Advancing Health Literacy Measurement: A Pathway to Better Health and Health System Performance

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The concept of health literacy initially emerged and continues to gain strength as an approach to improving health status and the performance of health systems. Numerous studies clearly link low levels of education, literacy, and health literacy with poor health, poor health care utilization, increased barriers to care, and early death. However, theoretical understandings and methods of measuring the complex social construct of health literacy have experienced a continual evolution that remains incomplete. As a result, the seemingly most-cited definition of health literacy proposed in the now-decade-old Institute of Medicine report on health literacy is long overdue for updating. Such an effort should engage a broad and diverse set of health literacy researchers, practitioners, and members of the public in creating a definition that can earn broad consensus through validation testing in a rigorous scientific approach. That effort also could produce the basis for a new universally applicable measure of health literacy. Funders, health systems, and policymakers should reconsider their timid approach to health literacy. Although the field and corresponding evidence base are not perfect, health literacy—especially when combined with a focus on prevention and integrative health—is one of the most promising approaches to advancing public health.

The concept of health literacy initially emerged and continues to gain strength as an approach to improving health status and health systems because numerous research studies clearly link low levels of education, literacy, and health literacy with poor health, poor health care utilization, increased barriers to care, and early death around the world (Berkman et al., 2011; Nielsen-Bohlman, Panzer, & Kindig, 2004; Zarcadoolas, Pleasant, & Greer, 2006). However, theoretical understandings and methods of evaluating health literacy have been in continual evolution since the idea of health literacy was first put forward. That normal evolutionary process of developing a scientific understanding and evidence base remains incomplete—this is especially true regarding understanding and measuring the complex social construct of health literacy (Berkman, Davis, & McCormack, 2010).

If one were to construct an evolutionary chart of the approach to measurement of health literacy, it would begin with a series of relatively simple methods focused on evaluating an individual's reading and, to a lesser extent, numeracy skills in clinical contexts. Later developments in that evolution include modifying the basic approach to a food label versus solely a clinical context. Examples of tools in this area include the Rapid Estimate of Adult Literacy in Medicine, the Test of

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Functional Health Literacy in Adults, and the Newest Vital Sign (Davis et al., 2006; Parker, Baker, Williams, & Nurss, 1995; Weiss et al., 2005).

While clearly creating a useful foundation, early efforts to measure or screen for health literacy may become more of a branch rather than the main trunk of the ongoing evolution of the field. Efforts focused on producing a method that would be acceptable in clinical settings were built under a perception that a social research method must be quick versus in-depth. Now, it seems that many are in agreement that the initial energy might have been better purposed if it had focused on producing a robust method to deeply explore the complexity of health literacy rather than developing quick, and thus relatively shallow, screening tools. Yet, history should be neither discounted nor ignored as the field of health literacy—and there is a growing field of health literacy research and practice—is where it is today in no small part because of those early efforts.

Another development in the evolution of health literacy measurement has fairly recently emerged. This group of efforts focuses on self-report as a method to evaluate health literacy in individuals and populations. Recent examples in this branch of development include the European Health Literacy Survey, the Health Literacy Questionnaire, a series of single-item screeners, a health literacy measure for Japanese adults, and another in Dutch (Chew, Bradley, & Boyko, 2004; Chew et al., 2008; Jordan et al., 2013; Sorenson et al., 2013; Suka et al., 2013; van der Vaart et al., 2012; Wallace, Rogers, Roskos, Holiday, & Weiss, 2005).

Self-reports are subject to criticism on several grounds including that they may more accurately be assessing self-efficacy instead of health literacy. In addition, it is clear that individuals with health literacy may choose to not use it for a variety of reasons; for example, in a distressing situation or when they have complete trust in the health care professional they are working with (Brashers, Goldsmith, & Hsieh, 2002; Frisch, Camerini, Diviani, & Schulz, 2011; Ishikawa & Yano, 2008; Ramanadhan & Viswanath, 2006).

Furthermore, the issue of shame may play a strong role in the results of self-report measures of health literacy. One study found that 40% of patients with low health literacy who also acknowledged they have trouble reading admitted to feeling shame. Of that 40%, more than 65% had never told their spouse and more than 50% had never told their children (Parikh, Parker, Nurss, Baker, & Williams, 1996). In many instances, self-reports may not, therefore, be entirely accurate, but the method may provide an approach to begin validating the broader underlying theoretical constructs of how health literacy actually functions in the lives of individuals, communities, and populations.

