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COMMENTARY

Multidimensional targeting for tailoring: a comment on Ogden (2016)

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In a well-argued, compelling article, Ogden (2016) takes the position that standardised models of health-behaviour-change techniques may limit innovation and offer little to the individual practice of health behavioural change. In her view, a standard, generic, a priori type of approach is likely to reduce new theoretical developments and ultimately cap advancements in the field of health psychology. Furthermore, she argues that it is not possible to generate an a priori account of individual sources of variance such as the particulars of individual patients.

Point 1. Need for creativity and the description-prescription cycle as an open system

We agree with Ogden (2016) that research on behaviour change has to capitalise on serendipity and potential for innovation, particularly given that our most optimistic assessments reveal moderate intervention efficacy (e.g., Albarracin et al., 2003, 2005; Bartlett, Sheeran, & Hawley, 2014; Johnson, Scott-Sheldon, & Carey, 2010; Sandler et al., 2014; Sweet & Fortier, 2010; Tannenbaum et al., 2015; Webb & Sheeran, 2006; Wilson et al., 2014). There is no risk for innovation if behavioural-change-technique taxonomies are used descriptively. For example, Michie, Abraham, Whittington, McAteer, and Gupta (2009) wrote:

> The 122 evaluations (N = 44,747) produced an overall pooled effect size of 0.31 (95% confidence interval = 0.26 to 0.36, I^2 = 69%). The technique, 'self-monitoring', explained the greatest amount of among-study heterogeneity (13%). Interventions that combined self-monitoring with at least one other technique derived from control theory were significantly more effective than the other interventions (0.42 vs. 0.26). (p. 690)

However, the science of health-behaviour change is inherently applied. Researchers often describe what has worked in prior programme implementations in order to prescribe evidence-based policy recommendations. For example, meta-analysing the efficacy of HIV-prevention interventions allowed Albarracin et al. (2005; for other domains, see also Tannenbaum et al., 2015; Wilson et al., 2014) to develop decision trees for the application of health-behaviour intervention strategies. Based on the strategies coded as included in the intervention, the researchers primarily recommended implementing active interventions that involve self-management-behavioural-skills training, information, HIV counselling and testing, and information. If such active interventions are not feasible, the recommended policies were attitudinal and control persuasive arguments, as well as distribution of condoms.

This description-prescription process, however, is an open system and not closed to innovation. By definition, science is dynamic, and describing and prescribing based on what has worked previously does not preclude research on what might work in future. Innovative development of techniques to change behaviour is indispensable for a vital discipline and improvements in public health. Therefore, having a taxonomy of what has worked is orthogonal to innovative research on the next generation of behavioural change techniques.

Point 2. Behavioural taxonomies are limited for tailoring individual treatments

Response 1. Behaviour change taxonomies often address non-individual solutions

Behaviour-change-technique taxonomies recognise that health behaviours depend on biological and external factors that cannot be changed with behavioural interventions (Michie & Abraham, 2008; Michie et al., 2009; Michie, Abraham, et al., 2011; Michie, Ashford, et al., 2011; Michie, van Stralen, & West, 2011; Michie et al., 2013). A healthy diet depends on the prices of healthy food (Raine, 2005), and adequate levels of physical activity on urban planning (Davison & Lawson, 2006). Accordingly, the behaviour change wheel (Michie, van Stralen, et al., 2011) includes environmental planning, legislation, and fiscal measures, which are all far from being traditional behavioural interventions for a practitioner to implement. Thus, even if it were true that no general intervention knowledge is sufficient to treat individual patients, a broad taxonomy like the behavioural change wheel makes a contribution to structural interventions that are beyond the scope of individual treatment.

