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Pragmatic Learning Theory: An Inquiry-Action Framework for Distributed Consumer Learning in Online Communities

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We examine consumer social learning from distributed inquiry capabilities in online communities. Using an inquiry-action framework rooted in pragmatic learning theory, we longitudinally trace community inquiry processes and their link to individual action in six health-related online communities. Our interpretive analyses reveal leaps and lapses in social learning. Generative learning is evident when collective productive inquiry is linked to expanding individual action repertoires. Individual disengagement diverts inquiry and disrupts inquiry-action linkages, creating lapses that degenerate learning. Within these extremes, instances of individual faltering are evident when inquiry is productive but individuals fail to leverage inquiry for empowered action.

S ocial learning is important for empowered decision making in market exchanges. Consider, for example, how consumers tap social networks to effectively negotiate a major purchase (e.g., automobile) or to evaluate different choices in a product category (e.g., Xbox, PlayStation, or Wii) to fit their needs. Enabled by Internet technologies, social networks are generating excitement as learning incubators for leveraging the distributed skills and disparate experiences of diverse consumers linked together in problem-solving communities (Hemetsberger and Reinhardt 2006; Mathwick, Wiertz, and de Ruyter 2008). For example, in

health care, several policy initiatives advocate using peer-to-peer patient communities to develop a "wide range of skills and competencies . . . to make informed choices, reduce health risks, and increase quality of life" (Zarcadoolas, Pleasant, and Greer 2006, 55). In fact, for the study of social learning processes, it is hard to imagine a more appropriate and widespread context than consumer behavior.

Surprisingly little scholarship on social learning exists in consumer research, despite its everyday significance (Meltzoff et al. 2009). In general, consumer researchers have been preoccupied with learning theories that emphasize either an individual's networks of hardwired associative linkages among external cues and stimuli (referred to as associative learning) or an individual's cognitively mediated internal rules for categorization and information processing (referred to as rule-based learning), paying scant attention to social learning from interpersonal networks.

This study aims to examine whether participation in virtual communities promotes social learning for empowered decision making. Following Gibson (1991), Pires, Stanton, and Rita (2006), and others, we view empowered decision making as a process by which consumers develop and practice skills for asserting control over their decision environment. Past research suggests that learning from experience is fallible and illusionary (Eisenstein and Hutchinson 2006; Hoch and Deighton 1989). However, the community-of-practice research indicates that learning from distributed experiences is effective in growing knowledge stocks and problem solving (Lave and Wenger 1990). The intersection of these two bodies of research has attracted little attention, presumably because, thus far, conditions have been unfa-

TABLE 1

COMPARATIVE OVERVIEW OF ASSOCIATIVE, RULE-BASED, AND PRAGMATIC LEARNING THEORIES

	Associative learning theory (ALT)	Rule-based learning theory (RLT)	Pragmatic learning theory (PLT)
Focus	Predictive relationships between environmental cues and behavioral response	Causal, logical, and hierarchical structure of rules that provide coherent explanations for behavioral response	Transformation of knowing embedded in action to (experiential) knowledge for behavioral response
Processes	Automatic, intuitive, and relatively undemanding cognitive processes based on concepts such as similarity, contiguity, recognition, repetition, and reinforcement	Deliberate, systematic, and cognitively intensive inquiry processes based on concepts of categorization, memory, explanation, and analytical representation	Deliberate, cyclical, and socially constructed inquiry processes involving concepts of reflection, refining, and exploring
Response/action	Predictive responses learned through heuristic and associative processes and executed with relatively less effort	Reasoned action from effortful rational processes of rule identification and integration	Expanding action repertoires associated with productive inquiry that require individual effort and community
Modes	Implicit, heuristic, adaptive, and related modes that differ in automaticity, rapidity, and reflexivity	Explicit, deductive, rule-based, and related modes that differ in consciousness, attention, and reflectivity	Generative, nongenerative, and degenerative modes that differ in terms of inquiry, action, and temporal links between them
Enabling conditions	Intuition and experience	Memory and cognitive resources	Individual engagement and distributed inquiry abilities

vorable for consumers to be organized in communities of practice. Increased Internet access by ordinary consumers offers new opportunities for a fresh consideration of the potential for social learning through online consumer communities.

To provide insights into consumer social learning mechanisms, we outline an inquiry-action framework based on pragmatic learning theory (PLT) that is central to the communities-of-practice literature. Extending PLT to the study of consumer communities requires developing PLT concepts, mapping their interrelationships, and examining their relevance for consumers' learning from experience. We contextualize our study in communities focused on medical treatments and explore how and when learning transforms individual roles for empowered engagement in medical decision making.

Medical decision making is a controversial context with significant public policy implications. For some, online communities hold the promise of mobilizing the collective resources of patients to overcome challenges of asymmetrical medical knowledge for informed decision making (Kaplan and Brennan 2001). Others doubt that consumers can effectively cope with the burden of medical decisions and emphasize the potential for harm when naive consumers are bolstered by participation in social networks to attempt self-diagnosis and self-treatment (Shaw and Baker 2004). Our study provides initial insights to inform this debate.

