

Changing Behaviour to Address Antimicrobial Resistance: Applications of the Behaviour Change Wheel

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UCL Centre for Behaviour Change



Who we are

- · Core team of researchers, trainers & practitioners in behaviour change
- · A cross-disciplinary community of academic experts at UCL & beyond
- · Global network of over 4,000 contacts

Our aims

- To harness the breadth and depth of academic expertise in behaviour change to
- · Increase the quantity and quality of behaviour change research
- Translate that expertise to policy-makers, practitioners, industry, NGOs and researchers
- to address key challenges facing society



www.ucl.ac.uk/behavior-change

What we do

- Training
- International Summer Schools
 Bespoke and open short courses and workshops
- Teaching
- MSc Behaviour Change
- Research
- Methods and theories of behaviour change
- · Behaviour change interventions applied to real world issues

Consultancy

- Behaviour change expertise provided to public, commercial and third sector organisations
- Events
- Annual Digital Health Conference Public talks and seminars



This talk

- 1. What is the role of behaviour in anti-microbial stewardship?
- 2. What might be gained by using the science of behaviour change to address anti-microbial resistance?
- 3. What does the application of a scientifically derived model of behaviour and behaviour change to AMR look like?

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Behavioural influences on Anti-Microbial Resistance					
Prevention	 Are farmers using animal husbandry practices that reduce need for anti-microbial agents? Are antimicrobial agents being prescribed prophylactically to prevent disease occurrence? 				
Adherence	 Do people adhere to correct use of anti-microbial treatment, once prescribed? 				
Delivery of evidence- based care	 Are veterinary professionals behaving in accordance with existing guidance? Are farmers following best practice recommendations? 				

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SO, given that human behaviour is so central to addressing AMR why is it that many of the efforts to address it lack behavioural science?

> Of those that use behavioural science, how many of them give behavioural interventions the same degree of attention and scientific scrutiny as pharmacological or surgical interventions?

ISLAGIAT Principle: It Seemed Like A Good Idea At The Time!





The Behaviour Change Wheel

- Systematic literature review identified 19 frameworks for designing behaviour change interventions
 - related to health promotion, environment, culture change, social marketing etc.
- · So synthesised the frameworks into ...
- The Behaviour Change Wheel; a standardized, integrative framework for designing and evaluating interventions to change behaviour

Michie et al (2011) The Behaviour Change Wheel: a new method for characterising and designing behaviour change interventions, *Implementation Science*.



UCL The Behaviour Change Wheel: a <u>methodology</u> for designing and evaluating interventions



A science of behaviour change requires at least the following:

- A methodology for designing, delivering and evaluating behaviour change interventions.
- · A comprehensive theory of behaviour
- A replicable way of understanding what is inside complex behaviour change interventions



Behaviour: part of a system of behaviours

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- ...that facilitate and compete with each other – within and between individuals
- Understand the system of behaviours to identify where best to intervene & how





- As precisely as possible
 - e.g. 'reduce prescribing rates' *is not* behaviourally specific
- Specify in terms of:
 - -Who needs to do...
 - -What differently ?
 - -When/How often?
 - -and Where?





Which behaviour to start with?

- Questions to ask yourself
 - -If I change this, what is the likely impact?
 - -How easy is it to bring about change?
 - -Preference, acceptability, cost?
 - Spillover/generalisability to other behaviours and people?



NICE Guidance for Behaviour change at population, community and individual levels (2007)





Chaos (in) theories!

- · Systematic review of theories of behaviour in social and behavioural sciences:
- 83 theories
 - List of constructs
 - 1738; mean 19, range 5-84
 - Network diagram of source theories
 - Future: Searchable website



Davis et al, Health Psychology Review, 2014 Michie et al, www.behaviourchangetheories.com, 2014

1. Action Theory Model of Consumption

- 2. Affective Events Theory
- 3. Aids Risk Reduction Model
- 4. Behavioural-Ecological Model of Adolescent 25. Health Behaviour Goal Model Aids Prevention
- 5. CEOS Theory
- 6. Change Theory
- 7. Classical Conditioning
- 8. COM-B System
- 9. Consumption as Social Practices
- 10. Containment Theory
- 11. Control Theory
- 12. Differential Association Theory
- 13. Diffusion of Innovations
- 14. Ecological Model for Preventing Type 2 Diabetes 35. Integrative Model of Behavioural Prediction in Minority Youth
- 15. Extended Information Processing Model
- 16. Extended Parallel Processing Model
- 17. Feedback Intervention Theory
- 18. Focus Theory of Normative Conduct
- 19. General Theory of Crime
- 20. General Theory of Deviant Behaviour
- 21. Goal Directed Theory

