

The Journal of **Continuing Education in the Health Professions**

Volume 19, Number 3, Summer 1999

Contents

Theoretical Foundations

- Motivation and the Facilitation of Change, Learning, and Participation in Educational Programs for Health Professionals 132
Robert D. Fox, EdD, and Clint Miner, MHR

Original Articles

- Effectiveness of a Physician Reminder Program for Smoking Cessation 142
Margaret H. Shanley, MD, Margaret Laskey, RN, and Richard Decker, MD
- A Study of the Educationally Influential Physician 152
David M. Kaufman, EdD, Kurt Ryan, BSc, BPharm, and Ian Hodder, BSc (HE)
- Use of a Residency Program Incident Reporting System as an Educational Tool 163
Norman A. Desbiens, MD
- Externalization of the Health Care System's Educational Programs 170
*Mary A. Seisser, RN, MSN, FASHRM, CPHQ,
and Alice L. Epstein, MHA, DFASHRM, CPHQ*
- Can Case Management Be Taught in a Multidisciplinary Forum? 181
*Jacqueline McClaran, MD, FCFP(C), Zarina Lam, PhD,
Eliane Franco, MD, MPH, and Linda Snell, MD, FRCPC*

Access this and past issues of *The Journal of Continuing Education in the Health Professions* on-line at www.jcehp.com.

Acknowledgment

The Journal of Continuing Education in the Health Professions gratefully acknowledges support for publication and operations from the following corporations, organizations, and institutions:

- Pharmacia & Upjohn
- Pharmacia & Upjohn (Canada)
- Wyeth-Ayerst (Canada)

Theoretical Foundations

Motivation and the Facilitation of Change, Learning, and Participation in Educational Programs for Health Professionals

ROBERT D. FOX, EdD
Professor of Adult and Higher
Education and Family Medicine
University of Oklahoma
Norman, OK

CLINT MINER, MHR
Director, Advanced Programs
University of Oklahoma
Norman, OK

Abstract: *To be effective change agents, continuing education (CE) professionals must be able to develop strategies that assess and affect learners' motivation to learn about specific topics and engage in specific learning activities. This article suggests a framework for assessing and influencing learner motivation. Need reduction theory based on discrepancy analysis provides one way to explain and predict health care professionals' motivation to learn. Path-goal theory describes how learners make decisions to engage in a specific learning activity. The understanding and use of these two perspectives can help CME programmers influence learner needs and target those needs with more effective CME programs that are likely to draw high rates of participation.*

Key Words: Continuing education (CE), discrepancy analysis, learning, motivation, needs assessment, path-goal theory

In spite of the central role that motivation plays in the process of learning and in participation in continuing education (CE) programs, practical methods and techniques for measuring and altering motivation have not been developed. A variety of mandates from accrediting bodies insisting that planning strategies include assessments of needs have increased the pressure to assess learners' needs and motivation to learn about specific clinical areas but without much guidance as to what strategies are likely to succeed. It is also difficult to determine the relative weight of learners' attitudes toward specific methods and techniques for learning. Being able to describe the relative motivation of learners to select and participate in one method over another is a different kind of challenge

because it is a different kind of motivation from motivation oriented toward a particular change in one's practice or competencies. Rather than motivation to learn in order to achieve a particular goal, this kind of motivation reflects the extent of drive to learn in a particular way. It is about the method rather than the objective.

How does motivation develop? What affects its relative strength as a force for learning and change in clinical practice? Why are health professionals motivated to learn using one method or program of education over another? What are the factors that contribute to higher levels of motivation to learn and change? Answers to these questions can provide opportunities for CE professionals to become more effective as change agents in several ways:

1. Continuing educators can determine if motivation is too low to make education

an effective first strategy for facilitating change. Other interventions such as feedback on performance may need to be used first to alter the motivational levels of health care professionals.

