

SPRINGER BRIEFS IN CRIMINOLOGY · POLICING

Geoff Dean

Neurocognitive Risk Assessment for the Early Detection of Violent Extremists



Springer

SpringerBriefs in Criminology

Policing

Series Editor

M. R. Haberfeld, City University of New York, John Jay College
of Criminal Justice, New York, NY, USA

For further volumes:

<http://www.springer.com/series/11179>

Geoff Dean

Neurocognitive Risk Assessment for the Early Detection of Violent Extremists

 Springer

Geoff Dean
Faculty of Law
School of Justice
Queensland University of Technology
Brisbane, Australia

ISSN 2194-6213 ISSN 2194-6221 (electronic)
ISBN 978-3-319-06718-6 ISBN 978-3-319-06719-3 (eBook)
DOI 10.1007/978-3-319-06719-3
Springer Cham Heidelberg New York Dordrecht London

Library of Congress Control Number: 2014939290

© The Author 2014

This work is subject to copyright. All rights are reserved by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed. Exempted from this legal reservation are brief excerpts in connection with reviews or scholarly analysis or material supplied specifically for the purpose of being entered and executed on a computer system, for exclusive use by the purchaser of the work. Duplication of this publication or parts thereof is permitted only under the provisions of the Copyright Law of the Publisher's location, in its current version, and permission for use must always be obtained from Springer. Permissions for use may be obtained through RightsLink at the Copyright Clearance Center. Violations are liable to prosecution under the respective Copyright Law.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

While the advice and information in this book are believed to be true and accurate at the date of publication, neither the authors nor the editors nor the publisher can accept any legal responsibility for any errors or omissions that may be made. The publisher makes no warranty, express or implied, with respect to the material contained herein.

Printed on acid-free paper

Springer is part of Springer Science+Business Media (www.springer.com)

Preface

This research presents a unique perspective on violent extremism. Violent extremism is defined in this research as inclusive of terrorists, militants, active shooters (schools, public and workplaces) and other forms of mass/spree killing. The research approach adopts a cognitive neuroscience perspective in which neuroplasticity plays a dominant role in shaping the cognitive rewiring of thinking pathways over time. This neurocognitive rewiring involves specific sets of interwoven perceptions and beliefs that foster violently extreme behaviours. The research outlines in detail the theoretical and conceptual scaffolding for such a neurocognitive based model of cyclical psychological complexity inherent in the minds of violent extremists.

The research is divided into four main sections. The first section presents a brief overview of contemporary approaches to the risk assessment of violence. The second section provides the background context for the current research project by seeking to unravel the definitional minefield surrounding the concepts of ‘terrorism’ and ‘radicalisation’ and the related notion of ‘violent extremism’. This section also contextualises violent extremism within the larger frame of reference of ‘injustice’.

The third section details the development of the current research on a neurocognitive based risk assessment toolbox (RAT). This toolbox consists of two components. The first component is a structured professional judgment (SPJ) rating instrument based on a set of cognitive indicators. This SPJ instrument functions as an early detection checklist for trained practitioners to use for the Risk Assessment for Violent Extremists (RAVE). The second component is a software visualisation program used for the Geometric Risk Indicator Positioning of Extremists (GRiPe). This visualisation program displays on a three-dimensional risk surface the assessed risk level of a person of interest (PoI) that has come to the attention of police/security and/or other law enforcement agencies and who may pose a risk to society by engaging in violent and extreme actions. This section also includes a pilot ‘case study’ experiment. The findings of this pilot experiment highlight the practical value and utility of this neurocognitive RAT.

The fourth section involves an ‘expert elicitation’ research project conducted with a sample of recognised experts (specialist academics and experienced practitioners) drawn from several countries around the world. The purpose of this study

was to fine-tune and validate the risk parameters of the two components, the RAVE cognitive SPJ checklist instrument and the GRiPe software visualisation program, that constitute the RAT. The data collection stage of this expert elicitation project was completed in November 2013. Analysis of the findings is presented along with a discussion of the implications of RAT as a practitioner-focused system for the early detection of potentially violent extremists. Furthermore, the strategic intelligence potential of incorporating a neurocognitive risk assessment approach to violent extremism to the existing arsenal of risk assessment models is outlined. Finally, this section concludes with outlining future research plans to further refine and extend the relevance and applicability of this neurocognitive based RAT for the early detection of violent extremists.

