WANDERSMAN CENTER

$R = MC^2$

Readiness

Motivation
Innovation-Specific Capacity
General Capacity

Readiness Briefing Paper
FY 2017- 2018

*R*eadiness *B*uilding *S*ystems
A division of the Wandersman Center
10.16.18

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About Us…

The Wandersman Center is an interdisciplinary team with extensive experience in community psychology, program evaluation, quality improvement, and implementation science. By obtaining grants and contracts from numerous foundations and state and federal agencies, we ensure these concepts are rigorously tested in real-world settings so that they have the maximum benefit for organizational and community-level practitioners. We aim to help programs reach positive outcomes.

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READINESS BUILDING SYSTEMS: 2017-2018 ANNUAL PROGRESS REPORT ON ORGANIZATIONAL READINESS RESEARCH AND PRACTICE

OCTOBER 2018

EXECUTIVE SUMMARY

ORGANIZATIONAL READINESS AND $R=MC^2$

Organizational readiness is a key factor in the ultimate success of innovations (new programs, policies, practices or process), policy change, etc.) that organizations implement. Through our work over many years, we have grouped three key components of readiness (general capacity, innovation-specific capacity, and motivation) into an easy-to-remember heuristic:

$$R=MC^2$$

In this heuristic, readiness (R) is equal to motivation (M) x general capacity (C) x innovation-specific capacity (C). Our work on organizational readiness and the $R=MC^2$ model is centered on five main principles of organizational readiness:

1. Readiness consists of multiple concepts.
2. Readiness is innovation- specific (tied to a specific process, program, policy, or practice)
3. Readiness is important throughout the implementation cycle (e.g., adoption, planning, implementation, sustainability).
4. Readiness is important for outcomes across multiple system levels (e.g., individual/organization/community/state/nation).
5. Readiness is a dynamic concept and can be enhanced.

The major aim of this report is to present our progress in the strategic development of our readiness work by reviewing: a) assessment and tool development, b) research and evaluation, and c) practical application. These are integrated into *The Readiness Building System (RBS)* that includes a focus on evidence-based change management strategies to increase readiness.

Who We Are

The Wandersman Center is an interdisciplinary team with extensive experience in community psychology, program evaluation, quality improvement, implementation science, and applied research.

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Brief Overview of Our Work

Our work on organizational readiness includes three major areas: Assessment and Tool Development, Research and Evaluation, and Practical Application. These are represented in Figure 1 as a Venn diagram to show the synergy at the intersection of measurement, research, and practice. Throughout this report, we use examples from current projects to share key components in these areas[1].

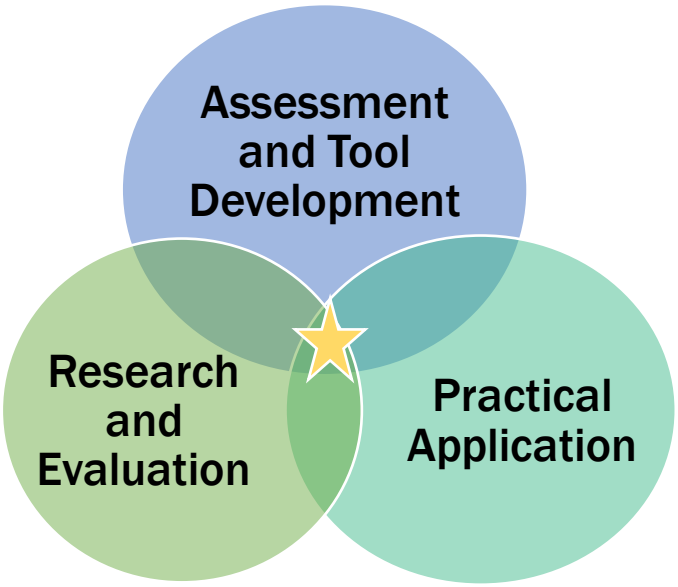

Figure 1. Strategic Readiness Domains

Assessment and Tool Development

We have developed a set of methods, measures, and metrics to assess organizational readiness throughout the implementation life cycle. As a way of orienting potential participants in the RBS, we use "readiness thinking" tools to introduce the $R=MC^2$ heuristic. To assess readiness, we have several measures such as the Readiness Diagnostic Tool (RDT), the Activity Readiness Tool (ART), and an Innovation-Configuration Map (IC-Map) process. Additionally, our group is continuing to develop shorter "pulse-check" surveys as well as analytic models that synthesize qualitative readiness data.

Research and Evaluation

Our research has primarily focused on promoting and measuring changes in readiness over time. Because various subcomponents comprise each of the three readiness components, our measurement processes provide specific information about changes in the subcomponents. For example, after conducting a Delphi process in a community health setting, we found that there are important differences in readiness subcomponents at different stages of implementation. We are replicating these findings with a variety of additional stakeholder groups which will help to generalize the findings to other settings. We have also assessed similarities and differences in the readiness subcomponents across various staffing positions (e.g., leaders, middle managers, front-line staff).

[1] We are grateful to our collaborating organizations and participants that have enabled us to learn from this work and move it forward. Several of these include the American Institutes for Research (AIR), the Centers for Disease Control and Prevention's Office on Smoking and Health (CDC OSH), the Institute for Healthcare Improvement (IHI), the National Institutes of Justice (NIJ), the RAND Corporation, and the United States Department of Defense (US DoD).

PRACTICAL APPLICATION

To promote the practical application of this work, we collaborate with key stakeholders to assess and then build readiness. We have found that many people are eager to begin a readiness assessment process because they understand that lower levels of readiness affect the quality of implementation→ short-term outcomes→impacts. Below, we briefly describe how we present the results of the readiness assessments and outline our model for building readiness.

***Practical Application*: Presentation of Findings.** Interpreting the results of a readiness assessment tool, such as the RDT, is an important component of the readiness process; it allows the user to better understand the readiness results. We use multiple methods to visualize assessment data, including radar diagrams, bar graphs, and stacked bar graphs. However, the most commonly used option to visualize data is the use of density (or "heat") maps. These color-coded figures show scores that are relative to one another (darker colors are indicative of higher (or lower) values). Overall, stakeholders appreciate these visuals because they are able to quickly and intuitively understand strengths and challenges related to readiness.

***Practical Application*: Building Readiness.** Readiness assessments often highlight a need to build readiness to ensure quality implementation. Therefore, we have compiled a change management database of strategies that draws from multiple literatures: implementation science, improvement science, social psychology, education, and business. One goal is to match change management strategies to specific subcomponents in order to improve readiness. Organizations vary in what they want to build readiness for. Many are very specific about the new innovation (e.g., program, practice, etc.) such as building readiness to use evidence-based programs or facilitating significant changes in the work flow of a health care site.

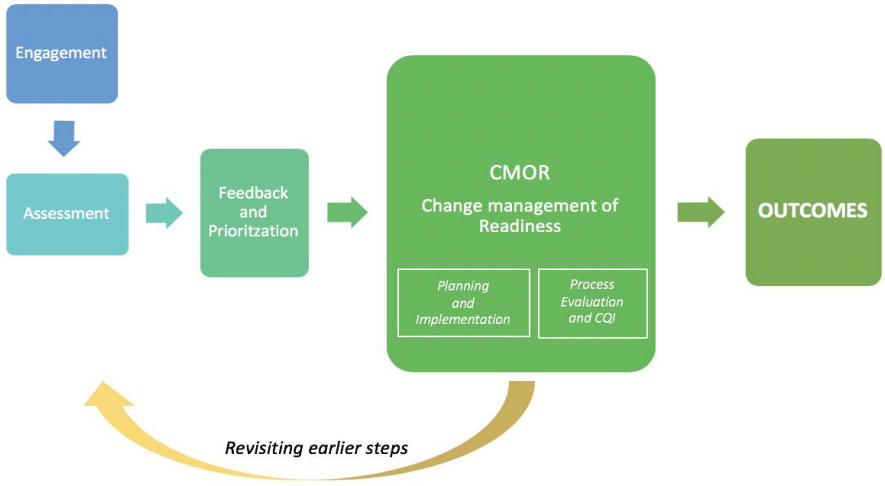

Figure 2. The Readiness Building System with the CMOR model

Figure 2 summarizes the typical readiness building steps. First, an organization engages with the RBS, followed by a readiness assessment and individualized site report that provides scores in areas of low and high motivation and capacities. The feedback and prioritization process highlight the readiness subcomponents where improvements may make the most significant impacts. Change Management of Organizational Readiness (CMOR) strategies are integrated into a technical assistance readiness-building plan that is collaboratively developed, implemented, and

evaluated—aimed at creating sustained and measurable change within an organization. We have begun to implement CMOR in several projects, including a large-scale project with the United States Air Force that has over 100 collaborating sites.

LOOKING AHEAD

Through grants and contracts with various organizations, agencies, and foundations, we are rigorously testing RBS in many settings to obtain optimal benefit for organizational and community-level practitioners. In Fall 2018, we began several new projects that will allow us to:

- Study how the components and subcomponents of readiness apply to policy change
- Explore the interrelationships of the subcomponents of readiness
- Use a readiness lens in the evaluation of training and technical assistance
- Build and evaluate a systematic approach to CMOR

To date, evidence strongly indicates that a focus on organizational readiness can improve the quality with which work is implemented. Although we have a wide range of projects in our portfolio, we continue to seek new collaborative opportunities to apply a readiness lens to multiple levels (e.g., individual, team, organization, community, state, nation).

