in GB

Why study behaviours?

Assumption - It is hard to stop access to the railway, but if it is possible to spot suspect behaviours earlier, it may be possible to make interventions.



Research on behaviours in GB

- Analysis of pre-existing information (e.g. reports of incidents in various industry databases, analysis of descriptions of behaviours from CCTV recordings)
- Workshops with experts
 - how they determine risk in a situation,
 - how they developed their knowledge,
 - what cues alert them to a problem,
 - which factors influence their intervention



References to “gut feeling”, described by the experts as

- ... “something not right
- .. processing from experience
- .. sub-consciously processing information
- .. it is not a stab in the dark
- .. it uses a combination of the senses”.



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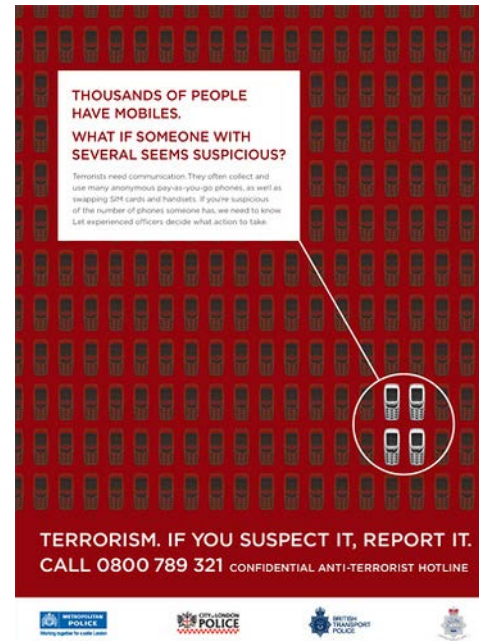


Shades of Grey



Shades of Grey

- Novel surveillance interventions
 - robust indicators of notable behaviours in public areas
 - amplifying the signal to noise ratio of notable and normal behaviours
 - enhancing normal user experiences whilst frustrating terrorist activities
 - 11 UK Universities
- Crowded public spaces
 - mass transit hubs
 - social venues
- Key themes
 - coarse gestures
 - flow of people in public spaces
 - novel interview techniques



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- Research in a sensitive domain
 - snowball approach = organic development of contacts
- Developing domain knowledge
 - SO15 and special branch briefings
 - Projects Griffin & Argus
 - Business Resilience Management training
 - ESRC 'Preparing for Emergencies' seminar series
 - NaCTSO Europrotect



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- Rail case study (protocols and perceptions)
- Expert review of suspicious behaviours (typical traits)
 - body language – agitated, evading staff
 - loitering – no specific ‘purpose’
 - clothing – out of context
 - groups – sports fans
 - disorientation - drunkenness
 - ‘gut feeling’
 - staff ‘just know something isn’t right’



Suspicious behaviour at stations

- Public perception of suspicious behaviour
 - loitering
 - looking around a lot
 - running/pushing
 - big jacket
 - backpack / large bag
- Common constructs
 - expert / public



Deception & self awareness

- Waiting prior to an interview
 - preparing to tell the truth or to lie
 - with / without a mirror
- Participants preparing to lie
 - without a mirror
 - less time moving their hands
 - higher levels of subjective anxiety
 - felt they waited for less time
- Coding methods
 - real-time verbal narrative
 - ‘gut feeling’
 - no difference (this is good)
 - better judgement with mirror



Bag drop detection

- 'Gut feeling' bag drop detection from CCTV images
 - asked to identify potential suspect 3 sec into video playback
- Key findings
 - observers were unable to identify potential suspects
- Key issues
 - temporal aspects
 - context



Identifying suspicious behaviours on the railway – does the literature help in understanding this?

... “founded on a solid and complete grasp of the details ...”
.. “based on years of experience ...”
... “a synthesis of different types of information ..”
... “where all of the data are not available”

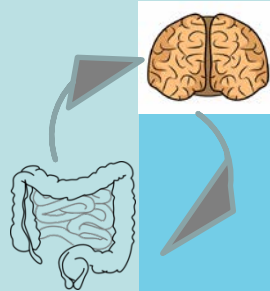
Type of decision making, influenced by
Time available, effort required

Intuitive

Affective

Unconscious

Based on feelings (including “gut feelings”)



Deliberative

Focus on details

Cognitive

The railway context

Complex vs simple

Unstable vs stable

Accuracy of decisions, influenced by
Biases, heuristics

There could be opportunities for intervention – if behaviours are detected and if time is available

Drink / alcohol problems

Lack of personal care

Searching for trains

Letting trains pass by

Calm

Agitated

Behaviours from RESTRAIL studies

Time

Incident



Do experts use intuitive decisions and can these be effective in these contexts?

The experts in RESTRAIL described their “gut feelings” as

- ... “something not right
- .. processing from experience
- .. sub-consciously processing information
- .. it is not a stab in the dark
- .. it uses a combination of the senses”.



These explanations can be supported by evidence from the literature, but can “gut feelings” be used to identify suspicious behaviours?

Do the experts use gut feelings in this way in practice?



The paradox of expertise? Do people really know how they are making decisions? Decisions may be a combination of intuition and deliberation, which could be a good thing.

Would it be right for them to use “gut feeling” or intuition in this type of situation?

The police officers in RESTRAIL said that they have been warned against using “gut feeling” e.g. to avoid problems with “stop and search”



Intuitive decisions can be accurate or even more accurate than deliberative decisions in complex and unstable situations

Can this type of intuitive decision-making be improved or developed?



Yes, according to some ... “*through repeated exposure to the complexity of real problems*”. Initial intuitive decisions, may need to be confirmed (e.g. through use of checklists), but thinking too much could also be counter-productive

“When the going gets tough, go with your gut – but with one qualification that one should not overthink their decision”



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Conclusions

- “Gut feeling” is something that is meaningful as a concept to practitioners, when trying to identify suspicious behaviours
- We have started to understand more about this and related decision making concepts, through our practical work with experts, our experimental work and review of evidence from the literature
- There are likely to be situations where intuitive decisions are reliable and even necessary to respond appropriately to behaviours and the contexts in which these are observed.
- However, errors in decision-making are also possible. We need to understand more about how to develop intuitive decision-making in the railway security context, enabling people to trust their instincts and learn from any errors without compromising safety in the system



Future work

- We have more work to do to bring together the different pieces of research on this topic
- We are interested in talking to others who share our interests (researchers, stakeholders, experts or practitioners), with a view to developing future collaborative work to test some of the ideas that are emerging from this early work in this area



Thank you for listening.
Any questions?

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