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Making Behavioural Science fit for behaviour change interventions

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The evidence that behaviour influences health and health outcomes continues to increase exponentially. As a result, governments, policy-makers, practitioners and scientists urgently seek effective behaviour change interventions. Since behavioural science has been building evidence about how to change behaviour for over a hundred years, it is important that this knowledge contributes effectively to the development of behaviour change interventions. In this talk I identify challenges to behavioural science, and discuss how challenges to theory, methods of investigation and the ways we communicate our science might be met.

Language of behavioural science: call behaviour behaviour'

Many words are used to describe behaviours and this can fragment the evidence and usefulness of behavioural science (Dixon & Johnston, 2008). For example, behaviours such as activity and smoking may be referred to as lifestyle, but lifestyle also implies fancy cars, home furnishings and fashion. Behaviours are included in assessments of quality of life but these measures also include a mixture of other components (Pollard, Johnston, & Dieppe, 2006). Using a diversity of terms has two major downsides: policy and practice do not benefit from best behavioural science; and behavioural science does not accumulate evidence effectively.

Target of behavioural interventions: 'as near the health outcome as possible'

Behaviour change interventions and predictive models often depend on a causal chain, for example from cognitions to behaviour to physiology to disease to death. Given the attenuation at each step, enormous changes are needed in cognitions to impact health outcomes such as disease or mortality. On the other hand there are behavioural health outcomes such as activity limitations or disability which can be directly and successfully targeted using behavioural models and methods (Johnston et al., 2007).

Theory in Behavioural Science: 'limit the proliferation of non-distinguishable constructs'

Behavioural science uses an enormous number of theories and theoretical constructs in predicting and changing behaviour (www.behaviourchangetheories.com,). They are difficult to communicate to other disciplines (Michie et al., 2005), and within behavioural science many of these constructs cannot be distinguished by our methods of assessment and measurement (Johnston et al., 2014). The introduction of new constructs should be limited to those that can be operationalised with distinguishable content relevance and representation (Bell et al., in submission).

Methods of testing theory: 'test theories using within person designs'

When used as a basis for intervention, tests of theory can be vague or even inappropriate, for example, in using evidence from between person studies where within person evidence is required (Johnston & Johnston, 2013). These two designs can provide opposing evidence (Curran & Bauer, 2011): for example Quinn et al. (2012) and Quinn, Johnston, and Johnston (2013) found that perceived control predicted activity in between, but not within person designs, while (Inauen et al., 2016) found that intention predicted snacking in within but not in between person designs. Using between person data might have led to interventions to increase perceived control that might have been harmful in Quinn et al's population, while the opportunity to reduce snacking by lowering intention might have been missed in Inauen's participants. Information from between person studies indicates who might benefit from intervention but not how to intervene (Johnston, 2016).

Reporting behaviour change interventions: 'use best reporting standards'

There is ample evidence that interventions, especially behavioural interventions, are reported badly but recent developments of standardised methods can improve reporting (Johnston, 2014). The TIDieR checklist (Hoffmann et al., 2014) provides a minimal reporting standard for all interventions while the Behaviour Change Techniques Taxonomy (Michie et al., 2013) gives a method for reporting the active content of behaviour change interventions. Unless interventions are reported well they can neither be implemented nor replicated or improved.

Developing an ontology of behaviour change interventions: 'use agreed terms and labels'

Evidence about behaviour change interventions is increasing rapidly but in a fragmented way. Cumulative science has progressed when they adopted agreed systems of labelling key phenomena (e.g. http://www.genenames.org/). Behavioural science needs an ontology, which is an agreed set of terms to describe the main aspects of a behaviour change intervention. Work to develop such an ontology and to use it to integrate and organise the evidence is underway (www.humanbehaviourchange.org)

Conclusions

Behavioural science faces many challenges but many can be met and it is therefore poised to contribute effectively to behaviour change interventions addressing 21st century health problems.