None of these issues in the measurement of health literacy should come as a surprise to anyone active in the field, nor should they be treated as controversial. For example, Pleasant and McKinney (2011) reported that more than 90% of participants in a discussion of health literacy measurement agreed new measures of health literacy need to be developed, 95% agreed new measures should be based on and test theory, and 88% agreed existing measures of health literacy do not match the current understanding of health literacy.

Measuring a Social Construct: Definitions Do Matter

Health literacy is a complex social construct. A social construct is essentially an idea or concept that people have created and can use to organize their actions and thoughts. Social constructs can be considered products of human choices rather than laws resulting from natural processes or divine will. By extension, any treatment of health literacy as a naturally occurring or entirely objective phenomenon is somewhat misguided. That means, for example, a deficit approach that blames people

for not having what is deemed appropriate health literacy is not an accurate reflection of the concept.

Health literacy, as Hanchate said, “is intimately connected with the socioeconomic environment and with demographics. Health literacy is also complex. A few sociodemographic measures will not account for all individual differences in health literacy. For example, some people with substantial schooling may still have inadequate health literacy, and such cases will be captured only by direct measurement” (2009, p. 62).

To evaluate a social construct such as health literacy, the strongest methodological approach is to proceed from the basis of a definition—which is essentially a theory or conceptual framework of what the social construct represents and how it functions (Streiner & Norman, 1995; Trochim, 1989). Differences between a definition, conceptual framework, and theory can and have been expounded upon, but for this discussion they essentially serve the same purpose of identifying the primary attributes of the social construct and the relations between those attributes and possible outcomes.

What has been missing in health literacy research, essentially, is a robust and rigorous use of the scientific method to fully explore the complex social construct. *Scientific method* is defined by the Oxford English Dictionary as “a method or procedure that has characterized natural science since the 17th century, consisting in systematic observation, measurement, and experiment, and the formulation, testing, and modification of hypotheses.”

In this process, researchers first craft a hypothesis. In the case of health literacy, the central hypothesis about the nature of health literacy most often appears in the form of a definition. Through experimentation, researchers should test the specific and exact attributes of that hypothesis, or definition, in as rigorous a methodological approach as possible and ethical. The definition has to be written in a way that can be measured—which is certainly not true for all existing definitions of health literacy.

The results of that testing should allow researchers to further refine their original hypothesis/definition and then retest the resulting newly developed definition. That process can and should be repeated as many times as necessary to arrive at a reasonable degree of certainty. Ideally, this process is removed from personality and personal claims of discovery. A primary goal is to develop an evidence base of objective data that supports consensus making rather than conflict and claims making.

However, in health literacy, what was true for Begoray and Kwan (2011, p. 30) 3 years ago remains largely but not entirely true today. “The development of an operational definition that guides measurement has been an often overlooked but important step in the construct validation of health literacy.”

A Brief History: Ever-Changing Definitions of Health Literacy

To successfully measure a social construct like health literacy, the idea must be explicitly and clearly defined. Measurement tools should reflect—and test—the definition of a social construct. In health literacy at this point in time in early 2014, multiple and partially conflicting definitions of health literacy continue to appear.

Among the earliest attempts, Parker and colleagues (1995) wrote that health literacy means being able to apply literacy skills to health related materials such as prescriptions, appointment cards, medicine labels, and directions for home health care.

Three years later, Donald Nutbeam in a health promotion glossary for the World Health Organization wrote:

Health literacy represents the cognitive and social skills which determine the motivation and ability of individuals to gain access to, understand and use information in ways which promote and maintain good health. Health literacy means more than being able to read pamphlets and successfully make appointments. By improving people's access to health information and their capacity to use it effectively, health literacy is critical to empowerment (Nutbeam, 1998, 2000).

In another fairly early example, an American Medical Association ad hoc committee on health literacy defined health literacy as a constellation of skills, including the ability to perform basic reading and numerical tasks required to function in the health care environment (Ad Hoc Committee on Health Literacy for the Council on Scientific Affairs, 1999).