2. Evidence of low motivation to learn in a specific manner may lead to more effective designs for educational programs. Design can integrate more desirable methods and techniques, such as clinical vignettes or video trigger tapes so that traditional methods, like lectures or small-group discussions, are more effective. Tools and motivational strategies that are employed prior to enrolment of learners in an educational strategy, such as self-assessments, Web sites, or audits, can be used to build motivation to learn and change.
3. Factors in the clinical environment may be assessed for their role as barriers, inhibiting rather than encouraging health professionals to learn and change. Continuing educators can facilitate learning and change by developing specific strategies to eliminate or assist learners to overcome these barriers to learning and change.

High levels of motivation predict not only what one learns but how one learns. Understanding and intervening effectively in the realm of motivation are very important skills needed to effectively facilitate learning and changes in clinical practice.

The literature of adult and continuing medical education (CME) has suggested several different strategies for assessing the motivation of health care professionals to engage in learning activities such as CE programs. Each strategy is based on a theoretical model of need and motivation. Although these two explanations differ in terms of what they attempt to explain and in their fundamental assumptions, they share a common foun-

ation: behavior, in general, and participation in learning, specifically, are a function of perceptions. For example, if a health care professional believes that he or she does not know enough about an important clinical area, his or her decision to engage in learning activities and subsequent actions will be based on that perception. Objective evidence is important in this equation because it may change perception and, therefore, change behavior. However, if perceptions remain unchanged, behavior will remain unchanged.

This does not mean that perceptions are isolated from reality. Medicine places a high premium on objectivity and evidence, and health professionals are trained to seek and attend to evidence of their competence and effectiveness almost constantly. To manage an ever-changing practice, clinicians must engage in ongoing self-assessment. However, evidence must be perceived before it can have any impact, and part of the act of perceiving is to assign meaning to the evidence through interpretation.

A clinician's framework for decision making influences self-assessments to some extent. Perceptions emerge from reviews of patients' progress, clinical performance, and fund of knowledge and skill. Some may be adept at perceiving these things accurately, whereas others may not. This type of critical self-reflection is often difficult for learners.² However, learners base their decisions to engage in programs or self-directed learning activities on their perceptions, regardless of the accuracy of those perceptions. The fundamental role perception plays in motivation is the cornerstone of understanding why health professionals may have different levels of motivation related to similar topics and programs of continuing professional development.

Why Are Health Professionals Motivated to Learn More about a Clinical Topic?

At a fundamental level, motivation to gain new knowledge and skill is based on similar processes as motivation to engage in any action. It is based

on an intrinsic drive to act in a particular way that will change the underlying conditions and generate drive.

Motivation to learn is a function of a drive to satisfy an individual's perceived need. Need is defined based on a discrepancy between the present state of the learner in regard to an object and the learner's preferred future state. A discrepancy is an inconsistency between "what is" and "what ought to be." Discrepancy analysis is an examination of the "gap" or distance that exists between the two states.^{2,3} Knox⁴ defines "gap" or need as the difference between the present condition of the learner and the acceptable norm. Discrepancy analysis is a motivational theory that explains readiness to learn about a particular topic or problem.

Discrepancy analysis is the natural evolution of the earlier theories of learning as a process of discovery from within rather than compliance to external factors. This learning tradition is based upon an intrinsic motivation to learn promoted by a drive toward mastery and knowledge.⁵

Needs can be described as tensions produced that result in disequilibrium unless these tensions are relieved (Fig. 1). Each learner is reacting in ways to relieve those forces that bring about imbalance. The drive that emerges to relieve the anxiety is generated when things are not as they should be. Discrepancy theory explains how the learner determines that there is a need to increase competency and the value of fulfilling that need. This drive is the fundamental ingredient in motivation.⁴ For example, a family physician may decide that her techniques for managing diabetic patients are not what they should be. This discrepancy between her current procedures and medications for managing blood glucose levels do not match the recommendations found in a summary of evidence discussed in a recent journal article she has read. This generates some low-level anxiety. She feels a need to relieve this anxiety by learning about the latest research on managing blood glucose in type II diabetics. She is motivated.