Response 2. We need multidimensional targeting to achieve tailoring

Although we agree with Ogden (2016) that no behavioural-change-technique taxonomy is perfect, the argument that taxonomies are not useful at the individual level is questionable. Clearly, the science of behavioural change follows a nomothetic paradigm; it is concerned with unveiling regularities and general patterns to explain phenomena. Implementation, however, lies at the intersection of general knowledge on intervention efficacy and the idiographic characterisation of the individual recipient of the intervention. An adequate taxonomy for individual treatment must address the multiple dimensions associated with treatment efficacy (Albarracin & Durantini, 2010; Durantini & Albarracin, 2009, 2012; Noguchi, Albarracin, Durantini, & Glasman, 2007; Powell et al., 2015). In this context, we disagree with Ogden's (2016) notion that addressing sources of health-behaviour variability is unfeasible because this variability is random. Residual patient variability becomes systematic when researchers understand the multiple determinants of efficacy pertaining not only to intervention components, but also to behaviours, facilitators, and settings (e.g., see Durantini, Albarracin, Mitchell, Earl, & Gillette, 2006, for a meta-analysis of source effects in HIV prevention).

In our view, the call to abandon taxonomies must be replaced with a call to refine taxonomies to include *multidimensional targeting*. The debate surrounding behaviour-change-technique taxonomies, especially with Ogden's (2016) editorial as a counterpoint, suggests that more precise parameters of targeting are needed for practitioners to be able to tailor interventions. Intervention targeting refers to customising strategies to the specific target population, such as women or Latinos living in the US. Intervention tailoring describes interventions developed to fit individual characteristics, including the language or behavioural choices of a particular client. This multidimensional targeting we propose requires consideration of the (a) intervention components, (b) behaviour, (c) population, (d) facilitator, and (e) setting. Whether scientific research can help with tailoring is thus a matter of how many variables and higher order interactions can be properly estimated. With sufficient statistical power and diversity of variable values, researchers can characterise a fairly complex reality that

distinguishes between the particulars of many patients. From this point of view, tailoring becomes a refined form of targeting (termed here *multidimensional targeting*) rather than a qualitatively different enterprise.

Concluding remarks

Although evidence-based models may constrain the discovery of alternative intervention strategies, such models are necessary to identify innovation. Evidence-based models involve broad theoretical developments and their supporting evidence, helping to distinguish innovation from established knowledge and limiting redundancy. As evidence accumulates, behavioural-change-technique taxonomies are but one component of multidimensional targeting. Performing high-powered meta-analyses of multifaceted programmes will permit multidimensional targeting, which provides an evidence-based route to intervention tailoring. Multidimensional targeting, however, must begin to recognise that the key to efficacy is not always in the strict contents of the programme and it must consider the percentage of variance accounted for by (a) intervention components, (b) behaviour, (c) population, (d) facilitator, and (e) setting.

We would like to end this commentary by making a point we have not found in the literature. Table 1 presents the heterogeneity indexes for selected factors associated with (a) intervention components, (b) behaviour, (c) characteristics of the population, (d) facilitator, and (e) characteristics of the setting in our meta-analyses of HIV-prevention interventions (Albarracin, Durantini, & Earl, 2006; Durantini et al., 2006; Wilson et al., 2014). This table is organised by dimension and depicts the effects of intervention techniques exhaustively, followed by a selection of effects of recipient population, facilitator, and setting, as well as some two-way interactions. Q_Bs are displayed along with degrees of freedom and Q_Bs divided by degrees of freedom. The corrected Q_Bs can be more directly compared and suggest that intervention techniques vary greatly in explanatory power, from an index of approximately 0.01 to an index of 2.06, with an average of 0.57. However, source and recipient population factors are highly influential

Table 1. Heterogeneity statistics for dimensions of targeting.

