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ORIGINAL ARTICLE

Implementation Science and Practice-Oriented Research: Convergence and Complementarity

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Abstract

Implementation science is the scientific study of methods to promote the uptake of research findings and other evidence-based practices in routine care, with the goal of improving the quality and effectiveness of health services (Bauer et al., 2015). In addition to this common goal, practice-oriented psychotherapy research (and researchers) and implementation science (and scientists) share a common focus on the people and the places where treatment happens. Thus, there exists strong potential for combining these two approaches. In this article, we provide a primer on implementation science for psychotherapy researchers and highlight important areas and examples of convergence and complementarity between implementation science and practice-oriented psychotherapy research. Specifically, we (a) define and describe the core features of implementation science; (b) discuss similarities and areas of complementarity between implementation science and practice-oriented psychotherapy research; (c) discuss a case example that exemplifies the integration of implementation science and practice-oriented research; and (d) propose directions for future research and collaborations that leverage both implementation science and practice-oriented research.

Keywords Implementation science · Practice-oriented research · Evidence-based practice · Practice-based evidence

Introduction

The practice-research gap is a well-established challenge not only in the field of psychotherapy (Teachman et al., 2012), but also in other health fields at large, where it has been shown that it takes more than 17 years for new research results to be translated into clinical routine practice in community settings (Balas & Boren, 2000; Morris et al., 2011). Several solutions to address this gap have already been shown to be impactful, including practice-oriented

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research (POR) within the field of psychotherapy research (Castonguay et al., 2021), and implementation science. In this paper, we provide a primer on implementation science for psychotherapy researchers and highlight important areas and examples of convergence and complementarity between implementation science and practice-oriented psychotherapy research. Specifically, we (a) define and describe the core features of implementation science; (b) discuss similarities and areas of complementarity between implementation science and practice-oriented psychotherapy research; (c) discuss a case example that exemplifies the integration of implementation science and practice-oriented research; and (d) propose directions for future research and collaborations that leverage both implementation science and practice-oriented research.

What is Implementation Science?

Implementation science has been defined as "the scientific study of methods to promote the systematic uptake of research findings and other evidence-based practices into routine practice, and, hence, to improve the quality and effectiveness of health services" (Eccles et al., 2006, p. 1). To achieve its goal and enhance the impact of research to public health, the scope of implementation science extends beyond traditional patient-level clinical research, and is also purposefully inclusive of provider-, organizational, and policy-level research (Bauer et al., 2015). Given this transdisciplinary approach, an implementation research team may include health service researchers, clinicians, and patients as well as organization administrators, leadership, and scientists from other disciplines, such as (health) economists, sociologists, and anthropologists (Bauer et al., 2015). Implementation science provides theoretical models, frameworks, and implementation strategies that were developed to understand and address the barriers and facilitators for patients, providers, healthcare organizations in adopting research findings and other evidence-based practices into routine care (Nilsen, 2015).

Implementation science is concerned with a diverse range of evidence-based health service processes and interventions. Although behavioral health has received considerable attention from implementation scientists (McHugh & Barlow, 2012), its reach and focus are considerably broader. Across the health service spectrum, implementation science highlights different activities in the transmission of this knowledge: implementation, which includes specific, purposeful and active strategies to bring an innovation or research findings within an organization; dissemination, or the process of engaging multiple targeted groups of people to adopt an intervention or innovation; and diffusion, which refers to the passive spread of information/knowledge, and sustainability, or the process of turning an innovation/new knowledge into routine practice (Greenhalgh et al., 2004). Psychotherapy researchers may have interests in each of these domains, yet the predominant focus is arguably the activity of implementation, and this is where the intersection of implementation science and POR is most evident and fruitful.