NEEDS

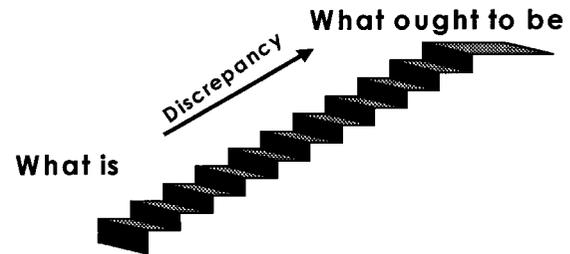


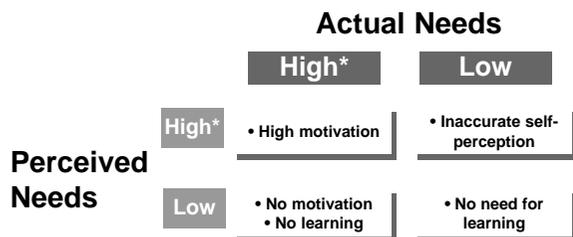
Figure 1 The elements of needs.

Discrepancies affect motivation in the sense that an individual seeks to (or is driven to) relieve the tension brought about by the felt needs and strives to reduce anxiety. Motivation is the compelling force that activates the learner as he or she strives to achieve balance by reducing the discrepancies between what is and what ought to be.

The extent of discrepancy one perceives affects the extent to which one is motivated to learn. Very large discrepancies promote very large levels of anxiety. High anxiety is likely to be associated with feelings of aversion rather than attraction and are not motivating. Very small discrepancies lead to very low levels of anxiety that can be easily tolerated. Consequently, these do not form a basis for motivation.

The most perplexing difficulty is with the learner who believes that he is close to the standard in performance but is really more discrepant from where he ought to be (Fig. 2). This may be manifest in several ways. The learner may misperceive where he ought to be—for example, believing that a usual medication or procedure is still the appropriate standard of care when a new medication or procedure, as of yet unknown to the clinician, is more appropriate. The physician may also believe that the way he is performing is closer to the standard than it is. For example, he may believe that talking to a patient about the need to manage diet is enough to fulfill the patient education requirement of good practice, when it is not really adequate or appropriate. The physician may

Perceived vs Actual Needs



*not extremely high

Figure 2 Implications of different combinations of perceived and actual needs.

not be good at it, although he believes he is doing very well.

Motivation, according to this perspective, is present within the individual health care professional. Ultimately, she determines the areas of need and the level of significance each area has. For example, a health care professional assesses herself as compared to a standard level of practice and determines if the “discrepancy” or gap is large or small. However, CE programs can use several strategies of assessment related to intrinsic motivation driven by need. Assessment of motivation based on need has four components:

1. Identification of expected patient outcome, clinical performance, or competence;
2. Rating of perceptions of desirability of expected patient outcome, performance, or competence;
3. Rating of perceptions of actual patient progress, performance, or competence; and
4. Derivation of discrepancy by subtracting perception of actual patient status, performance, or competence from expected

patient outcome, desired clinical performance, or competence.

For example, in a survey or interview, a physician associate may be asked to rate the following statement: “A PA should be able to select and evaluate the results from an appropriate screen for mental status when the chief complaint is memory loss.” The PA is asked to rate the statement in terms of the extent to which he believes that he should be able to do this, and the extent to which he believes he can do this. The rating of the latter (present competency) is subtracted from the earlier (desired competency) to reveal the discrepancy as perceived by the PA. This result increases the extent to which this PA is motivated to learn and change related to this area of clinical performance. Accompanied by some other evidence of level of competence or performance, provided as feedback to the learner, it becomes a strategy for altering motivation by altering perceptions.