We begin by reviewing the learning literature in consumer research to outline the distinct characteristics of PLT. Thereafter, we extend and develop PLT concepts and processes for the study of learning in consumer communities. We then provide a netnographic exploration of online discussion boards to illustrate the nature and dynamics of social learning. We conclude with a discussion of our results for con-

sumer learning and implications of PLT for consumer research.
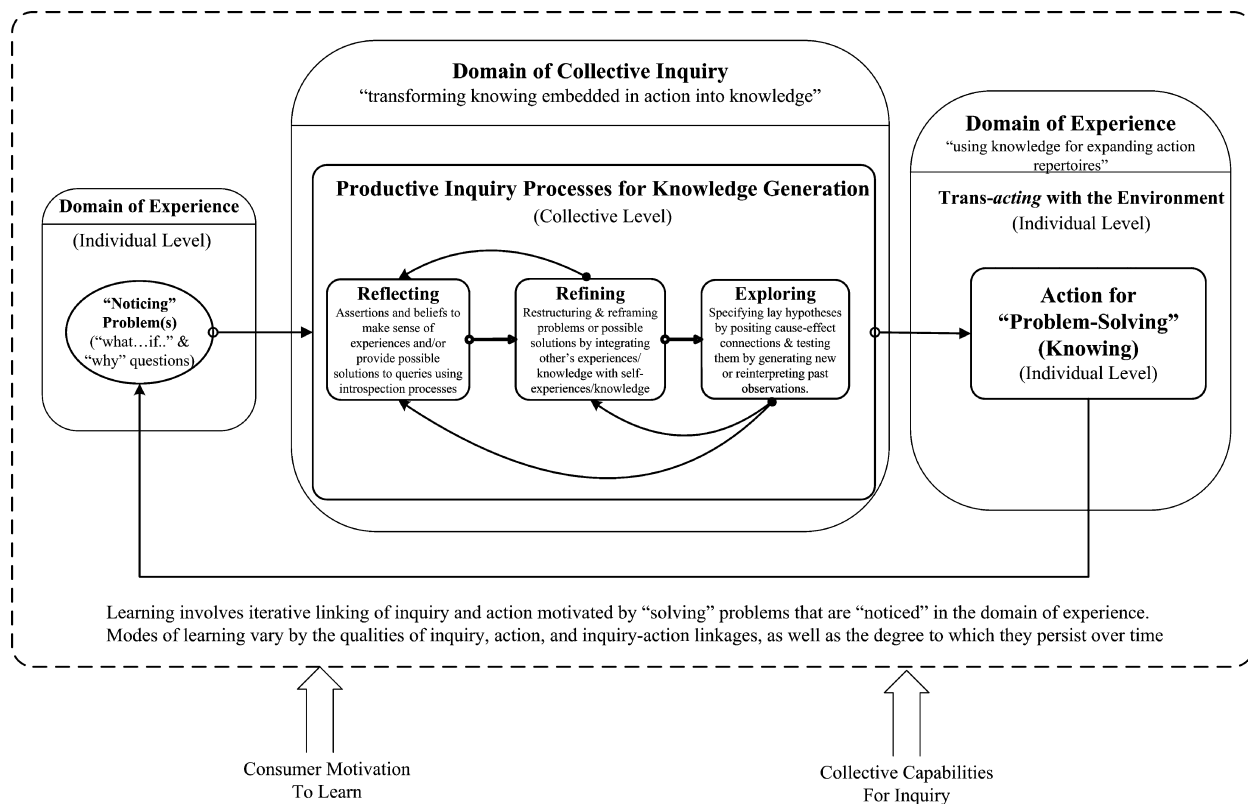
CONSUMER LEARNING: COMPARATIVE REVIEW AND PLT FRAMEWORK

How do consumers learn from and for everyday market experiences? Although much has been written, including several reviews, little consensus exists around concepts and processes that characterize different theories of consumer learning with largely disconnected literatures in consumer, cognitive, and social psychology (see Ashby and Maddox [2005]; Evans [2008]; Hutchinson and Eisenstein [2008]; Mitchell, De Houwer, and Lovibond [2009]; Sloman [1996]; and Van Osselaer [2008] for some notable recent reviews). Instead, efforts to categorize the diverse learning theories into two broad but disparate systems have been more successful. True to the underlying debate, consensus terms for the broad theoretical categories are elusive. Researchers resort to neutral labels (e.g., system 1 and system 2) while recognizing that a fundamental line of distinction separates learning theories that are characterized as largely unconscious, automatic, and fast, as exemplified by the hardwired associative learning theory (ALT), from those that are conscious, deliberate, and slow, as exemplified by the soft-wired rule-based learning theory (RLT).