Intersection of Implementation Science and Practice-Oriented Research

While implementation science is concerned with the study of methods to promote the uptake of research findings and other evidence-based practices in routine care, POR in psychotherapy is concerned with understanding and improving psychological services as they are implemented in routine care (Castonguay et al., 2021). Although the level and focus of POR varies, most approaches ultimately aim to generate *practice-based evidence*. Castonguay et al. (2021) delineate three common defining features of practice-based evidence in the context of POR: (a) data are collected as part of routine clinical practice; (b) what is assessed reflects routine clinical practice; and (c) the investigation involves minimal, if any, constraints on the nature of routine clinical practice (e.g., random assignment to a condition or a set of prescribed interventions). With these features stipulated, the evidence of interest in POR typically includes examining routine patient outcomes (including patterns of change) and the factors (e.g., participant variables, treatment variables, and system/contextual variables) that are systematically observed to foster or impede change.

Systematically generated practice-based evidence can ultimately enter the purview of implementation science and practice stakeholders; for example, stakeholders are likely interested in how to sustain practices that appear to be associated with better patient outcomes and to understand if and how such practices can be generalized and adopted by other settings and systems (Boswell & Schwartzman, in press). In turn, whether based on evidence-based practice distilled from controlled research or practice-based evidence distilled from naturalistic research, implementation stakeholders hope to make the new practice routine, generating clear relevance and interest for both implementation scientists and practice-oriented researchers.

A shared assumption of implementation science and POR is that clinical stakeholders can be both *consumers* and *producers* of evidence (Boswell & Schwartzman, in press). The complementary and synergistic relationship between implementation science and POR is also evident in their shared goals. Broadly, both approaches emphasize the increased

adoption and implementation of research supported and informed by practices using complementary top-down and bottom-up knowledge generation and adoption approaches. Both areas aim to increase the integration of research and practice, often through fostering and maintaining collaboration among clinicians and scientists (Castonguay et al., 2013). In addition, perhaps less obviously, both implementation science and POR share the goal of understanding and impacting multiple levels within the broader health care system. For example, contextual factors such as inner and outer setting characteristics are often of key importance to implementation scientists (Beidas & Kendall, 2010); similarly, given that it is, by definition, deeply embedded within the routine clinical context, POR must also contend with contextual factors that are likely to be relevant to the internal setting and the broader mental health care delivery context (Boswell, 2019). Potentially relevant internal setting characteristics include factors such as organizational culture, which includes its norms and values (Damschroder et al., 2009), and an organization's readiness for implementation, referring to factors that indicate its commitment to bring about an innovation (Damschroder et al., 2009), such as existing data collection structures. Relevant outer setting characteristics may include factors such as the broader socioeconomic context as well as private (e.g., payers) and public regulations (e.g., government statutes).

With these working definitions and broad areas of convergence and complementarity between implementation science and POR outlined, we will now turn to some more specific examples of similarities, differences, and convergence pertaining to commonly valued outcomes, processes, and methods.

Specific Areas of Similarity, Difference, and Complementarity

One important distinction between POR and implementation science is how they are positioned along the research "pipeline." This pipeline typically proceeds from basic research, to treatment development, to clinical trials of efficacy in controlled environments, to examining the effectiveness of a treatment in "real-world" environments, and finally to efforts of disseminating and implementing the treatment in broader practice (NIH, 2002). POR falls within the realm of the penultimate "effectiveness" stop along the pipeline, where it examines factors that impact the use and outcomes of treatments in routine care. In this way it starts to answer the question of how treatments/therapeutic interventions are used and how they function in the often-messy reality of actual practice, and it can begin to identify factors of interest to implementation science, which forms its own last pipeline stop. Implementation science aims to answer the bigger-picture question of what are the optimal methods to translate information and interventions from well-structured research settings to actual contexts in which people are receiving care. This is accomplished by focusing on the processes or factors that affect the processes present in this translational step, as well as some more specific questions of how many and which people or settings are actually getting access to these interventions, whether the intervention is still the right fit for these populations in real world contexts, and what kinds of modifications or resources are necessary for sustainable uptake and effective use of the intervention of interest. In this way, implementation science and POR are distinct, yet they inform one another.