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The Wandersman Center and the RBS

The Wandersman Center is developing a comprehensive system of "readiness to implement innovative programs/practices", The Readiness Building System (RBS), that includes a focus on evidence-based change management strategies for organizations. The purpose of this document is to describe the current system of processes and tools, share relevant research to date, and highlight next steps for moving forward.

Through decades of our academic and practice work in the areas of program development, implementation science, and evaluation, we concluded that organizational readiness is a key factor in the ultimate success of programs and related activities (e.g., practices, policy change, etc.). We compiled the three key elements of readiness (general capacity, innovation-specific capacity, and motivation) into an easy-to-remember heuristic.

***R**eadiness = **M**otivation ^{x} Innovation-Specific **C**apacity ^{x} General **C**apacity,*

or,

$$R = MC^2$$

R. The R = MC^2 approach emphasizes the critical importance of organizational willingness (motivation) and ability (capacity) to implement a program, policy, practice or process with quality. We define an 'innovation' as a program, practice, policy or process that is new to a setting. Readiness work can also be applied to existing interventions by simply substituting the word innovation with intervention.

M. There are psychological aspects of any change effort that are important for implementation success. Motivation consists of features of an innovation that contribute to whether people want to do it.

C^2. There are two types of capacity: general and innovation-specific. *General capacities* are the conditions applicable for any innovation. This is everyday functioning of the organization. *Innovation-specific capacities* are the conditions that are necessary to implement a particular innovation. This includes the knowledge and skills needed to do the innovation and the conditions within the organization that facilitate implementation. Several principles of organizational readiness guide our work:

1) To understand readiness, we need to be much more specific about specific aspects of motivation and capacity.
2) Readiness is innovation-specific.
3) Readiness is not static and can be enhanced.
4) Readiness is relevant across multiple system levels (e.g., state, county, community, school, class, student).
5) Readiness is relevant throughout implementation (e.g., initial engagement, implementation, sustainability).

After a brief discussion of our work in relation to these principles, we describe our current portfolio, how we measure organizational readiness and changes over time, interpretation of change scores, and strategies for enhancing organizational readiness. We present examples of our work throughout this briefing paper.

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Premises of Readiness

Our team's research and practical application of readiness in multiple settings has demonstrated several principles of organizational readiness.

1) Readiness consists of multiple concepts.

Readiness is more than being "ready or not." Instead readiness is determined by the three related components—motivation, innovation-specific capacity, and general capacity—that can vary in influence depending on the setting. Each component has a number of subcomponents that provide more detail about an organization's motivation and capacity.

Table 1: The components and subcomponents of readiness.

Motivation	**Degree to which we want the innovation to happen.**
Relative Advantage	This innovation seems better than what we are currently doing.
Compatibility	This innovation fits with how we do things.
Simplicity	This innovation seems simple to use.
Ability to Pilot	Degree to which this innovation can be tested and experimented with.
Observability	Ability to see that this innovation is leading to outcomes.
Priority	Importance of this innovation compared to other things we do.
Innovation-specific Capacity	**What is needed to make this particular innovation happen.**
Innovation-specific Knowledge & Skills	Sufficient abilities to do the innovation.
Champion	A well-connected person who supports and models this innovation.
Supportive Climate	Necessary supports, processes, and resources to enable this innovation.
Inter-organizational Relationships	Relationships between organizations that support this innovation.
Intra-organizational Relationships	Relationships within organization that support this innovation.
General Capacity	**Our overall functioning.**
Culture	Norms and values of how we do things here.
Climate	The feeling of being part of this organization.
Innovativeness	Openness to change in general.
Resource Utilization	Ability to acquire and allocate resources including time, money, effort, and technology.
Leadership	Effectiveness of our leaders.
Internal Operations	Effectiveness at communication and teamwork.
Staff Capacities	Having enough of the right people to get things done.
Process Capacities	Ability to plan, implement, and evaluate.

2) Readiness is innovation-specific.

When thinking about using readiness in a setting, consider this question: What are we ready for? Conditions may be right for one innovation while not being right for another. For example, just because a community coalition is motivated to implement a community walking program does not mean that they are ready to implement a nutrition program, even though they are both related to health and wellness. Therefore, it is necessary to specify the innovation in order to apply $R=MC^2$.

3) Readiness is important throughout the implementation cycle.

When people talk about being ready, it is often used to mean being "ready to begin". In a game of hide and seek, the person who is *it* will call out, "Ready or not; here I come!" and footraces start with: "Ready…set…go!".

However, being ready means more than just being ready to start. The conditions that influence readiness can go up or down throughout implementation. Just because the conditions are ideal for quality work at a certain time, does not necessarily mean that these conditions will be the same a year, or even just a few weeks, later. Consequently, readiness must be considered throughout implementation in order to be successful. An example of changing readiness can be found in the sidebar.

Further along the innovation lifespan, we consider any sustainability effort to be a form of ongoing readiness because it involves maintaining the motivation and capacity to implement an innovation.

The dynamic nature of readiness means that it is applicable and relevant across all stages of implementation: **pre-implementation, adoption, active implementation, and sustainability**[1]. No matter the stage of an innovation's lifespan, there are readiness issues that should be considered.

Readiness in Puerto Rico: Changing conditions

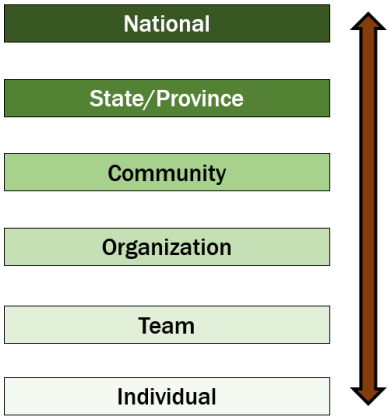
Readiness can change. In our work with the Centers for Disease Control's Office on Smoking and Health, we heard a story from a colleague with the Puerto Rico health department. The stakeholders on the ground were well prepared to implement a healthy air policy that limited where tobacco products could be used. Before the program could be fully rolled out, Hurricane Maria struck the island.
Shortly, the communities' infrastructure was devastated. While there had been sufficient capacity to implement this new policy only a few days beforehand, the organizational climate and structure no longer supported this effort. The motivation for such a program also decreased due to competing demands. There were so many other priorities (restoring electricity, finding potable water), that the advantages of having a clean air program were no longer salient.

This example is extreme, yet illustrates that readiness can change quite dramatically in a short amount of time. There have been many less extreme examples of shifting readiness impacted by phenomena such as staff turnover.

4) Readiness is important for outcomes across multiple system levels.

The concept of readiness is well established in the clinical literature; enhancing readiness is a key aspect of many interventions that help people make changes in their lives. The intervention of Motivational Interviewing[2] involves exploring the rationale for change, then eliciting behavioral indicators of commitment to and progress toward that change.

Readiness also applies to higher system levels: from the individual, to the team/organization/coalition/community/county/state/nation. We have applied $R=MC^2$ across many of these levels. For example, in one project, we assessed coach's readiness to deliver a specific technical assistance (TA) model. In another, we looked at readiness on a state level to develop health equity plans.



Readiness can vary by level

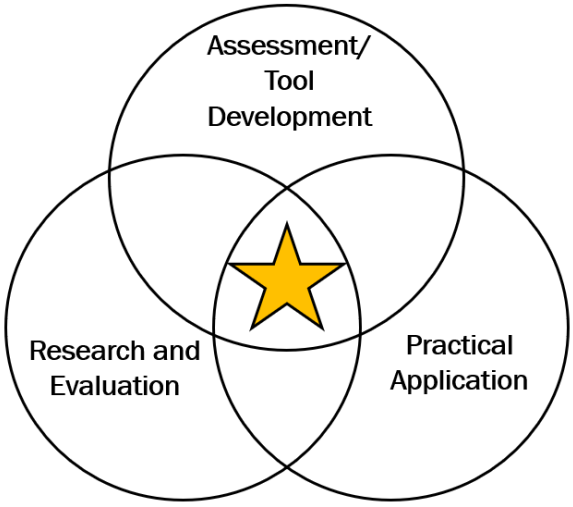
5) Readiness can be built.

Finally, and most important, readiness can be built using customized interventions. By building the conditions that are associated with quality implementation, an organization can increase the likelihood of achieving desired outcomes. Furthermore, these conditions can be preventively addressed to promote the sustainability of implementation so that gains are maintained and decreases in quality are minimized. By understanding the readiness of an organization, a readiness building plan can be developed to increase motivation and capacity.

Overview of Strategic Readiness Directions

This brief discusses the Wandersman Center's progress in setting up a comprehensive learning system to study and build the practical science of readiness. Through research and practice, we have pursued a rigorous line of inquiry, as represented by the three strategic directions in the Venn diagram below.

Assessment/Tool Development. We have been developing a set of measures, methods, and metrics to diagnose and track readiness conditions throughout implementation. This involves creating and refining validated tools and identifying proxy indicators that can help to capture changes over time.