The PLT perspective differs substantially from both the ALT and RLT perspectives. We briefly outline the key points of distinction, summarized in table 1, which are intended as neither a comprehensive review nor an exhaustive summary. Rather, for expository purposes, we organize the distinctions around focus, processes, action (response), modes, and enabling conditions, to highlight PLT's unique per-

FIGURE 1

PRAGMATIC LEARNING THEORY: AN INQUIRY-ACTION FRAMEWORK FOR DISTRIBUTED CONSUMER LEARNING
IN ONLINE COMMUNITIES

spective. Thereafter, we extend and develop PLT for understanding learning in social communities.

To appreciate the distinctions in table 1, it is useful to consider the broad assertions of PLT. Specifically, PLT intersects two alternative views of learning. The first, focused at the individual level, considers learning to be a process that results in the acquisition of knowledge and skills (acquisitive approach). The second, focused at the collective level, deems learning to be participation in communities of practice and emphasizes the social and situated meaning of worldly experiences (participative approach). As such, PLT simultaneously focuses on how learning is taking place (participative) as well as what is learned (acquisitive). Moreover, PLT construes learning as an iterative intersection of "experience" rooted in individual action and "inquiry" involving collective and individual efforts (Elkjaer 2004).

Table 1 reveals that, with regard to focus, the three learning perspectives differ in their conceptions of the person/environment relationship. The ALT perspective emphasizes predictive associations among environmental cues and behavioral response and is largely silent about the internal psychological mechanisms that actively negotiate, confirm, or contest such associations (Sloman 1996; Smith and De-Coster 2000). Applications of ALT in consumer research include affect transfer between unconditioned stimuli and brands and implicit processes of stereotyping and hedonic consumption. The RLT perspective favors individual agency and considers learning to be internal and goal oriented. It emphasizes analytical reasoning exemplified by the development of causal, logical, and hierarchical structures of rules that guide an individual's behavioral response across contexts. Prominent applications of RLT in consumer research include information-processing models, memory, categorization, consumer expertise, and inference making.

Unlike ALT or RLT, PLT focuses on learning as situated in social interactions, whereby individuals appropriate socially derived forms of knowledge that emerge from the transformation of knowing embedded in one's actions (discussed in the next section; fig. 1). This knowledge is neither fully internalized as rule-based structures nor fully externalized as hardwired links between environmental cues (Cook and Brown 1999; Hemetsberger and Reinhardt 2006).

Consistent with their focus, the three perspectives emphasize different processes and action outcomes (rows 2 and 3 in table 1). The ALT perspective construes individual action as an automatic, intuitive, and cognitively undemanding response that is supported by heuristic and associative processes such as similarity, contiguity, recognition,

repetition, and reinforcement (Evans 2008). However, RLT views individual response as reasoned action that stems from conscious, intentional, and cognitively demanding processes of rule abstraction and integration for explanation and analytical representation. By contrast, PLT construes individual action as an ongoing transaction with the environment, such that expanding action repertoires are supported by productive inquiry processes that are cyclically connected and socially constructed. Thus, PLT views learning as contingent on interaction, negotiation, and collaboration.

Finally, ALT and RLT represent contrasting modes of learning that leverage disparate enabling conditions and are sometimes viewed as endpoints on a continuum (e.g., implicit-explicit, reflexive-reflective, intuitive-analytical). For example, ALT emphasizes the automatic and rapid activation of implicit evaluations that reflexively link individual goals to behavioral responses. Such reflexivity is hardwired as intuitions by a database of associative memory that accumulates with time and across experiences. By contrast, RLT highlights learning modes that are consciously motivated by intentional learning to reflectively access well-specified logical rules. By recruiting memory and cognitive resources for active hypotheses testing, RLT learning modes uncover novel rules that can be generalized across situations. For instance, Deighton (1983, 314) likens RLT mode to the consumer as a scientist who is motivated to "conceptualize, hypothesize, and test by disconfirmation."

PRAGMATIC LEARNING IN CONSUMER COMMUNITIES

The PLT perspective attempts to bridge the implicit aspects of action, referred to as *knowing*, with the explicit and intentional processes that leverage the distributed abilities of the community, referred to as *inquiry*. In particular, four elements are germane to PLT (elaborated below; see fig. 1): (*a*) individual experiences trigger the noticing of problems (*what if* and *why* questions), which motivates an inquiry (e.g., a hunt) for problem solving; (*b*) inquiry mobilizes the capabilities of individuals and the communities to which they belong; (*c*) when inquiry is productive, with persistent links to action, learning is generative and expands individuals' action repertoires; and (*d*) action, in turn, feeds back to the noticing of new problems, and the iterative cycle thus continues. The PLT perspective does not presume that learning from experience is generative; rather, it specifies mechanisms that favor such learning. Also, while our discussion may inadvertently suggest that these mechanisms are linear, sequential, or context free, PLT posits anything but.