Dimension	Q_{B1}	df	Q_B/df
Intervention technique			
Normative arguments	173.09	199	0.869798995
Attitudinal arguments	53.74	199	0.270050251
Informational arguments	2.95	199	0.014824121
Behavioural skills arguments	44.49	199	0.223567839
Threat inducing arguments	201.43	199	1.012211055
Condom provision	33.78	199	0.169748744
Condom skills training	0.71	122	0.005819672
Interpersonal skills training	10.14	122	0.083114754
Self-managements training	251.08	122	2.058032787
HIV counselling and testing	125.28	122	1.026885246
Recipient variables			
Gender	7.26	105	0.069142857
Ethnicity	54.2	105	0.516190476
Age similarity	89.12	149	0.598120805
Source			
Expertise	224.91	149	1.509463087
Age similarity	54.21	105	0.516285714
Gender similarity	90.67	105	0.86352381
Clinical setting	0	200	0
Intervention technique (HIV CT) × recipient ethnicity	137.74	199	0.692160804
Recipient × source (Expertise × ethnicity)	167.6	151	1.109933775
Clinical setting × behavioural skills arguments	158.07	199	0.794321608

as well, and so were some interactions, with indexes as high as 1.51. These results thus support the notion that tailoring is possible by obtaining systematic information about the impact of multiple critical dimensions that avoid the misconception that behaviour-change techniques dominate intervention efficacy.

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References

Albarracin, D., & Durantini, M. R. (2010). Are we going to close social gaps in HIV? Likely effects of behavioral HIV-prevention interventions on health disparities. *Psychology, Health & Medicine*, 15, 694–719. doi:10.1080/13548506.2010.498892

Albarracin, D., Durantini, M. R., & Earl, A. (2006). Empirical and theoretical conclusions of an analysis of outcomes of HIV-prevention interventions. *Current Directions in Psychological Science*, 15, 73–78. doi:10.1111/j.0963-7214.2006.00410.x

Albarracin, D., Gillette, J. C., Earl, A., Glasman, L. R., Durantini, M. R., & Ho, M.-H. (2005). A test of major assumptions about behavior change: A comprehensive look at the effects of passive and active HIV-prevention interventions since the beginning of the epidemic. *Psychological Bulletin*, 131, 856–897. doi:10.1037/0033-2909.131.6.856

Albarracin, D., McNatt, P. S., Klein, C. T. F., Ho, R. M., Mitchell, A. L., & Kumkale, G. T. (2003). Persuasive communications to change actions: An analysis of behavioral and cognitive impact in HIV prevention. *Health Psychology*, 22, 166–177. doi:10.1037/0278-6133.22.2.166

Bartlett, Y. K., Sheeran, P., & Hawley, M. S. (2014). Effective behaviour change techniques in smoking cessation interventions for people with chronic obstructive pulmonary disease: A meta-analysis. *British Journal of Health Psychology*, 19 (1), 181–203. doi:10.1111/bjhp.12071

Davison, K. K., & Lawson, C. T. (2006). Do attributes in the physical environment influence children's physical activity? A review of the literature. *The International Journal of Behavioral Nutrition and Physical Activity*, 3, 19. doi:10.1186/1479-5868-3-19

Durantini, M. R., & Albarracin, D. (2009). Material and social incentives to participation in behavioral interventions: A meta-analysis of gender disparities in enrollment and retention in experimental human immunodeficiency virus prevention interventions. *Health Psychology*, 28, 631–640. doi:10.1037/a0015200

Durantini, M. R. & Albarracin, D. (2012). Men and women have specific needs that facilitate enrollment in HIV-prevention counseling. *AIDSCare*, 24, 1197–1203. doi:10.1080/09540121.2012.661834

Durantini, M. R., Albarracin, D., Mitchell, A. L., Earl, A., & Gillette, J. C. (2006). Conceptualizing the influence of social agents of behavior change: A meta-analysis of the effectiveness of HIV-prevention interventionists for different groups. *Psychological Bulletin*, 132, 212–248. doi:10.1037/0033-2909.132.2.212

Johnson, B. T., Scott-Sheldon, L. A. J., & Carey, M. P. (2010). Meta-Synthesis of health behavior change meta-analyses. *American Journal of Public Health*, 100(11), 2193–2198. doi:10.2105/AJPH.2008.155200

Michie, S., & Abraham, C. (2008). Advancing the science of behaviour change: A plea for scientific reporting. *Addiction*, 103 (9), 1409–1410. doi:10.1111/j.1360-0443.2008.02291.x

