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Adult Learning Models for Translational Health Research: Bench, Bedside, and Communities

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Abstract. *The intent of translational health research is to bridge the long-standing gaps between laboratory research and the people who are the intended beneficiaries of the resulting discoveries. Models from the field of adult education, particularly experiential and transformative learning approaches, can be useful in developing theory for the learning processes that occur when scientists, health practitioners, and community members collaborate around the identification, implementation, and evaluation of research projects aimed at improving health for everyone.*

Introduction

The field of health research is recognizing that a considerable number of scientific discoveries are never effectively used by the underserved racial, ethnic, and poor communities most in need (Marmot, 2005; McGlynn et al., 2003). This identification of gaps between the laboratory "bench", where basic science generally takes place, and the symbolic "bedside" of patient care has led to the call for research that is more inclusive of the socioeconomic and cultural attitudes, values, and behaviors of the individuals and communities that will ultimately receive health care. This call for a new, more collaborative research paradigm in which health care recipients participate not merely as subjects, but as co-definers of research priorities and processes, has been termed "translational" research, or translational science (Zerhouni, 2005). In translational science, basic health studies move from laboratories, to human studies, to clinical practice, and eventually to the public at large. An important focus of translational science is the underserved (based on race, ethnicity, income level, immigration status, language group, sexual orientation, etc.) communities that have been neglected not only in research, but by the health care system in general (Cook & Community Engagement Steering Committee, 2009).

Learning around translational research at the level of communities involves several key categories of participants: underserved community members, clinicians or practitioners (physicians, nurses, etc.), and academic researchers. The learning processes that accompany the interactions between these groups are not well understood, in part because of the amorphous nature of the translational process. How does learning occur around an area of scientific research that has been historically viewed as the domain of academically-trained experts? How do you bring together institution-based researchers with marginalized community members in an equalized learning environment? What is the role of the educator . . . and who are the educators? How do you promote learning around both the instrumental goals of scientific research and the relationship building processes needed to rebuild community trust in public health institutions? Theories of adult learning encompassing both cognitive and affective processes can help illuminate the learning patterns that emerge in the context of translational research, typified by differences in knowledge bases, status, and life experiences.

The translational Research Environment

The goal of translational health research is to nurture a new vision of health care in which "patients with active diseases, both chronic and acute, will receive targeted therapies that have a reduced likelihood of adverse effects while reducing morbidity and mortality" (Zerhouni & Alving, 2006, p. 4). Much of the activity around translational research stems from the Clinical and Translational Science Awards (CTSA) to academic institutions throughout the United States from the National Institutes of Health (NIH), beginning in 2005 (Reis et al., 2010; Zerhouni, 2005). Further goals of the CTSA initiative are "to reduce the time it takes for laboratory discoveries to become treatments for patients, to engage communities in clinical research efforts, and to train a new generation of clinical and translational researchers" (NCRR Fact Sheet, 2010). The intent of NIH translational research efforts are to form interdisciplinary teams trained to move the results of basic biomedical research into clinical trials, where the resulting findings will ultimately be disseminated into clinical practice. Partnerships are encouraged—with industry, in the basic research and clinical trials phases, and with communities, as clinical trial participants and as the ultimate beneficiaries of improved health care. Towards the latter goal, each institution receiving CTSA funding has a community engagement program, along with programs in bioinformatics, biostatistics, regulatory knowledge, education, and clinical trials.

The community engagement function has become increasingly prominent in the five years since the initiation of the CTSA consortium, moving beyond a narrow focus on promotion of community involvement in clinical trials into the broader project of empowering communities as partners in the formulation, implementation, and evaluation of health research projects. A key conceptual base for community engagement can be found in community-based participatory research (CBPR), an approach with deep roots in the fields of health and health care, typified by emphases on community strengths, equitable and sustainable partnerships with health institutions, co-learning, and an ecological approach to the causes of disease (Israel et al., 2001; Minkler & Wallerstein, 2008; Ziegahn, in press). However, while learning is valued within this model and other community-engaged health research models, the predominant assumption appears to be that learning is the inevitable by-product of collaborative processes. Missing are theoretical and empirical examinations of the learning participants, models, and strategies that can illuminate the translational research enterprise. Following is an example of a translational research scenario:

Dr. X is a researcher studying the genetic correlates of cardiac disease. He would like African American families to participate in clinical trials because past studies on this topic have not included this population, and as a result, research findings have been of limited value to the many African Americans suffering from heart disease. Dr. X realizes, however, that merely advertising for African American participants is an insufficient recruiting strategy. Moreover, he is committed to building a long-term relationship with local African American communities that will enable him to both understand community views around the causes of cardiac disease, and inform potential treatments. He and his clinical trial coordinator enlist the support of a local nonprofit organization in an African American neighborhood, whose leaders encourage him to "give something in return" for clinical trial participation, and indeed to first establish trusting relationships with the community, through presenting talks on wellness, diabetes, heart disease, and other health issues.

However, most important would be to solve the vexing issue of health care access: If a clinical trial participant is uninsured, what good is it for him or her to find out about other chronic health conditions that might emerge from the usual health screening tests that accompany trial admittance if they don't have access to the appropriate follow-up health care?

In this situation, learning occurs around the continually evolving topics that emerge when Dr. X, community-based organization (CBO) leaders, community members, clinical trial coordinators and other health institution staff come together to address the different phases of their work together. This collaboration entails not only strategies to disseminate health information, encourage clinical trial participation, or surmount the hurdles of access to health care for the uninsured. Learning in a translational environment also necessitates attention to the mistrust of minority and underserved communities that led to resistance of these same communities to the "solutions" of academic institutions in the first place. Whereas the dominant paradigm for medical science has been that scientific discoveries are somehow unidirectionally diffused into the realm of clinical practice and subsequently into the mindsets and habits of individuals, translational science calls for bidirectionality. This concept is characterized by a shared *learning* process between people who use health services, practitioners who give medical advice, and the scientists who pursue new treatments.

In translational research, the collaborative efforts of researchers, clinicians, and community members to connect scientific expertise with community needs and networks are often initially vague, becoming more concrete through continued interactions. The learning that transpires is thus couched in community and workplace environments, in which assumptions about who has health expertise depends upon cultural and lived experience as well as advanced training. Models of how to conduct community-engaged research are not sufficient to explain how learning transpires in such contexts.

Experiential and Transformational Learning Theories

There are numerous adult education theories which prioritize the role of social justice in learning (Freire, 1970; Lynam, 2009), and are thus relevant to the equity concerns of translational science involving both academic researchers and members of disenfranchised communities. However, the key challenge in translational science is the taking of information learned in the laboratories of basic biomedical research and diffusing it to environments in which variables cannot be manipulated and where the culture- and environment-based interactions that occur in physicians' offices and in communities are unknown. Thus, the theory base for learning in the translational science environment must also be responsive to the dynamic context in which experts and lay people co-construct new knowledge and revisit past experiences with health care while seeking active solutions for urgent health and health care problems.

Theories from the field of adult education which help us understand how individuals learn within the context of translational science come from both experiential and transformative learning. Fenwick (2000) assessed five experiential learning perspectives in terms of their utility for understanding cognition, or learning. Four of these approaches contribute to our understanding of the learning that takes place among participants in translational science projects. *Reflection* on experience enables the learner to construct meaning gained from action and interactions and is useful in helping elucidate how scientists, clinicians, and community

members can interrupt and reframe habits of thinking and feeling about the other. Reflective learning in health has also been explored as a means of integrating research evidence into clinical decision-making, a crucial phase in translational research (Vachon, Durand, & LeBlanc, 2010). Vachon et al. propose a "model of research utilization grounded in critical reflection" that can be used to stimulate changes in the practice of health professionals through a range of clinical decision-making processes and types of reflective thinking, leading ultimately to changes in perspective. While this model looks only at clinicians' learning, the study method for supporting the development of reflective skills—critical incident analysis, reflective journal writing, and concept mapping—can be expanded to include forums where scientists, clinicians, and community members came together to consider how to improve community health.

