A Theory-Based Approach to Improving Health Literacy

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ABSTRACT

Health literacy, from a reductionistic standpoint, could be viewed as a complement of individual skills needed to process and act on health information. However, such a limited perspective unnecessarily removes the individual from the broader array of social forces that influence health. Indeed, an ecological approach provides the contextualization needed to identify individuals with varying degrees of health literacy and construct long-term solutions to reduce the adverse health consequences of poor health literacy. The dearth of evidence-based outcomes data on health literacy interventions confirms the limitations of strategies that are not based on an ecological framework.

A more reasoned approach to improving health literacy embraces the ecological model when designing interventions and employs theory-based logic models to facilitate actualization of the comprehensive model. Adopting an integrated behavioral health theory that operationalizes constructs of perceived benefits and threats, self-efficacy and social norms, along with broader social planning theory, could result in a powerful tool to design effective multilevel interventions to improve health literacy. The currently limited empirical data on the application of theory-based logic models to health literacy lends urgency to such a rigorous analysis, especially given the dramatic personal, economic, and health systems impact of poor health literacy.

Efforts to improve health literacy in Missouri were guided by the adoption of a theory-based logic model and informed by a multidisciplinary team of community and academic stakeholders familiar with ecologic models. This paper outlines the series of efforts that culminated in the creation of the Health Literacy Missouri Initiative, which has been tasked to strengthen the evidence base for health literacy, improve health literacy through education and community collaboration, and create systemic change in the health system starting at the patient-provider interface. We immediately appreciated the universality of the resulting model, inherent in the precept that health literacy is woven into the fabric of good health; adorned by the group, not the individual.

Keywords: Health literacy, logic model, behavioral health theory, community planning
INTRODUCTION

Health literacy, as defined by the 2004 Institute of Medicine report, *Health Literacy: A Prescription to End Confusion*, is the degree to which individuals have the capacity to obtain, process, and understand basic information and services needed to make appropriate decisions regarding their health.¹ The report noted that adults with limited health literacy have less knowledge of disease management, report poorer health status, and are less likely to seek preventive care. By some accounts, low health literacy costs the U.S. health care industry $73 billion a year in misdirected or misunderstood health care services.²⁻⁴

A wide range of measurement instruments have been developed that allow categorization of individuals as having low, average, or high levels of health literacy.⁵⁻⁸ The reasoning follows, pari passu, that those individuals who acquire the skill set necessary to improve their health literacy will be able to successfully navigate the complex health care maze leading to healthy and productive lives.⁹⁻¹². Fortuitously, most health professionals and social scientists who work in the field of health literacy acknowledge the need to develop strategies that address all facets of the health care encounter.

Materials devoted to improving health communications have targeted patients, health care providers, health care vendors, and policymakers involved in health care.⁷⁻¹³⁻¹⁵ A critique of the effectiveness of health literacy programs has demonstrated mixed results.¹⁶ Those programs that demonstrated the greatest impact have highlighted the broad array of social forces that affect health and health care delivery.¹³, ¹⁷⁻¹⁹ Arguably, it is difficult to envision any program attempting to improve health literacy that does not embrace the social determinants of health.²⁰

Of equal import is the belief that improved health literacy benefits society as a whole; consequently, efforts to ameliorate the health and economic burden of populations with low health literacy remains the responsibility of a broad swath of stakeholders in the U.S. An effective strategy to improve health literacy should incorporate multi-level interventions that in practice promote partnerships among individuals and their families, educators, health providers and community stakeholders, and policy-makers at the local, state, and federal level.²¹⁻²² Collectively, such an empowered group would be able to access the requisite social, financial and political capital needed to “move the needle” towards improved population health.
The literature is replete with examples of health literacy programs tailored for general and at-risk communities; however evidence-based outcomes studies that affirm the benefits of health literacy interventions on behavioral modification are relatively limited. Theory-based interventions have emerged as powerful methods for promoting and sustaining behavioral change; concomitantly, health literacy initiatives that incorporate behavioral theory are more amenable to acceptance by the targeted population and are more likely to be associated with positive, behavioral change.