- 22. Goal-Framing Theory
- 23. Goal Setting Theory
- 24. Health Action Process Approach
- 26. Health Behaviour Internalisation Model
- 27. Health Belief Model
- 28. Health Promotion Model
- 29. I-Change Model
- 30. Information-Motivation-Behavioural Skills Model
- 31. Information-Motivation-Behavioural Skills Model of Adherence
- 32. Integrated Theoretical Model for Alcohol and Other Drug Abuse Prevention
- 33. Integrated Theory of Drinking Behaviour
- 34. Integrated Theory of Health Behaviour Change
- 36. Integrative Model of Factors Influencing Smoking Behaviour
- 37. Integrative Model of Health Attitude and Behaviour Change
- 38. Integrative Model of Factors Influencing Smoking And Attitude And Health Behaviour Change
- 39. Model of Pro-Environmental Behaviour
- 40. Motivation-Opportunities-Abilities Model
- 41. Needs-Opportunities-Abilities Model
- 42. Norm Activation Theory

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- 43. Operant Learning Theory
- 44. Precaution Adoption Process Model
- 45. Pressure System Model
- 46. PRIME Theory
- 47. Problem Behaviour Theory
- 48. Prospect Theory
- 49. Protection Motivation Theory
- 50. Prototype Willingness Model
- 51. Rational Addiction Model
- 52. Reflective Impulsive Model
- 53. Regulatory Fit Theory
- 54. Relapse Prevention Model
- 55. Risk as Feelings Theory56. Self-Determination Theory
- 50. Sen-Determination Theo
- 57. Self-Efficacy Theory
- 58. Self-Regulation Theory
- 59. Six Staged Model of Communication Effects
- 60. Social Action Theory (1)
- 61. Social Action Theory (2)62. Social Change Theory
- 63. Social Cognitive Theory

- 64. Social Consensus Model of Health Education
- 65. Social Development Model
- 66. Social Ecological Model of Behaviour Change
- 67. Social Ecological Model of Walking
- 68. Social Identity Theory
- 69. Social Influence Model of Consumer Participation
- 70. Social Learning Theory
- 71. Social Norms Theory
- 72. Systems Model of Health Behaviour Change
- 73. Technology Acceptance Model 1, 2 & 3

74. Temporal Sen-Regulation The

- 75. Terror Management Theory
- 76. Terror Management Health Model
- 77. Theory of Interpersonal Behaviour
- 78. Theory of Normative Social Behaviour
- 79. Theory of Planned Behaviour
- 80. Theory of Triadic Influence
- 81. Transcontextual Model of Motivation
- 82. Transtheoretical Model of Behaviour Change
- 83. Value Belief Norm Theory

LICL The COM-B system: Behaviour occurs as an interaction between three necessary conditions























Selecting appropriate intervention functions

	Intervention functions								
	Education	Persuasion	Incentiv- isation	Coercion	Training	Restriction	Environmental restructuring	Modelling	Enablement
Physical capability									
Psychological capability									
Physical opportunity									
Social opportunity									
Automatic motivation									
Reflective motivation									

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Selecting appropriate intervention functions

		Intervention functions							
	Education	Persuasion	Incentiv- isation	Coercion	Training	Restriction	Environmental restructuring	Modelling	Enablement
Physical capability									
Psychological capability	V				\checkmark				\checkmark
Physical opportunity									
Social opportunity									
Automatic motivation									
Reflective motivation									

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Increasing psychological capability







Selecting appropriate policy categories

	Intervention functions								
	Education	Persuasion	Incentivisation	Coercion	Training	Restriction	Environ. restructuring	Modelling	Enablement
Communica tion/marke- ting									
Guidelines									
Fiscal measures									
Regulation									
Legislation									
Environ./ Social planning									
Service provision									

Policy Interventions to increase psychological capability











A science of behaviour change requires at least the following:

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Descriptions of "behavioural counselling" in two interventions

