Implementation effectiveness of health interventions with Māori communities: a cross-sectional survey of health professional perspectives

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Abstract

Objective: To identify factors that New Zealand health professionals rate as important for implementation effectiveness for health interventions with Māori communities.

Methods: Health professionals (N=200) participated in an online cross-sectional survey. The survey was organised in three sections: a) participants' general perceptions of key features for implementation effectiveness; b) participants' direct experience of implementing health interventions with Māori communities, and c) general demographic information.

Results: Paired sample t-tests revealed four levels of importance for implementation effectiveness with teamwork and community autonomy as being most important. Only 24% of participants had experience with a previous health intervention in Māori communities. A multiple regression model identified two key overall factors that were associated with participants' rating of implementation effectiveness in these previous interventions: process (B=0.29 p<0.01), and community (B=0.14, p<0.05).

Conclusions: Key areas of implementation effectiveness were community engagement and participatory process; this contributes to the body of literature that challenges traditional top-down approaches of implementation.

Implications for public health: This study provides the perspectives of health professionals on implementation effectiveness when working with Māori/Indigenous communities. These professionals often lead the implementation of health interventions to address health equity. The study supports the inclusion of community voice in implementing community health interventions.

Key words: implementation effectiveness, health professionals, Māori health interventions

Research in Aotearoa New Zealand continues to identify significant health inequities between Māori (Indigenous people of New Zealand) and non-Māori populations.[1,2] These inequities stem from a range of factors including social determinants, racism, cultural insensitivity and the inability of some health professionals to connect with their patients, as well as the lack of commitment in the past by the New Zealand Government towards obligations under Te Tiriti o Waitangi (The Treaty of Waitangi; the founding document for New Zealand that outlined the relationships between Māori and non-Māori colonisers).[3] It should be noted that the authors recognise that Te Tiriti o Waitangi and The Treaty of Waitangi are two different documents; the document of reference in this case is Te Tiriti o Waitangi and the authors are only providing a direct translation of the treaty for the wider international audience.

Many structural barriers influence the implementation of health services, such as not always having culturally-appropriate practices for Māori, a lack of cultural training for health professionals, and some patients lacking financial resources, which may affect the attendance at health appointments.[3]

Numerous health interventions have been developed in recent years to address these inequities, aiming to address structural issues within a culturally-centred approach.[4-6] Some of these interventions have been developed through a Kaupapa Māori lens (methodology centred in Māori knowledge and cultural practices [or tikanga] developed by and with Māori) and with participatory, co-design methods to enhance the cultural centredness of the interventions.[4,7] While many of these interventions have been shown to have efficacy, the majority of them have not considered larger issues of implementation effectiveness.

When implementing health interventions with Indigenous communities, there is always a concern regarding the reception of the health intervention. Mainstream implementation focusses on the individual's ability to adopt the intervention.[8,9] Indigenous implementation often has a community approach in which it encourages implementation within a collective setting – focusing on the entire community rather than one individual.[10] This inclusive process relies heavily on the health professional's ability to complement the community's approach and create goals that the community and the health professional collectively identify as a priority.[11]

Research identifying factors that are associated with implementation

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effectiveness of health interventions includes five categories: the intervention; the process of creating the intervention; the organisation(s) implementing the intervention; the communities for which the intervention is intended; and the individuals who are involved in the implementation of the intervention.[12] The intervention includes different aspects that will be implemented, such as the innovativeness of the intervention, the compatibility of the intervention with the person or community and the relative advantage of the intervention.[9,13]

The process of creating the intervention is the second factor and it is just as important as the intervention itself.[14] The process focuses on the methods or approach used to develop and implement the intervention. There is an increasing body of research that has found that health interventions developed and implemented through participatory or collaborative processes (e.g. community-based participatory research) are strongly associated with improved health outcomes and reduced inequities.[7,15] For example, an implementation framework targeted for Māori suggests that key elements of the development and implementation of the intervention include community engagement (e.g. shared decision making), culture centredness (e.g. community voice in defining the problem and creating the intervention), systems thinking (e.g. focus on holism and how the intervention will fit within a system), and integrated knowledge translation (e.g. the inclusion of end-users in the development process).[7] Research suggests that process is among the factors least likely to be assessed during the implementation of a health intervention.[16]