Domain of Experience and Action

Dewey (1910) considers experience to be human action that is symbiotically linked to, and integral to transacting with, the environment. Trans*acting* with the environment, hence *action*, implies recognizing that humans act in social and physical environments in which time, space, and order are inseparable (see fig. 1, far right box). As such, experi-

ences are best thought of as not what happens to people but how people act on the basis of what it means to them. Given time and context, individual experiences may evidence variability ranging from *constrained action*, which is indicated by inaction or a restricted range of behavioral responses, to *expansive action*, which involves an engaged and expanding repertoire of behavioral responses. Expansive action is a key characteristic of empowered decision making since it affords individuals a varied set of options from which to flexibly choose a response that best fits the demands of a given environment. For instance, similar symptoms of malignant lymph nodes may produce different experiences for Mary, Maxine, and Beth. Mary may frame cancer as a problem-solving goal and mitigate the effects through the development of coping skills for adaptive actions (expansive action). By contrast, Maxine may view cancer as an end-of-life condition evoking helplessness and fear, which results in passive acceptance and inaction. Situated within these extremes, Beth may perform routine actions (e.g., taking medication and attending follow-ups) without understanding their effects on her well-being. Thus, to understand how Mary, Maxine, and Beth transact with their condition requires placing their actions within their individual contexts.

Elaborating on Dewey's ideas and building on Wittgenstein's notions of "knowing *what*," and "knowing *how*," Cook and Brown (1999) note that human action embodies *knowing*, which they distinguish from knowledge. Knowledge is defined as an epistemological dimension of possession involving abstract ideas and concepts that one uses in action, in line with the acquisitive approach. In contrast, Cook and Brown define knowing as an epistemological dimension of action itself, such that it is part of action rather than something that is necessary or used for action. Knowing is neither abstract nor conceptual; instead, it is specific to and embedded in individual action. Knowledge does not imply knowing. Individuals with considerable knowledge may lack the sensitivity to response variations and vice versa.

Working with the preceding distinctions, PLT views learning as a process of "transforming" experiences (Hemetsberger and Reinhardt 2006, 190) or "bridging epistemologies" of knowing and knowledge (Cook and Brown 1999, 393) to grow the stock of experiential knowledge. This knowledge is relational, dynamic, and experience based, unlike generalizable knowledge that endures over time, space, and contexts (Elkjaer 2004).

In medical decisions, most consumers lack scientific (generalizable) knowledge about diseases and treatments or the resources to acquire it, whereas physicians are professional experts of this knowledge. By contrast, patients may possess experiential (albeit fallible) knowledge due to their personal experiences of diseases and treatments, whereas physicians may lack this knowledge or the resources to acquire it. For instance, Mary may know a lot from her experiences of thyroid cancer, including understanding its effects on her physiological (e.g., weight, pain) and psychological response (e.g., fear of the cancer spreading, social stigma). By contrast, Mary's physician may know a lot about the

cellular and molecular bases of thyroid cancer and the how and why of different treatments. For effective medical decisions, both types of knowledge need to be deployed to develop an individualized regimen that works for Mary.

Domain of Collective Inquiry and Transformation of Experience

The PLT perspective asserts that the transformation of experience to experiential knowledge is neither automatic nor guaranteed. Rather, transformation requires effortful engagement to enable inquiry mechanisms (see fig. 1, middle box). Individuals are motivated for inquiry when they notice problems as they transact with the environment (Mason 2002; fig. 1, far left box)—for example, Why am I gaining weight with no change in diet? Why do I feel so drained in the morning with this medication? What will happen if I alter the dosage? Noticing need not imply that the problems are structured sufficiently to facilitate learning. Instead, most inquiries begin with ill-structured and ill-defined problems that are subsequently refined and structured iteratively in the process of resolving them. In this sense, PLT views problems as emergent spaces that are actively constructed and modified by inquiry processes.

Dewey viewed inquiry as a quest for motivated problem solving that involves a systematic, rigorous, and disciplined way of thinking. In elaborating Dewey's notion of inquiry, Rodgers (2002) identified its distinct aspects to include (a) experience itself, (b) a spontaneous interpretation, (c) understanding the problem, (d) generating possible explanations by drawing on distributed experiences, (e) ramifying working hypotheses, and (f) experimenting with selected hypotheses. While inquiry has remained an elusive construct because of its "broad range" of inclusiveness (Cook and Brown 1999, 388), PLT is clear in specifying different forms of inquiry. The inquiry is passive (productive) when individuals lack (engage in) playfulness and openness toward new ideas in making sense of their experiences and in the service of effective problem solving (Elkjaer 2004). Emphasizing the social processes of inquiry, PLT asserts that a community can overcome the deficiency in individual inquiry capabilities.

Thus, one provocative idea from PLT application in the communities-of-practice literature is that a community can enable productive inquiry for members who individually lack inquiring abilities (Cook and Brown 1999). For instance, Mary might observe that her weight is increasing without any change of diet but may lack the inquiring ability to properly frame the problem, posit working hypotheses about possible causes, and engage in lay experimentation. However, in a community of individuals with hypothyroid conditions, members can collectively work through Mary's situation to provide enabling conditions for collective learning (Hemetsberger and Reinhardt 2006). Evidence that distributed abilities in a community can overcome limitations of its individual members is available in the management and education literatures.