Participative perspectives, including situated cognition and Wenger's (1998) communities of practice (CoP) model, allow for the simultaneous linking of knowing, learning, and doing. Learning "in" experience (Wilson, 1992) emphasizes the transformation of experience gained in one context to another, negotiated through individual interests and the changing conditions of communities. In translational science, the settings in which scientists, clinicians, and community members come together vary considerably. University-based community meetings which "include" community members are very different from community meetings in which researchers are invited as collaborators in terms of power dynamics, agenda initiation, and task versus process orientations.

CoP models are useful to an understanding of learning in the translational science context because of their focus on the learning that occurs in participatory group settings and on interactions between novices and experts (Wenger, 1998, Li et al., 2009). Learning in health science-community environments wherein both paid staff and volunteers come together is characterized by both informal networks and the structured hierarchies of academic medical institutions. While participation in academic-community partnerships is not generally linked to employment for community participants, this environment contains what Engestrom (2004) has termed the "expansive" features of workforce apprenticeship models, wherein employees learn from engaging in multiple communities of practice, are exposed to broad experiences, learn off-the-job as well as on-the-job, and have extended roles. In situations where knowledge or skills are not well-defined, and notions around who has the competence or expertise to teach fluctuate according to context and issue, the CoP is a useful construct for theorizing how learning occurs. Lacking, however, is the recognition of participants'—scientists as well as community representatives—roles as learners (Li et al., 2009).

In her study of novice and expert learning for continuing professional education for nurses, Daley (1999) found that novice learning depended more on concept formation and assimilation and was more subject to emotions, while expert learning was viewed as a more constructivist process characterized by active concept integration and self-initiated strategies. She concluded that experts know how to learn from experience, whereas novices don't necessarily understand learning processes. In translational research contexts, all parties in what may be termed communities of practice may be simultaneously experts and novices; learning occurs through the negotiation of roles, power, and bases of knowledge.

Foundational to the understanding of the learning that occurs within contexts characterized by power imbalances is the notion of *resistance*, categorized by Fenwick (2000) as a type of experiential learning. It would be unethical to divorce learning around collaborative health research from the tensions reflected by differences in language, values, culture, and socioeconomic status which constitute the translational science environment. The academic

environment of translational science is colored by memories of the hegemonic role of science in improving the health of some but not necessarily all, and by the present-day physical realities of academic medical institutions often situated in the midst of urban poverty. The fourth experiential perspective of *enactivism* looks at the interactions between individuals and context from a systems perspective, characterized by dynamism and a binding together of the components of experience. In the current political environment of health science, learning is couched in the fiscal, political and organizational challenges of ever-changing institutions and communities.

Transformative learning offers a framework whereby learners reflect upon prior experience in order to develop new, more inclusive meaning perspectives that can inform future actions (Lynam, 2009; Mezirow, 2000; Vachon, Durand, & LeBlanc, 2010). While transformative learning has been criticized for its decontextualized view and for its lack of integration of affective and cognitive domains, as well as its inattention to social justice issues, the focus on premise reflection is useful to the context of translational research. Critical to change in interpersonal and intergroup interactions, the relative balance of power, and ultimately views and behaviors around health are the changes in the underlying thoughts, feelings, and assumptions that guide action. The questioning that accompanies critical reflection is crucial to the learning that takes place as both scientists and community members challenge the privileged role of biomedicine in determining what health concerns are worth exploring, how research is conducted, and who benefits from results (Lynam, 2009).

Implications for the Development of Adult Education Theory and Practice

The inclusion of communities in the translational research environment stretches the boundaries of knowledge creation and learning around health research. This environment provides an opportunity for adult educators to explore how learning occurs when researchers and members of the public collaborate around health research issues, methods, and outcomes. Further theorizing is needed, through literature review and exploratory studies in the field of adult education, in the following areas:

- the testing of experiential and transformative adult education learning theories in the context of collaborative health research in which people from underserved communities and medical/health “experts” struggle to revise long-standing views on who defines research, how research is conducted, and how improvements in health are defined;
- better understanding of the participants, topics, stimuli, and formats of learning in community-academic partnerships around health research;
- how power dynamics affect learning in translational research contexts and how scientists and community members can learn from resistance in the translational research context;
- the cognitive and affective dimensions of experiential and transformative learning and how models of adult learning can be used to inform translational science curriculum and program development for researchers, community members, and clinicians.

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