The organisation is the third factor associated with implementation effectiveness. The organisation is the entity(ies) responsible for the implementation of the intervention.[16] Research suggests that several organisational elements are associated with intervention effectiveness, including the support of management for the change and having effective teamwork among people implementing the intervention.[17]

Community is an oft-studied element in the development of an intervention, although it is not always considered for implementation effectiveness.[16] Key community elements include the readiness to change, community autonomy to participate and define problems and prior history of intervention work.[11]

Health researchers often use participatory processes to gauge community readiness and 'fit' and to ensure the methodological principles of the health intervention align with the participants' identity.[18] While community is often linked with a process, it is also a distinct element that centres on the context of the implementation.[11]

The final element is the characteristics of the individuals who are delivering the intervention. Some of the key individual characteristics include self-efficacy and work-related knowledge, which are positive correlates for effective implementation of new interventions.[19] An individual's belief in their own ability to perform and produce an acceptable level of output is referred to as self-efficacy.[19] Work-related knowledge helps the individual to perform better in their tasks as it equips them with sufficient knowledge about what is required of them.[19]

Improving the effectiveness of community health interventions relies increasingly on the ability of the health professional to identify key components of the implementation process that are effective and contribute to sustainable outcomes for the people the intervention is intended for.[20] Further, health professionals are the key deliverers of the intervention for the population. For example, research suggests that in working with Māori communities, cultural competency and communication skills for health professionals are key to successful health outcomes and stronger relationships with patients.[18,21]

There is a body of research about facilitators and barriers for implementation for health interventions.[16,22] However, the perspectives of health professionals about the implementation effectiveness of health interventions for Māori is under-researched. Articles on health professional perspectives tend to be commentary or reflections about the implementation of a particular intervention.[23] It is important to include health professional perspectives as they are the frontline individuals who are carrying out the tasks of implementing the interventions. Therefore, the purpose of this study was to identify the perspectives of New Zealand health professionals about implementation effectiveness for Māori communities. The research questions for this study were:

1. How do New Zealand health professionals rate the importance of features of implementation effectiveness of health interventions with Māori communities?
   a) Is there variability in the ratings based on demographics and prior experience with health interventions?
2. What features are correlated with the implementation effectiveness of the health interventions implemented with Māori communities?

Methods

Methodology

This study was guided by Kaupapa Māori methodology, as its main goal is to ensure the research conducted has positive outcomes for Māori communities.[24] Kaupapa Māori research prioritises Māori worldviews and tikanga (protocols) in investigating research topics that are of importance for Māori communities; in this case, implementation effectiveness for health equity. The study builds on a program of research about Māori implementation science led by a Māori researcher.[25] Specifically, the focus of the prior research was on understanding implementation effectiveness from a Māori perspective. The current research employed Kaupapa Māori throughout the study, in particular, in the selection of questions and the interpretation of the results. The questions were selected as informed by this previous research program and from the extant literature that is consistent with prior implementation science literature, particularly that which is based on Kaupapa Māori methodology.[7] The interpretation of the results was centred on addressing implementation effectiveness and health equity to benefit Māori communities and from a Māori perspective. Both authors have previously worked with Kaupapa Māori methodology and value the framing it brings to this study.

Research design and sampling frame

The research design for this study was a cross-sectional survey. We employed Qualtrics to administer the survey. Studies have employed Qualtrics and highlight their effectiveness in data collection such as easy access, diversity of participants, volunteerism and anonymity while also ensuring data quality.[26] The sampling frame was a panel of healthcare workers in New Zealand maintained by an online partner provider of Qualtrics. The panel consists of nearly 4,600 from all facets of the healthcare workforce. The inclusion criteria or profile attributes that Qualtrics was provided

with included: medicine/nursing, community health, health management and related functions, allied health and support workers. The panel providers undergo a thorough and strict process during recruitment and they classify panel members during this process including an established system for verification and security. Members choose to join a panel through a registration process. Upon registration, they enter some basic data about themselves, including demographic information, hobbies and interests, among many other characteristics that are used to match panellists to specific surveys, i.e. not all panellists are invited to every survey, (Joanne Dufficy, project coordinator, e-mail communication 10 March 2020).