Brisbane, QLD, Australia

Geoff Dean

Contents

| | |
|--|----|
| 1 Risk Assessment: Research on Violence | 1 |
| Contemporary Risk Assessment | 1 |
| Risk Assessment Approaches to Violence..... | 3 |
| Violent Political Extremism..... | 4 |
| Behavioural Indicators of Violent Extremism | 6 |
| 2 Background to Research Project: Violent Extremism | 11 |
| Rise of Violent Extremism..... | 11 |
| Murky Waters: ‘Terrorism’, ‘Radicalisation’, ‘Violent Extremism’..... | 14 |
| Defining the Slippery Eel of Terrorism..... | 15 |
| Politicalisation of Radicalisation | 16 |
| Pathways to Radicalisation: Many and Complex..... | 19 |
| Pathways Model of ‘Interlocking Terrorism Contexts’ | 22 |
| Contextualising Violent Extremists: ‘Injustice’ Frame of Reference | 23 |
| 3 Current Research: Neurocognitive Risk Assessment | 29 |
| Research Framework: ‘Normality’ of Violent Extremists | 29 |
| Review of Literature on Violent Extremism | 29 |
| Theoretical Framework: Cognitive Neuroscience..... | 34 |
| Neurocognitive Mapping | 35 |
| Conceptual Framework: Neurocognitive Model of Extremism..... | 39 |
| Cyclical Complexity of Neurocognitively Based Violent Extremism | 42 |
| Visualisation Framework: Diagramming ‘Risk’ Neurocognitively | 47 |
| Conceptualising the Neurocognitive Risk of Violent Extremism..... | 47 |
| Operational Framework: Cognitive Indicators..... | 50 |
| Security Restrictions on Publication of Perceptions and Beliefs..... | 50 |
| ‘Extreme’ Perceptions and ‘Violent’ Beliefs | 51 |
| The Cognitive Indicator of ‘Perceived’ Injustice..... | 51 |
| Cognitive Indicators: Bibliographical Sources | 53 |
| Psychological Rigidity of ‘Risky’ Perceptions and Beliefs..... | 53 |
| Checklist Instrument: Risk Assessment for Violent Extremism..... | 55 |

| | |
|--|-----------|
| Software Visualisation: Geometric Risk Indicator | |
| Positioning of Extremists..... | 56 |
| ‘Pilot’ Experiment: Testing RAVE Checklist Using | |
| Case Study Method..... | 56 |
| Case Study Methodology..... | 57 |
| Case Study Results..... | 58 |
| 4 Research Project: Expert Elicitation Study..... | 61 |
| Objectives of Study..... | 62 |
| Methodology: Expert Elicitation..... | 63 |
| Participant Characteristics..... | 64 |
| Method: Peer Reviewing of Case Studies..... | 66 |
| Rating Instructions..... | 66 |
| Tuning Cases: Types of Violent Extremists..... | 66 |
| Results: Comparative Analysis..... | 68 |
| GRiPe Outputs: Interpreting Contour and Surface Plots..... | 69 |
| Validating Risk Positions: ‘Estimated’ and ‘Calculated’ | |
| with ‘Known Risk’..... | 72 |
| Case 1: Shooter with a Known ‘Moderate’ Risk Assessment..... | 73 |
| Case 2: Militant with a Known ‘Moderate-to-High’ | |
| Risk Assessment..... | 76 |
| Case 3: Militant with a Known ‘Moderate-to-High’ | |
| Risk Assessment..... | 78 |
| Case 4: Terrorist with a Known ‘Moderate’ Risk Assessment..... | 80 |
| Case 5: Militant with a Known ‘High’ Risk Assessment..... | 80 |
| Case 6: Terrorist with a Known ‘High’ Risk Assessment..... | 83 |
| Case 7: Ex-Terrorist with a Known ‘Minimal-to-Minor’ | |
| Risk Assessment..... | 84 |
| Case 8: Non-terrorist with a Known ‘Minimal’ | |
| Risk Assessment..... | 86 |
| Case 9: Shooter with a Known ‘Low-to-Moderate’ | |
| Risk Assessment..... | 86 |
| Appendix 1: Introductory Booklet_Risk Assessment Toolbox: | |
| Introduction-Page 1..... | 90 |
| Appendix 2: Introductory Booklet_Risk Assessment Toolbox: | |
| Overview-Page 2..... | 91 |
| Appendix 3: Introductory Booklet_Risk Assessment Toolbox: | |
| Explanatory Terms-Page 3..... | 92 |
| Appendix 4: Introductory Booklet_Risk Assessment Toolbox: | |
| Rating Guidelines-Page 4..... | 93 |
| Appendix 5: Introductory Booklet_Risk Assessment Toolbox: | |
| Sample Case Study-Page 5..... | 94 |