Likely the most cited definition within the United States to date is the definition proposed in the Institute of Medicine's initial report on health literacy (Nielsen-Bohlman et al., 2004). That now decade old volume, *Health Literacy: A Prescription to End Confusion*, as well as Healthy People 2010 and 2020 initiatives in the United States, define health literacy as the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions (Nielsen-Bohlman et al., 2004; Selden, Zorn, Ratzan, & Parker, 2000; U.S. Department of Health and Human Services, 2000). An U.S. Agency for Healthcare Research and Quality effort limits that definition to just a "patients' ability" and thus, reflecting their mission, explicitly emphasizes clinical settings over public health or other contexts (Agency for Healthcare Research and Quality, 2007).

The Council of State Government, in 2003, produced an informational health literacy toolkit that defined the social construct as the ability to read, understand, and act appropriately on health care information. Furthermore, the toolkit proposed that to be health literate, one must possess the reading, listening, reasoning, and problem-solving skills necessary to make informed choices about health and health care (Sewell, 2003). The U.S. National Assessment of Adult Literacy defined *health literacy* as "the ability of U.S. adults to read, understand, and apply health-related information presented in written English to function in society and achieve one's goals" (Kutner, Greenberg, Jin, & Paulsen, 2003; White, 2008, p. 3).

In a systematic review of the peer-reviewed literature to date in 2004, DeWalt and colleagues wrote, "Researchers and policy makers often use the phrase 'health literacy' to describe a set of skills needed to function in the health care environment" (p. 1228). Chew and colleagues (2008, p. 561) offer a quoted and cited definition as "the degree to which individuals have the capacity to obtain, process, and understand basic health-related decisions." The citation provided is to the Institute of Medicine's *Prescription to End Confusion* volume, but a search of that volume via the National Academy of Science's online interface reveals no exactly matching definition (Chew et al., 2004; Chew et al., 2008).

Researchers Kickbush and Maag offered a context-driven definition of health literacy as "the ability to make sound health decisions in the context of everyday life—at home, in the community, at the workplace, the health care system, the market place and the political arena" (2008, p. 206). Health literacy in this definition is cast as a critical empowerment strategy to increase people's control over their health, their ability to seek out information and their ability to take responsibility. However, the generalities in the definition seem to defy using this definition as a basis for measurement.

Furthermore, the notion of a sound decision is as judgmental as the Institute of Medicine's definitional outcome of an appropriate decision (Kickbusch & Maag, 2006).

Researchers in Canada and at the World Health Organization have offered a definition of health literacy as people's ability to find, understand, appraise, and communicate information to engage with the demands of different health contexts to promote health across the life course (Kwan, Frankish, & Rootman, 2006). Zarcadoolas and colleagues (2006) offered a comprehensive definition in their book, *Advancing Health Literacy: A Framework for Understanding and Action*. That definition neither limits nor conflicts with others by defining health literacy as the wide range of skills and competencies that people develop to seek out, comprehend, evaluate, and use health information and concepts to make informed choices, reduce health risks, and increase quality of life (Zarcadoolas et al., 2006).

In 2009, Yost and colleagues offered a definition that reads:

Health literacy is the degree to which individuals have the capacity to read and comprehend health related print material, identify and interpret information presented in graphical format (charts, graphs, tables), and perform arithmetic operations in order to make appropriate health and care decisions (p. 298).

Begoray and Kwan (2011) worked to develop what they called an operational definition of health literacy by reviewing other definitions, and produced a definition of health literacy as the degree to which people are able to access, understand, appraise, and communicate information to engage with the demands of different health contexts to promote and maintain health across the life-course.

As part of the European Health Literacy Survey effort, a definition was developed based on a review of existing models that defines health literacy as follows:

[T]he knowledge, motivation and competences to access, understand, appraise, and apply health information in order to make judgments and take decisions in everyday life concerning health care, disease prevention and health promotion to maintain or improve quality of life throughout the course of life (Sorensen, 2013; Sorensen et al., 2012, p. 6).

Recently, an effort to produce consensus on a definition of health literacy included researchers and practitioners across multiple fields in the United States and Canada. The Calgary Charter on Health Literacy formally defines health literacy as follows:

Health literacy allows the public and personnel working in all health-related contexts to find, understand, evaluate, communicate, and use information. Health literacy is the use of a wide range of skills that improve the ability of people to act on information in order to live healthier lives. These skills include reading, writing, listening, speaking, numeracy, and critical analysis, as well as communication and interaction skills.

