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# Focusing on fidelity: An exploration of intervention fidelity within behavioural trials

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## Systematic review

# Implementation fidelity of physiotherapist-delivered group education and exercise interventions to promote self-management in people with osteoarthritis and chronic low back pain: A rapid review Part II<sup>☆</sup>



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## Research Report

## Development of a Feasible Implementation Fidelity Protocol Within a Complex Physical Therapy-Led Self-Management Intervention

Elaine Toomey, James Matthews, Suzanne Guerin, Deirdre A. Hurley



## Systematic review

# The effectiveness of physiotherapist-delivered group education and exercise interventions to promote self-management for people with osteoarthritis and chronic low back pain: A rapid review Part I<sup>☆</sup>



Elaine Toomey<sup>\*</sup>, Laura Currie-Murphy, James Matthews, Deirdre A. Hurley

School of Public Health, Physiotherapy and Population Science, Health Science Centre, University College Dublin, Belfield, Dublin 4, Ireland

## Open Access

## Research

## BMJ Open Using mixed methods to assess fidelity of delivery and its influencing factors in a complex self-management intervention for people with osteoarthritis and low back pain

Elaine Toomey,<sup>1</sup> James Matthews,<sup>2</sup> Deirdre A Hurley<sup>2</sup>

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## ABSTRACT

**Objectives and design** Despite an increasing awareness of the importance of fidelity of delivery within complex behaviour change interventions, it is often poorly assessed. This mixed methods study aimed to establish the fidelity of delivery of a complex self-management intervention and its influencing factors.

## Strengths and limitations of this study

► This mixed methods investigation of fidelity of delivery and its influencing factors provides valuable information on fidelity assessment methods and factors to be considered in developing and evaluating self-management interventions.

## [ VIEWPOINT ]

ELAINE TOOMEY, PhD<sup>1</sup> • WENDY HARDEMAN, PhD<sup>2</sup>

## Addressing Intervention Fidelity Within Physical Therapy Research and Clinical Practice

*J Orthop Sports Phys Ther* 2017;47(12):895-898. doi:10.2519/jospt.2017.0609

Intervention fidelity is a key component of the design and conduct of physical therapy research; however, it currently does not receive the attention it deserves. Intervention fidelity is defined as “the methodological strategies used to enhance and monitor the reliability and validity of behavioral interventions.”<sup>1</sup> In other words, intervention fidelity includes enhancing and assessing the extent to which an intervention is implemented as intended by its developers, including how they envisage the participants or patients to interact with the intervention. While this concept is well understood, it is often difficult to implement in practice. Although intervention fidelity can, in some cases, be enhanced through the use of fidelity checklists, it is often more challenging to ensure that the intervention is delivered as intended in the real world.

therapy research to improve the quality of intervention reporting in this field.<sup>27</sup> While the quality of reporting of physical therapy research is crucial, intervention fidelity is a key issue to be addressed at the earlier stage of trial design and conduct. Fidelity of delivery concerns the procedures put in place to enhance and assess faithful implementation of the intervention, and is thus distinct from the quality of the intervention itself. With the growing emphasis on patient-centered care and the need for high-quality evidence, it is essential that physical therapy research and clinical practice pay attention to the issue of intervention fidelity.

