

The Science of Partner Engagement in Research: Development and Validation of Evaluation Metrics

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The science of stakeholder engagement in research: classification, implementation, and evaluation

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Abstract

In this commentary, we discuss the science of stakeholder engagement in research. We propose a classification system with definitions to determine where projects lie on the stakeholder engagement continuum. We discuss the key elements of implementation and evaluation of stakeholder engagement in research posing key questions to consider when doing this work. We commend and critique the work of Hamilton et al. in their multilevel stakeholder engagement in a VA implementation trial of evidence-based quality improvement in women's health primary care. We also discuss the need for more work in this area to enhance the science of stakeholder engagement in research.

Keywords

Stakeholder-engaged research, Evaluation, Implementation science, Community engagement

With the uptake of implementation and translational

Implications

Research: Future research should evaluate stakeholder engagement in research to determine the association between the level (quality and quantity) of engagement and research outcomes.

Practice: Practitioners interested in engaging multilevel stakeholders in service evaluation and quality improvement should consider where the project lies on the stakeholder engagement continuum and create processes for shared decision-making that respect diverse perspectives and interests.

Policy: Meaningful stakeholder engagement with shared decision-making is a key component to evidence-based quality improvement initiatives.



If you want to go fast, go alone.

If you want to go far, go together.

-African Proverb

Community Engagement Working Definition



“...the process of working collaboratively with and through groups of people affiliated by geographic proximity, special interest, or similar situations to address issues affecting the well-being of those people.



It is a powerful vehicle for bringing about environmental and behavioral changes that will improve the health of the community and its members.