Evaluating the effectiveness of comprehensive health literacy initiatives, including those based on behavioral theory, is expectedly cumbersome given the complexity of analyzing far-ranging, upstream determinants of health literacy such as poverty, educational attainment, neighborhood development, social norms, etc. In such situations logic models are particularly useful tools that provide better documentation of outcomes and shared knowledge about what works and why. Incorporating behavioral theory into logic models allows more comprehensive program design and planning – effectively linking ideas to explain underlying program assumptions. This paper illustrates how a statewide effort to increase health literacy was informed by a theory-based logic model and validated by a multidisciplinary team of community and academic leaders. The theoretical framework of the model – Health Literacy Missouri, facilitates its adoption by diverse cultures in developing, newly industrialized, and developed countries.

EARLY ROOTS: THE REGIONAL HEALTH COMMISSION HEALTH LITERACY TASK FORCE

Conceptualization of a health literacy campaign began in June 2004 with the creation of the Saint Louis Regional Health Commission’s Health Literacy Task Force. The Task Force was charged with the development of executable health communications and health literacy program initiatives that were aligned with the Regional Health Commission’s strategic objectives to improve access to health care services, reduce health disparities, and improve health outcomes for the medically underserved population of the Saint Louis metropolitan region. At its inception, the Task Force identified several key behavioral theory constructs on which to base an intervention strategy.

First, interventions that promote self-efficacy, boosting individual’s skills and confidence in managing and assessing their health problems would more likely culminate in an “activated” patient who would pursue a more
durable partnership with his health provider. 28 Secondly, interventions should be initiated at the earliest possible stage of development to improve basic literacy skills, when such skills are beginning to develop. The environment plays a critical role at this juncture, wherein health beliefs are born and social norms established through exposures to mass media and social marketing, popular music, cultural and community centers, religious institutions, and schools. 29 Finally, a readiness to transition through stages of change occurs as adults acquire the confidence and motivation to contemplate healthy behavior, either through sheparding by trained community health ambassadors, or enhancing skills through adult education. Adult education curricula have traditionally included health lessons related to hygiene, nutrition, and healthful habits. Health-related content in adult education classes would be more likely to engage adult students and subsequently increase learner interest, motivation, and persistence. 30-31

ESTABLISHMENT OF THE MISSOURI FOUNDATION FOR HEALTH – HEALTH LITERACY COORDINATING COUNCIL

Concurrent with the initiative by the St. Louis Regional Health Commission to enhance the health literacy of patients cared for by the newly-created St. Louis Integrated Health Network, the Missouri Foundation for Health embarked on a statewide Health Literacy Enhancement Initiative. Recognizing that reducing health disparities required sustained collaboration across many boundaries and disciplines, the Foundation convened stakeholders from across Missouri, including those at an urban, private academic institution, a micropolitan public academic center, and a rural public academic center. The newly-convened Health Literacy Coordinating Council adroitly adopted three guiding principles: engage community partners, innovate strategically and collaboratively, and put the consumer first. Through this process, the health literacy initiative would fulfill its mission of improving Missouri’s health through the provision of broad access to plain language health information, community-based education collaboratives, and educational resources that would help providers and consumers communicate more effectively.

DEVELOPMENT OF A THEORY-BASED HEALTH LITERACY LOGIC MODEL

A review of grants funded by the Missouri Foundation for Health, a large U.S. healthcare foundation, indicated a large number of proposals
advocated health promotion interventions which would ultimately improve health literacy. Although well-intentioned, many of the initiatives lacked a theory base which could guide program evaluation and subsequently program effectiveness. Theory-based programming projects clarity on an observable event by systematically characterizing the relationship of the observation to a set of variables. If programmers understand why behaviors occur they can then target specific behavioral antecedents and structure the most efficient and effective interventions to modify the behavior.

Theory-based evaluation probes the assumptions on which programs are based, essentially querying what effect each particular activity will have, what the program does next, what the expected response is, and eventually what leads to the desired outcome. The posited benefits of theory-based evaluation include advantages to program planning and modification, advantages for the growth of knowledge about human behavior and behavior change, and the advantages for the planning and conduct of the evaluation of the specific program.