Lack of motivation is a function of perceptions. All strategies for enhancing motivation must focus on altering the state of perceptions related to the four elements above. Learners must be able to identify standards for outcomes, performance, and competency and perceive them as valuable and desirable in their own practice. Strategies should demonstrate the value of the standard so that they will be adopted. Evidence-based standards of performance must be marketed to clinicians.

Strategies for increasing motivation should encourage accurate self-assessment of current patient outcomes, performance, and competency. Quality assurance, self-tests, and peer observation and review may be very successful strategies for altering motivation if they are not used in a regulatory or punitive way. Competence and performance assessments are threatening and demotivating unless the privacy and confidentiality of the learner is guarded. The above considerations are only examples. Creative use of videotapes, Web sites, case studies, and pretests can enhance motivation to learn about a topic.

Discrepancy theory provides a methodology for translating specific performance problems into training events aimed at reducing the gap in current versus desired level of performance, thereby increasing performance. Formal assessments allow program planners to place areas of perceived need higher and more apparent on the list of objectives so that the educational event is seen as starting with the expressed needs and motivation of learners rather than of teachers or planners. This increases the likelihood of higher levels of effort and activity.

Why Are Learners Motivated to Participate in Specific Activities?

The discussion above describes how discrepancy theory explains why health professionals are motivated to learn. The anxiety caused between the perceived gap of current level of skills and experience compared to the desired level of skills and experiences—usually defined in terms of acceptable norms—results in a need to reduce that perceived disequilibrium. This need promotes motivation to take action, to learn more. The question now is how do physicians decide what specific action to take to reduce that perceived discrepancy? What motivates a health care professional to choose one learning activity over others?

Vroom,⁶ referring to a study of individual workers and how they relate to their organizations, defined motivation as “a process governing choices made by persons or lower organism among alternative forms of voluntary activity” (p. 6). His work resulted in a theory that links motivation to engage in a specific behavior to desired goals and the individual’s perception of how to reach those goals. Translated to the field of CME, a physician decides to take action to engage in a specific learning activity based on a desire to obtain goals that are important to him/her and the individual assessment of what action will best result in a realization of those goals. Those goals are the performance changes and gained skills that reduce the perceived gap between current and preferred knowledge and clinical practice.

What Is Path-Goal Theory?

Path-goal theory explains how and why an individual may attempt to act in a specific way to close a perceived gap in performance. This includes the defining of a specific performance goal/objective and identification of a behavioral path that will lead to the attainment of that goal. It presents a framework that helps explain and predict why a health care professional will choose to engage in a specific learning activity and how CME professionals can influence that process.

In path-goal theory, as is the case with discrepancy theory, perception is also more important than objectivity in predicting human behavior since motivation to engage in a specific behavior is a result of an individual’s perception of specific goals and paths to those goals.⁶ According to path-goal theory, an individual has long-term and intermediate goals. Intermediate goals may be perceived as having more or less likelihood that they will lead to long-term goals. Each goal has many possible paths one can take to eventually reach these goals. Each path may be perceived as having intrinsic value and a level of expectance that it will lead to outcomes. Motivation depends on the individual’s perceptions of the extent to which:

1. First-level outcomes (goals) lead directly to second-level outcomes or long-range goals (instrumentality),
2. It is likely that a course of action (like participation in a CE program) will lead to goals (expectancy),
3. Attitudes are positive toward the value of particular means to achieving instrumental goals (valence), and
4. It is likely that action leads to first-level outcomes (expectancy).

As an example, a physician perceives that his or her performance in the treatment of diabetes is

below the norm (perhaps because of new procedures or lack of learned ability). He considers the ability to treat diabetes important (instrumental) to being a successful and effective physician (secondary outcomes or long-term goals). The physician's decision to engage in a specific CME program (a particular action or means) will depend upon the perceived value of the program for improving his ability to treat diabetes (expectancy), and the perception that the specific learning activity will be personally satisfying (valence), and will result in the increased ability to effectively treat diabetes, which will lead to being a better clinician (instrumentality). It is less likely that the physician will engage in that specific CME activity if one of those three factors is missing. The analysis of a decision by this physician as to why they did not engage in this program could include the following factors affecting overall motivation:

- Lack of a perceived discrepancy between what is and what ought to be (gap),
- Closing the gap is not perceived to be important to becoming a better physician (instrumentality),
- Perception that the CME program will not reduce the gap (expectancy), and
- Perception that the CME activity will not be personally satisfying (valence).