Research and Evaluation. We have been studying how to properly predict outcomes based on different readiness profiles. In diverse settings, different subcomponents may be differentially important. For example, in one setting, establishing the priority behind an initiative may not be as critical because policies require use (e.g., think about an organization's IT department moving everyone

over to a new email system and eliminating the old one). Therefore, we want to know how to emphasize different subcomponents at different stages of an implementation process to better understand how to support interventions.

Practical Application. We have been making the readiness work more practical. This includes evaluating how to build readiness. Given the level of a certain subcomponent, we can use specific strategies to facilitate changes. We are assembling a robust repository of evidence-based interventions to build and sustain readiness, called Change Management of Readiness (CMOR).

We think it is important that readiness concepts become the norm in an organization. This involves the concept of *readiness-thinking* which involves being able to apply $R = MC^2$ intuitively to a variety of different problems. We have been developing readiness reports that contain readiness assessment data for a site that include CMOR strategies on how to build readiness. The reports have simple language and interesting data visualizations to help connect people to the underlying concepts that make readiness useful.

Current Projects. Table 2 outlines our current core project activities (FY 2017-2018).

Table 2: Current Projects.

Large Projects	Aims	Some Highlights
United States Air Force *(with the RAND corporation, funded by the US Department of Defense)*	To support all 93 USAF installations (and 17 Air National Guard installations) in developing an evidence-based process to develop installation-level integrated violence prevention and resilience plans and their implementation.	• Readiness is important throughout the lifespan; not just in innovation selection. • Stakeholders like to consider readiness issues at the beginning of planning. • $R=MC^2$ can align with how the US military approaches "military readiness," especially in soldier/sailor/airmen capability. • We have developed a training of trainers (ToT) system to work on readiness at scale.
CDC-Office on Smoking and Health *(funded by the Robert Wood Johnson Foundation)*	To develop a readiness-based technical assistance (TA) process that helps Project Officers identify and act on readiness issues with their state grantees on developing and implementing tobacco policy. To incorporate readiness concepts into daily program planning and support activities learning across CDC.	• Readiness for *readiness* needs to be built into project implementation. • Readiness thinking (e.g., intuitively considering readiness issues) is highly useful to project officers. • When used in TA, it is helpful to co-design readiness tools with multiple stakeholders. • Readiness can be incorporated into funding announcements & cooperative agreements as a means of improving the quality of applicants.

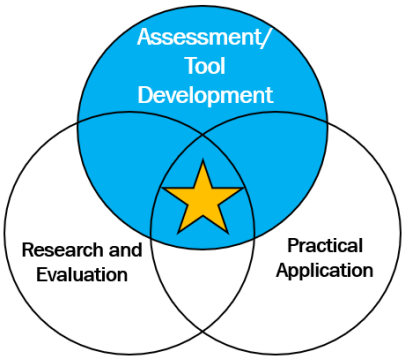
Large Projects		Aims	Some Highlights
California Safe Schools Study *(with the American Institute for Research, funded by National Institute for Justice*		To measure the relationship of readiness across multiple levels (individual, school, district) and across multiple stakeholders (teachers, students, parents) to school safety outcomes.	• Readiness can be used proactively to promote engagement in a project. • Studying readiness at the individual, school and community levels
SCALE *(with the Institute for Healthcare Improvement, funded by the Robert Wood Johnson Foundation)*	Regions of Solution	To facilitate use of improvement techniques to develop community-based wellness, health, and equity.	• Multiple assessment methods can be used to support program planning and implementation (including how to develop Innovation-Configuration Map-based methods) • Readiness building can be integrated into improvement cycles, include implementation staff and community representatives to facilitate spread of ideas to new coalitions.
	States of Solution	To build collaborations within states to develop state-level health equity plans	• A combined Readiness-Relationship model ($R=MC^2$ & Relational Coordination) may be used in promoting change on a broader level.
	Health and Care	To develop a tool to promote health system engagement in population health and motivate systems to seek out support for their transformation process.	• Development of an assessment that gathers information about current status of population health work, while also functioning as a tool to educate respondents about population health readiness

In the following sections, we discuss each of the three strategic directions and identify some specific progress, tools, and ideas that have been generated by our group. We conclude by outlining the frontier of readiness research and practice.

Assessment/ Tool Development

Measurement of Readiness.

We have developed a set of tools that can be used and adapted for many innovations. When we reviewed the existing readiness assessment tools[3] in the field, we did not find measures that captured all the constructs of interest, nor measures that connected to direct, actionable strategies for change. We also noted that there was little guidance on how to adapt the tools to specific innovations, which could pose a challenge to those implementing specialized projects. The ability to adapt tools is very important and we found that two of the three readiness components (motivation and innovation-specific capacities) are connected to the particular innovation under examination.



Readiness Diagnostic Tool (RDT). Our core measure is the Readiness Diagnostic Tool (RDT). It contains about 65 items[4] that cover all readiness subcomponents (see Table 1). The RDT has good construct and criterion validity determined via factor and comparative analyses. Because of our promising findings, we received research funding from the U.S. National Institutes of Health (led by colleagues at the University of Texas Health Sciences Center and the University of South Carolina) to continue to develop the measurement properties of this tool for specialized use in colorectal cancer prevention and school nutrition programming.

The RDT is extremely flexible. We have adapted and used this tool in over 20 settings to date. For example, a version of the RDT, the Readiness for Integrated Care Questionnaire (RIC-Q[5]) was used in health care settings to help integrate behavioral health and primary care services. Another version was used with the United States Air Force to help individual bases understand their readiness to implement specialized prevention and wellness programs.

The RDT in Practice

During the initial engagement period with stakeholders, we often receive feedback that the RDT seems long. They ask, "Can you make it shorter?" The answer is generally, "It depends on what you plan to use it for." Our data have shown that people who take the RDT usually spend between 15 and 20 minutes taking the survey. Additionally, readiness consists of different constructs that contribute to whether there is quality implementation. Therefore, not assessing all these conditions may lead to an incomplete picture that misses key information that could help improve implementation.

As one practitioner reported, if people are not willing to devote 15-20 minutes to fill out a survey about readiness to engage in a new policy, practice or program, then the organization may already have challenges with implementation.

Activity Readiness Tool (ART). Regularly conducting a full RDT assessment may be impractical for many stakeholders. Additionally, many innovations are complicated with multiple elements. For example, integrating behavioral health and primary care may involve hiring and training staff, reconfiguring billing systems, and implementing new assessment and screening tools. The readiness to do each of these specific activities can vary greatly.

Therefore, we have developed Activity Readiness Tools (ARTs) that measure the motivation and innovation-specific capacity for a particular activity within an innovation. We do not measure general capacity in the ART because general capacity, by definition, is applicable across all organizational initiatives. The ART usually contains one item per subcomponent. We have used this tool when it is necessary to get a quick picture of current readiness.

In the ICLP integrated care project, we used ARTs alongside the RDT. Under the support of a TA provider, ART was used with staff working on specific elements of integrated care. Using a Plan-Do-Study-Act process[6], the individual practices developed strategies, respectively, to address readiness subcomponent(s), then re-administered the ART to see whether or not the improvement met its intended goal. This process is illustrated in Figure 1 the below.

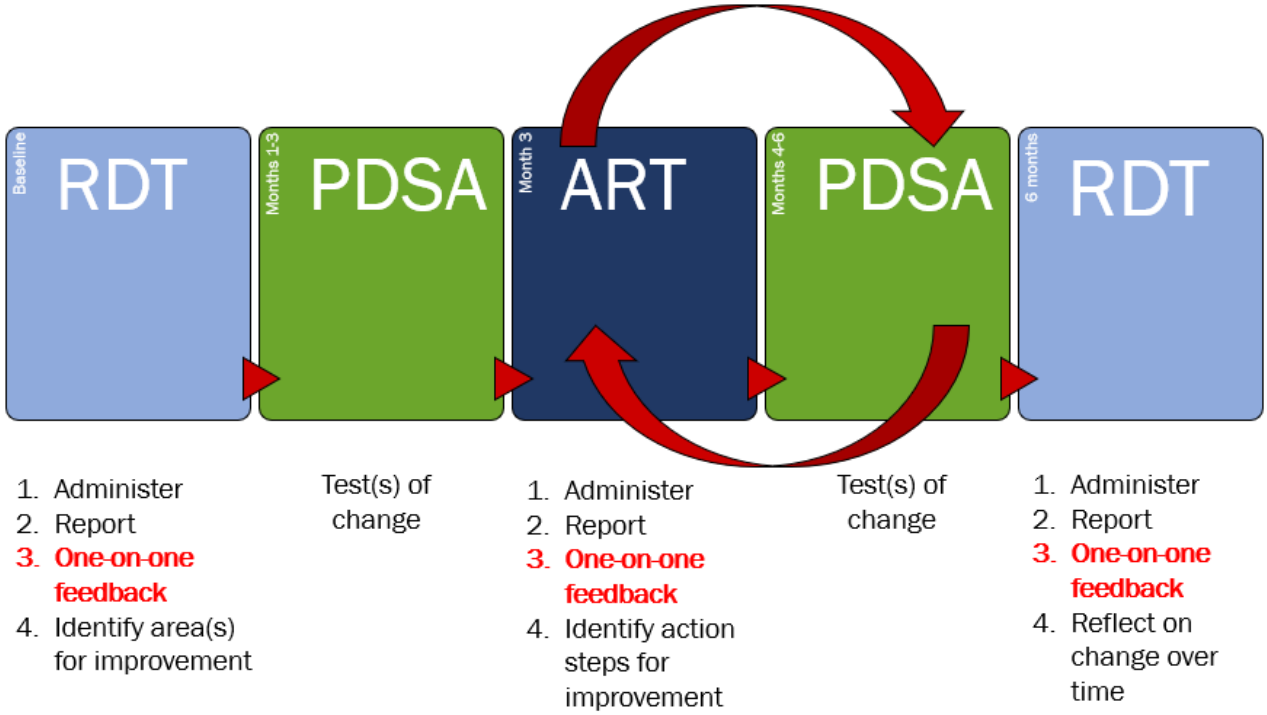


Figure 1: Demonstrates how the RDT was linked to an improvement cycle, then paired with the ART to look at key activities along the way.