Measures

The items for the survey are included in Supplementary File 1 and were organised in three sections. Before participants began the survey, a screening question determined whether they had experience working with Māori patients or communities. Responding 'no' removed the participant from the survey. The first section of the survey focused on the participants' general perceptions of five factors for effectively implementing health interventions with Māori communities. The response scale for the first section was from 'not at all important (1)' to 'extremely important (5)'. The first factor was based on the characteristics of the intervention and included 10 items slightly adapted from various sources[27,28] and one item created for this study. The second factor was process and it included eight items from two sources[29,30] and three items created for this study. The third factor was organisation and it included 10 items from various sources[29-32] and one item created for this study. The fourth factor was community, with three items from a previous source[29] and three items were created for this study. The final factor was the individual and this included nine items adapted from various sources,[29,33-35] with one item that was created for this study. While most of the items came from previously used sources, the collection of items does not have previous reliability and validity estimates. Thus, these psychometric properties are addressed directly in this study. This section of the survey highlights the participants' perceptions of implementation effectiveness when working with Māori communities.

The second section of the survey focused on participants' direct experience of implementing health interventions with Māori communities. The section began with a question as to whether respondents had experience with a previous health intervention with Māori communities. If they responded 'no', they continued to the third section. With a 'yes', they were asked about their role on the project and then completed questions about the implementation and its effectiveness. The response scale for these items was from 'a small extent (1)' to 'a complete extent (5)'. For intervention, two items were created for the study, and one item was adapted from another source.[28] For process, all three items were adapted from a previous source.[29] For organisation, three items were adapted from two sources.[29,34] For community, both items were created for this study. For the individual, three items were adapted from three sources.[29,32,36] Additionally, implementation effectiveness was measured by five items from two sources[29,32] and two items created for the study. This section highlights the number of participants who have direct experience of working on novel health interventions with Māori communities and enables this study to compare perceptions of implementation effectiveness with those who do not. Finally, the third section of the survey consisted of generic demographic items.

Recruitment and data collection

Recruitment and data collection was conducted by Qualtrics. Qualtrics randomly selected respondents who matched the inclusion criteria and sent an e-mail invitation. To those that were previously invited but did not start or dropped out of the survey, a reminder e-mail was sent. Participants received an incentive for their participation in the form of points. The points system is set up by Qualtrics where points can be accumulated and redeemed in the form of gift cards, airline miles, credit for online games, etc. The number of points differed depending on factors such as the target audience and the length of the survey. The length of the survey differed for those who had experience with prior interventions; they had extra questions to answer. All respondents received the same incentive allocated by Qualtrics. The research ethical procedures for this study were approved by the Human Research Ethics Committee at The University of Waikato (HREC2019#87).

Data analysis

Factorial validity for the items in the five factors was established using a principal component factor analysis and varimax rotation. Factors with an eigenvalue greater than one were retained; items with primary loading of at least 0.6 and secondary loading 0.2 less than primary were retained. Internal consistency (Cronbach's alpha) for items was checked within each factor. Independent sample t-tests compared respondents with direct experience to those without on each factor; demographic questions were compared with one-way ANOVA. Also, paired sample t-tests compared the ranking of the factors. For the second research question, the internal consistency of the items within each factor was calculated. One item in the community factor was removed to obtain an acceptable Cronbach's alpha. The implementation effectiveness measure had some missing data, which was replaced with the series mean prior to analysis. This occurred because some items were not relevant, and this was a way to retain an equivalent outcome score to other participants. The implementation effectiveness scale was regressed on the five factors using multiple linear regression and a forward procedure.

Results

Of the total invitations sent, 59% refused to start the survey for an approximate response rate of 41%. Qualtrics removes surveys based on quality checks such as response patterns, time to completion, and fraudulent respondents. Of the 307 participants who entered the survey, 96 were removed due to insufficient data. Of those 96 responses, 63 did not complete the survey, 31 opted out of taking part in the survey, and two people did not have any experience in their roles working with Māori communities. A further 11 people who completed the survey were deemed to be low quality (patterned missing data or completed the survey too quickly). As a result, 200 survey responses were deemed as having sufficient data for analysis for this study. A total of 48 people had direct experiences with implementing health interventions with Māori communities. Table 1 presents a summary of the demographic characteristics of the study sample.