This understanding of the importance of instrumentality, expectancy, and valence gives the CME professional insights into both assessment of physicians' motivation to engage in a specific activity and how to influence those decisions. Asking physicians to make estimates on these factors in interviews or on surveys can provide the basic tools for understanding motivation to learn and change. Each perception has its own interpretation. Motivation to participate in a specific learning activity will be greatest when the physician perceives strong or many goals, that those goals are important, that participating in the specific learning activity is personally satisfying, and that partic-

ipating will result in achieving the goals. However, if any one of the estimates is high enough, it may lead to participation, regardless of the others.

How Can Educators Affect Motivation to Participate in Specific Programs?

By understanding the health care professional's perceived gap in current versus desired level of performance, educational providers can design and market programs that help clarify goals, especially in terms of valence, and paths, in terms of instrumentality and expectancy. What does this mean to CE professionals? It implies that there are three steps to planning and marketing a program. The plan and the promotional materials should articulate:

1. How the program leads to a specific outcome (reducing a performance gap and expectancy),
2. Why this outcome is important to being a good clinician (instrumentality), and
3. If the program has valence (why this means of learning is valuable and rewarding).

There may be many different paths to the same goal. Therefore, it is important not only to clarify what valuable performance improvement a specific program addresses but also why a specific learning activity/program is better than others are and more satisfying.

Although the two explanations of motivation described above reflect different perspectives on the nature of motivation, in tandem they can provide a more comprehensive and integrated approach to understanding the motivation of health professionals. When used together, the CE professional gains several kinds of insights into the learner, including:

- The kinds of change in competence that the learner is seeking,

- The intensity of their drive to gain these changes in competence,
- The learner's estimate of how likely they are to gain these competencies, and
- The learners' sense of the value of particular ways of achieving these objectives.

With measures of all of these factors, CE professionals are able to identify and order the specific competencies learners are motivated to achieve. They are also able to identify and order specific methods of learning according to the learner's perceptions of how likely those goals are to lead to long-term goals and how pleasant and effective different methods of learning are as ways of achieving the goals.

What Kinds of Studies Are Needed to Better Grasp the Nature of Motivation?

Presently, there is a wealth of writing about motivation, including presentations of other explanations beyond the scope of this article. Although the basic science of motivation rests on a substantial foundation, studies of applications of these principles to continuing professional development are uncommon. To know exactly how to use these explanations, studies that use practice environments and continuing professional education programs as laboratories are needed. These studies should focus on the developmental side of the research and development enterprise. They should concentrate on the behavioral consequences of using different measures and different approaches to altering motivational levels in health professionals. Studies are also needed that incorporate motivation as one of a series of variables affecting professional performance and patient care. In some cases, motivation may act as an antecedent variable, altering the effect of subsequent variables as they act on competence and performance. Do learners who participate in a CME event learn more or less effectively if they begin with different levels of motivation? Here,

motivation is treated as a covariant, directly affecting the likelihood that the intervention will succeed.

Establishing and describing the nature and level of motivation to learn and change may also be the outcome or dependent variable in studies. If the presumption that a motivated learner with high intelligence can engage in self-directed learning to achieve change in performance is accurate, motivational level should be the target of the intervention in some cases. Studies are needed as to what affects motivation levels and how.

Finally, studies are needed as to how motivation to learn in specific ways (e.g., formats and techniques) may be influenced by the actions of the continuing professional educator. For example, many dentists and physicians were trained in educational environments dominated by lectures and hands-on experience but did not use small-group discussion as often, even though for some kinds of learning, small-group learning is a very effective method. Are there ways to alter the perceptions of these health professionals as the relative effectiveness or pleasure in learning that can come with this method of learning?