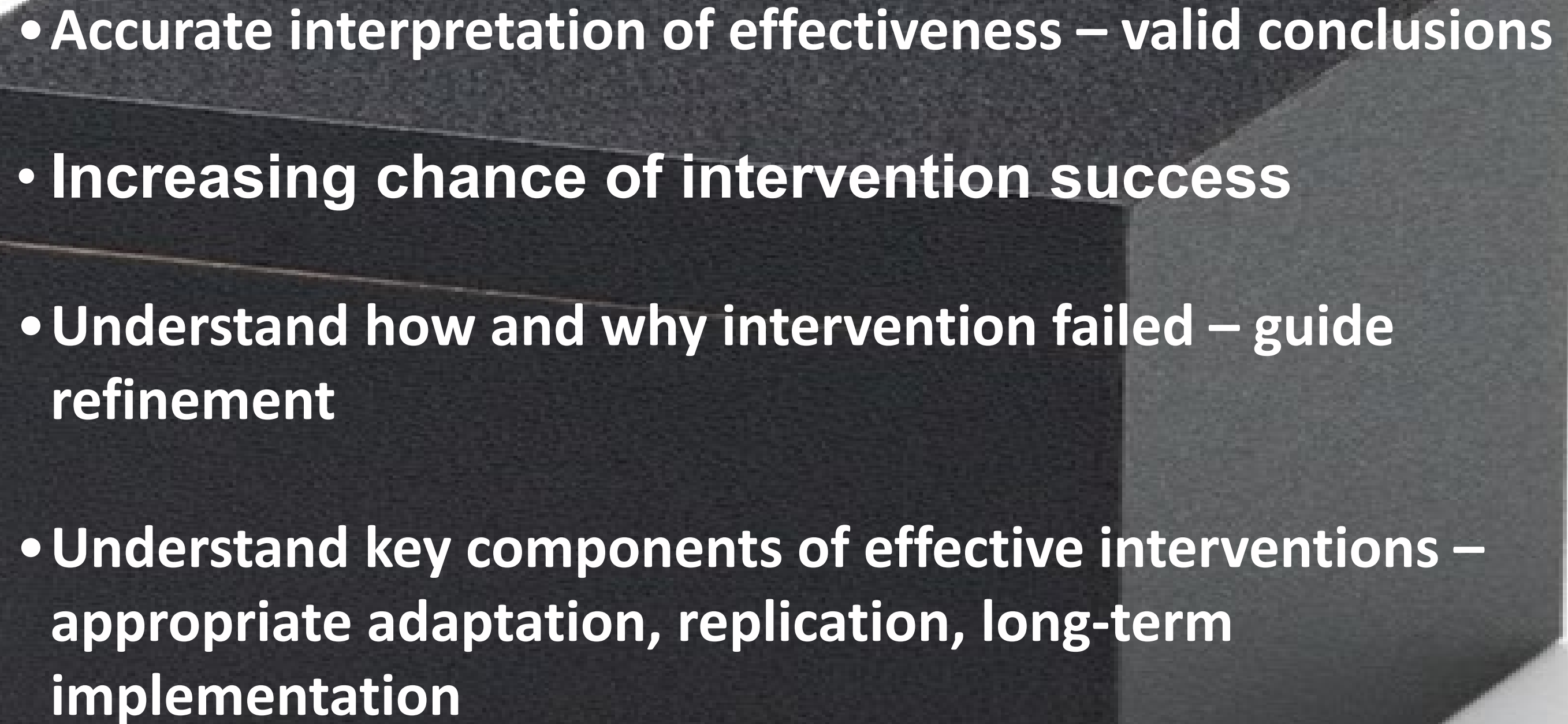


The degree to which interventions are put into practice as intended

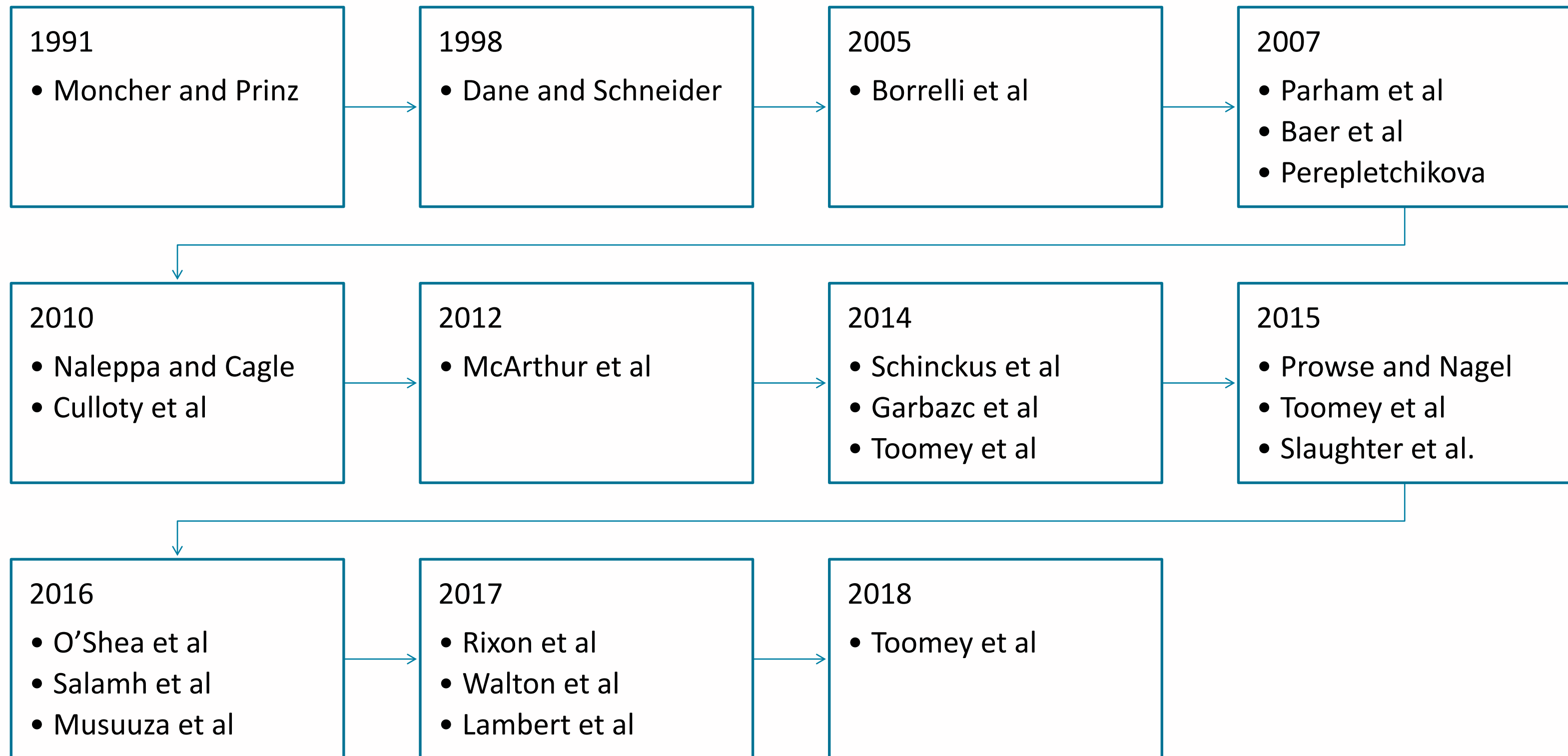
or

The ‘methodological strategies used to monitor and enhance the reliability and validity of behavioural interventions’ (NIHBCC Bellg et al., 2004)



- 
- **Accurate interpretation of effectiveness – valid conclusions**
  - **Increasing chance of intervention success**
  - **Understand how and why intervention failed – guide refinement**
  - **Understand key components of effective interventions – appropriate adaptation, replication, long-term implementation**

# Systematic reviews of intervention fidelity in behaviour change interventions – fidelity often poorly addressed...





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McGee *et al. Trials* (2018) 19:504  
<https://doi.org/10.1186/s13063-018-2838-6>