Theory-based programming and evaluation have well-demonstrated effectiveness in designing interventions that influence behavior toward a desired outcome. In such settings the behavioral modifiers and the major covariates that interact with those modifiers can be identified a priori. When the Missouri Foundation for Health elected to design an initiative that would enhance the health literacy of its entire service area, it confronted a culturally diverse population fragmented into rural and urban components, in which behavioral antecedents associated with low health literacy were less readily identified. Additionally, the marked heterogeneity of social factors that influence health literacy did not lend itself to conventional evaluation methodology. The construction and adoption of a theory-based logic model permitted a more graphic display of behavioral antecedents and their hypothesized relationships, along with the array of programmatic activities which would lead to the desired outcome of improved health literacy and healthier lives.

A recent report by J. Vernon and colleagues detailed the high economic costs of low health literacy to the United States economy, which are in the range of $106 billion to $236 billion annually. In Missouri, these costs are between $3.3 billion and $7.5 billion each year. In light of the remarkable economic impact of low health literacy, the goals of improved health literacy and improved quality-adjusted life-years can be achieved if program planning were based on the following assumptions:
Health literacy is associated with a low quality of life
Low health literacy is a significant issue in Missouri
Low health literacy disproportionately affects marginalized and underserved populations
Responsibility in improving health literacy resides in the entire community

Inherent in these assumptions is the belief that health literacy is influenced not just by cognitive, individualistic characteristics, but by the cumulative impact of social, economic, and environmental factors. Consequently, strategies considered most effective in enhancing health literacy should adhere to an ecological framework, wherein program activities address the broader social determinants of health. Program activities should then be guided by health behavior theories that help determine why certain behaviors occur, so that interventions would more likely yield sustainable outcomes.

The theories that were adopted to guide planning for the health literacy project included: Health Belief Model, with its primary constructs of perceived susceptibility of illness, perceived severity, perceived benefits, and perceived barriers; Social Cognitive Theory, with a major focus on self-efficacy and social norms; Theory of Planned Behavior, with its emphasis on decisional balance and pros or cons of performing a behavior; and community planning models such as PRECEDE-PROCEED.

The Health Literacy Missouri Logic Model is shown in Figure 1. The heterogeneity of inputs reflected the desire to embed a multilevel decision-making model in all program activities. The logic model development was informed by individual consumers and the influential elements of their social and institutional environment, which included churches, the educational system, the health and medical community, and social service organizations; the larger community of business and industry leaders and private foundations; and those in the public policy arena including local and state politicians and academic policy centers.

Constructs from the behavioral change theories were operationalized through the activities detailed in the logic model. Improved self-knowledge and self-efficacy were promoted by developing a repository of easily-accessible health literacy materials (which included print, illustrations, video, and other media), followed by a broad-based public education campaign largely utilizing grass-roots community liaisons. Promoting behavioral change through social norms was actualized by linking health promotions with communityliaisons.
ambassadors, who by being culturally competent and/or ethnically similar, were more likely to positively influence health behaviors in the long-term. Social norms were also influenced by engaging in a social marketing campaign to reach a wider, more diverse audience.

Recognizing that some individuals, (and minority populations in particular), were less likely to seek health information or health care because they feel culturally alienated or intimidated in the medical encounter, the coordinating council considered activities to improve the likelihood of moving individuals from a precontemplative stage to the active and maintenance stage of health management by increasing health professional’s awareness of cultural sensitivity. Proposed activities range from health professional school curriculum reform to health provider cultural competency training. Woven throughout the designated activities was the reliance on planning evaluation to discern predisposing, reinforcing, and enabling constructs, as articulated in the Precede-Proceed model. Affording evaluation a highly visible role in our model affirmed the significance of linking program activities to the environment, creating the de facto “politics of accountability” that promotes social change.45-46

The outputs, or products in the Health Literacy Logic Model reflect the outgrowth of the multilevel intervention strategies. The hallmark of the logic model was the creation of a Health Literacy Center of Excellence, guided by an independent coordinating council. The coordinating council, adhering to the principles of community empowerment in health planning, conducted focus group sessions with employees at 54 Missouri non-profit organizations in 14 Missouri counties from 2007-2008. These grass roots individuals defined health literacy as: understanding basic health concepts; understanding, finding, and using health information provided inside and outside of healthcare; navigating the healthcare system; and patients taking responsibility for their own health.

The participants noted that culture and language played an important part in understanding health information or having a successful health encounter. As one participant said:

Health literacy means the ability of patients to be able to understand their own medical conditions, instructions that may have been given about their medical conditions, so that they’re making wise choices and decisions about keeping themselves healthy.