| | |
|----------------------------|-----|
| 5 Discussion | 95 |
| Research Limitations | 99 |
| Future Research | 100 |
| 6 Conclusion | 101 |
| References | 103 |
| Index | 111 |

List of Figures

- Fig. 1.1 Risk factor sections and risk items on VERA's rating sheet
- Fig. 1.2 Key behaviours of home-grown violent extremists
- Fig. 2.1 Definition and dimensions of violent extremism
- Fig. 2.2 Continuum of violent extremism categories
- Fig. 2.3 Multiple cognitive pathways towards violent extremism
- Fig. 2.4 Categories of perceived 'injustices' by violent extremists
- Fig. 3.1 Neurocognitive map of multi-layered 'brain-mind' interface
- Fig. 3.2 Neurocognitive process of violent extremism
- Fig. 3.3 Cyclical complexity neurocognitive model of violent extremism
- Fig. 3.4 Geometric representation of risk/safety and radicalisation/de-radicalisation dimensions
- Fig. 3.5 3-D graphic depiction of neurocognitive risk for violently extreme individuals
- Fig. 3.6 Risk status and risk state of RAVE as SPJ instrument
- Fig. 3.7 Known information on 'Fort Hood' case study
- Fig. 3.8 Scatterplot of student responses of 'Fort Hood' case study (*source*: Carter and Carter, 2012:149–150)
- Fig. 3.9 Geometric profile of 'risk/safety' positions for persons of interest
- Fig. 4.1 Classification chart of tuning cases with known outcome
- Fig. 4.2 Contour plot of specified 'risk positions' for known outcome cases
- Fig. 4.3 Contour plot of militant cases rated by academic experts
- Fig. 4.4 Surface plot of militant cases rated by academic experts
- Fig. 4.5 Risk 'contour' and 'surface' plots of case 1—shooter ($N=41$ experts)
- Fig. 4.6 Risk 'contour' and 'surface' plots of case 2—militant ($N=41$ experts)
- Fig. 4.7 Risk 'contour' and 'surface' plots of case 3—militant ($N=41$ experts)
- Fig. 4.8 Risk 'contour' and 'surface' plots of case 4—terrorist ($N=41$ experts)
- Fig. 4.9 Risk 'contour' and 'surface' plots of case 5—militant ($N=41$ experts)
- Fig. 4.10 Risk 'contour' and 'surface' plots of case 6—terrorist ($N=41$ experts)

- Fig. 4.11 Risk 'contour' and 'surface' plots of case 7—ex-terrorist ($N=35$ experts)
- Fig. 4.12 Risk 'contour' and 'surface' plots of case 8—non-terrorist ($N=28$ experts)
- Fig. 4.13 Risk 'contour' and 'surface' plots of case 9—shooter ($N=41$ experts)
- Fig. 5.1 Risk contour plot for pretest data set ($N=9$)