The length of the ART is often appealing to many stakeholders who are wary of the burden of data collection. The ART can be administered in approximately five minutes; however, it is not as thorough as our other tools. Therefore, while the ART may not be appropriate for comprehensive planning and monitoring, it has a place when a quick diagnostic is necessary.

Innovation-Configuration Map (IC-Map). For certain situations, we use comprehensive, qualitative descriptions of readiness using an Innovation-Configuration Map (IC-Map) format[7]. The IC-map specifies in words what the different amounts or levels of a capacity or motivation subcomponent look like in practice. This approach has advantages when tied into a comprehensive planning process. First, a precise description of the subcomponent makes it easier for respondents to ground their answer in a real-world example. This can improve the validity and reliability of their responses. Second, seeing descriptions laid out on the same scale provides respondents with a sense of the roadmap to improved readiness. An IC-map can be used for planning because there are precise descriptions of what the next step looks like. An example of items from the SCALE project with IHI can be found below.

33. We have a diverse collaboration with leadership representative of the community.	We want a diverse group of organizations and community residents in our collaboration. We have not begun actively recruiting new organizations or individuals.	We are recruiting community members from different backgrounds into our work. This includes people who have formal power. It also includes community members who speak for the community.	We have both formal leaders and people from populations that are not thriving in our collaboration.	Our collaboration is diverse and reflective of our community in most initiatives (>75%). There are many ways someone can be a leader in our work. We see this diversity as a source of strength. We have influential leaders from relevant sectors. We also have influential leaders from populations who aren't thriving who are able to reach many others.	We have been helping other communities in our region to develop more diverse leadership. Our regional team reflects the diversity of our region.
	0	**1 2 3**	**4 5 6**	**7 8 9**	**10 11 12**
34. We partner with people with lived experience of inequity **to create change.**	We understand community needs by engaging community members through surveys. We have not yet involved them as partners in creating change.	We have involved community members to design change on at least one prior occasion. We use focus groups and community meetings to develop solutions in a few initiatives.	We are partnering with people with lived experience of inequity to design change and create solutions in at least half of our initiatives.	People with lived experience of inequity are involved in every step of the process. This includes design, implementation and evaluation of our community efforts. Many people with lived experience are leaders in our work.	We share our experience of partnering with people with lived experience of inequity with other communities in our region.
	0	**1 2 3**	**4 5 6**	**7 8 9**	**10 11 12**

Figure 2: Example IC-Map items from the SCALE (Community Transformation Map (CTM)). The blue text are hyperlinks to additional resources that can help to support and guide planning processes.

These types of tools offer many benefits for both evaluation and program development purposes. The only drawback is that these are labor-intensive to develop because they require a careful consideration of the design of the specific innovation and the experiences of those taking the survey.

Pulse Checks. We have begun to experiment with short "pulse-check" surveys. These ask between three to five questions about perceptions of readiness on the component level. While these have been useful for observing high level trends over time (because they can be completed very frequently), we have not yet developed methods for translating these results into actionable insights for program leadership.

Qualitative Models. We are starting to develop analytic models that synthesize readiness insights gained from qualitative data. This is done in two ways. First, we have a standard set of qualitative questions on the readiness components and subcomponents. While there is no scoring rubric yet, we have used these in several informal settings to promote engagement in readiness and to gain additional information about the rationale for scores on the RDT.

Second, since much of our observational data is qualitative in nature (from program applications to narrative progress reports), we are developing specialized text mining methods that extract key readiness terms in order to provide an indication of readiness beyond what is captured from our quantitative methods. We are currently applying these methods to interview transcripts from an implementation project and to data from a training evaluation.

Research and Evaluation

Changes in Readiness.

A central premise of the applied readiness research is that readiness can change over time. This has been demonstrated in projects with repeat measurement models. In Table 3 below, we see changes in overall readiness (calculated as the average of the component scores) across several practices building readiness for integrated care.

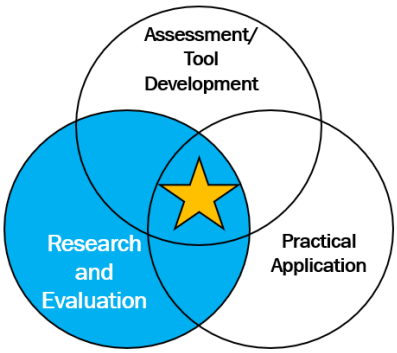


Table 3. Changes in overall readiness scores across project waves.

	Wave 1 Mean	Wave 2 Mean	*Wave1 to Wave2 Change*	*p*	Wave 3 Mean	*Wave2 to Wave3 Change*	*p*	*Overall (Wave1 to Wave3) Change*	*p*
Practice B	4.98	5.58	0.60	0.59	5.46	-0.12	0.87	0.48	0.64
Practice C	5.96	5.22	-0.74	0.16	N/A	N/A	N/A	N/A	N/A
Practice D	5.11	5.24	0.13	0.82	5.09	-0.15	0.78	-0.02	0.96
Practice E	5.77	6.37	0.60	0.02	N/A	N/A	N/A	N/A	N/A
Practice F	5.13	5.51	0.38	0.1	5.61	0.10	0.57	0.48	0.06
Practice G	4.92	5.51	0.59	0.04	N/A	N/A	N/A	N/A	N/A
Practice H	6.96	5.90	-1.06	0.05	6.29	0.39	0.39	-0.67	0.003
Practice J	4.41	5.16	0.75	0.38	5.21	0.05	0.95	0.80	0.22

**green-shaded boxed indicate positive changes. Red-shared boxes indicated negative changes. When the p-value box is shared orange, the change was statistically significant at p<0.05*

Figure 3 below shows scores on the Community Transformation Map (the IC-Map tool co-developed with partners at the IHI). In order to track changes, we observed whether certain capacities associated with core skills (such as improvement, relationship-building, and health equity) skills went up when supported with training and TA. We were able to see growth in many coalitions, but also some decrease (indicating that some skills have been lost over time). This can be expected. There can be many factors that influence whether or not readiness is maintained over time. What is important is that this information can be used by coaches and project managers as an early warning system signaling the need to follow up.