These experiences highlighted the importance of formative research in identifying and assessing the effectiveness of intervention strategies in culturally
diverse groups. The Center of Excellence, known as Health Literacy Missouri, moved assiduously to incorporate the community perspectives into the Center’s desired outcomes.

DEMONSTRATION PROJECTS

Theory-based evaluations have been employed successfully in qualitative and quantitative research, typically linking empirical knowledge to the achievement of a desired outcome through defined programmatic activities. This paper goes a step further in outlining the impact of theory-based evaluation on a wide range of programs under the auspices of a state-wide program, Health Literacy Missouri. Given the impracticality of designing and evaluating a single comprehensive program for a culturally and ethnically diverse state, the coordinating council developed and implemented a process to identify and fund innovative health literacy demonstration projects around the state. Each demonstration project describes innovative community-based approaches in improving health literacy, and each includes a rigorous evaluation plan. The demonstration projects allow further assessment of how behavioral theories can be employed to test program assumptions, and hopefully allow generalization of the program to other targets.

Current demonstration projects are summarized in Table 1. There are multiple theories that could be explored for each project, however for the sake of parsimony only the major theories are presented here. Likewise, there is considerable overlap of constructs between projects, and only a representative number of constructs are outlined for each project. The evaluation of the demonstration projects, which are only in the first year of implementation, is ongoing and is sufficiently rigorous to ascertain which projects are more likely to be adopted and culminate in long-term behavioral change. Resources will be marshaled to replicate the most effective and sustainable projects across the State, and the results shared with a national health literacy consortium to further the adoption of health literacy best practices.

CONCLUSION

The approach of Health Literacy Missouri has been to adopt a program planning model that integrated the requisite needs assessment, ecological framework, and program evaluation. Launching a statewide health literacy campaign without those requisite elements would be a daunting task for a
number of reasons. First, since there is still not a comprehensive measure of health literacy, there is disagreement on how to assess a population with a varied socioeconomic and culturally diverse background. Secondly, program planning functions best when based on a conceptual framework that focuses on ecological, multilevel determinants of health\textsuperscript{38}. Successful implementation of the health literacy effort requires the interaction of a broad-based, multidisciplinary core of individuals and institutions, which are not historically characterized as collaborative.

Lastly, and perhaps more critically, theory-based program evaluation relies on monitoring how theory constructs are operationalized over time in order to determine why a set of activities did or did not lead to the desired outcome\textsuperscript{26}. The difficulty with monitoring health literacy over time is that, as a social construct, it is developed in response to our expanded cognitive skills as well as the product of social interactions\textsuperscript{48}. In essence, health literacy functions as a latent construct - not directly measured, but estimated through proxy measures such as family structure, educational attainment, economic status, health care access, and other contextual factors\textsuperscript{49}. Thus, assessing interventions to improve health literacy by measuring proxy covariates over time, while not improbable, can become an evaluator’s nightmare.

Crafting a theory-based logic model afforded the Coordinating Council the opportunity to explore the major assumptions about health literacy while designing a more effective plan to influence program outcomes in a culturally and economically diverse state. Incorporating behavioral theory into the health literacy logic model permitted the contextualization needed to identify individuals or systems that were amenable to modification. Building the model on an ecological framework has the potential to accelerate the achievement of the logic models long-term goals while promoting sustainability and making evaluation more engrained and systematic. Although the Health Belief Model, Social Cognitive Theory, Stages of Change, and Social Planning Model were emphasized in this model, other behavioral health theories can be readily adapted. The utility of the resultant logic model and its relative simplicity will hopefully result in its adoption by other communities nationwide and abroad.
Health literacy is associated with a low quality of life. Low health literacy is a significant issue in Missouri. Low health literacy disproportionately affects marginalized and underserved populations. Responsibility in improving health literacy resides in the entire community.