For example, in a series of studies examining Toyota's success, Nonaka (2007) traces its competitive advantage to its mobilization of employee teams to function as knowledge communities that transform individual know-how (knowing) into collective codified knowledge that seeds the spirals of innovation. Noting that, when left to themselves, individuals falter in extracting useful knowledge from their own knowing, Nonaka's research suggests that Toyota's U.S.-based competitors conceded their market dominance, in part, because they failed to mobilize internal knowing to fuel innovation. Similarly, in the field of education, where Dewey's ideas of pragmatic learning had considerable influence, studies and policy initiatives such as Realistic Mathematics Education (RME) confirm that learning is more effective when students engage in a dialogical process with their peers to create new knowledge through negotiating and transforming diverse perspectives, thereby developing an appreciation of mathematics in real world situations (Brown, Collins, and Duguid 1989; Meltzoff et al. 2009). Foreshadowing a similar wisdom of consumer communities, Kozinets, Hemetsberger, and Schau (2008) note that social interactions in consumer communities trigger creativity that is unmatched by its individual members.

Learning Modes and Knowledge Use

The PLT perspective views learning as reflecting multiple modes that lie on a generative-degenerative continuum. A generative mode occurs when emergent problems from current actions motivate productive inquiry that individuals iteratively link to their future actions and when individuals persist in these inquiry-action linkages over time. In any environment, individuals are likely to vary in the degree to which they are successful in enjoying the facilities and overcoming the frustrations in problem solving. Empowered decision making occurs when learning is associated with increasingly expansive rather than constrained affordances that indicate an enlarged repertoire of actions that persist over time. As such, a hallmark of generative learning is persistent inquiry-action linkage indicating that knowledge generated from inquiry is effectively used for expanding action repertoires. This does not imply that learning from experience is always generative. Learning follows a degenerative mode when inquiry is passive and/or when inaction or routine action constrains inquiry from seeding "intelligent" action, thus narrowing the "field of further experience" (Dewey 1916/1944, 78).

In summary, three key PLT assertions are relevant to consumer communities: (1) community enables individuals to engage in collective productive inquiry, (2) individual efforts to link community inquiry to guide actions expand the repertoire of behavioral responses, and (3) successive inquiry-action cycles that persist over time promote generative learning. These assertions translate into questions that guide our interpretive work: Is inquiry productive? Is inquiry linked to action? Do inquiry-action links persist over time? Our interpretive design is intended to develop PLT concepts of inquiry and dynamics to provide insights into

the usefulness of PLT for understanding community-enabled consumer learning.

RESEARCH METHODOLOGY AND ANALYTICAL APPROACH

Our interpretive analysis followed a netnographic methodology that relied on careful attention to purposive sampling of communities (entrée), longitudinal and comprehensive data capture (data collection), balanced interpretive analysis of textual discourse that recognized the problems of misrepresentation and incomplete observations (trustworthy interpretation), the protection of respondent privacy, and the securing of informed consent (research ethics; Kozinets 2002). Figure 2 displays the research methodology and analytical approach that we used. We sampled online messages posted on an asynchronous peer-to-peer electronic bulletin board (EBB) designed to provide a forum for people suffering from a particular disease (discussed below).

We used major search engines (e.g., Google and Yahoo!) to identify disease-specific EBBs. We avoided boards moderated by medical professionals or supported by pharmaceutical companies. Instead, we preferred EBBs with rich and descriptive content and active participation from a wide range of community members. Using these criteria, we narrowed our selection to 13 EBBs. We independently reviewed the selected EBBs for access to a sufficient number and length of postings and familiarity with the focal disease condition. On the basis of these considerations, we selected mythyroid.com, an open-forum EBB organized around issues relating to thyroid problems and treatments.[1] Using a stratified sampling approach (see below), we selected six unique threads from mythyroid.com for detailed analysis (table 2). Written informed consent from the EBB's moderator and a formal approval from our universities' institutional review boards (IRBs) were obtained to download and analyze postings. All contextual information was disguised in accordance with IRB procedures.

The thyroid Web site shows the latest post (with a hyperlink), a title relating to the issue discussed, the date and time (with the latest on top), the number of threads, and the number of posts for that particular health issue. Clicking on the thread shows the complete text of the discussion, and the transcripts of these electronic discussions constituted our data. We aimed to obtain a representation of different threads that varied in length (i.e., number of postings) and time (i.e., duration). In all, as of January 31, 2007, mythyroid.com had 508 unique threads, each with one to 116 postings. We grouped all threads by length, eliminated those with fewer than 10 postings, and randomly picked one thread from each group for a judgmental review. The judgmental review excluded threads mainly on the basis of content (e.g., if the focus was general support issues). As per table 2, the six

analyzed threads represented 497 distinct postings with 5,744 text lines by 83 unique individuals over a period of 10.5 months.

Further, we identified the focal actor in each of the six selected threads. The focal actor typically initiated the thread by posting a query and reporting on actions s/he took as the learning progressed. We also tracked focal actors' participation after the termination of the main thread, focusing on new threads they initiated until August 2009. We examined follow-up threads for longitudinal evidence of expanding action repertoires. With one exception (discussed below), the follow-up threads involved fewer than five participants, lasted less than 5 days, and involved fewer than 10 postings. Available background data for each focal actor are in table 2.