Outcomes indicated in the full definition include informed choices, reduced health risks, improved navigation of the health care system, reduced inequities in health, and increased quality of life in a variety of settings across the life course. That clearly moves toward a more explicit inclusion of public health within a definition of health literacy.

The Charter is freely accessible and offers all interested parties a chance to perform their own peer review and sign on to the Charter at http://www.centreforliteracy.qc.ca/health_literacy/calgary_charter. The definition of *health literacy* that the Charter proposes is a testable model of health literacy that can produce successful outcomes of the relationship between the supply and demand of health literacy that is central to public and individual health (Coleman et al., 2009). This approach is as much about what people do with the set of behavioral skills that support their health literacy as it is about the level of those skills they may possess. This definition clearly indicates that health professionals can help the public to, or the public at various skill levels can, achieve positive health outcomes by directing the skills they do possess to find, understand, evaluate, communicate, and use information to make informed decisions about their health (Coleman et al., 2009). Furthermore, that approach lays out a model of health literacy more in the mode of a theory of behavior change than a label attempting to aggregate a broad set of skills and abilities. Health literacy and literacy are behaviors. Thus, behavior change is a valid outcome of improved health literacy.

Behavior change is also a highly targeted and valued outcome in public health efforts as well.

Reviewing these 16 different definitions of health literacy identifies several common attributes. This seems to indicate that there is at least some consensus that health literacy is a multidimensional social construct. Areas of potential consensus about the attributes of health literacy emerge around core concepts such as using, understanding, finding, and evaluating information (Table 1).

The Disconnect Between *Definition* and *Measurement*

Just as there are multiple and conflicting definitions of health literacy, there are multiple and conflicting measurement and screening tools. Over the history of the idea of

Table 1. Attributes of health literacy from 16 existing definitions

Attribute of health literacy	Number of definitions attribute appears within
Use, function, and/or act	13
Understand	12
Find, access, and/or obtain	10
Evaluate or process	10
An appropriate or sound decision	5
To improve health	6
Reading and/or numeracy	5
A set of undefined skills	4
An informed decision	5
In a health care/clinical context only	3
Communicate	3
Empowerment/take responsibility	2
Listen	1
Print material	1
Graphic material	1

Note. Definitions used are from Agency for Healthcare Research and Quality, 2007; Ad Hoc Committee on Health Literacy for the Council on Scientific Affairs, 1999; Begoray & Kwan, 2011; Chew et al., 2008; Coleman et al., 2009; DeWalt et al., 2004; Kickbusch & Maag, 2008; Kirsch, Jugeblut, Jenkins, & Kolstad, 1993; Kwan et al., 2006; Nielsen-Bohlman et al., 2004; Nutbeam, 1998; Parker et al., 1995; Sewell, 2003; Sorensen et al., 2012; Yost et al., 2009; and Zarcadoolas et al., 2006.

health literacy, many people have proffered many definitions, yet those definitions have not been formally or fully tested. To be sure, health literacy evaluative and measurement tools often claim to be based on one definition or another, but the specific constructs within the definitions have rarely, if ever, been explicitly built into and tested with the evaluative tool. An important point to make before proceeding is that the majority of measurement or screening tools are targeted for use with individuals. Much less work has been done on the other side of the health literacy equation—namely, measuring the level of demand. That, however, is a topic for a different article.

Most, if not all, of the existing tools to measure or screen for health literacy are listed in Table 2. In reviewing existing efforts in 2013, Osborne, Batterham, Elsworth, Hawkins, and Buchbinder wrote, “However, most of these studies used measures of health literacy that fail to capture the full breadth of ideas embodied in definitions of health literacy and they have also been shown to have substantive psychometric weaknesses” (p. 2).

There are two issues to be addressed, as Osborne noted. One is the scope of what to measure and the other is the methodological rigor used to measure. From the basic methodological approach of measuring what you define, many of the existing measures of health literacy fall short on both accounts. From the earliest efforts to today, there are many peer-reviewed journal articles on the development of a health literacy measure or screener that do not contain a definition of health literacy nor suggest the health literacy measure reported on was based on a specific definition or conceptual framework. The researchers simply built a measure that they liked and tested and that passed peer review for publication. In contrast, personal networks within health literacy commonly include stories of a failure of one or another measure of health literacy, but failures very rarely create an opportunity for peer-reviewed publication.