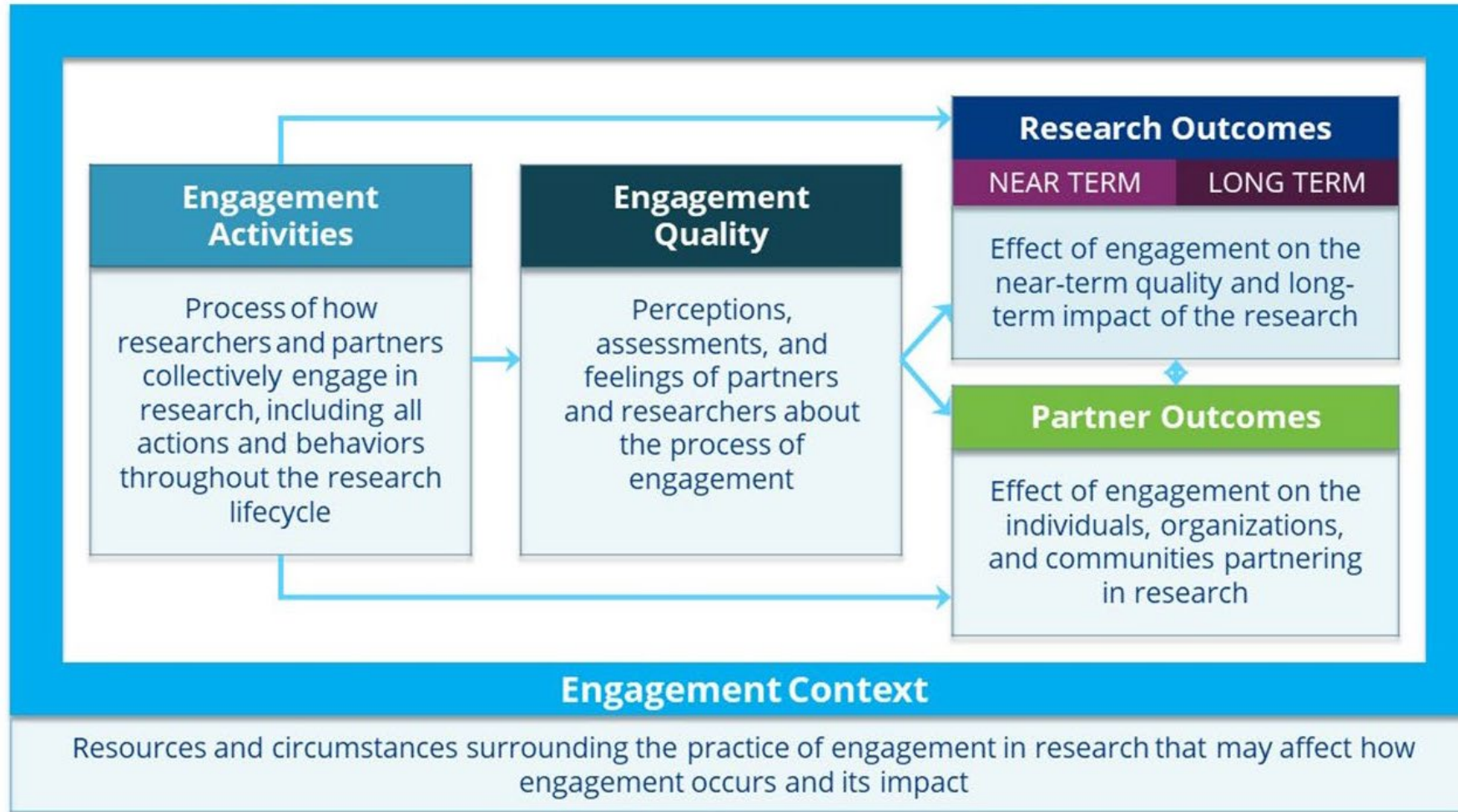


It often involves partnerships and coalitions that help mobilize resources and influence systems, change relationships among partners, and serve as catalysts for changing policies, programs, and practices.”

Why Do Stakeholder Engaged Research?

- Ensure research is patient/community centered
 - *Non-academic stakeholders provide unique perspectives on needs*
- Increase relevance to non-academic stakeholders
 - *patients, communities, policy makers*
- Supports sustainability of interventions post-funding
- Builds capacity and trust among all stakeholders
- Leverage existing resources within the community
- Reciprocal relationship between researchers and non-academic stakeholders
- Evidence-based approach for addressing health disparities

Engagement in Research: Theory of Action



NAME	DOMAIN	NUMBER OF ITEMS	SCORING/ INTERPRETATION	VALIDATION (IF APPLICABLE)
Mainous Trust in Medical Researchers [10]	Trust in medical researchers	12	Score ranging from 0 to 48; higher values indicate higher trust	Cronbach's alpha = 0.84
Hall Trust in Medical Researchers [11]	Trust in medical researchers	12	Score ranging from 0 to 100; higher values indicate higher trust	Cronbach's alpha = 0.87. Factor model consists of 1 factor.
Survey of community engagement [12]	Community engagement	3 categories; 25 items	Average score ranging from 1 to 7; higher scores indicate higher engagement	n/a
Partnership Assessment In community-based Research (PAIR) [13]	Evaluates key dimensions of researchers and community member partnerships	5 dimensions; 31 items	Average score ranging from 1 to 5; higher scores indicate higher engagement	Content validation (literature review, experts, cognitive interviews)
Community Engagement Research Index (CERI) [14]	Community engagement in research	12	Sum score ranging from 4 to 12; higher scores indicate higher engagement	Face validity (items identified by interview participants), content validity (items based on previously collected qualitative data)
Coalition Self-Assessment Survey (CSAS) trust sub-scale	Trust within coalition	7	Average score ranging from 1 to 4; higher scores indicate higher trust	No validation data, but used across several projects