Prior to addressing the primary research questions, the items for the five main implementation categories were subjected

to factor analysis (see Supplementary File 1 for results). The 11 items from intervention resulted in three factors accounting for 67.40% of the variance. These factors were identified as community (α=0.84), novelty (α=0.60), and evidence-based (α=0.59). *Community* refers to the alignment or fit of the health intervention to the communities' needs; *novelty* is that the health intervention is new or different to what is currently being done in the field; and *evidence-based* refers to fact that the health intervention is informed and supported by research evidence. The 11 process items resulted in a single factor accounting for 56.02% of the variance named process (α=0.92). The 11 items in organisation resulted in two factors accounting for 70.77% of the variance: teamwork (α=0.87) and management (α=0.86). *Teamwork* refers to the importance of everyone in the organisation working collaboratively to effectively implement the health intervention, and *management* refers to the support of management staff and their involvement in the decision making for the health intervention. Four of the items were removed due to not loading cleanly on either factor. The factor analysis of the six community items resulted in two factors accounting for 78.93% of the variance: community autonomy (α=0.88) and prior history (α=0.84). *Community autonomy* is the inclusion of community voice and decision making in the health intervention and *prior history* is the experiences the communities may have had in past interventions or health projects. Finally, the 10 individual items resulted in two factors accounting for 60.14% of the variance: self-efficacy (α=0.84), and work-related knowledge (α=0.80). *Self-efficacy* refers to beliefs that the individuals involved in the implementation are capable and confident in their ability to carry out their tasks, while *work-related knowledge* highlights knowledge and experience in implementing health interventions. Three items were removed because the items did not load cleanly on either of the two factors. Table 2 provides the descriptive statistics for the resulting variables from the factor analysis.

Table 1: Demographic characteristics.

Variable	Attribute	Sample (N=200)	Prior Intervention Experience (N=48)
Gender identity	Male	23.5%	31.3%
	Female	76.0%	66.7%
	Different	0.5%	2.1%
Ethnicity	NZ or other European	70.0%	43.8%
	Māori	7.5%	10.4%
	Samoan	1.5%	2.1%
	Cook Islands Māori	0.5%	-
	Tongan	0.5%	2.1%
	Niuean	0.5%	2.1%
	Chinese	5.0%	4.2%
	Indian	5.5%	10.4%
	Other	18.5%	18.8%
Education	Less than High School	0.5%	2.1%
	High School/College	13.0%	14.6%
	Undergraduate qualification	45.5%	29.2%
	Postgraduate qualification	38.5%	54.2%
	Other	2.0%	-
Job title	Clinician (doctor/nurse)	38.0%	41.7%
	Community Health Worker	19.0%	16.7%
	Allied Health Professional	23.0%	22.9%
	Other including health management	20.0%	18.8%
Role in intervention	Deliverer/Care Provider	-	62.5%
	Evaluator	-	8.3%
	Co-creator	-	25.0%
	Manager/Supervisor	-	20.8%
	Cultural Advisor	-	6.3%
	Advisory Board Member	-	6.3%
	Principal Investigator	-	2.1%
	Other	-	6.3%
Age: M (SD)		43.10 (14.2)	44.17 (13.6)

Note:

For ethnicity and role in intervention, participants could select more than one category so numbers do not add to 100.

To address the first research question, paired sample t-tests were used to identify which of the implementation variables were identified as most important for implementation effectiveness in Māori communities. Four levels of importance were identified. The most important items were teamwork and community autonomy with both having means above four on the five-point scale. The next level of importance included community fit, self-efficacy, and process with means right around four. The third level of importance comprised of management and evidence-based with means in the upper three range. The final level included work-related knowledge, prior history and novelty with means in the lower threes.

Table 2 also presents the findings for comparisons of ratings of implementation variables between participants who had experience in implementing health interventions with Māori communities and those who did not. Overall, people with prior experience rated all the variables as more important than those without experience although only seven of the variables were statistically different. The only variables not showing a significant difference were teamwork, community fit and evidence-based.

We also examined demographic comparisons and found minimal differences. When comparing work positions, novelty of health interventions was the only variable with statistical significance: community health workers (M=3.55, SD=0.73) rated novelty higher than clinicians (M=3.05, SD=0.78, p=0.016) and other health professionals (M=2.99, SD=0.79, p=0.014). Novelty was also the only statistically significant variable for education: high school graduates (M=3.50, SD=0.70) rated it higher than undergraduate qualification (M=3.06, SD=0.79, p=0.021). Furthermore, evidence-based was the only variable that was statistically significant for the comparison of NZ European (M=3.85, SD=0.76) and other ethnicities (M=3.61, SD=0.73, p=0.035).