Health Literacy Missouri Program Logic Model

Assumptions
- Health literacy is associated with a low quality of life
- Low health literacy is a significant issue in Missouri
- Low health literacy disproportionately affects marginalized and underserved populations
- Responsibility in improving health literacy resides in the entire community

Inputs
- People of Missouri
- Educational Systems
- Faith-based Institutions
- Social Service Organizations
- Health and Medical Community
- Industry
- Academic Policy Centers
- Government

Activities
- Needs Assessment
- Resource Inventory and Development
- Assessment and Triage of Community Resources
- Health Professional Curriculum Development
- Public Education Campaign
- Strategic Communication Planning
- Prioritized Needs of Missourians
- Health Literacy Resource Repository
- Public Education Campaign
- Health Professional Training Program
- K-12 College Health Literacy Curriculum

Outputs
- Increased Public Awareness of Health Literacy
- Increased Personal Satisfaction with Health Care
- Increased Patient’s Health Communication Skills
- Appropriate Use of Prevention Services
- Increased Health Literacy Among Students
- Increased Provider Health Literacy and Communication Skills
- Increased Community Capacity

Outcomes
- Short Term
  - Healthier Missourians
  - Reduced Health Care Costs
  - Improved Systems Infrastructure
- Medium Term
  - Healthier Missourians
  - Reduced Health Care Costs
  - Improved Systems Infrastructure
- Long Term
  - Healthier Missourians
  - Reduced Health Care Costs
  - Improved Systems Infrastructure

Evaluation
Data Collection, Analysis, Reporting

Figure 1.
Table 1. Health Literacy Demonstration Projects

<table>
<thead>
<tr>
<th>ORGANIZATION</th>
<th>PROJECT TITLE</th>
<th>PROJECT DESCRIPTION</th>
<th>THEORY</th>
<th>CONSTRUCTS</th>
<th>EVALUATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban League of Metropolitan Saint Louis</td>
<td>Health Liaisons Block Unit Model</td>
<td>A health literacy training program will be developed in twenty neighborhoods in an African American underserved community. Neighborhood ambassadors will be used enrolled to address the following components of health literacy: communication with physicians, understanding nutrition labels, and understanding prescription labels.</td>
<td>Health Belief Model, Social Cognitive Theory</td>
<td>Benefits, Barriers, Self-efficacy, Social Norms, Reinforcement</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Nurses for Newborns Foundation</td>
<td>Mothers of Newborns Health Literacy Project</td>
<td>Patient-provider communication will be enhanced by using community outreach mothers to train mothers from Bosnian and Hispanic communities. In-home visits will stress prescribed medications, immunizations, and risk of tobacco smoking</td>
<td>Health Belief Model, Social Cognitive Theory, Stages of Change</td>
<td>Benefits, Barriers, Self-efficacy, Social Norms, Reinforcement</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Saint Louis Christian Chinese Community Service Center</td>
<td>Chinese Community Health Literacy Enhancement</td>
<td>The health literacy of new immigrants, older adults, and other underserved individuals in the Chinese community would be improved through development and delivery of linguistically and culturally sensitive materials. Community capacity would be extended as a consequence</td>
<td>Health Belief Model, Social Cognitive Theory, Social Planning Model</td>
<td>Barriers, Benefits, Self-efficacy, Social Support, Social Environment</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Parkway School District</td>
<td>Adult Health Literacy: A Curriculum Designed for Missouri Adult Education and Literacy Programs</td>
<td>Health literacy modules would be created to allow adult students to participate in health literacy lessons. The newly-designed curriculum would interface with the Missouri State Adult Education Section and the Adult Education Professional Development Center</td>
<td>Health Belief Model, Social Cognitive Theory, Social Planning Model</td>
<td>Benefits, Self-efficacy, Social Norms,</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Erise Williams and Associates,Inc</td>
<td>HIV/AIDS Health Literacy Initiative</td>
<td>The initiative will measure the impact of health literacy on HIV/AIDS treatment and adherence to persons living with HIV/AIDS. A tool would be subsequently developed to improve treatment knowledge and adherence</td>
<td>Health Belief Model, Stages of Change</td>
<td>Perceived Benefits, Barriers, Health Motives, Self-efficacy, Reinforcement Management, Social Liberation</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Maplewood-Richmond Heights School District</td>
<td>Seed-to-Table Program</td>
<td>Child’s understanding of healthy nutrition will be enhanced through developing a community garden. New resources will be developed to further integrate health literacy into K-12 curriculum</td>
<td>Health Belief Model, Social Cognitive Theory</td>
<td>Benefits, Self-efficacy, Observational Learning, Reciprocal Determinism</td>
<td>Ongoing</td>
</tr>
</tbody>
</table>
References:


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