For example, the original article reporting on the Rapid Estimate of Adult Literacy in Medicine does not include an explicit definition of health literacy. The original article report on the first development of the Test of Functional Health Literacy in Adults contains a definition of functional literacy, but not of functional health literacy or health literacy. The original article reporting on development of the Health Activities Literacy Scale also defines literacy, but does not explicitly define health literacy. To many, however, this is likely not an immediate cause for concern. Early conceptions of health literacy and many active in the field today insist health literacy is simply the use of literacy skills in a health context. Others disagree.

This historically present disjoint in the evolution of health literacy measurement may be fading away. For example, a recent article reporting on the development of the Health Literacy Questionnaire, conducts a comparison to an existing definition, but in a not as productive as possible post-hoc fashion. (Osborne et al., 2013) The comparison made is between Nutbeam’s model of health literacy and the self-report statements that make up the nine subscales that ultimately comprise the Health Literacy Questionnaire. The development of the questionnaire was based not a previously proposed hypothesis or definition, but upon a grounded process that included a series of concept mapping workshops and consultations with patients and experts. In the end, the Health Literacy Questionnaire seems to propose two different models of health literacy—one reflected in the nine subscales of the questionnaire and a second from the post hoc analysis of those subscales using Nutbeam’s model. One essentially proposes yet another definition of health literacy without explicitly testing those already in circulation and the other does not really test or validate Nutbeam’s model as so many statements contained within the Health Literacy Questionnaire are not reflective of Nutbeam’s model. The Health Literacy Questionnaire’s subscales, however, seem to agree with the Calgary Charter’s

Table 2. Existing screeners and measures of health literacy

Screener or measure	Reference
Rapid Estimate of Adult Literacy in Medicine (a variety of versions exist)	Davis et al., 1991; Davis et al., 1993; Davis et al., 2006
Test of Functional Health Literacy in Adults (a variety of versions exist)	Gong et al., 2007; Parker et al., 1995
Medical Terminology Achievement Reading Test	Hanson-Divers, 1997
Literacy Assessment for Diabetes	Nath, Sylvester, Yasek, & Gunel, 2001
Items from the 2003 National Assessment of Adult Literacy	Kutner et al., 2003
Health Activities Literacy Scale	Rudd, Kirsch, & Yamamoto, 2004
Chew single item screener - 1	Chew et al., 2004
Newest Vital Sign	Weiss et al., 2005
Wallace single item screener	Wallace et al., 2005
The Spoken Knowledge in Low Literacy in Diabetes scale	Rothman et al., 2005
Stieglitz Informal Reading Assessment of Cancer Text	Agre, Steiglit, & Milstein, 2006
Short Assessment of Health Literacy for Spanish-speaking Adults	Lee, Bender, Ruiz, & Cho, 2006
Single item literacy screener	Morris, MacLean, Chew, & Littenberg, 2006
Hebrew version of the short form of the Test of Functional Health Literacy in Adults	Baron-Epel, Balin, Daniely, & Eidelman, 2007
Nutrition Literacy Scale	Diamond, 2007
eHEALS: The ehealth literacy scale	Norman & Skinner, 2007
Chew single item screener - 2	Chew et al., 2008
Diabetes Numeracy Test (a variety of versions exist)	Huizinga et al., 2008
Population based predictive models	Martin et al., 2009
Health Literacy Assessment Using Talking Touchscreen Technology	Hahn, Choi, Griffith, Yost, & Baker, 2011; Yost et al., 2009
Demographic Assessment of Health Literacy	Hanchate, 2009
An instrument targeting Canadian adolescents	Wu et al., 2010
Health Literacy Skills Instrument	McCormack et al., 2010
Comprehensive Measure of Oral Health Knowledge	Macek et al., 2010
Mandarin Health Literacy Scale	Tsai & Kuo, 2011
An adaptive testing algorithm for shortening health literacy assessments	Kandula, Ancker, Kaufman, Currie, & Zeng-Treitler, 2011
Media Health Literacy	Levin-Zamir, Lemish, & Gofin, 2011
Health Literacy Test for Singapore (an adapted short form of the Test of Functional Health Literacy in Adults)	Ko, Lee, Toh, Tang, & Tan, 2011
A Canadian exploratory study to define a measure of health literacy	Begoray & Kwan, 2011
The Health Literacy Management Scale: A measure of an individual's capacity to seek, understand, and utilize health information within the health care setting	Jordan et al., 2013
The Health Literacy Questionnaire	Sorenson et al., 2013
European Health Literacy Survey Questionnaire	Sorenson, 2013; Sorenson et al., 2013
Fostering Literacy for Good Health Today and the related Spanish project named Vive Desarrollando Amplia Salud	Ownby et al., 2013