Outcome Focus

Implementation outcomes help to assess "how much" and "how well" an organization, provider, or healthcare system uses the intervention being implemented (Curran, 2020). In a seminal paper, Proctor and colleagues (2011) describe implementation outcomes as capturing "deliberate and purposive actions to implement new treatments, practices, and services" (p. 65). Implementation outcomes tend to focus on the population or the system (rather than the patient; Proctor et al., 2009). In contrast with a common focus in POR, although patient-level outcomes can be included in implementation efforts, typically the level of analysis happens at the level of the clinician or system, with patients nested within the larger unit being analyzed. Implementation outcomes also help describe the context in which the treatment/intervention is being used and guide research to focus on the elements that make an evidence-based intervention effective.

Implementation outcomes are typically guided by the Proctor and colleagues (2011) framework that defines eight outcomes. Acceptability refers to the stakeholders' perceived satisfaction or agreeableness to the innovation, intervention, or treatment. Appropriateness is defined as whether an innovation, intervention or treatment is viewed as a good fit, relevant, or compatible to a given setting or to address a problem. Feasibility relates to the degree to which an innovation, intervention, or treatment can be effectively used or done within a setting. Adoption, also referred to as uptake, indicates the provider or organizations' intent, decision, or behavior to implement an innovation, intervention, or treatment. Fidelity refers to the extent to which an innovation, intervention or treatment is implemented as originally developed in the protocol or as it was intended. Cost is evaluated as the cost related to implementing an intervention or treatment. Penetration assesses the integration of an innovation, intervention, or treatment in a given context. And

lastly, sustainability refers to the degree that an innovation, intervention, or treatment is maintained within a system's operations.

The main focus of implementation science is on these implementation outcomes, in conjunction with clinical outcomes, that provide context to the larger study. Understanding whether or not an intervention was successful based on treatment or implementation factors is critical when doing research (Proctor et al., 2011). In other words, no matter how effective a treatment was found to be in efficacy studies, and even if it is delivered with fidelity, we would not conclude that it was a successful implementation unless we also see effectiveness results in routine care.

Intervention Process and Fidelity

When interventions are provided in routine care settings, it is important to ensure that they are being delivered in a manner that all key elements of the treatment protocol(s) are followed with fidelity. In other words, fidelity measurement attends to whether key intervention elements are present, recognizable, and of sufficient intensity (i.e., adherence), and that they are delivered skillfully (i.e., competence) (Schoenwald et al., 2011; Webb et al., 2010). Assessing fidelity is important both in initial training, provision of ongoing support, and monitoring of ongoing quality (Aarons et al., 2011; Racine, 2006; Stirman et al., 2016), as implementers measure initial and growing therapist skills, identify areas for further growth after the initial training has been completed, and monitor skill to prevent drift. However, traditional and "gold standard" methods of fidelity assessment from psychotherapy process and outcome research are typically too time- and labor-intensive to be feasible in routine care (Stirman et al., 2018; Wells & Miranda, 2006). The Cognitive Therapy Rating Scale (CTRS; Young & Beck, 1980), for example, is the gold-standard measure of CBT competence; however, rating of a single 50-minute session may take a trained evaluator up to 3 h, making it a non-starter at any scale in routine practice (Creed et al., 2022). In the absence of fidelity data, little is known about how interventions function in these contexts, which is of critical importance to both implementation scientists and applied psychotherapy researchers.