We used a hermeneutical interpretive approach, where main thread postings were treated as textual data to be interpreted through a series of part-to-whole iterations involving distinct stages of intratext (within-thread) and intertext (across-thread) analysis (fig. 2). Later, these analyses were merged with analysis of follow-up threads to trace PLT dynamics over time (Thompson 1997). Initially, we selected two main threads to develop a reliable and valid approach for identifying and coding concepts related to inquiry processes. We first analyzed the community postings individually and later met as a team (authors plus two students) to triangulate, resolve discrepancies, and clarify definitions/distinctions. In so doing, we followed an iterative process by challenging emergent concepts from interthread analysis through another round of intrathread analysis and refining the concepts through a return to interthread analysis. During each step, emergent concepts were reviewed for consistency with the definition of inquiry in PLT. Triangulating across the team ensured that marginal and less relevant concepts were ruled out. Moreover, concepts that were not salient in community discourse, indicated by infrequent occurrence, were discarded. Once a common set of concepts was identified, points of overlap and distinction across concepts were exploited to develop a parsimonious set of distinct concepts that collectively provided a fair representation of inquiry processes. Explicit definitions and exemplars for the identified concepts were developed to clarify their conceptual content and establish their distinction. Also, procedures for coding both the main and follow-up threads were outlined. The main threads were coded for PLT inquiry concepts and instances of action, whereas the follow-up threads were coded only for the focal actor's actions and problems that motivated the query since they were typically short in length and duration.

Thus, for each main thread, we coded community postings for (*a*) each inquiry concept identified, (*b*) actions (or lack thereof) reported by the focal actor, and (*c*) interrelationships among inquiry and actions over time. Likewise, each follow-up thread was coded to extract the guiding problem that triggered the query and the key actions reported by the focal actor. We combined the interpretive analysis of main and follow-up threads for each focal actor (intrathread analysis)

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[1]Throughout this article, all names and references to the EBB and its members are disguised in accordance with our institutional review board approval. Any resemblance to existing or future names and references is coincidental and unintended.

FIGURE 2

RESEARCH DESIGN AND ANALYTICAL APPROACH FOR INTERPRETIVE STUDY OF PLT CONCEPTS AND DYNAMICS
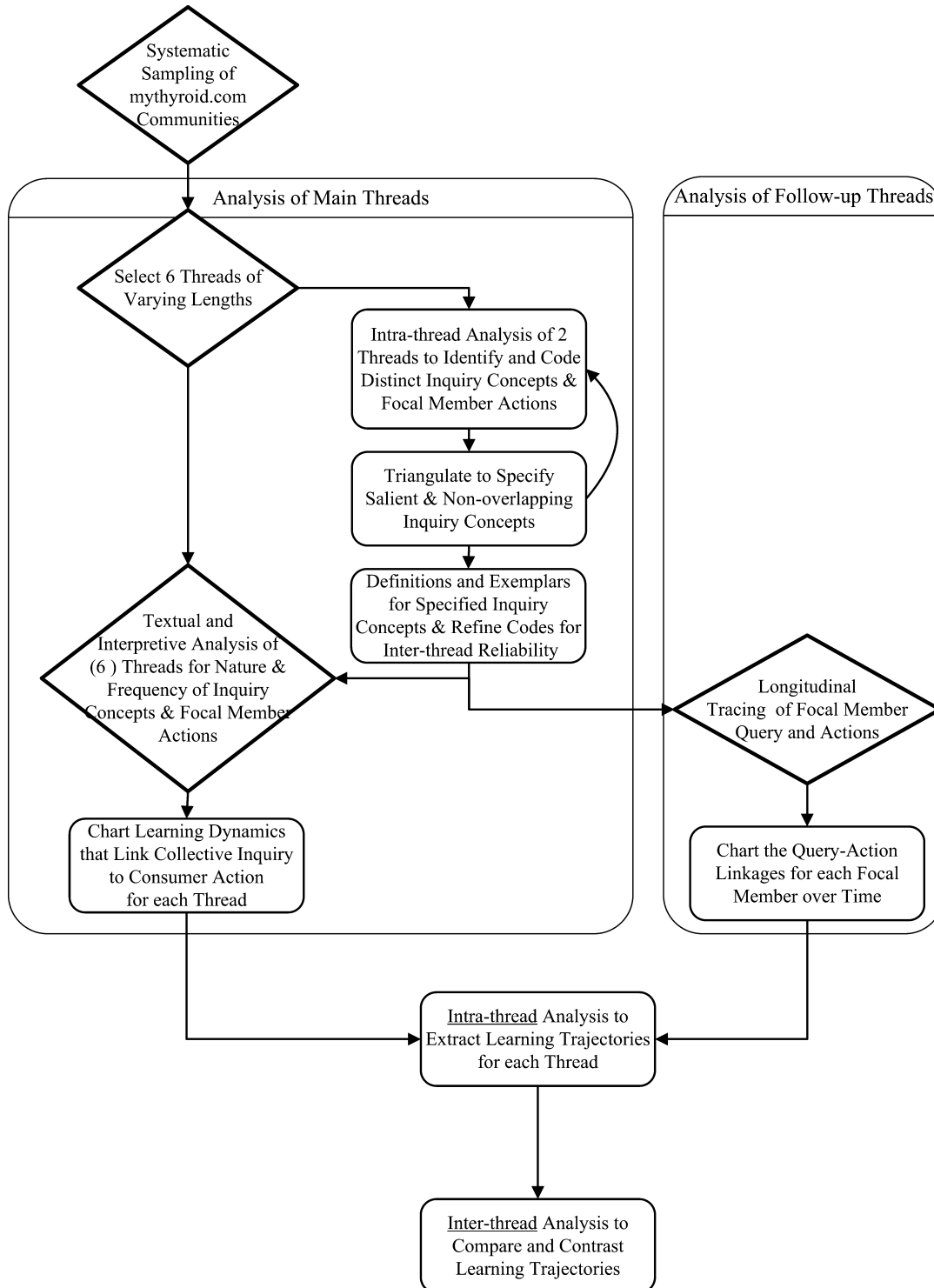IN ONLINE CONSUMER COMMUNITIES