Trials

RESEARCH

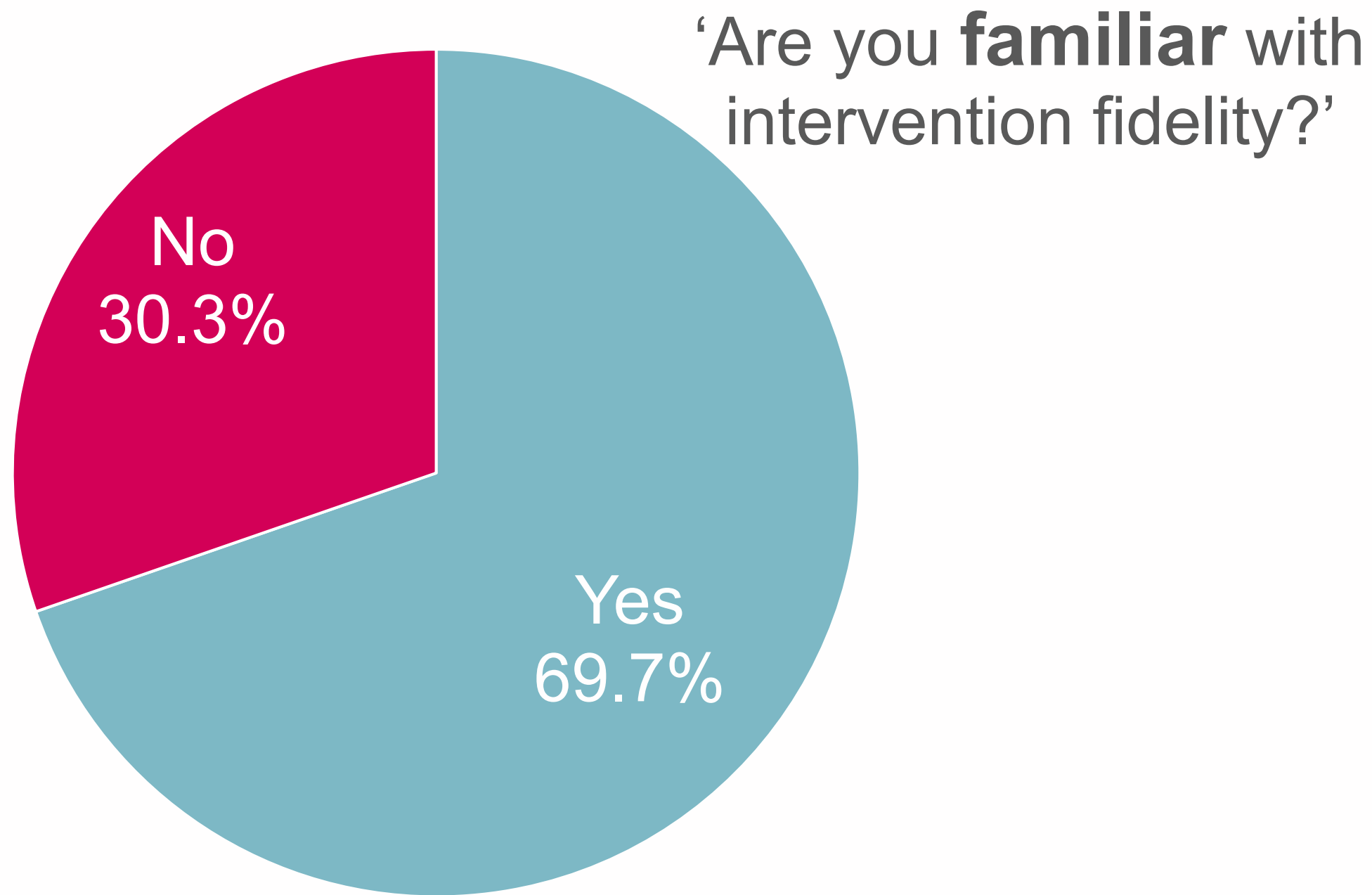
Open Access



# Surveying knowledge, practice and attitudes towards intervention fidelity within trials of complex healthcare interventions

Daragh McGee<sup>1</sup>, Fabiana Lorencatto<sup>2</sup>, Karen Matvienko-Sikar<sup>3</sup> and Elaine Toomey<sup>4\*</sup> 

Survey of 264 behavioural triallists from 15 countries regarding intervention fidelity



- Good awareness of intervention fidelity and importance
- Understanding was lower
- Poor use of fidelity frameworks - 73.6% had never used one
- Need for better clarification of terminology and components
- Need for practical guidance

Self-reported **understanding** of intervention fidelity was **5.84**±2.26  
1(poor) to 10 (excellent)



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## Focusing on fidelity: narrative review and recommendations for improving intervention fidelity within trials of health behaviour change interventions

E. Toomey<sup>a</sup>, W. Hardeman<sup>b</sup>, N. Hankonen<sup>c</sup>, M. Byrne<sup>a</sup>, J. McSharry<sup>a</sup>, K. Matvienko-Sikar<sup>d</sup> and F. Lorencatto<sup>e</sup>

- Summarise key methodological issues identified by:
  - Reviews of fidelity across multiple behaviour change topics
  - 2018 fidelity survey of triallists
- Suggest practical recommendations



# Issues with fidelity – what is not being done, and when it is, what is lacking?

1. Lack of standardisation regarding how fidelity is conceptualised and defined
2. Limited focus beyond assessing fidelity of delivery
3. Limited use of existing fidelity frameworks or guidance
4. Lack of focus on quality and comprehensiveness of fidelity assessment strategies
5. Lack of explicit focus on the balance between fidelity and adaptation
6. Poor reporting of how intervention fidelity is addressed

# Practical recommendations for addressing key fidelity issues...

Overarching issue	Specific recommendations
1. Lack of standardisation regarding how fidelity is conceptualised and defined	1. Clarify how fidelity is defined and conceptualised
2. Limited focus beyond assessing of fidelity of delivery	2a. Consider fidelity beyond intervention delivery 2b. Consider both enhancement and assessment strategies explicitly
3. Limited use of existing fidelity frameworks or guidance	3. Make use of existing frameworks
4. Lack of focus on quality and comprehensiveness of fidelity assessment strategies	4. Consider the psychometric and implementation properties of mixed method fidelity assessment strategies
5. Lack of explicit focus on the balance between fidelity and adaptation	5. Consider the need for balance between fidelity and adaptation a-priori
6. Poor reporting of how intervention fidelity is addressed	6. Comprehensively report use of strategies to enhance and assess fidelity and results of fidelity assessments