Title of journal article	Description of "behavioural counseling"
The impact of <i>behavioral</i> <i>counseling</i> on stage of change fat intake, physical activity, and cigarette smoking in adults at increased risk of coronary heart disease	"educating patients about the benefits of lifestyle change, encouraging them, and suggesting what changes could be made" (Steptoe et al. <i>AJPH</i> 2001)
Effects of internet behavioral counseling on weight loss in adults at risk for Type 2 diabetes	"feedback on self-monitoring record, reinforcement, recommendations for change, answers to questions, and general support" (Tate et al. JAMA 2003)

Content of the intervention: behaviour change techniques (BCTs)

- "Active ingredients" within the intervention designed to change behaviour
- They are
 - observable,
 - replicable and
 - irreducible components of an intervention
- Can be used alone or in combination with other BCTs

ann. behav. med. DOI 10.1007/s12160-013-9486-6

ORIGINAL ARTICLE



The Behavior Change Technique Taxonomy (v1) of 93 Hierarchically Clustered Techniques: Building an International Consensus for the Reporting of Behavior Change Interventions

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Electronic supplementary material The online version of this article (doi:10.1007/s12166-013-5486-6) comains supplementary material, which is available to authorized uses. S. Michie (G²⁾, N. Johnston - C. E. Wood Centre for Otucomes Research Effectiveness, Research Department O Climical, Educational and Health Psychology, University College London, 1-10 Tornington Place, London WCIE TRI, UK

Abstract Background CONSORT guidelines call for precise reporting of behavior change interventions: we need rigor toms with precision and specificity. Objectives The objective of this study is to develop nonomy of techniques [behavior change techniques [BCTs] used in behavior change interventions and precision and evaluation behavior change techniques [BCTs] used in behavior change interventions in the avertise interventions are interventions in the avertise interventions in the avertise interventions, but we anticipate further development and evaluation based on international, interdisciplinary consensus.

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BCT Taxonomy v1: 93 items in 16 groupings

Pi	Page Grouping and BCTs		Page	Grouping and BCTs	Page	Grouping and BCTs		
1	1 1. Goals and planning		8	6. Comparison of behaviour	16	12. Antecedents		
	1.1. Goal setting (behavior) 1.2. Problem solving 1.3. Goal setting (outcome) 1.4 Action planning			 6.1. Demonstration of the behavior 6.2. Social comparison 6.3. Information about others' 		12.1. Restructuring the physical environment 12.2. Restructuring the social		
		1.5. 1.6.	Review behavior goal(s) Discrepancy between current	approval		12.3. Avoidance/reducing exposure to cues for the behavior		
			behavior and goal	9	7. Associations		12.4. Distraction	
17		1.7.	Review outcome goal(s)	_	7.1 Promots/cues		12.5. Adding objects to the	
	N	lo.	Label	Def	finition		Examples	
н	1	. Goa	ls and planning					
	1.1 Goal setting (behavior)		Set the Not sufj inte bel set spe inte Act	or agree on a goal defined in term behavior to be achieved te: only code goal-setting if there is ficient evidence that goal set as par ervention; if goal unspecified or a havioral outcome, code 1.3 , Goal ting (outcome) ; if the goal defines cific context, frequency, duration o ensity for the behavior, <u>also</u> code 1 . tion planning	s of rt of r 4,	Agree on a daily walking goal (e.g. 3 miles) with the person and reach agreement about the goal Set the goal of eating 5 pieces of fruit per day as specified in public health guidelines		

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C T axonomy	The BCTTv1 app
	Fully searchable version of BCTTv1
BCTs Taxonomy	Search by BCT label, BCT grouping or alphabetically
 Q. Filter items 1. Goals and planning 2. Feedback and monitoring 	Increases familiarity with the taxonomy
3. Social support 4. Shaping knowledge 5. Natural consequences	Increases speed and recall of BCT labels and definitions
6. Comparison of behaviour 7. Associations 8. Repetition and substitution	
Grouped All About Help	Search for: BCTs bcts.23.co.uk*
<u> </u>	Control Search for: BCTs*
	* You'll need an internet connection to use the app







Summary

- Changing human behaviour is central to reducing the development of antimicrobial resistance
- Approaches to changing behaviour that are based on theory and evidence are more likely to be effective than those that are not
- Behaviour change frameworks work with behaviour-in-context and emphasise the role of systems in addressing behaviour