NAME	DOMAIN	NUMBER OF ITEMS	SCORING/ INTERPRETATION	VALIDATION (IF APPLICABLE)
Partnership Self-Assessment Tool (PSAT) – Leadership	Partnership leadership	11	Average score ranging from 1 to 5, rounded to 0.1; higher scores indicate better leadership	According to the National Collaborating Centre for Methods and Tools (NCCMT), the PSAT tool has been evaluated, validity properties meet accepted standards, and reliability properties meet accepted standards. They gave the tool a ‘strong’ methodological rating.
Partnership Self-Assessment Tool (PSAT) – Efficiency	Partnership Efficiency	3	Average score ranging from 1 to 5, rounded to 0.1; higher scores indicate better efficiency	
Partnership Self-Assessment Tool (PSAT) – Administration/ Management	Partnership administration/ management	9	Average score ranging from 1 to 5, rounded to 0.1; higher scores indicate better administration/ management	
Partnership Self-Assessment Tool (PSAT) – nonfinancial resources	Partnership nonfinancial resources	6	Average score ranging from 1 to 5, rounded to 0.1; higher scores indicate has resources	
Partnership Self-Assessment Tool (PSAT) – financial other capital resources	Partnership financial other capital resources	3	Average score ranging from 1 to 5, rounded to 0.1; higher scores indicate has resources	
Wilder Collaboration Factors Inventory	Collaboration evaluation	6 dimensions, 20 factors, 40 items	Average score ranging from 1 to 5 with dimensions equally weighted; higher scores indicate higher collaboration	Reliability varied for dimensions (alpha 0.50 – 0.93) [19]

Why Measure Partner Engagement?



The extent to which stakeholders in research partnerships *feel engaged* has not received sufficient attention.



It is important to understand:

How engagement level in a partnership is developing.

To what extent engagement level is a predictor of outcomes in the larger study.

Systematic Review to Identify Measures



Started by thinking that such measures existed and that they had properties that were understood



Found that lots of people had measured something



But really did not know what they had measured



Field was “not very strong methodologically”

Existing Measures Came in Two Camps


- One, in which investigators simply counted the attendance in various events and activities, and assumed engagement
 - *Example: Number of people who attended a board meeting or community meeting*
- Two, in which investigators measured some construct that was possibly related to engagement
 - *Example: Degree to which participants felt comfortable sharing their thoughts and opinions*
- Neither way has been validated or corroborated
- Mostly not examined in relation to outcomes or progress in project
- Not tracked over time

METHODOLOGY

Open Access



Construct validation of the Research Engagement Survey Tool (REST)

Melody S. Goodman^{1*} , Nicole Ackermann², Zoé Haskell-Craig¹, Sherrill Jackson³, Deborah J. Bowen⁴ and Vetta L. Sanders Thompson²

Abstract

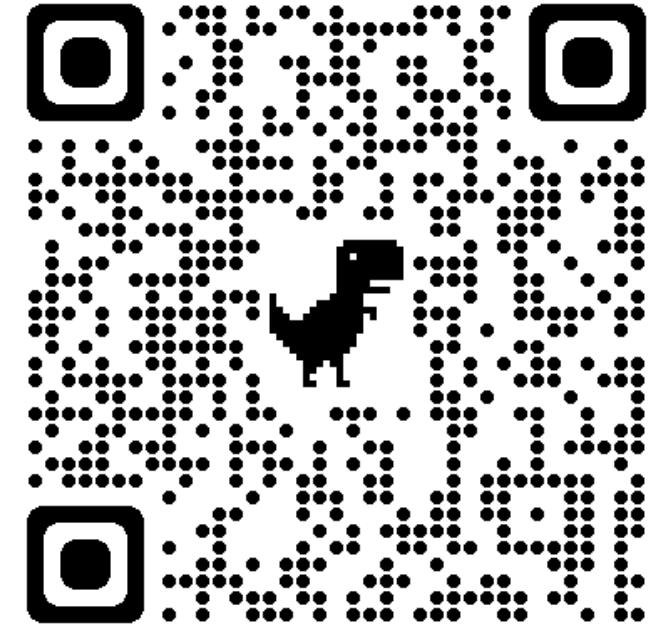
Background: The Research Engagement Survey Tool (REST) was developed to examine the level of partner (e.g., patients, caregivers, advocates, clinicians, community members) engagement in research studies. The REST is aligned with eight engagement principles based on the literature and consensus reached through a five round Delphi process. Each of the engagement principles has three-five corresponding items that are assessed on two Likert type scales quantity (how often: never, rarely, sometimes, often, always, not applicable) and quality (how well: poor, fair, good, very good, excellent, not applicable). We conducted a comprehensive validation of the REST. Despite the importance of partner engagement in research, currently no gold standard measure exists.