References

Bell, C., Johnston, D. W., Allan, J., Pollard, B., & Johnston, M. (2016). What do Demand-Control and Effort-Reward work stress questionnaires really measure? A Discriminant Content Validity study of relevance and representativeness of measures. Manuscript in preparation.

Curran, P. J., & Bauer, D. J. (2011). The disaggregation of within-person and between-person effects in longitudinal models of change. Annual review of psychology, 62, 583-619. doi:10.1146/annurev.psych.093008.100356

Inauen, J., Shrout, P. E., Bolger, N., Stadler, G., & Scholz, U. (2016). Mind the Gap? An intensive longitudinal study of between-person and within-person intention-behavior relations.

Annals of Behavioral Medicine, 50, 516-522. doi:10.1007/s12160-016-9776-x.
Hoffmann, T. C., Glasziou, P. P., Boutron, I., Milne, R., Perera, R., Moher, D., ... Lamb, S. E. (2014). Better reporting of interventions: Template for intervention description and replication (TIDieR) checklist and guide. BMJ, 348, 1687. doi10.1136/bmj,g1687
Johnston, D. W., & Johnston, M. (2013). Useful theories should apply to individuals. British Journal of Health Psychology, 18, 469-473. doi:10.1111/bjhp.12049
Johnston, M. (2014). Improving the reporting of behaviour change interventions. The European Health Psychologist, 16(5), 162-170. Retrieved from http://openhealthpsychology.com/ehp/index.php/contents/issue/view/ehp.v16.i5/showToc
Johnston, M. (2016). Use and usability: Are theoretical models of behaviour change practical? In S. Christmas, S. Michie, & R. West (Eds), Thinking about behaviour change (pp. 61-84). London: Silverback Publishing.
Johnston, M., Bonetti, D., Joice, S., Pollard, B., Morrison, V., Francis, J. J., & MacWalter, R. (2007). Recovery from disability after stroke as a target for a behavioural intervention: Results of a randomised controlled trial. Disability & Rehabilitation, 29, 1117-1127. doi:10.1080/03323310600950411
Johnston, M., & Dixon, D. (2008). Current issues and new directions in psychology and health: What happened to behaviour in the decade of behaviour? Psychology & Health, 23, 509-513. doi:10.1080/08870440701816728
Johnston, M., Dixon, D., Hart, J., Glidewell, L., Schröder, C., & Pollard, B. (2014). Discriminant content validity: A quantitative methodology for assessing content of theory based measures, with illustrative applications. British Journal of Health Pychology, 19, 240-257. doi:10.1111/bjhp.12095
Michie, S., Johnston, M., Abraham, C., Parker, Lawton, R., & Walker, A. (2005). Making psychological theory useful for implementing evidence based practice: A consensus approach. Quality in Health Care, 14, 26-33. doi:10.1136/qshc.2004.011155
Michie, S., Richardson, M., Johnston, M., Abraham, C., Francis, J., Hardeman, W., ... & Wood, C. E. (2013). The behavior change technique taxonomy (v1) of 93 hierarchically clustered techniques: building an international consensus for the reporting of behavior change interventions. Annals of Behavioral Medicine, 46, 81-95. doi:10.1007/s12160-013-9486-6
Pollard, B., Johnston, M., & Dieppe, P. (2006). What do osteoarthritis health outcome instruments measure? Impairment, activity limitation, or participation restriction? The Journal of Rheumatology, 33(4), 757-763.
Quinn, F., Johnston, M., Dixon, D., Johnston, D. W., Pollard, B. & Rowley, D. I. (2012). Testing the integration of ICF and behavioural models of disability in orthopedic patients: Replication and extension. Rehabilitation Psychology, 57, 167-177. doi:10.1037/a0028083
Quinn, F., Johnston, M., & Johnston, D.W. (2013). Testing an integrated behavioural and biomedical model of disability in N-of-1 studies with chronic pain. Psychology & Health, 28, 1391-1406. doi:10.1080/08870446.2013.814773

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