# Practical recommendations for addressing key fidelity issues...

## Overarching issue

1. Lack of standardisation regarding how fidelity is conceptualised and defined

## Specific recommendations

1. Clarify how fidelity is defined and conceptualised

- Without clear consensus in the literature, make the definitions and conceptualisations you are using explicit
- Work towards building a common language



# Practical recommendations for addressing key fidelity issues...

## Overarching issue

## Specific recommendations

2. Limited focus beyond assessing of fidelity of delivery

2a. Consider fidelity beyond intervention delivery 2b. Consider both enhancement and assessment strategies explicitly

- Consider fidelity throughout each step of the causal pathway of the intervention (e.g. study design, provider training, intervention delivery, intervention receipt and enactment by participants)
- Consider strategies to enhance **and** assess at each step (can be the same)
- Balance comprehensiveness with feasibility – may not be feasible/desirable/necessary to address all steps

# Practical recommendations for addressing key fidelity issues...

## Overarching issue

## Specific recommendations

3. Limited use of existing fidelity frameworks or guidance

3. Make use of existing frameworks

- Review and apply existing fidelity frameworks, e.g. NHBCC Treatment Fidelity Framework (Bellg 2004), Conceptual Framework of Implementation Fidelity (Carroll 2007)
- Need to identify all existing frameworks and compare and contrast these

# Practical recommendations for addressing key fidelity issues...

## Overarching issue

## Specific recommendations

4. Lack of focus on quality and comprehensiveness of fidelity assessment strategies

4. Consider the psychometric and implementation properties of mixed method fidelity assessment strategies

- Mixed methods allow us to understand the what and the why/how
- Consider use of existing validated and reliable measures
- Consider cost, acceptability and practicality of assessment measures (Walton et al 2017)



# Practical recommendations for addressing key fidelity issues...

## Overarching issue

## Specific recommendations

5. Lack of explicit focus on the balance between fidelity and adaptation

5. Consider the need for balance between fidelity and adaptation a-priori

- Considering fidelity and adaptation as two sides of the same coin
- Acceptable adaptations, flexibility within fidelity, 'form versus function' (Hawe 2004)

# Practical recommendations for addressing key fidelity issues...






Overarching issue	Specific recommendations
6. Poor reporting of how intervention fidelity is addressed	6. Comprehensively report use of strategies to enhance and assess fidelity and results of fidelity assessments

- Examining fidelity data alongside trial effectiveness data



STUDY PROTOCOL

**Addressing fidelity within complex health behaviour change interventions: A protocol of a scoping review of intervention fidelity frameworks and models. [version 1; peer review: 2 approved]**

Rebekah Roy<sup>1</sup>, Heather Colquhoun<sup>2</sup>, Molly Byrne <sup>3</sup>, Fabiana Lorencatto<sup>4</sup>, Karen Matvienko-Sikar <sup>5</sup>, Nicola McCleary <sup>6,7</sup>, Nicole Nathan <sup>8,9</sup>, Elaine Toomey <sup>3</sup>

- Aim to synthesise and compare existing fidelity frameworks and/or models, to help facilitate the appropriate selection and application of fidelity frameworks

Coming soon! (finally 😊)...