Methods: Multiple strategies were employed to validate the REST. Here, we examine the internal consistency of items for each of the eight engagement principles. In addition, we examine the convergent validity of the comprehensive (32-item) REST with other measures (e.g., medical mistrust, Community Engagement in Research Index, Partnership Self-Assessment Tool, Wilder collaboration inventory, Partnership Assessment In community-based Research). We propose two scoring approaches for the REST; one aligned with the engagement principles and the other aligned with levels of community engagement: (1) outreach and education, (2) consultation, (3) cooperation, (4) collaboration, and (5) partnership.

Results: The REST has strong internal consistency (Cronbach's alpha > 0.75) for each of the eight engagement principals measured on both scales (quality and quantity). The REST had negligible (e.g., medical mistrust, community engagement in research index), low (e.g., Partnership Assessment In community-based Research, Partnership Self-Assessment Tool- benefits scale), and moderate (e.g., Wilder collaboration inventory, Partnership Self-Assessment Tool- synergy scale) statistically significant correlations with other measures based on the Spearman rank correlation coefficient. These results suggest the REST is measuring something similar and correlated to the existing measures, but it captures a different construct (perceived research engagement).

Conclusions: The REST is a valid and reliable tool to assess research engagement of community health stakeholders in the research process. Valid tools to assess research engagement are necessary to examine the impact of engagement on the scientific process and scientific discovery and move the field of stakeholder engagement from best practices and lessons learned to evidence-based approaches based on empirical data.

Keywords: Research engagement, Stakeholder engagement, Validation, Survey measure, Construct validation, Convergent validity, Internal consistency



Source: Goodman, M.S., Ackermann, N., Haskell-Craig, Z. et al. Construct validation of the Research Engagement Survey Tool (REST). *Res Involv Engagem* 8, 26 (2022).
<https://doi.org/10.1186/s40900-022-00360-y>

Strategies of community engagement in research: definitions and classifications

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Abstract

Engagement activities are defined along a continuum that analyzes and represents nonacademic stakeholder activities and interactions with academic researchers. Proposed continua begin with none to limited stakeholder inclusion and input into research and continue with descriptions of increasing presence, input, and participation in decision-making. Despite some agreement in the literature, development of consistent terminology and definitions has been recommended to promote the common understanding of strategies in engaged research. This paper sought to develop and understand classifications and definitions of community-engaged research that can serve as the foundation of a measure of engaged research that permits comparisons among engagement strategies and the outcomes that they produce in health- and healthcare-related research studies. Data on academic and stakeholder perceptions and understandings of classifications and definitions were obtained using Delphi process ($N = 19$) via online and face-to-face survey and cognitive response interviews ($N = 16$). Participants suggested the need for more nuanced understanding of engagement along portions of the continuum, with active involvement and decision-making as engagement progressed. Cognitive interview responses suggested that outreach and education is a more advanced

Implications

Practice: It is possible for researchers and stakeholders to clarify terminology so that roles, participation, and benefits are clear at each level of community engagement along the continuum.