More scalable methods of fidelity assessment are being developed to respond to this need, although the extent to which they produce reliable estimates vary (McLeod et al., 2023). For example, behavioral rehearsal/role play strategies have been shown to result in comparable fidelity scores as direct observation in child mental health settings (Becker-Haimes et al., 2022), although a similar approach with actors trained to be "standardized patients" with therapists trained in Motivational Interviewing (MI) for substance use disorders reporting inflated scores compared to direct observation (Decker et al., 2013). Hogue and colleagues (2015) found similar results for MI, Cognitive Behavioral Therapy (CBT), and family therapy in another study. Other research has found that raters' scores of the quality of worksheets generated in cognitive processing therapy sessions correlates with observer-rated competence ratings (Stirman et al., 2021). Artificial-intelligence-based tools to automatically code competence from session recordings have also been developed for MI (Cao et al., 2019) and CBT (Creed et al., 2022), increasing scalability but limited to contexts with access to the required technology. Research on clinician self-reported fidelity has been mixed, with some studies finding inflated self-report scores (Becker-Haimes et al., 2022; Creed et al., 2016), others finding that therapists underestimated their own skill (Brookman-Frazee et al., 2021), and still others have found that therapists can accurately self-report (Gumport et al., 2020). These differences in findings may be related to wording of specific measures, training on use of the measure, or other factors, so careful scrutiny and piloting of established self-report measures before broad implementation is warranted.

Adaptation Process and Impacts

Evaluation of adaptations done by providers to treatment protocol(s) is an area of complementarity between implementation science and POR. Adaptations are expected in both POR research and implementation science. Adaptations may occur due to patient (e.g., comorbidity, culture, motivation) or therapist factors (knowledge, theoretical orientation), or setting-related factors (e.g., time constraints, reimbursement policy) (Stirman et al., 2019). They can take the form of mild tailoring of terminology, analogies, or materials such as therapy worksheets, or they may involve more substantial changes such as addition or integration of elements from other treatment modalities, removing or substituting specific therapeutic interventions, or drifting away from a specific treatment approach in the absence of a strong therapeutic rationale (Stirman et al., 2019; Lau et al., 2017). These different forms of modifications have different impacts, with some enhancing patient engagement and outcomes, and others being potentially detrimental. The extent to which the adaptations are made while preserving treatment to fidelity may be especially important in optimizing clinical outcomes (Marques et al., 2019) and to guide efforts to provide therapist training and support. Adaptations and modifications to treatments can be characterized by documenting (1) the point in the implementation process at which the modification decision was made, (2) the extent to which the adaptation was planned or reactive to the situation or context, (3) who made the decision that an

adaptation was necessary or desirable, (4) what specifically was modified, (5) for whom or what the modification was made, (6) the nature of the modification, (7) whether the modification was consistent or inconsistent with treatment fidelity, and (8) the reasons for the modification (Stirman et al., 2019). Through tracking in this manner and linking to clinical and implementation outcomes, POR and implementation science provide opportunities to understand the types of adaptations that are made in routine care, which aspects of adaptation are particularly important to consider at various points across the treatment implementation and delivery timeline, and ultimately can begin to shed light on associations between specific forms of adaptation and clinical outcomes of interest.

Sustainability

Inherent in the goals and efforts to integrate evidence-based treatments and practices to routine care is an assumption that they will be sustained over the long-term. However, over time, research has demonstrated that sustainment presents unique challenges, and often interventions are not sustained over time after initial efforts and funding for implementation have ended (Stirman et al., 2012). Standalone effectiveness trials or even implementation initiatives of studies will likely be insufficient to ensure that practices become a part of the routine. Thus, efforts are underway to study strategies to support sustainment and their mechanisms (Lewis et al., 2021).

The sustainability of the implementation of evidence-based practices is partly a function of the degree to which the new practice can be seamlessly integrated into the routine workflows and structures of a given context or system (Hailemariam et al., 2019). This is also important for sustainable POR efforts and plans for the continuous generation of practice-based evidence. Once embedded into a setting, the burden to maintain POR must be manageable for the relevant stakeholders, including the ability to weather the turbulence that comes with high rates of personnel turnover (Boswell et al., 2015). As one example that cuts across both implementation science and POR, measurement-based care (MBC) tools and methods potentially hold more promise for sustainability (supporting MBC as an evidence-based practice as well as a mechanism for generating routine outcome and program evaluation data) because of existing options to leverage technology and automated data collection, processing, and feedback (Egeter et al., 2018). Similar to automated fidelity assessment, by building this type of data collection into an agency, assessments may be theoretically performed in perpetuity.