Michie, S., Abraham, C., Eccles, M. P., Francis, J. J., Hardeman, W., & Johnston, M. (2011). Strengthening evaluation and implementation by specifying components of behaviour change interventions: A study protocol. *Implementation Science*, 6(10), 10. doi:10.1186/1748-5908-6-10

Michie, S., Abraham, C., Whittington, C., McAteer, J., & Gupta, S. (2009). Effective techniques in healthy eating and physical activity interventions: A meta-regression. *Health Psychology*, 28(6), 690. doi:10.1037/a0016136

Michie, S., Ashford, S., Sniehotta, F. F., Dombrowski, S. U., Bishop, A., & French, D. P. (2011). A refined taxonomy of behaviour change techniques to help people change their physical activity and healthy eating behaviours: The CALO-RE taxonomy. *Psychology & Health*, 26(11), 1479–1498. doi:10.1080/08870446.2010.540664

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(1), 81–95. doi:10.1007/s12160-013-9486-6

Michie, S., van Stralen, M. M., & West, R. (2011). The behaviour change wheel: A new method for characterising and designing behaviour change interventions. *Implementation Science*, 6(1), 42. doi:10.1186/1748-5908-6-42

Noguchi, K., Albarracin, D., Durantini, M. R., & Glasman, L. R. (2007). Who participates in which health promotion programs? A meta-analysis of motivations underlying enrollment and retention in HIV-prevention interventions. *Psychological Bulletin*, *133*, 955–975. doi:10.1037/0033-2909.133.6.955

Ogden, J. (2016). Celebrating variability and a call to limit systematisation: The example of the behaviour change technique taxonomy and the behaviour change wheel. *Health Psychology Review*, *10*(3), 245–250. doi:10.1080/17437199.2016.1190291

Powell, B. J., Beidas, R. S., Lewis, C. C., Aarons, G. A., McMillen, J. C., Proctor, E. K., & Mandell, D. S. (2015). Methods to improve the selection and tailoring of implementation strategies. *The Journal of Behavioral Health Service & Research*. Advance online publication. doi:10.1007/s11414-015-9475-6

Raine, K. D. (2005). Determinants of healthy eating in Canada: An overview and synthesis. *Canadian Journal of Public Health*, *96*(Suppl. 3), S8–S14.

Sandler, I., Wolchik, S. A., Cruden, G., Mahrer, N. E., Ahn, S., Brincks, A., & Brown, C. H. (2014). Overview of meta-analyses of the prevention of mental health, substance Use and conduct problems. *Annual Review of Clinical Psychology*, *10*, 243–273. doi:10.1146/annurev-clinpsy-050212-185524

Sweet, S. N., & Fortier, M. S. (2010). Improving physical activity and dietary behaviours with single or multiple health behaviour interventions? A synthesis of meta-analyses and reviews. *International Journal of Environmental Research and Public Health*, *7*(4), 1720–1743. doi:10.3390/ijerph7041720

Tannenbaum, M. B., Helper, J., Zimmerman, R. S., Saul, L., Jacobs, S., Wilson, K., & Albarracin, D. (2015). Appealing to fear: A meta-analysis of fear appeal effectiveness and theories. *Psychological Bulletin*, *141*(6), 1178–1204. doi:10.1037/a0039729

Webb, T. L., & Sheeran, P. (2006). Does changing behavioral intentions engender behavior change? A meta-analysis of the experimental evidence. *Psychological Bulletin*, *132*, 249–268. doi:10.1037/0033-2909.132.2.249

Wilson, K., Senay, I., Durantini, M., Sanchez, F., Hennessy, M., Spring, B., & Albarracin, D. (2014). When it comes to lifestyle recommendations, more is sometimes less: A meta-analysis of theoretical assumptions underlying the effectiveness of interventions promoting multiple behavior domain change. *Psychological Bulletin*, *141*, 474–509. doi:10.1037/a0038295