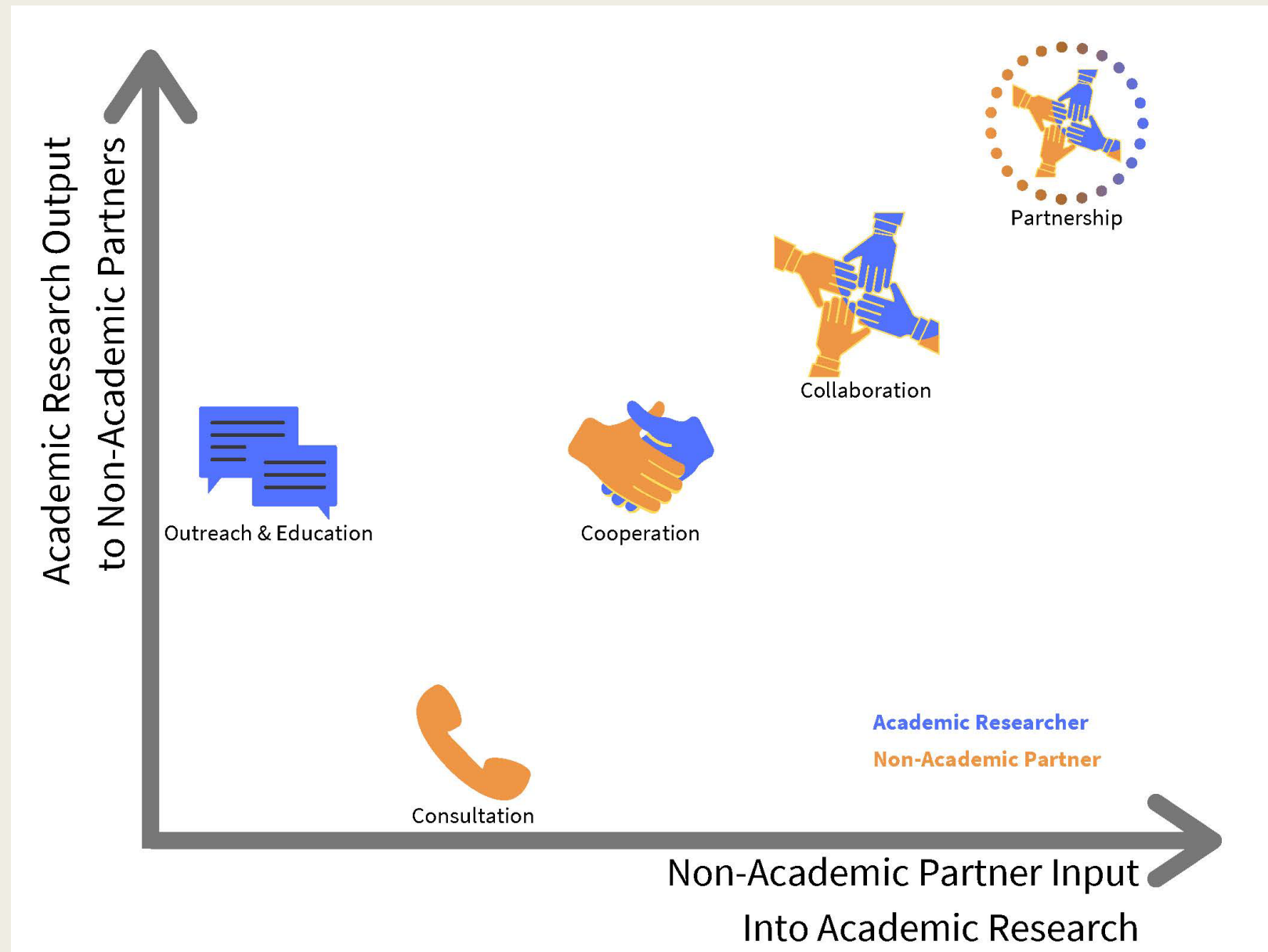
Policy: Policymakers who want to encourage community-engaged research must consider similarities and differences that may emerge in community and academic perceptions of community-engaged research.

Research: Future research is needed to clarify the understanding and depiction of community engagement activities and strategies that guide measure development.

was formed, composed of individuals from the



Categories of Partner Engagement in Research



Source: Sanders Thompson, VL., Ackermann N, Bauer, KL, Bowen, DJ, Goodman MS. Strategies of community engagement in research: definitions and classifications, *Translational Behavioral Medicine*, , ibaa042, <https://doi.org/10.1093/tbm/ibaa042>

All I really need to know....I learned in Kindergarten

Wisdom was not at the
top of the graduate
school mountain.