Methods

POR and implementation science also overlap in their use of a "mixed methods" research paradigm to assess the targets described above (Palinkas et al., 2011). Mixed methods approaches incorporate both quantitative and qualitative data to paint a comprehensive picture of complex research targets (Southam-Gerow & Dorsey, 2014). Both POR and implementation science studies draw qualitative data from focus groups and semi-structured interviews that capture the experiences, insights, and ideas of patients, providers, and other key stakeholders involved with an intervention, as well as from "field notes" drawn from researcher observations that can give quick and useful information on what is working in a particular context (Hamilton & Finley, 2019). They also strive to measure processes and intervention/innovation outcomes through pre-post or longitudinal changes on routine outcome measures, structured surveys of stakeholders, treatment fidelity ratings, and organizational statistics (e.g., admission and discharge rates, length of treatment, or staff turnover). Both implementation science and POR are aligned in their use of this range of data types in order to triangulate key themes and assess effectiveness of interventions within complex real-world practice settings where the use of rigorously-controlled empirical methods would be limiting or impractical (Proctor et al., 2011; Ramanadhan et al., 2021).

An addition from implementation science that may be of interest to POR researchers is effectiveness-implementation hybrid designs. Hybrid effectiveness-implementation designs were developed to evaluate both effectiveness and implementation outcomes at the same time within one study and thus, increase the speed with which research evidence-based practices can be adopted in routine care (Curran et al., 2012). Three types of hybrid designs have been proposed, each differing in the focus and emphasis placed on effectiveness compared to implementation outcomes. Hybrid type 1 primarily focuses on the evaluation of effectiveness outcomes for treatments or interventions, while assessing implementation-related factors such as barriers and facilitators; Type 2 places an equal emphasis on both effectiveness and implementation outcomes, allowing for testing of implementation strategies while also evaluating effectiveness of a treatments/interventions; and Type 3 is concerned with implementation outcomes related to implementation strategies while also evaluating effectiveness outcomes. These hybrid designs can inform POR research as evidenced by the case examples we describe below.

Stakeholder Collaboration

A key component of both implementation science and POR is the active engagement of stakeholders, individuals or groups who can affect or are affected by an issue (Schiller et al., 2013), throughout each phase of a project. Based on the 7 P's Framework developed by Concannon and colleagues (2012), stakeholders include: (1) patients and the public (users or recipients of health care and public health initiatives, families, community partners, advocacy organizations, etc.); (2) providers (individuals and organizations that deliver health care); (3) purchasers (sponsors of healthcare costs); (4) payers (those responsible for reimbursing health care costs); (5) policymakers (both governmental and non-governmental agencies); (6) product makers (intervention developers and medical drug and device manufacturers); and (7) principal investigators (researchers and their funders).

The types of stakeholders and their level of involvement in an implementation or POR project may vary depending on the research that is being conducted. Establishing partnerships with stakeholders that are guided by shared values of equity, respect, collaboration, co-creation, and intentional power sharing is a crucial component of infusing evidence-based practices into routine care settings (Bodison et al., 2015). Stakeholder engagement in implementation science and POR is a bi-directional relationship between the stakeholder(s) and researcher/evidence-based practice implementer that should result in informed decision-making about the selection, conduct, and use of research findings (Concannon et al., 2012; Pellecchia et al., 2022). Benefits of engaging stakeholders in implementation science and POR include enhancing implementation and effectiveness outcomes, selecting and using better implementation strategies, and facilitating sustainable partnerships between stakeholders that can lead to additional projects to improve healthcare and public health (Pellecchia et al., 2022).