Note. This table deliberately does not include explicit literacy or numeracy measures that have been used at times in a health context such as the Wide Range Achievement Test (Wilkinson & Robertson, 2006), Subjective Numeracy Scale (Fagerlin et al., 2007), the Woodcock-Johnson Tests of Achievement (Woodcock, McGrew, & Mather, 2001), or several others listed in the systematic review sponsored by the Agency for Healthcare Research and Quality (Berkman et al., 2011). The 1992 National Adult Literacy Survey is not included because it only had six health-related questions and only two were reused in the 2003 National Assessment of Adult Literacy. While the 2003 National Assessment of Adult Literacy is reported to have included sufficient questions for establishing trends with future assessments, the 2013 Programme for the International Assessment of Adult Competencies did not take advantage of that opportunity.

proposed definition of health literacy in many ways. Still, that is a research effort that needs undertaken in the future.

A similar shift in fundamental approach is also evident in the development of the European Health Literacy survey (Sorensen, 2013; Sorenson et al., 2013) That effort was based on “a systematic literature review of existing definitions and models of health literacy” that created what the organizers called an “integrated definition of the concept.” That definition, as stated earlier, was the basis for their efforts to develop a measurement tool that, through a perhaps overly complicated process, became a self-report measure despite initial goals of creating a more objective measurement tool.

As a result of these two recent efforts, it seems that despite the possible criticism of self-report measures, such relatively subjective approaches to testing the definitions of health literacy in the general public may be an economically and ethically feasible approach that can be built upon. Both measurement tools have demonstrated significant correlations with health status. Ideally, the gold standard for validity testing of any measure of health literacy would be based upon a change in health literacy having a significant relationship with a parallel change in health status. This is entirely possible to achieve in practice.

Despite those efforts, more remains to be accomplished. In different ways those recent efforts to build self-report measures did not fully explain the relationships between the attributes of health literacy they measured and how those related to health. Is there, for example, as the Calgary Charter on Health Literacy proposes, a logic model that people can use their skills—at whatever level they exist—to make informed decisions that in the aggregate lead to a life of improved health and wellness? That is one aspect of the work this I and my colleagues at Canyon Ranch Institute are taking up; results will be forthcoming. In the long run, however, the use of subjective self-reports is an incomplete but seemingly a necessary and useful step in the long-term development of an objective measure of health literacy as a theory of behavior change. This long-term goal is, unfortunately, one that is often outside of funding organizations traditional approaches to science.

Discussion

Over the past several decades, differing parties have defined *health literacy* at different times and with different underlying agendas and foci in sometimes supportive and sometimes conflicting manners. That flexibility and resilience of the social construct can be viewed as both a strength and weakness. For example, while the flexibility of a rubber band is its greatest selling point; that flexibility also limits the tool's strength and, clearly, a rubber band can be stretched only so far before breaking.

The concept of health literacy seems to have a strong and growing appeal to a wide variety of researchers, practitioners, and policymakers. That attractiveness risks being superficial as its basis at least partially lies in the flexibility of the social construct that to date has allowed anyone to identify nearly whatever they want as health literacy. While the flexibility of the social construct has so far prevented the concept from fragmenting under stress, that flexibility in meaning also works to prevent the field from building a defined, valid, objective, and reliable evidence base that can produce systematic reviews identifying best practices based on a high strength of evidence.

That flexibility, creating a nearly universal appeal and interest, may well be an outcome of the reality that health literacy researchers, theoreticians, and practitioners were initially drawn from the two very diverse and disparate fields of medicine and adult basic education. In medicine, there is a clear and valid priority given to academic publication as well as a perceived need to quickly screen individuals for

risk factors. In adult basic education, there is an equally clear and valid priority given to long-term engagement with individuals to develop a complex, grounded understanding of the challenges those individuals face in their lives. Other significant differences between the fields include their size, funding levels, pressure for profit, level of governmental regulation, length and intensity of relationships with participants, social recognition, and the power relationship between providers and learners or patients.