Share everything

Play fair

Don't hit people

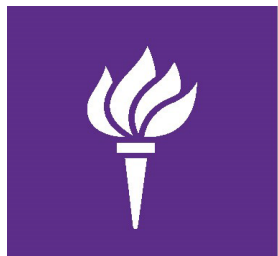
Put things back where
you found them

Clean up your own mess

Don't take things that
aren't yours

Say you're sorry when
you hurt somebody

And it is still true, no
matter how old you are,
when you go out in the
world, it is best to hold
hands and stick together



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Appendix References

Name	Domain	Number of items	Scoring/ interpretation	Validation (if applicable)
Partnership Self-Assessment Tool (PSAT) – Synergy	Partnership synergy	9	Average score ranging from 1 to 5, rounded to 0.1; higher scores indicate higher synergy	According to the National Collaborating Centre for Methods and Tools (NCCMT), the PSAT tool has been evaluated, validity properties meet accepted standards, and reliability properties meet accepted standards. They gave the tool a ‘strong’ methodological rating.
Partnership Self-Assessment Tool (PSAT) – decision making	Partnership decision making	3	Average score ranging from 1 to 5, rounded to 0.1; higher scores indicate better decision making	
Partnership Self-Assessment Tool (PSAT) – benefits	Partnership benefits	11	Percentage score (out of nonmissing items); higher score indicates more benefits	
Partnership self-assessment tool (PSAT) – Drawbacks	Partnership drawbacks	6	Percentage score (out of nonmissing items); higher score indicates more drawbacks	
Partnership Self-Assessment Tool (PSAT) – comparing benefits and drawbacks	Comparing benefits and drawbacks	1	1='Drawbacks greatly exceed the benefits' to 5='Benefits greatly exceed the drawbacks'	
Partnership Self-Assessment Tool (PSAT) – satisfaction	Partnership satisfaction	5	Average score ranging from 1 to 5, rounded to 0.1; higher scores indicate higher satisfaction	

Comparison Measures

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REVIEW

Systematic Review of Quantitative Measures of Stakeholder Engagement

DJ Bowen^{1,*}, T Hyams¹, M Goodman², KM West¹, J Harris-Wai³ and J-H Yu⁴

INTRODUCTION

Stakeholder engagement in research has received increasing attention in recent years.^{1,2} The term “stakeholder engagement” refers to the process of meaningful involvement of those who are engaged in making decisions about programs.³ Engaging members of the target population is often key to improving the relevance of the issues studied, the procedures used for study, and the interpretation of outcomes of research studies, health promotion activities, and disease prevention initiatives.^{4–6} The utility of stakeholder engagement has been well established in the literature,^{7–9} but there are few examples of measurement and evaluation of the degree to which stakeholders are engaged in these activities and the impact of engagement on positive outcomes. These types of evaluations have been limited in scope, and largely focused on qualitative approaches.^{10–14} Qualitative methods cannot be easily compared across programs or institutions.¹⁵

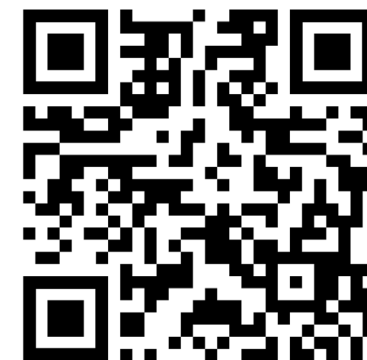
drafting or revision of the article, and (3) approval of the final version.

Search methods

We searched the peer-reviewed literature using two electronic bibliographic databases: PubMed (web-based) and the Web of Science (web-based). These database searches for all years until 2013 were conducted between July and September 2014. The 2014 search was conducted in January 2016.

Phase I: Searching the literature

With assistance from a reference librarian, we generated a master list of search terms to use with both databases. The following Medical Subject Headings (MeSH) terms were selected: *stakeholder engagement*, *community engagement*, *community engaged research*. These terms were then



EVALUATING COMMUNITY ENGAGEMENT IN RESEARCH: QUANTITATIVE MEASURE DEVELOPMENT

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Although the importance of community engagement in research has been previously established, there are few evidence-based approaches for measuring the level of community engagement in research projects. A quantitative community engagement measure was developed, aligned with 11 engagement principles (EPs) previously established in the literature. The measure has 96 Likert response items; 3–5 quality items and 3–5 quantity items measure each EP. Cronbach's alpha is used to examine the internal consistency of items that measure a single EP. Every EP item group had a Cronbach's alpha > .85, which indicates strong internal consistency for



RESEARCH ARTICLE

Content validation of a quantitative stakeholder engagement measure

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Abstract

Aim: Using a stakeholder-engaged approach, this study conducted content validation and item reduction of a quantitative measure of research engagement.