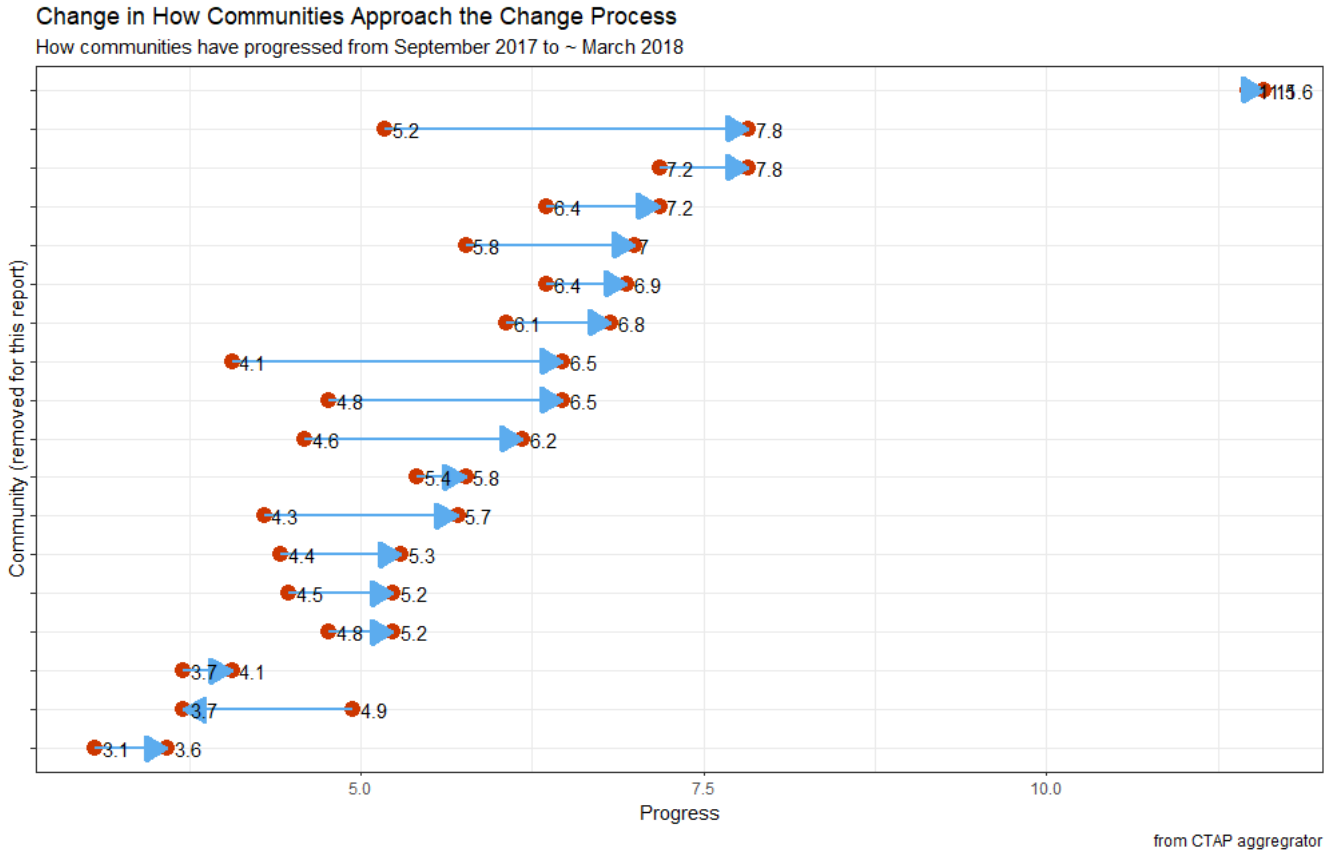


Figure 3: Example scores on the Community Transformation Map. Community names removed in this figure to preserve anonymity. Progress was measured on a 1-12 scale within five different boxes (figure 2) that described the level of capacity or motivation at that level.

What is important and when? We have conducted a pilot Delphi[8] process with a group of community health stakeholders. A Delphi process is a structured consensus-gaining process conducted with content experts. Participants rated whether a subcomponent was important during various implementation stages, and the ease with which it could be changed. Our preliminary data indicated that there is a sequence in which the subcomponents are relatively important. While any conclusions are limited to community health settings, it appears that there are important differences at different stages of implementation.

Table 4: Results of Delphi Process.

Subcomponent		Exploration	Installation	Initial Implementation	Full Implementation
Motivation	Relative Advantage				
	Compatibility				
	Complexity - Simplicity				
	Ability to Pilot				
	Observability				
	Priority				
Innovation-specific capacity	Knowledge, Skills, and Abilities				
	Champion				
	Supportive Climate				
	Inter-organizational Relationships				
General Capacity	Culture				
	Climate				
	Innovativeness				
	Resource Utilization				
	Leadership				
	Internal Operations				
	Staff Capacity				

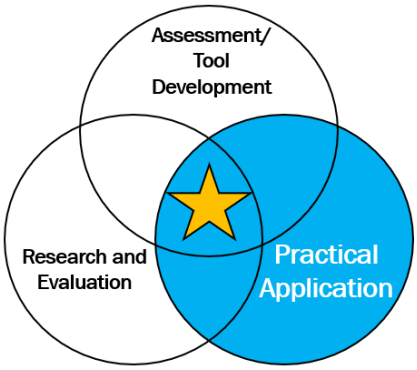
**in this table, the dark green cells represent where there was 80% consensus that a subcomponent was important for that stage of implementation. Where there is a lighter green, there was between 70-79% consensus that the subcomponent was important.*

We received additional research funding to replicate this study with three additional types of stakeholder groups that will provide further research and practical experience about the importance of readiness.

Practical Application

Interpretation of readiness.

Readiness for Readiness Assessments. Before distributing and administering surveys, we have found that it is critical to cultivate commitment and support for a readiness assessment; essentially, building readiness for readiness. This includes providing some background about readiness (e.g., the purpose of the survey and how it would be used) as well as information about the innovation prior to giving the survey to respondents. We have developed a variety of readiness thinking worksheets to orient people to the concepts within the readiness heuristic. This can help to: 1) prepare them for various factors that can impact implementation and 2) set expectations for why readiness information is being considered. An example of a readiness thinking worksheet can be found in the appendix, along with some discussion questions that prompt consideration of readiness issues.



Interpreting the RDT. We use multiple methods to visualize RDT data, including radar diagrams, bar graphs, and stacked bar graphs. Figure 4 below shows respondent *motivation to implement readiness-based technical assistance*. Simply reporting overall scores does not capture the potential variation within a subcomponent. The variation, whether it be each individual response or a boxplot, can indicate where there are inconsistencies about perceived readiness for a specific innovation.

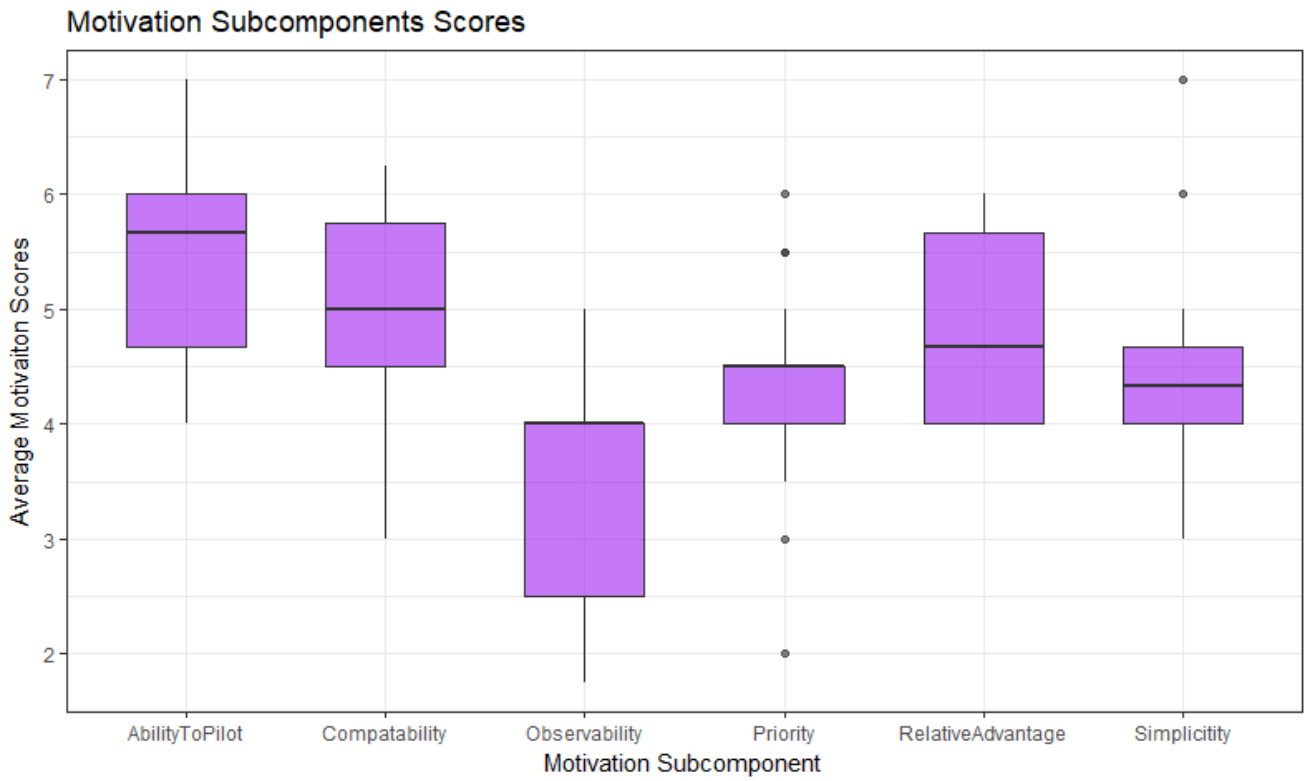


Figure 4: A boxplot, which show the distribution of each subcomponent. The horizontal line in the middle of the boxes is the median value (for observability, the median was 4). The upper and lower edges of the box represent the first and third quartiles respectively. The dots represent outliers.