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TABLE 2

DESCRIPTIVE DETAILS OF SIX ELECTRONIC BULLETIN BOARD THREADS ANALYZED FOR EXTRACTING PLT THEMES (SORTED BY DURATION)

Thread title	Unique members	Total postings	Total text lines	Total text lines per member	Total text lines per post	Duration	Focal actor profile	Focal actor role
Right Dosing	7	67	661	94.4	9.8	21 days, 14 hours, 27 minutes	Bug; female, senior member, joined 10/30/2004; 141 total posts, .15 average posts per day	Initiator and active
Hospitalization	12	65	358	29.8	5.6	29 days, 1 hour, 38 minutes	Princess: female, member, joined 9/12/2005; 89 total posts, .14 average posts per day	Initiator and active
Home Health	27	78	1,063	40.8	13.6	45 days, 15 hours, 46 minutes	Coffee: male, junior member, joined 8/1/2003; 14 total posts, .01 average posts per day	Initiator but inactive for over 2 weeks before thread terminated
Thyroid Carcinoma	16	104	803	50.2	7.7	60 days, 5 hours, 59 minutes	Hannah: female, senior veteran, joined 6/1/2003; 1,161 total posts, .79 average posts per day	Initiator and active
Follicular Cancer	5	70	674	134.8	9.6	87 days, 9 hours, 9 minutes	AWills: male, senior veteran, joined 12/4/2005; 514 total posts, .92 average posts per day	Initiator and active
Interactions	16	113	2,185	136.6	19.3	88 days, 17 hours, 27 minutes	Rain: female, senior member, joined 2/26/2004; 263 total posts, .21 average posts per day	Not initiator; joined after 3 days, 6 hours, 2 minutes; active thereafter

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and used it for comparing and contrasting the learning trajectories across focal actors (interthread analysis). The results from these analyses were tabulated for each thread, and a chart was developed to display inquiry-action linkages over time. Throughout, our approach was consistent with an iterative, hermeneutical process focused on preserving the authenticity of postings and the dynamics that they reflected (Thompson 1997).

In addition, we computed frequency counts for the relative occurrence of inquiry concepts (see additional details in appendix table B1 and fig. B1, available in the online edition of the *Journal of Consumer Research*). We estimated the incidence of each inquiry concept by computing the lines of text devoted to each concept as a proportion of the total text lines in each thread. Dividing by total text lines allows normalization of the frequency counts, thereby allowing comparisons of relative incidence across threads. Moreover, to evaluate the relative incidence of inquiry concepts for within-thread comparisons, we (1) partitioned each thread into subsets at time points associated with a clear and distinct action by the focal actor; (2) computed the relative incidence of inquiry concepts for each partitioned text, using a common denominator of total text lines; and (3) evaluated the longitudinal pattern in the relative incidence of inquiry concepts within a thread. For the duration of any given thread, focal actors usually reported three to five key actions that linked to ongoing inquiry and that germinated new questions. The first action is identified as the T_0 partition, and subsequent actions are identified by sequential partitions (e.g., T_1, T_2, etc.). We recognize that these partitions are arbitrary and are imposed on a discourse that tends to proceed both nonlinearly and recursively as it reverts to previous actions and inquiry even as it moves forward. However, these partitions facilitate a longitudinal tracing of the focal actor's repertoires and associated PLT dynamics.

INTERPRETIVE FINDINGS

We organize our findings around four subsections: (1) development of key inquiry concepts based on hermeneutical analyses, (2) patterns of inquiry concepts across and within threads, (3) longitudinal mapping of focal actors' actions, and (4) longitudinal tracing of PLT dynamics of inquiry-action linkages in the main and follow-up threads. Throughout, we maintain the integrity of the community discourse by contextualizing PLT dynamics within the concerns and coping efforts of the participants as they negotiate a severely debilitating disease.