Methods: A five-round modified Delphi process was used to reach consensus on items. Rounds 1–3 and 5 were conducted using web-based surveys. Round 4 consisted of a 2-day, in-person meeting. Delphi panelists received individualized reports outlining individual and aggregate group responses after rounds 1–3.

Results: Over the five-round process, items were added, dropped, modified, and moved from one engagement principle to another. The number of items was reduced from 48 to 32, with three to five items corresponding to eight engagement principles.

Conclusions: Research that develops standardized, reliable, and accurate measures to assess stakeholder engagement is essential to understanding the impact of engagement on



RESEARCH ARTICLE

Community partners' responses to items assessing stakeholder engagement: Cognitive response testing in measure development

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Abstract

Background

Despite recognition of the importance of stakeholder input into research, there is a lack of validated measures to assess how well constituencies are engaged and their input integrated into research design. Measurement theory suggests that a community engagement measure should use clear and simple language and capture important components of underlying constructs, resulting in a valid measure that is accessible to a broad audience.

Objective

The primary objective of this study was to evaluate how community members understood and responded to a measure of community engagement developed to be reliable, valid, easily administered, and broadly usable.

Method

Cognitive response interviews were completed, during which participants described their reactions to items and how they processed them. Participants were asked to interpret item meaning, paraphrase items, and identify difficult or problematic terms and phrases, as well as provide any concerns with response options while responding to 16 of 32 survey items.

Results

The results of the cognitive response interviews of participants (N = 16) suggest concerns about plain language and literacy, clarity of question focus, and the lack of context clues to facilitate processing in response to items querying research experience. Minimal concerns were related to response options. Participants suggested changes in words and terms, as well as item structure.

OPEN ACCESS

Citation: Thompson VLS, Leahy N, Ackermann N, Bowen DJ, Goodman MS (2020) Community partners' responses to items assessing stakeholder engagement: Cognitive response testing in measure development. PLOS ONE 15(11): e0241839. <https://doi.org/10.1371/journal.pone.0241839>

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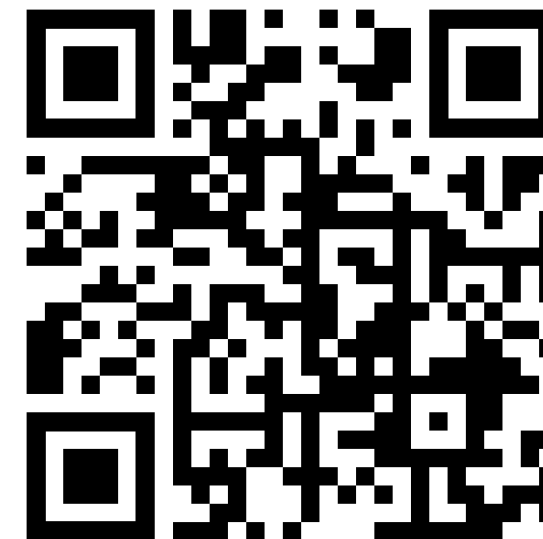
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Data Availability Statement: Data are available in ICPSR: <https://www.icpsr.org/online/>



Source: Thompson VLS, Leahy N, Ackermann N, Bowen DJ, Goodman MS (2020) Community partners' responses to items assessing stakeholder engagement: Cognitive response testing in measure development. PLOS ONE 15(11): e0241839. <https://doi.org/10.1371/journal.pone.0241839>

Reaching Consensus on Principles of Stakeholder Engagement in Research

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Submitted 10 October 2018, revised 27 March 2019, accepted 28 August 2019

Abstract

Background: Stakeholder-engaged research is an umbrella term for the types of research that have community, patient, and/or stakeholder engagement, feedback, and bidirectional communication as approaches used in the research process. The level of stakeholder engagement across studies can vary greatly, from minimal engagement to fully collaborative partnerships.

Objectives: To present the process of reaching consensus among stakeholder and academic experts on the stakeholder engagement principles (EPs) and to identify definitions for each principle.