To address the second research question, Table 3 displays a correlation matrix and descriptive statistics for the variables in the second section of the survey. The multiple regression model of implementation variables was statistically significant, $F(2,45)=12.48$, $p<0.001$, adj $R^2=0.33$. While all five factors had significant and positive bivariate correlations with implementation effectiveness, the regression model found two statistically

significant predictors of intervention effectiveness = process (B=0.29, SE=0.10, Beta=0.38, $p<0.01$) and community (B=0.14, SE=0.06, Beta=0.32, $p<0.05$).

Discussion

This study aimed to identify the key features that New Zealand health professionals perceive as important for implementing health interventions when working with Māori communities. Additionally, this study sought to identify the features that health professionals with implementation experience believe predict outcomes of health interventions with Māori communities.

Key implementation features

Participants in this study identified effective teamwork in the organisation and community autonomy as the most important features for implementation effectiveness. The second tier of factors included community fit, process and self-efficacy. These findings are consistent with some of the existing literature on the importance of effective teamwork and self-efficacy of individuals.[17] They also are consistent with the growing literature about the importance of community engagement and participatory processes when implementing new interventions.[7,11] Community autonomy, however, is not often considered a priority in implementation effectiveness[16] but speaks to the importance of communities being able to determine what interventions are right for them.[7] Self-determination is a key aspect of Te Tiriti o Waitangi when working with Māori communities and this finding likely reflects this contextual element.[3]

The least important features in this study were work-related knowledge, prior history and intervention novelty. Individual work-related knowledge and community prior history are moderately ranked, perhaps suggesting prior knowledge and experience is not a pre-requisite for developing an intervention; they may be seen as helpful elements by some, but overall other elements of the process and community are the necessary elements for implementation effectiveness.[7] Further, novelty was the lowest-ranked feature and may reflect that trying something new in and of itself is not a key element for success. Rather, it may be that some action or effort including tried and tested interventions may be important to address a need rather than a novel health intervention.[37]

Table 2: Differences in ratings of implementation variables and descriptive statistics of implementation variables.

	No previous experience		Previous experience		Total		
	M	SD	M	SD	M	SD	95%CI
Most important							
Teamwork	4.17	0.79	4.32	0.77	4.21[a]	0.79	4.10, 4.31
Community autonomy	4.07[1]	0.82	4.35[2]	0.70	4.14[a,b]	0.80	4.02, 4.25
Very high importance							
Community fit	4.01	0.70	4.20	0.58	4.06[b]	0.67	3.96, 4.15
Self-efficacy	3.93[1]	0.71	4.17[2]	0.52	3.99[b]	0.67	3.90, 4.08
Process	3.93[1]	0.67	4.16[2]	0.63	3.98[b]	0.66	3.89, 4.08
High importance							
Management	3.78[1]	0.83	4.11[2]	0.65	3.86[c]	0.80	3.75, 3.97
Evidence-based	3.76	0.75	3.78	0.78	3.77[c]	0.76	3.66, 3.87
Moderate importance							
Work-related knowledge	3.30[1]	0.91	3.63[2]	0.96	3.38[d]	0.93	3.25, 3.50
Prior history	3.16[1]	0.87	3.46[2]	0.97	3.23[d,e]	0.90	3.11, 3.36
Novelty	3.06[1]	0.73	3.50[2]	0.86	3.17[e]	0.78	3.06, 3.28

Note:
Different number superscripts indicates statistically significant at p <.05 and compare previous experience to lack of experience; Different letter superscripts indicate statistically significant at p <.01 and compare implementation variables

There were only minor differences in the rankings for demographic characteristics except for previous experience. Those professionals with previous experience ranked most of the implementation variables higher than those without experience, which likely speaks to the fact that experience with implementation creates an awareness into the complexity and difficulty in effectively implementing a new intervention.[9] Thus, those without experience likely will benefit from mentorship from health professionals without experience.