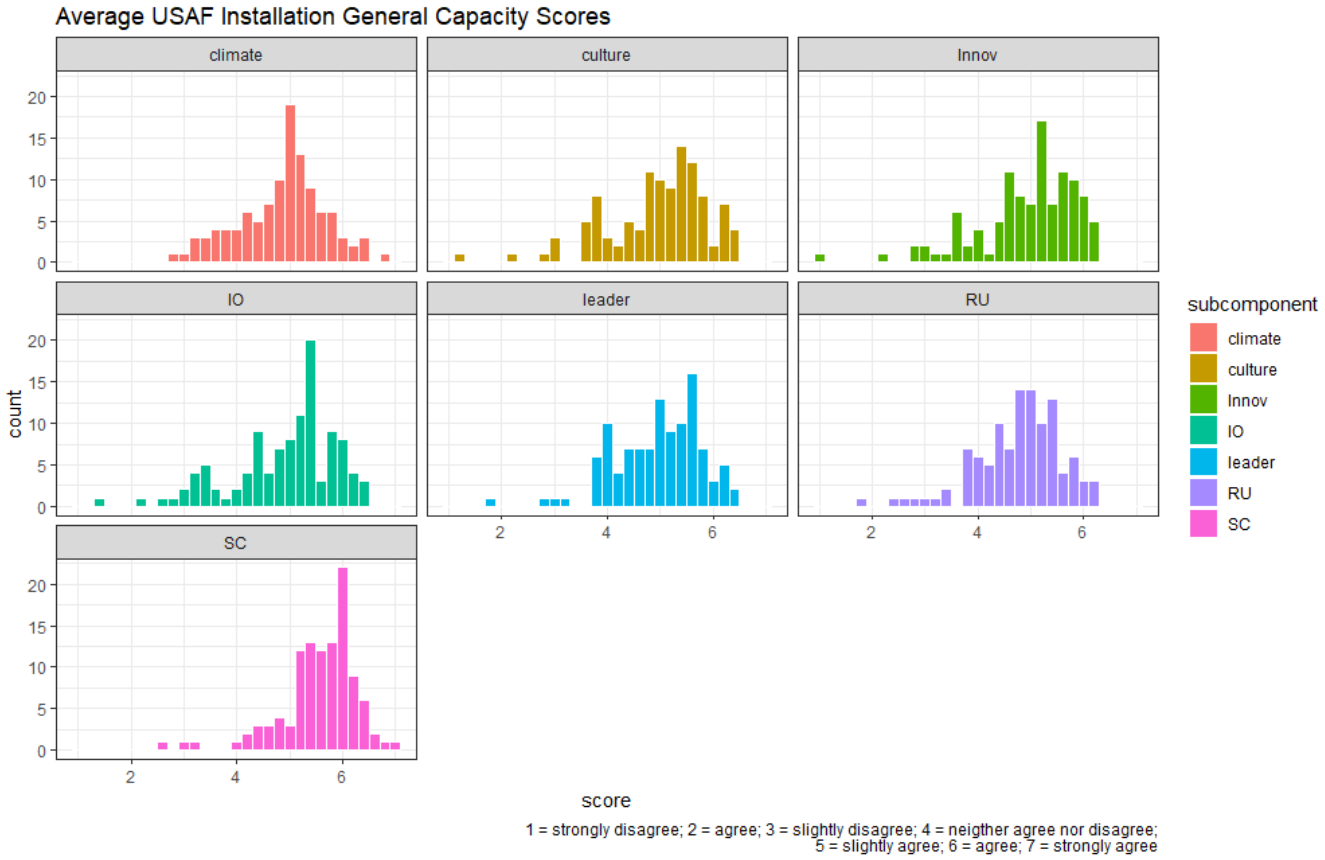


Figure 5: A series of histograms that illustrate the distribution of general capacity subcomponents across the USAF.

The most commonly used option to visualize data has been the use of density (or "heat") maps. These color-coded diagrams show scores that are relative to one another, whereby darker colors are indicative of higher (or lower) values, and lighter colors indicate movement away from maximum/minimum scores. Stakeholders like these visuals because they are able to quickly and intuitively understand strengths and weaknesses. However, there have been challenges with this presentation. First, the scores are relative to one another, and we do not yet have enough empirical data to say what a "sufficient" score would be to predict implementation. Second, since the RMT is a self-report measure, we are capturing respondent's perceptions of their readiness. While heat maps may be useful in single-organization reports, comparing across organizations (as is depicted in Figure 6) may not accurately capture true differences.

Community	Number	Culture	Climate	Structure	Innovativeness	Resource Utilization	Staff Capacity	Leadership	General Capacity
Coalition 1	9	6.94	6.83	7.00	6.94	6.86	6.94	7.00	6.93
Coalition 2	4	6.17	5.94	5.88	6.00	4.94	6.19	6.54	5.95
Coalition 3	2	6.00	6.00	5.50	6.42	5.00	6.13	5.64	5.81
Coalition 4	4	6.25	5.56	5.81	5.25	4.88	6.25	6.46	5.78
Coalition 5	7	5.81	5.68	5.86	5.76	5.18	5.82	6.06	5.74
Coalition 6	7	5.71	5.82	5.71	5.31	4.93	6.14	6.00	5.66
Coalition 7	4	5.46	6.19	5.25	6.08	5.06	5.25	6.04	5.62
Coalition 8	3	5.94	5.75	5.08	5.50	5.17	6.00	5.62	5.58
Coalition 9	6	5.43	5.83	5.63	5.42	4.79	5.83	5.88	5.54
Coalition 10	7	5.93	5.46	5.64	5.48	4.57	5.71	5.45	5.46
Coalition 11	4	5.33	5.56	5.25	5.38	4.44	5.88	5.86	5.38
Coalition 12	11	5.67	5.36	4.93	5.21	5.05	5.60	5.44	5.32
Coalition 13	6	5.67	5.29	5.54	5.25	3.33	5.63	5.76	5.21
Coalition 14	3	5.00	5.00	5.25	5.11	5.00	5.92	5.14	5.20
Coalition 15	5	5.00	5.25	4.45	4.90	4.55	4.70	5.86	4.96
Coalition 16	7	5.62	5.18	4.79	4.86	3.64	4.99	5.53	4.94
Coalition 17	7	4.88	4.80	4.96	5.04	3.82	5.25	5.27	4.86
Coalition 18	4	4.67	4.88	4.38	4.50	4.13	4.69	4.67	4.56

Figure 6: Example of a density ("heat") map

Reporting on item-level data. Several projects have found value in an item-by-item review of the readiness data. This has prompted discussion and specific action about how stakeholders could address the specific content that the readiness assessment measures. We are currently exploring the best way to use the individual items in coaching and TA settings.

Changing Readiness.

We conducted a comprehensive research synthesis on whether readiness could be changed through the provision of support. Specifically, we assessed if readiness can be changed when an organization explicitly tries to change readiness. There are many different types of support in consultative relationships: tools, training, TA, and quality improvement/quality assurance. We screened over 4000 peer reviewed articles, and reviewed and coded just under 300. We found that there is evidence, with varying strengths, that the readiness subcomponents can be changed (table 5).

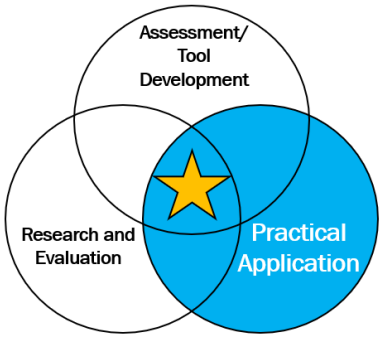


Table 5: Using support strategies to change readiness.

Subcomponent	No Evidence	Minimal Evidence	Limited Evidence	Moderate Evidence	Strong Evidence
Motivation					
Relative Advantage		X			
Compatibility		X			
Complexity		X			
Ability to Pilot** Trialability	X				
Observability			X		
Priority			X		
Innovation-specific capacity					

Subcomponent		No Evidence	Minimal Evidence	Limited Evidence	Moderate Evidence	Strong Evidence
Knowledge, Skills, and Abilities				X		
Champion**		X				
Supportive Climate Implementation Climate Supports				X		
Inter-organizational Relationships	Support and Delivery System		X			
	Between Delivery Systems			X		
General Capacity						
Organizational Culture				X		
Organizational Climate				X		
Organizational Innovativeness				X		
Resource Utilization				X		
Leadership				X		
Organizational Structure					X	
Staff Capacity				X		

**some of the terms in this table reflect terms that we no longer use because we found alternative ways to phrase these that better resonated with stakeholder. We put the original search in a smaller front below our preferred terms.*

***We note that although there was no evidence that trialability and program champion can be changed, this is because the conditions were treated as binary: present or not present in a project. We have since synthesized ample evidence showing that there are ways to make an innovation "more trialable" and way to identify and cultivate champions.*

Change Management of Readiness (CMOR). Once an organization knows its current readiness, it is essential that they be able to intervene in order to build their readiness. We have been developing a change management database of strategies that draws from multiple literatures: implementation science, improvement science, social psychology, education, and the business. Our goal is to match strategies to specific readiness subcomponents so that we can use these strategies to promote changes. Currently, we have identified over 220 unique strategies that can be used to address all readiness subcomponents (see Figure 7).