What Kinds of New Technologies Might Be Developed to Measure and Alter Motivation?

The emerging distributive technologies (i.e., computer-assisted learning, Web-based instruction, videoconferencing, etc.) offer tremendous opportunities for increasing motivation to learn and change. They have reduced the boundaries between learning opportunities and the learning needs of health care professionals⁷ and have provided a mechanism to foster motivation and self-assessment. Web-based delivery offers health care professionals access to links that opens up a whole world of information and experiences not readily available in traditional formats. The various technologies, such as videotapes, teleconferencing, computer-assisted instruction, and Web-based

delivery provide CE professionals with the challenge of matching learner needs (goals) and appropriate methods (path) with the content to provide effective delivery in terms of instrumentality, expectancy, and valence.

Effective distance delivery is based, in part, on learners' self-efficacy, self-directedness, and comfort with the various technology media. Participation in learning at a distance requires the ability to take advantage of such opportunities. Not only are physicians well prepared to take advantage of the power of the new emerging information infrastructure in terms of computer literacy and self-directedness,⁸ but there is a great imperative for the development of distance delivery options to meet the ever-increasing demands of "just in time" information. CE costs are on the rise. CME programming is challenged by the exponential growth in reply to new medical developments and procedures and exacerbated by the isolation of those serving in rural communities. Cost and isolation raise the risk of intellectually impoverished professionals because of the lack of CME opportunities offered at a time, in a place, and at a cost that meets their needs. Distance technology can be part of the solution. It can facilitate rapid information sharing and dissemination without time and place dependence and at effective return on programming costs.^{8,9} The key to effective programming, as predicted by path-goal theory, is that physicians must perceive the method (path) as a satisfying and effective method of meeting goals (valence).

The uses of technology to enhance learning expand beyond the delivery of education programs. Distance-based technologies can be designed to promote motivation and foster reflective self-assessment. Technology can foster motivation to learn by promoting the type of self-reflection necessary for effective discrepancy analysis. Web sites and interaction among professionals facilitated by listservs and other distributive mediums can promote continual performance evaluation and an interest in professional growth and improvement that in the past has been

largely restricted to the annual "self-renewal" at professional conferences.

These technology-based mediums also help foster individual discrepancy analysis and increase awareness of performance norms that health care professionals can use to determine if there is a performance gap. For example, a Web site that contains practice guidelines, a self-assessment quiz, links to articles, and case studies probably becomes a center for "just in time" self-assessment and reflection. Add to this interaction with cases or colleagues and you have a motivational tool that will not only alter self-perceptions toward a higher level of accuracy but will also provide authoritative information that can enhance competence.

A real strength of the distance technologies is in their use to foster health care professionals' motivation to engage in a specific learning activity. CD-ROMs, videotapes, and Web sites can package and market the program in ways that articulate how the program leads to a specific outcome (reducing a performance gap), has valence (why reducing that gap/improving performance is important to them), and how this learning activity is the most effective method to reach that specific outcome (instrumentality). The long reach of the World Wide Web can capture our target audience and motivate them to engage in the specific learning programs that are being offered.

These technologies can be used to influence and shape the health care professional's need to learn and demonstrate how a specific program provides the most effective path to enhanced performance. As an example, a Web-based program can provide links to sites that offer the best practices for specific medical performance tasks and the mechanism for a physician to assess his or her own performance level in that task. This exploration of current practices at facilities located around the globe and self-reflective activity are accomplished at a time and place convenient for the physician, with privacy, and at a self-regulated pace. The well-designed site can foster the motivation to engage in learning by guiding the physician through an effective self-assessment. This

creates the optimum condition for successful change: individual commitment to improve practice through learning to reduce the dissonance between the preferred and current level of practice. The physician is psychologically ready to learn.¹⁰ The Web-based site can help clarify the perceptions and the dissonance. It should also be designed to help reduce it.