Correlates of implementation effectiveness

This study found that health professionals perceive all factors (the intervention, process, organisation, community and individual) are positively correlated with implementation effectiveness in previous health interventions implemented with Māori communities. However, process and the community involvement in the implementation of the intervention were the significant correlates of intervention effectiveness within a multiple regression model. These are the areas that are less likely to be considered in the implementation science literature,[16] and yet this finding is consistent with the growing literature about participatory processes in working with communities.[15] Participatory processes engage community members to discuss their views and goals regarding the health intervention and collectively work towards a solution.[18]

The study findings reinforce a growing trend in New Zealand toward co-design and collaboration with communities in health research, health interventions and health services.[7] The larger extant literature has emphasised the importance of co-creating health interventions with Māori and other Indigenous communities as critical for improving health and reducing health inequities.[11] The current study illustrates that New Zealand health professionals recognise the importance of prioritising the process and

Table 3: Correlation matrix of implementation variables and outcomes for those with previous intervention experience.

Variable	M	SD	1	2	3	4	5	6
1. Intervention	3.51	0.83	0.81					
2. Process	3.31	1.00	0.79**	0.79				
3. Organisation	3.52	0.97	0.53**	0.57**	0.79			
4. Community	4.65	1.68	0.33*	0.46**	0.65**	0.86		
5. Individual	3.62	0.85	0.66**	0.61**	0.58**	0.38**	0.81	
6. Outcome	3.58	0.37	0.49**	0.53**	0.45**	0.49**	0.38**	0.82

Notes:
Cronbach's alpha listed on the diagonal;
***p<0.01; *p<0.05*

community involvement as well. However, challenges remain, including limited funding for translating research into implementation practice and health systems focused on traditional implementation models (i.e. top-down driven approaches). Perhaps not unrelated to this last claim is our finding that only 24% of participants had experience working on a health intervention with Māori communities.

While the limited number of participants with direct experience working on a health intervention is surprising, these findings still have important implications for implementation effectiveness for health intervention for Māori communities. Their perspectives matter because they are frontline workers who are likely to implement novel and established evidence-based interventions. Even if they do not have direct experience, they are likely to have an opportunity in the future and also can reflect on their own clinical practice as to what features matter for implementation effectiveness. These perspectives will shape the implementation process; thus, understanding the degree to which their perspectives align with Kaupapa Māori and Māori implementation science is important.[7,24,25] Collectively, the participants have consistent patterns in emphasising implementation processes and community fit and autonomy that are consistent with Kaupapa Māori. Thus, a key implication is that health professionals want to follow Kaupapa Māori principles as they think it will enhance implementation effectiveness. The extent to which these are not followed is likely to be related to systemic and structural issues in funding at a district health board or ministry level, which is beyond the scope of the current study.

Limitations

While this study is important for providing health professional perspectives about implementation effectiveness, there are several limitations as well. The first limitation for this study is that the cross-sectional nature of the study does not allow us to make causal links between implementation factors and effectiveness. A second key limitation is that we do not know how representative the Qualtrics panel is and thus the external validity of the findings is questionable. There are limited details regarding the characteristics of those who chose to not participate in the study. We can assume they match those of the participants who did respond based on Qualtrics sampling frame, but we cannot be certain. Another limitation for this study is the sample size given the small proportion of professionals with prior implementation experience. While the multiple regression model has the minimum number of participants for the number of regressors in the model, a larger sample may have provided greater variability in responses. A further limitation is the lack of items regarding the impact of funding models and system structures and the impact they have on implementation effectiveness. The final limitation is that two of the subscales had relatively low internal consistency estimates although the vast majority had strong estimates (i.e. at or near 0.80 or above). Despite this limitation, most of the psychometric evidence supported the reliability and validity of the scales and thus these can be used by other studies to measure implementation factors. These scales can help supplement existing measures,[16] particularly around issues of community and process.

Conclusion

In conclusion, this study aimed to provide the perspectives of health professionals about the implementation effectiveness of health interventions for Māori communities. Health professionals are the frontline individuals who deliver the interventions, and this study provides their perceptions within the New Zealand context. This study identified that the most important features for implementing health interventions with Māori communities from a health professional's perspective related to the process by which the intervention was developed, engagement with the community including community autonomy, and effective teamwork. This study has highlighted key areas of implementation that are not always discussed or considered and contributes to the body of literature that challenges the traditional top-down approach.

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Supporting Information

Additional supporting information may be found in the online version of this article:

Supplementary File 1: Survey items.