As one framework, Community Based Participatory Research (CBPR) is a collaborative approach that equitably involves stakeholders, especially community partners, to increase the relevance, fit, and sustainability of interventions in a particular context (Minkler & Wallerstein, 2003). CBPR is often the "gold standard" of stakeholder engagement. A central tenet of CBPR is to uphold the community partners' goals and input into the implementation process, even if it means re-designing or doing away with a procedure or practice that is not working or is not acceptable. As such, implementation science and POR both benefit from incorporating CBPR principles with the goal of improving the relevance, fit, and ownership of evidence-based practices into routine care settings. These principles overlap to a large degree with Practice-Research Network (PRN) approaches where clinicians are active participants across all aspects of research design, including having direct input on research questions, design, and methodology (Castonguay et al., 2021).

The ideals of CBPR and PRNs likely hold wide appeal, yet the practicalities of implementation are complex and vary by context. Building and sustaining collaborative and equitable partnerships necessitates the use of key implementation strategies by researchers and evidence-based practice implementers in an intentional and ongoing manner. These include: (1) considering and prioritizing partners' needs, objectives, ideas, and timelines (even when not ideal for the research team); (2) being engaged, responsive and flexible throughout the planning and implementation process, while enabling adaptations to training and supervision as needed; and (3) rapid-cycling testing of implementation strategies and continuous quality improvement (Orengo-Aguayo et al., 2020). Additional implementation strategies that facilitate stakeholder engagement in implementation science and POR include obtaining and using feedback from stakeholders, promoting adaptability, tailoring implementation strategies to better fit the setting in which evidence-based practices are being implemented, building partnerships between stakeholder groups to foster successful implementation, improving implementers' buy-in, and altering or providing financial incentives (Powell et al., 2015).

Case Example of Implementation Science and POR in Conjoint Action: Outcome-Based Patient-Therapist Matching

To bring to light how these above mentioned areas of similarities, differences and complementarity would impact actual practice, we present a case example. Informed by a series of POR studies, a recently completed randomized clinical trial (RCT) utilized psychotherapists' own practice-based outcome evidence to test an empirical patient-therapist match intervention (Constantino et al., 2021). Specifically, psychotherapists' own routine outcome data were used to generate effectiveness profiles across a variety of patient-reported outcome domains (e.g., depression, anxiety, sleep, social functioning, quality of life). For example, a given psychotherapist's outcome profile might indicate that they are particularly effective at reducing their patients' depression and anxiety symptoms, yet this same psychotherapist may be particularly *ineffective* at reducing problematic substance use or improving quality of life. A different psychotherapist may possess the opposite pattern of relative effectiveness. In a double-masked RCT, naturalistically presenting patients were randomized to receive a psychotherapist assignment based on the empirical match or based on as

usual practices (e.g., availability or therapist self-identified expertise). The nature of the psychotherapy itself was not manipulated. Patients randomized to the empirical match condition demonstrated significantly better outcomes relative to the case assignment as usual condition, including a steeper rate of change and lower levels of global impairment at post-treatment. In addition, the benefit of the match effect was found to be larger for patients with higher initial severity and for patients who identified as a racial-ethnic minority individual (Boswell et al., 2021a). The results of this controlled research were consistent with previous POR observational (Kraus et al., 2016) and simulation studies (Imel et al., 2015).