Summary

Motivation to learn and motivation that results in the decision to engage in a specific learning activity are closely related but distinct. The former is about goals, the latter about the methods to achieve goals. Both have significant implications for CME professionals in terms of assessing learner needs and developing programs that effectively target those needs. Both share the common foundation of basing human behavior on an individual's perceptions but they differ in terms of assessment strategies, what they attempt to explain, and fundamental assumptions.

Need-based discrepancy theory explains health care professionals' motivation to learn about specific areas of content. It defines motivation to learn as a function of intrinsic drives to satisfy an individual's perceived need. It predicts readiness to learn based upon an individual's perception of an inconsistency between their current performance level, "what is," and the preferred performance level, "what ought to be." It attributes action to the reflective examination of the "gap" or distance that exists between those two states and the need to reduce the low-level discomfort that comes from not being where you ought to be professionally.

Whereas discrepancy theory explains and predicts the level of motivation to learn something, path-goal theory is useful in explaining and predicting a physician's motivation to engage in a specific learning activity—a specific method—to meet learning goals. Path-goal theory explains why an individual chooses a specific learning

activity over others to reduce the perceived performance gap. The decision to engage in a learning activity is weighted by the instrumentality, valence, and expectancy of the outcomes. Physicians make assessments about how important it is to them to reduce the performance gap and how effective the specific learning activity will be in helping them close that gap.

CME professionals can use both of these perspectives to better assess the training needs of health care professionals. The efficacy of these perspectives in motivation is anchored in the level of effective individual self-reflection and analysis. Not all physicians are good at self-assessment. Therefore, understanding of these constructs is useful not only in the assessment of motivation and learner needs but in the development of strategies to help health care conduct discrepancy analysis and make informed decisions about which specific learning activities to participate in to close the perceived performance gap.

CE can help health professionals be more effective at identifying current performance and competencies and comparing them to performance norms or "best practices." They can also help health care professionals by demonstrating how specific programs are the most effective methods in realizing specific outcomes that close performance gaps that are perceived to be critical by the individual.

Distance technologies open up a new world of reaching the entire health care community without the same place and time constraints. These new delivery systems also have the potential for increasing access to information on best practices, facilitating continual professional dialogue, and linking those who typically remain isolated from the mainstream of other professionals.

References

1. Brookfield S. Critically reflective practice. *J Cont Educ Health Prof* 1998; 18:197–205.
2. Fox RD. Discrepancy analysis in continuing medical education. *Möbius* 1983; 3:37–44.

3. Moore DE. Needs assessment in the new health care environment: combining discrepancy analysis and outcomes to create more effective CME. *J Cont Educ Health Prof* 1998; 18:133–141.
4. Knox AB. Influences on participation in continuing education. *J Cont Educ Health Prof* 1990; 10:261–274.
5. Deci EL, Ryan RM. *Intrinsic motivation and self-determination in human behavior*. New York: Plenum Press, 1985.
6. Vroom VH. *Work and motivation*. New York: John Wiley and Sons, 1964.
7. Dillon CL. Distance education research and continuing professional education: reframing questions for the emerging information infrastructure. *J Cont Educ Health Prof* 1996; 16:5–13.
8. Kripalani S, Cooper HP, Weinberg AD, Laufman L. Computer-assisted self-directed learning: the future of continuing medical education. *J Cont Educ Health Prof* 1997; 17:114–120.
9. Suggs PK, Mittelmack R, Krussak K, et al. Efficacy of a self-instruction package when compared with a traditional continuing education offering for nurses. *J Cont Educ Health Prof* 1998; 18:220–226.
10. Mazmanian PE, Waugh JL, Mazmanian PM. Commitment to change: ideational roots, empirical evidence, and ethical implications. *J Cont Educ Health Prof* 1997; 17:133–142.