A later arrival, but quickly growing in importance, is the field of public health. Public health brings a focus on prevention versus treating disease after it occurs, an awareness of community and national level disparities and complex causation versus a focus on the individual, and an acute awareness that systems can create barriers to individual success. Given that origin and evolutionary context, it should be no surprise that the field of health literacy has and continues to embrace and encompass a diverse array of practices, definitions and conceptual frameworks, and attitudes. That diversity—despite the protests of some—should be generally taken as an overall strength rather than a crippling weakness; but, more important, that diversity should also not be allowed to interfere with the development of a broadly shared consensus and evidence-based best practices.

Although not a complete theory of science, Lakatos and Musgrave (1970) presented an approach to scientific research programs that described a hard core and a soft belt. Essentially, the hard core of a theory is that which cannot be abandoned or altered without abandoning the research altogether. The soft belt is composed of hypotheses that can be altered or abandoned based on empirical evidence to protect the hard core.

For health literacy, much of the focus and discussion to date have been on identifying attributes of the soft belt rather than defining and measuring a hard core. This is an outcome of a focus on screening and quickness versus developing and testing theory with comprehensive measurement tools. Furthermore, the diverse communities and individuals interested in health literacy have and continue to tend to focus on their differences rather than on developing a shared consensus. Hopefully, that phase in the evolution of the scientific understanding of health literacy is nearing an end.

One possible route to reach that end, is to consider the development of the hard core and soft core of health literacy theory and practice as a two-step process. First, the field needed to identify the broad range of skills associated with health literacy and begin to explore the relation between those skills and health status. Second, as it became clear skill levels were not the sole determinant of that relation, the focus shifted to what people did with the skills that they do possess.

Nutbeam (2000) wrote:

It is important to recognize that high literacy levels (assessed in terms of ability to read and write) are no guarantee that a person will respond in a desired way to health education and communication activities. By contrast Freire, and those that have modeled their education programs on his methods, have shown that working to raise the 'critical consciousness' of those with little or no skills in reading and writing can undertake activities and achieve outcomes which are closely aligned to the definition of critical literacy (p. 264).

That path, a shifting of focus from skills to what people do with their skills is reflected perhaps most robustly in the Calgary Charter on Health Literacy's proposed definition of health literacy (Coleman et al., 2009). That definition, or theory,

proposes a logic model that ends in behavior change versus simply trying to define and measure a set of skills. The logic model proposed in the Calgary Charter on Health Literacy can be followed by individuals at any skill level. Essentially and practically, the hypothesis proposed is that in terms of health outcomes, which skills people use is not as important as what people actually do with the skills they possess.

Preliminary work of this author and colleagues at Canyon Ranch Institute has explored the viability and validity of this approach in public health interventions focusing on an integrative approach to health (see <http://www.canyonranchinstitute.org>). Early results are promising and will be reported on in greater detail in forthcoming publications (Pleasant, 2011; Pleasant, de Quadros, Pereira-León, & Cabe, 2014).

Continuing to advance the field of health literacy is important for many reasons. From a health perspective, while the existing body of evidence has fostered a formative understanding of the pathways by which low health literacy may contribute to poor health outcomes, it falls short of explaining why the intermediate factors (e.g., lack of knowledge, lower participation in screening, reduced ability to act) occur. Is it because individuals cannot find the information? Are they unable to understand the information they do find? Can they not evaluate information to discern high-quality information from low-quality information? Can they not effectively communicate any questions or concerns they have about the information they have? Do they lack the confidence to act on or use the information?

Other reasons for why this area of work is so critical lie in the reality that over the past several decades, there has been a decline in infectious diseases and an increase in chronic diseases, such as type 2 diabetes and heart disease. Effective chronic disease prevention and self-management both require an active and informed public with the health literacy skills necessary to carry out self-care plans, make informed decisions related to health-promoting behavior and lifestyle changes, adhere to increasingly complex medication regimens, effectively communicate with health professionals, and properly escalate issues requiring further medical attention.