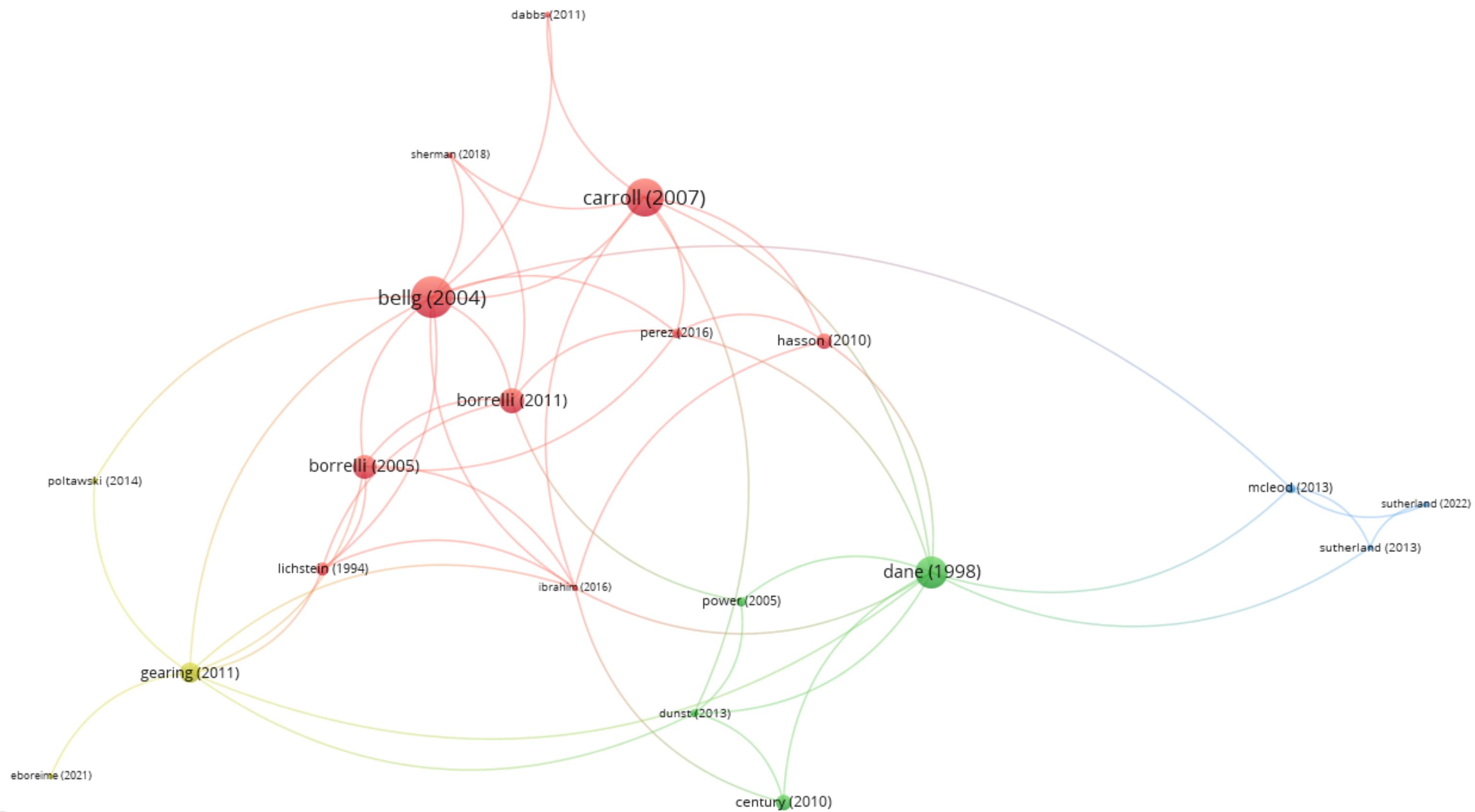
With special thanks to Dr Daphne To





	Study characteristics	N=19	%
Country	USA	12	63
	Canada (one Canada/Nigeria)	3	16
	UK	2	11
	Cuba	1	5
	Sweden	1	5
Year of Publication	1990-1994	1	5
	1995-1999	1	5
	2000-2004	1	5
	2005-2009	3	16
	2010-2014	7	37
	2015-2019	3	16
	2020-2023	3	16

Fidelity terms used	N=19	%
Implementation fidelity/fidelity of implementation	10	53
Intervention fidelity	6	32
Treatment integrity	3	16
Integrity	3	16
Program Integrity	2	11
Fidelity	1	5
Treatment fidelity	1	5
Integrity of treatment implementation	1	5
Theoretical fidelity	1	5
Intervention integrity	1	5







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# Thank you

# Questions?

Bellg AJ, Borrelli B, Resnick B, Hecht J, Minicucci DS, Ory M, Ogedegbe G, Orwig D, Ernst D, Czajkowski S (2004) 'Treatment Fidelity Workgroup of the NIH Behavior Change Consortium. Enhancing treatment fidelity in health behavior change studies: best practices and recommendations from the NIH Behavior Change Consortium', *Health Psychol.* Sep;23(5):443-51. doi: 10.1037/0278-6133.23.5.443.

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<https://doi.org/10.12688/hrbopenres.12892.1>

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Walton, H., Spector, A., Tombor, I., & Michie, S. (2017). Measures of fidelity of delivery of, and engagement with, complex, face-to-face health behaviour change interventions: A systematic review of measure quality. *British Journal of Health Psychology*, 22, 872–903.

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