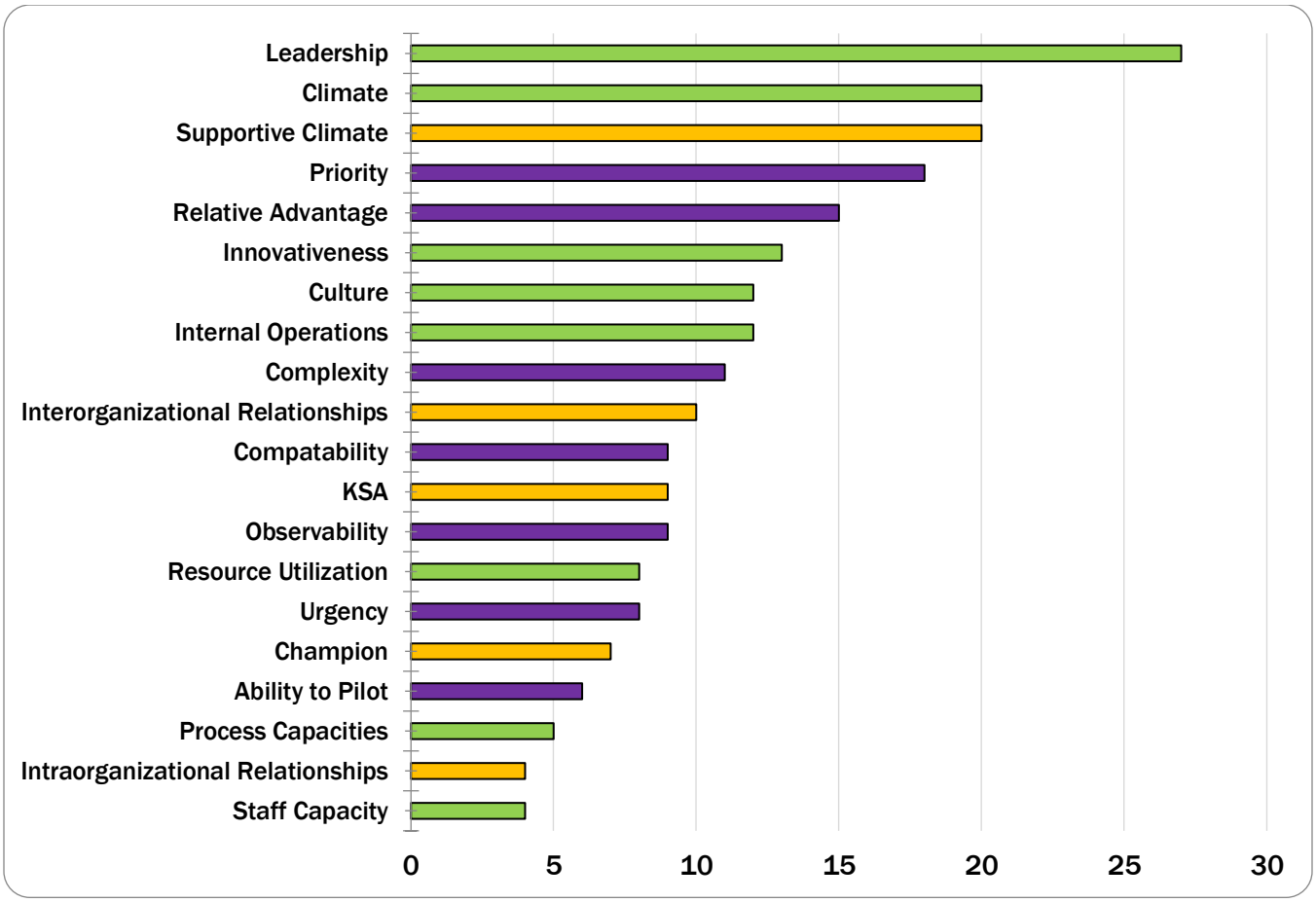


Figure 7: Demonstrates the number of unique strategies we have identified for each subcomponent, color coded by component (general capacity = green, innovation-specific capacity = orange; motivation = purple). We also include "urgency" which is an emerging candidate to potentially be added to the motivation subcomponent.

We are currently embarking on a data reduction strategy to textually identify how much overlap there is between strategies and whether some strategies are useful for more than one subcomponent.

We have begun to implement CMOR in several projects. With CDC-OSH, we administered an RDT to all project officers to assess their current motivation and capacities to implement advanced TA. We then developed a project plan that addressed their deficits by using strategies from the CMOR database. These will be delivered and used with CDC-OSH as part of our ongoing consultative relationship.

We are also demonstrating how CMOR can be applied on a larger scale --with the United States Air Force. With over 100 participating installations, it is extremely difficult to provide individualized TA to build readiness. However, we have incorporated CMOR strategies into a reporting process so that if scores fall below a certain threshold, specific USAF-vetted CMOR strategies will be matched and provided to installation level stakeholders. Through consultation and TA with readiness-trained coaches, this information can be made actionable by incorporating it into a comprehensive planning process.

Figure 8 shows our Readiness Building System. Following a readiness assessment, a feedback and prioritization process helps prioritize which readiness subcomponents are likely to be the most important and effective leverage points. Subsequently (CMOR box), a plan is developed, implemented, and evaluated to see whether CMOR strategies had the intended effect.

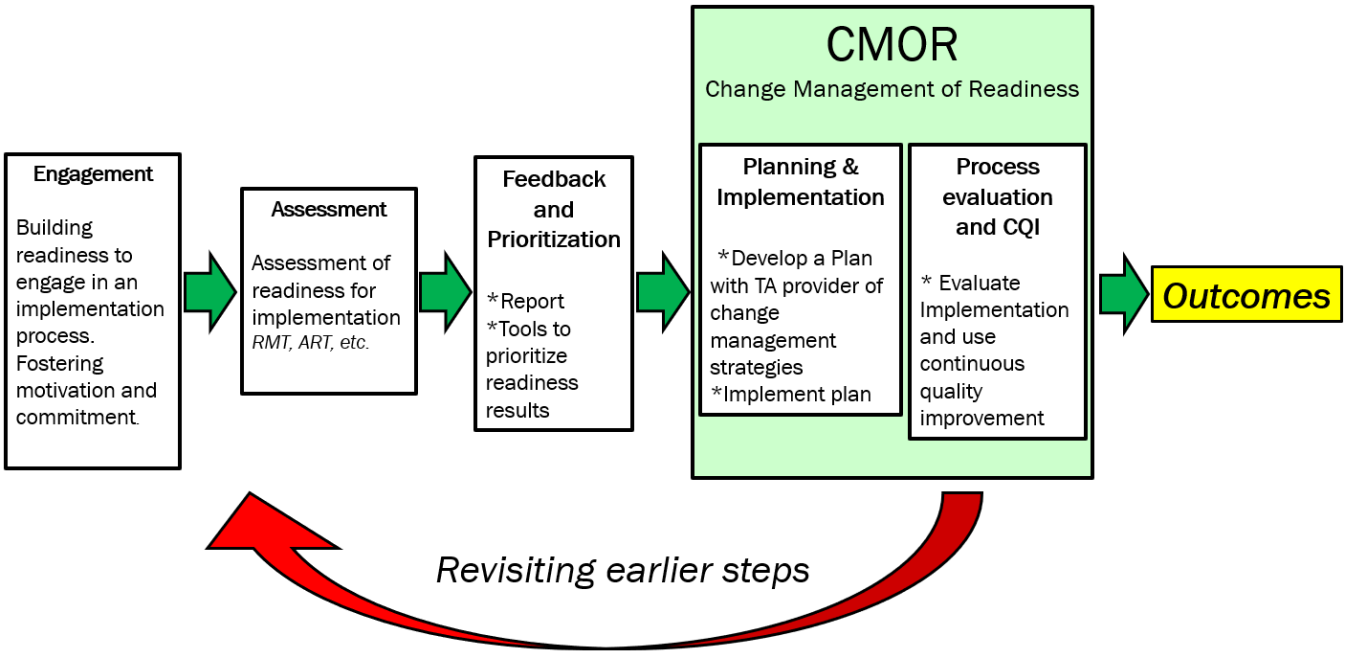


Figure 8: Readiness Building System

Readiness and Getting To Outcomes ®

We are often asked about how readiness fits into a larger strategic planning and evaluation process, like Getting To Outcomes ®. Several core members of our team (Abraham Wanderman and Pamela Imm) were among the original developers of the GTO model in 1999. While we have enhanced Step 5 of GTO from "capacities" to "readiness," (motivation x capacities), our experience with USAF showed us that readiness is relevant throughout the GTO process, not just in step five.

Prior to GTO step 1 (Needs and Resources), readiness helps sites think generally about their implementation context (general capacity e.g., culture, climate, staff capacity), and, if needed, implement strategies to strengthen it. Building readiness can be addressed through targeted CMOR.

In the interactive process of GTO steps 3-5 (Evidence-Based Practices, Fit, and Readiness), each innovation that is being considered will have distinct motivational components and innovation-specific capacities. These need to be considered (and built) if a particular innovation is to be implemented. Building readiness may take place in GTO step 6 (Planning).

Readiness continues to be prominent in GTO step 7 (Implementation & Process Evaluation). Readiness can go up or down over time because of planned *or* unplanned change. Monitoring readiness allows for early detection of issues that may negatively impact implementation. Readiness itself may be an outcome goal in GTO step 8 (Outcome Evaluation). This is because new innovations require gains in specific skills. Using readiness as an outcome determines whether these skills have been put into place.

GTO step 9 (Continuous Quality Improvement) prompts GTO users to go back and consider the overall rationale for innovation selection and the process of implementation. If potential decreases in readiness are detected, CMOR strategies can be used to prevent extensive slippage and continue gains over time. Finally, maintaining readiness is a key aspect of ongoing implementation. In GTO step 10 (Sustainability), there is planning for retention of motivation and capacity gains. If an innovation can be scaled up, a new set of capacities and motivational components need to considered.