Methods: We convened 19 national experts, 18 of whom remained engaged in a five-round Delphi process. The Delphi panel consisted of a broad range of stakeholders (e.g., patients, caregivers, advocacy groups, clinicians, researchers). We used web-based surveys for most rounds (1–3 and 5) and an in-person meeting for round 4. Panelists evaluated EP titles and definitions with a goal of reaching consensus (>80% agreement). Panelists' comments guided modifications, with greater weight given to non-academic stakeholder input.

Conclusions: EP titles and definitions were modified over five Delphi rounds. The panel reached consensus on eight EPs (dropping four, modifying four, and adding one) and corresponding definitions. The Delphi process allowed for a stakeholder-engaged approach to methodological research. Stakeholder engagement in research is time consuming and requires greater effort but may yield a better, more relevant outcome than more traditional scientist-only processes. This stakeholder-engaged process of reaching consensus on EPs and definitions provides a key initial step for the content validation of a survey tool to examine the level of stakeholder engagement in research studies.

Keywords

Community health partnerships, evaluation studies, outcome and process assessment (health care), community-based participatory research, process issues



A Study Examining the Usefulness of a New Measure of Research Engagement

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INTRODUCTION: Engagement of relevant stakeholders' ideas, opinions, and concerns is critical to the success of modern research projects. We have developed a tool to measure stakeholder engagement, called the Research Engagement Survey Tool (REST). The purpose of this paper is to present the implementation and uptake of the stakeholder engagement measure REST among research teams, including the assessment of barriers and facilitating factors for use of the new research engagement measure in practice.

METHODS: In this implementation study, project team members participated in baseline and follow-up web-based surveys. Web-based interviews were conducted with a subset of project teams that implemented the REST. On the baseline survey, project teams were asked to provide details about up to three ongoing or recently completed projects, were asked if they agreed with compensation for REST completion, and were asked if they would like to send the survey to stakeholders or would prefer our project team to email their project stake-

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INTRODUCTION

Engagement of relevant stakeholders' (e.g., patients and their families, clinicians, health systems, policy makers, community organizations, advocacy groups) ideas, opinions, and concerns is critical to the success of modern research projects. To facilitate acceptance of the important role that stakeholder engagement plays in rigorous science, we must evaluate its impact on research development, implementation, and outcomes [1]. We have developed a tool to measure stakeholder engagement, called the Research Engagement Survey Tool (REST) [2, 3]. The utilization of REST as an evaluation tool depends on its dissemination into the hands of research teams and incorporation in the evaluation





Source: Bowen, D.J., Ackermann, N., Thompson, V.S. et al. A Study Examining the Usefulness of a New Measure of Research Engagement. *J GEN INTERN MED* 37 (Suppl 1), 50–56 (2022).
<https://doi.org/10.1007/s11606-021-06993-1>



Article

Development and Validation of a Brief Version of the Research Engagement Survey Tool

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Abstract: The Research Engagement Survey Tool (REST) examines the level of partner engagement in research studies. This study used mixed methods, including web-based surveys (N = 336), a modified Delphi process (N = 18), and cognitive response interviews (N = 16), with convenience sampling to develop and validate a short version of the REST. We conducted factor analysis and calculated internal consistency for the condensed REST. We validated the condensed REST against the comprehensive REST. All analyses were carried out on two scales (quality and quantity) based on Likert-type response options. We examined convergent validity with other measures theoretically associated with the REST (e.g., the Community Engagement Research Index and the Partnership Self-Assessment Tool). This study produced a 9-item condensed version of the REST. The condensed REST loads on 1 factor, has high internal consistency (Cronbach's alpha = 0.92 for the quantity scale; 0.94 for the quality scale), is significantly correlated ($\rho = 0.97$; $p < 0.001$ for both scales) with the comprehensive (32-item) REST, and has negligible, low, and moderate correlation with other measures (e.g., the Partnership Assessment In community-based Research, trust in medical researchers, and the Coalition Self-Assessment Survey). Use of the condensed REST will reduce participant burden and time to complete. This standardized and validated quantitative measure is useful to compare engagement across projects or within a project over time.



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