Given these promising trial results and mental health stakeholder interest in psychotherapist outcome data and outcome-based matching (Boswell et al., 2021b), with support from the Patient Centered Outcomes Research Institute, the same project team has recently embarked on a large-scale, multiple phase implementation project. The primary goals of the project are to implement outcome-based matching in larger and more diverse mental health care settings, and to demonstrate similar effects on patient outcomes for matched cases. In addition, one focus is observing and distilling the processes and factors likely to be associated with successful implementation. Beyond patient outcomes (the basic effectiveness question), the project is interested in a series of implementation outcomes, including adoption, costs, feasibility, fidelity, sustainability, efficiency, and equity (Proctor et al., 2011). This project is perhaps most accurately characterized as a *Hybrid Type I* design because it is primarily interested in examining the health impact of outcome-based matching as an evidence-based practice, while also prospectively collecting information on implementation processes to inform subsequent implementation efforts (and expected subsequent rapid scaling phase) (Bauer et al., 2015; Curran et al., 2012), but not manipulating or evaluating specific implementation strategies.

The implementation approach and evaluation plan have been informed by existing implementation frameworks that have been used in previous MBC implementation initiatives (e.g., Lewis et al., 2015; Steinfeld et al., 2015); specifically, the Framework for Dissemination (FFD; Mendel et al., 2008) and the Dynamic Sustainability Framework (DSF; Chambers et al., 2013). The FFD shaped the evaluation process plan to conduct (a) a capacity and needs assessment with relevant stakeholders, (b) implementation process evaluations of match adoption/penetration and stakeholder attitudes, and (c) an impact evaluation focused on fidelity and patient-level outcomes. A capacity and needs assessment typically involves a mix of quantitative and qualitative methodologies, with a focus on learning more about the existing norms and attitudes of internal partners (e.g., whether clinicians are already collecting any data to inform their practice), existing resources (e.g., capacity to integrate new data collection with the existing electronic medical record), and workflows (e.g., roles involved in the patient intake process). Implementation process evaluations are conducted on an ongoing basis to track how many relevant people have been "reached" by the newly implemented practice(s) (e.g., the proportion of participating sites that are actively matching by a certain date relative to the number of total participating sites). Ongoing stakeholder attitude assessments are also commonly conducted to gauge if attitudes toward the implementation have remained positive or have improved relative to initial skepticism. Finally, more distal impact evaluations of fidelity include determining if the core components of the new practice are being implemented as intended (e.g., determining that most, if not all, new patients are being assessed with the relevant measure to inform a match recommendation). Patient-level outcomes of interest include, but are not limited to, factors such as symptom remission and functional improvement. Implementation fidelity metrics can be incorporated into evaluations of patient-level outcomes to better understand the dose of treatment needed for a response. For example, Bickman et al. (2016) created an implementation index that measured the 'dose' of MBC by calculating measure completion by patients and feedback viewing by clinicians. Results indicated that without a sufficient dose of MBC, treatment outcomes were nil for one site compared to a small but significant effect in a site with sufficient implementation fidelity.

Guided by the DSF, ongoing evaluation activities will inform subsequent implementation steps and potential adaptations (Chambers et al., 2013). Lessons learned from the initial phase of implementation will subsequently inform rapid scaling of outcome-based matching in a larger number of service delivery settings. In addition, the implementation of routine outcome monitoring and outcome-based matching will result in the accumulation of a large amount of practice-oriented data. This will foster additional research and evidence on therapist effects and moderators of match-outcome effects.

Current Developments and Future Directions

The synergy of POR and implementation science offers key perspectives for stakeholder knowledge generation and learning, from the inside-out with POR and the outside-in with implementation science. A platform for bridging the gap between research and practice is bi-directional learning, where the challenge is to leverage the transfer processes,

from individual learning and action to organizational learning and action (the inside-out), and the impact on real world practice of external evidence translated through multiple contexts (the outside-in) (Douglas et al., this issue). This is the 'sweet spot' of the learning health care system. The Agency for Healthcare Research and Quality defines the learning health care system as one in which continuous improvement stems from evidence grounded in internal data capture, reflection on experience, and integration of external research (2019). Implementation science adds value for the learning health care system by adding a focus on theoretical models and multi-level strategies to embed promising innovations in real world settings (Chambers et al., 2016). POR adds value to the learning health care system with the generation of practice-based evidence (Castonguay et al., 2021).