Moving Ahead: A Research and Practical Agenda

Aim 1: Applying Readiness to Policy. In a policy brief for the US Department of Health and Human Service's Assistant Secretary for Planning and Evaluation[9], we proposed three current policy implications of an $R=MC^2$ approach. First, readiness can be used in funding opportunity announcements as a way to screen for the organizations who are best prepared to implement a project. We recognize that this is a reality in many situations where there are limited resources. However, using readiness solely as a screening tool is potentially harmful because this could perpetuate inequity between organizations disadvantaging organizations and communities who have real needs but not sufficient capacity or motivation to obtain a grant. This is addressed in the third policy implication below.

A second policy implication is to maximize support system resources by using readiness to match training and TA to a specific organization's needs. We previously illustrated how CMOR can be used to develop a specific plan based on a readiness profile.

Third, we see readiness as a way to help organizations that are not yet "ready", to become "ready" by providing them the language and strategies to build and maintain their readiness over time. Since

readiness can be built, we can use interventions to help organizations who are not ready, but may be otherwise strategically positioned, build up their infrastructure to do quality work. We are currently working on the policy implications of $R=MC^2$ through a multi-project, multi-site initiative funded by the Robert Wood Johnson Foundation.

Aim 2. Exploratory interrelationship of readiness components. We are interested in seeing how the subcomponents relate to one another. By providing the high leverage points, training and TA could be more targeted by addressing subcomponents that may influence each other. Figure 9 below shows a network analysis of how the subcomponents were related to one another in the Air Force project.

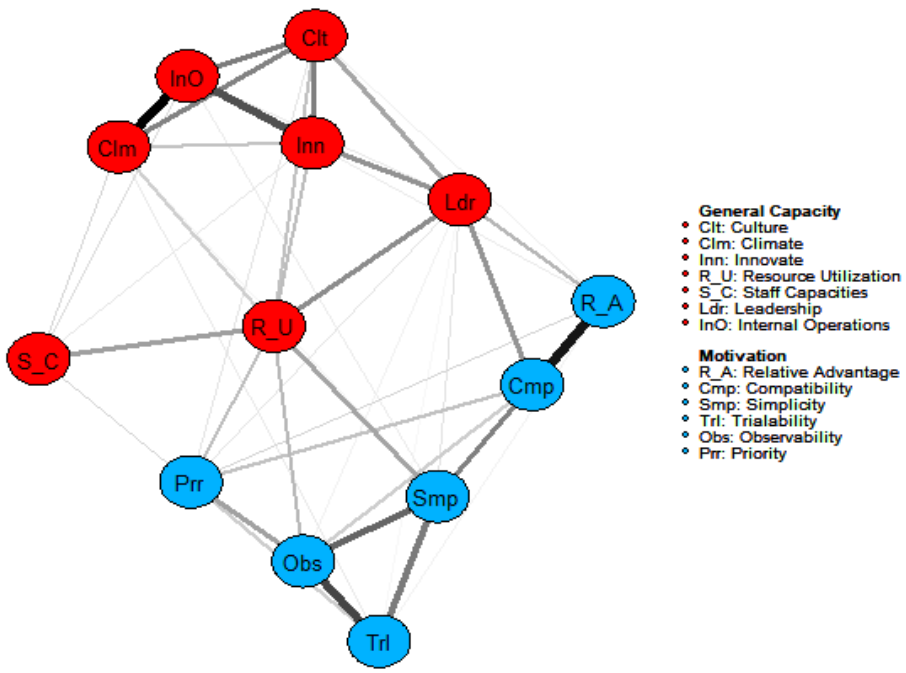


Figure 9: A network analysis of relations between subcomponents.

Aim 3: Applying a readiness lens to evaluation of training. Significant amounts of investment in time and resources are spent training adult learners on a variety of topics. Because the $R=MC^2$ model is designed to capture changes in motivational and capacity subcomponents, it is well suited for use in the evaluation design of trainings. It is not enough to measure whether participants were satisfied or whether their knowledge increased. Readiness can be used to track whether their motivation for the innovation was changed, and whether they perceive themselves as having increased capacities. This can also provide some direction for future TA to ensure that gains from the training are sustained over time.

Aim 4: Building a comprehensive data infrastructure. We are building web-based platforms so that stakeholders can begin to assess and consider their readiness. While tools in and of themselves are not sufficient for outcomes, they can provide initial guidance of strengths and areas for improvement that may impact an implementation project.

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$R = MC^2$

Readiness

Motivation
Innovation-Specific Capacity
General Capacity

Growing the scope of the Readiness Building System

We are actively considering new projects and new partners. To date, the evidence has strongly indicated that a focus on readiness can improve the quality with which work is implemented. Although we have a wide range of projects in our portfolio, we continue to seek new opportunities in which to apply a readiness lens to different settings at different system levels.

Projects Beginning September 2018

- With RAND funded by the *Department of Defense's Sexual Assault Prevention and Response Office*. Helping to build and maintain installation-level readiness to implement evidence-based sexual assault prevention programming
- With the *University of Texas and* the *University of South Carolina funded by NIH*. Testing the validity of a readiness measure for colorectal cancer and for school nutrition programs.

Funded by Robert Wood Johnson Foundation

- With *Serve and Connect and Relational Analytics*. Building readiness within communities to improve police-community relationships
- With the *University of North Carolina's School of Pharmacy*: Building readiness for Implementing Comprehensive Medication Management Policies and Practices:
- With *Relational Analytics and the Institute for Healthcare Improvement*: Examining the relationship of readiness to relationships within state-level health equity collaborations

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$R = MC^2$

Readiness

Motivation
Innovation-Specific Capacity
General Capacity

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Gordon Hannah
Pam Imm
Victoria Scott

If it be not now, yet it will come—the readiness is all.

Hamlet

In omnibus negotiis prius quam aggrediare, adhibenda est præparatio diligens.

In all matters, before beginning, a diligent preparation should be made.

Cicero, De Officiis (44 B.C.)

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[2] Miller, W. R., & Rollnick, S. (2012). *Motivational interviewing: Helping people change*. Guilford press.

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More recently, the Society for Implementation Research Collaboration and St. Michael's Hospital with the University of Toronto have been examining the properties and usefulness of various implementation measures.

Lewis, C. C., Stanick, C. F., Martinez, R. G., Weiner, B. J., Kim, M., Barwick, M., & Comtois, K. A. (2015). The society for implementation research collaboration instrument review project: a methodology to promote rigorous evaluation. *Implementation Science*, *10*(1), 2.
Timmings, C., Khan, S., Moore, J. E., Marquez, C., Pyka, K., & Straus, S. E. (2016). Ready, Set, Change! Development and usability testing of an online readiness for change decision support tool for healthcare organizations. *BMC medical informatics and decision making*, *16*(1), 24.

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[5] Scott, V. C., Kenworthy, T., Godly-Reynolds, E., Bastien, G., Scaccia, J., McMickens, C., ... & Wandersman, A. (2017). The Readiness for Integrated Care Questionnaire (RICQ): An instrument to assess readiness to integrate behavioral health and primary care. *American Journal of Orthopsychiatry*, *87*(5), 520

[6] Langley, G. J., Moen, R. D., Nolan, K. M., Nolan, T. W., Norman, C. L., & Provost, L. P. (2009). *The improvement guide: a practical approach to enhancing organizational performance*. John Wiley & Sons.

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$R = MC^2$

Readiness

Motivation
Innovation-Specific Capacity
General Capacity

Appendix: READINESS THINKING WORKSHEET ®

This worksheet can help you think about an organization's readiness to implement a new program, policy, practice or process.

1. Write down the innovation you are considering: _____
2. Reflect and consider whether the areas below are challenges or a strength for your innovation. Discuss your rationale with colleagues also involved in implementation.

Motivation	Degree to which we want the innovation to happen.	Challenge	Strength
Relative Advantage	This innovation seems better than what we are currently doing.		
Compatibility	This innovation fits with how we do things.		
Simplicity	This innovation seems simple to use.		
Ability to Pilot	Degree to which this innovation can be tested and experimented with.		
Observability	Ability to see that this innovation is leading to outcomes.		
Priority	Importance of this innovation compared to other things we do.		
Innovation-specific Capacity	**What is needed to make this particular innovation happen.**		
Innovation-specific Knowledge & Skills	Sufficient abilities to do the innovation.		
Champion	A well-connected person who supports and models this innovation.		
Supportive Climate	Necessary supports, processes, and resources to enable this innovation.		
Inter-organizational Relationships	Relationships between organizations that support this innovation.		
Intra-organizational Relationships	Relationships within organization that support this innovation.		
General Capacity	**Our overall functioning.**		
Culture	Norms and values of how we do things here.		
Climate	The feeling of being part of this organization.		
Innovativeness	Openness to change in general.		
Resource Utilization	Ability to acquire and allocate resources including time, money, effort, and technology.		
Leadership	Effectiveness of our leaders.		
Internal Operations	Effectiveness at communication and teamwork.		
Staff Capacities	Having enough of the right people to get things done.		
Process Capacities	Ability to plan, implement, and evaluate.		

Discussion Questions: Which is currently the greatest challenge for implementation? Which is the greatest strength? Where do you have differences with your colleagues?