Ongoing shifts in health policy and implementation of the Affordable Care Act in the United States further highlight the importance of these critical questions. Individuals newly eligible for publicly funded or subsidized health insurance will need to navigate the system to find accurate and usable information; understand eligibility guidelines, complete forms, and provide documentation necessary for enrollment; understand concepts such as premiums, copayments, and benefits, and be able to apply these concepts to their existing or anticipated health situation to select the most appropriate plan; understand which services are and are not covered; and complete additional paperwork to enroll in their selected plan. All those steps must occur before an actual visit with a health care professional. In short, advancing health literacy is important and necessary because a fully engaged, health literate public with the skills necessary to perform a variety of increasingly complex tasks and health behaviors will be vital to optimizing both individual and public health.

Conclusion

Health literacy is steadily emerging as an independent field of research and practice that has and continues to influence policy across the scope of the ongoing human experiment. At first, many considered health literacy simply the use of literacy in a health context. More recently, health literacy is being defined as a unique social construct that shares attributes with literacy but is far more than the possession of literacy skills in a health context.

The crux of that difference in opinion and approach is critical. If health literacy is simply the use of literacy skills in a health context then the intervention is to either lower the demand for literacy or increase the skills of literacy. However, the field of

Table 3. Initial validation samples of early health literacy measures

Measure	Initial validation population
Rapid Estimate of Adult Literacy in Medicine	<i>N</i> = 207; convenience sample; 54% Black; 76% female; 42% dropped out of high school
Test of Functional Health Literacy in Adults	<i>N</i> = 403; approximately 20% refusal; 11% failed screening; convenience sample, 45% African American “indigent”; 45% Hispanic; 58.5% less than high school graduate/GED
Newest Vital Sign	<i>N</i> = 500 (250 English, 250 Spanish); 20% refusal; mean age = 41 years; 21.5% White, 73% Hispanic; 84 men, 416 women
Chew’s single item screener #1	<i>N</i> = 332; 5% women; 81% White; 86% GED or higher; ambulatory preoperative clinic (excluded worst cases)
Wallace’s single item screener	<i>N</i> = 305; 68% female; 81.3% insured by TennCare/Medicare; only English speaking; 85.2% White; 88% less than high school education

health literacy seems to be largely in agreement that a high level of literacy skills does not necessarily mean people will use those skills in regard to their health. Therefore, health literacy is not simply the use of literacy skills in a health context; health literacy is what people do with the skills they do possess.

In parallel, early screening tools and measures of health literacy attempted to objectively measure literacy skills in a health context. The limits to those approaches in terms of advancing knowledge have become clear, so the transition has started toward developing more systematic, yet somewhat subjective, tools to measure health literacy through self-reports. That approach seems capable of helping the research community to test and revise their definitions of health literacy in an iterative scientific process.

That evolution in approach should continue to drive future advances in the field. Possible advances include revising, then testing and further revising, the most cited definitions of health literacy. In particular, the definition initially proposed in the now decade old initial report on health literacy produced by the Institute of Medicine is overdue for updating. (Nielsen-Bohlman et al., 2004; Pleasant, 2013a, 2013b). Such an effort should engage a broad and diverse set of health literacy researchers, practitioners, policymakers, and members of the public from around the world in creating a definition possible of achieving a broad consensus, then testing that definition through a truly representative random sample of participants (something that is also often lacking in earlier efforts to build measures of health literacy, see Table 3).

Furthermore, funders, practitioners, and health policymakers would also be well advised to reconsider their as of yet somewhat timid approach to and support of health literacy. This goes beyond traditional funding sources such as the National Institutes of Health and similar governmental organizations around the world and extends to large philanthropic efforts such as the Robert Wood Johnson Foundation, grassroots efforts addressing health at the community level around the world, and global organizations such as the World Health Organization and the Gates Foundation. By and large, most of those organizations have given a relatively, passing and cursory glance at health literacy. Now is the time for that level of disinterest to change. While the field and corresponding evidence base are not perfect, the idea of health literacy is one of the most promising approaches to advancing public health—especially when combined with a focus on prevention and integrative health.

At this point, perhaps the ideal is that funding organizations come together to direct the advancement of the field through improved measurement. Improved

measures will produce stronger evidence of which interventions work, which do not, and how to improve those in need of improvement. Traditional funding structures such as the National Institutes of Health in the United States have not been up to the task, particularly because of the approach of largely funding individual collaborators versus cooperatives, a 3-year funding outlook, a preference against funding exploratory research, and an institutional reluctance to support new paradigms versus supporting the refinement of known approaches. That should change—especially in regard to health literacy—if our primary shared goal is truly to improve health and well-being for all people in an equitable and efficient manner.

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