Learning organization concepts emphasize systems thinking, team learning, and data capture to close loops of information (Senge, 2006; Garvin, 1993). The structures and practices necessary to support iterative learning and continuous improvement are dynamic, complex, difficult, and ultimately, about people and influencing behavior change. How we 'take action' is not just about evidence and management to create better systems capable of embedding new knowledge but is about interpersonal and group dynamics like trust and psychological safety (Edmondson, 2018). Behavioral healthcare leaders need access to the tools and skills that allow them to excel at creating a culture that promotes learning to overcome individual and systemic resistance to change (Beidas & Stirman, 2020). Here, we outline a three-point plan to build on the points of convergence between implementation science and POR in service of a learning health care system approach.

First, as the earlier examples illustrate, MBC is an evidence-based approach to gathering patient-level data that can inform individual treatment and collective knowledge generation. When it is structured to contribute value and use at multiple levels, from the individual patient for treatment to aggregated data for supervision and program planning, MBC can provide the foundation of data necessary for organizational learning (Connors et al., 2021; Jensen-Doss et al., 2020; Kelley et al., 2010). This requires attention to stakeholder perspectives about what information is valuable and preferences about how information is used at multiple levels of the organization, which has been called the 'golden thread' of MBC (Douglas et al., 2016). Recent reviews of the health informatics literature on patient and public preferences around data sharing indicated a lack of consensus around consent mechanisms and control of data to support research (Hermansen et al., 2022). Researchers and practitioners using secondary data for organizational learning should be flexible in meeting patient needs for trust, transparency, and privacy (Hutchings et al., 2020), and consider opt out mechanisms for patient consent (Hutchings et al., 2021). From the perspective of the researchers and healthcare professionals, there is a need for increased clarity around data ownership and policies for acknowledgement and sharing (Hutchings et al., 2020). By working together, implementation science and POR practitioners could seek to improve the typically low rates of MBC implementation using evidence-based frameworks and learning from existing practice-level structures and policies for required data use and documentation.

Second, implementation science has been called a "team sport" (Chambers et al., 2016, p. 3), and the emphasis on stakeholder collaboration is an area where partnership with POR practitioners could strengthen our understanding of effective strategies to increase health equity and health care access. Individual bias and systemic bias must be considered in how behavioral health service systems are formed and operate. Implementation science methods and models for partnering with practice organizations are critical to adapt evidence-based practices to local contexts and cultures (e.g., Orengo-Aguayo et al., 2020; Paniagua-Avila et al., 2023; Shelton et al., 2020; 2021).

Third, the development and testing of methods to tailor interventions to local systems is critical to identify the underlying mechanisms of action for successful implementation (Lewis et al., 2020) and dissemination (e.g., Ashcraft et al., 2022). Rapid cycle methods to capture innovation that emerges from practice and then explore its translation throughout the learning health care system (e.g., Ashcraft et al., 2022; Glasgow et al., 2020; McCreight et al., 2019) is a must-have for practice settings that must balance a focus on patient care over research. The expansion of implementation science models to incorporate relevant outcomes around innovation and sustainability are just beginning (e.g., Damschroder et al., 2022).

Conclusion

The practice-research gap is a well-established challenge in our field. In this paper, we have identified areas of similarities, differences, and complementarity between two solutions that have been proposed as addressing this challenge, implementation science and practice-oriented research. We believe that at the intersection of these areas of knowledge we will find solutions that will adequately and sustainably address this long-term problem that we all face.

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Conflict of Interest Vanderbilt University and Susan Douglas receive compensation related to the Peabody Treatment Progress Battery; and Susan Douglas has a financial relationship with MIRAH, and both are Measurement-Based Care (MBC) tools. The author declares a potential conflict of interest. There is a management plan in place at Vanderbilt University to monitor that this potential conflict does not jeopardize the objectivity of Dr. Douglas' research. No other authors have a conflict of interest to disclose.

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