Hermeneutical Development of Inquiry Concepts

Our iterative analysis converged on three distinct concepts of inquiry that we refer to as reflection, refining, and exploring (see table 3 for definitions, exemplars, and coded results). Below we describe each concept and substantiate its relevance for PLT inquiry processes.

Reflecting is defined as interpreting experiences to form assertions or beliefs about the problem or query at hand, using introspection processes that access an individual's stocks of knowledge and experiences about self, environment, and the relationship between them (Wilson and Dunn 2004). Reflective processes in our analysis involved noting similarities in symptoms, relying on abstract knowledge, and identifying contrasts (table 3). Reflection often included elementary and descriptive assertions of problems. For instance, Hannah, the focal actor in the Thyroid Carcinoma thread, reflects on her medical report by contrasting it with her symptoms.

> *Hannah, July 13, 2:36 p.m.*: This week my regular dr. did a thyroid panel and said all of my thyroid hormone levels were normal. Yet, my hair is falling out, I'm tired all of the time, I'm having trouble remembering things and concentrating, I've been gaining some weight, and am very lightheaded and dizzy. . . . I think I've heard somewhere that you can be hypo and have your hormone levels show up normal. Is this true? (Thyroid Carcinoma)

Introspection is not limited to the focal actor. In the community discourses we examined, the nature of experiences varied across members, and collective reflection enhanced social capital that aided the community in gaining a common understanding of the problem. Often, though not necessarily, reflecting resulted in posing new questions or new ways of problematizing experience. For instance, Ethel openly reflects on her hypothyroidism and perimenopausal conditions and draws implications for the problem of inquiry.

> *Ethel, December 2, 6:14 p.m.*: I was just on the Menopause boards. . . . Just looking . . . reading. . . . Most of the symptoms, from muscle spasms to unexplained weight gain, to fatigue and mood swings sounded EXACTLY like those of most hypo[thyroidism] symtoms! What's the connection? . . . Is it possible to be both perimenopausal AND struggling with hypo? . . . If you're a female, 40–49 y/o, struggling with hypo BUT all lab results indicate "normal"—how likely is it that it may NOT be the thyroid and actually be suffering from perimenopause? (Interactions)

As noted in table 3, refining is defined as reframing, reconfirming, or restructuring problems or possible solutions by integrating others' experiences with self-experiences (Chak 2006). In the community discourses we analyzed, refining involved two or more community members triangulating their reflected experiences to facilitate problem solving. Refining is central to inquiry since "one has to assimilate, imaginatively, something of another's experience in order to tell him [her] intelligently of one's own experience" (Dewey 1916/1944, 6). As such, refining appears to mitigate individual limits of sense making by leveraging the diversity of experience sampling in the community and collective efforts to recognize inconsistencies and/or exceptions to the observed patterns across experiences. For instance, in one of the threads, Rain interprets her test results for low progesterone levels on day 4 by integrating Pully's reflections.

TABLE 3

DEFINITIONS, EXEMPLARS, AND ILLUSTRATIVE CODED EXAMPLES FOR KEY INQUIRY CONSTRUCTS

	Reflecting	Refining	Exploring
Mechanism	Introspection (self)	Interaction (other)	Experimentation (self or other)
Focus	Sense making	Integration	Cause-effect connections
Strategies	Identifying similarities and contrasts	Reframing, reconfirming, or restructuring	Induction and deduction, build lay models
Goals	Interpreting experiences to facilitate problem solving	Triangulating experiences to facilitate problem solving	Generating new experiences or reinterpreting past experiences to facilitate problem solving
Exemplar	I was just on the Menopause boards. . . . I came across a posting that said "let's list symptoms and compare." . . . Most of the symptoms . . . sounded EXACTLY like those of most hypo[thyroidism] symtoms! . . . Is it possible to be both perimenopausal AND struggling with hypo?	In your last post you quoted what my friend said about needing progesterone to help the thyroid hormones work. But then you added this: ". . . remember we haven't quite sorted out the thyroid stuff just yet but that will come now [after] we have got the female stuff sorted." This is great news to me.	Blood was drawn this morning. . . . The nurse called [with] the results . . . this afternoon. On the 3rd it was 26, on the 7th it was 39, a progression of 13 points in four days. The change from the 7th to today is exactly half that original rate of change—13 points in 8 days vs. 13 points in 4 days. If the rate of increase is cut in half again I will be at 58 when I am tested next Tuesday.
Illustrative coded examples:[a]			
Example 1	As we age, our systems tire, as opposed to when we where young. Not to mention that we live in an estrogene dominent society . . . where TONS of stuff called Xenohormones are all around us. . . . These things are absorbed into our systems and act like "estrogen" which makes us estrogen dominent (Interactions, 64.5%, 258).	Well thanks for your answers—your answrs basically confirm that I really don't have any options. . . . You guys are right I'm sick of healthcare. . . . Question on how long i might have is academic though suspect that i'll have a coronary before thyroid catches up to me (Home Health, 75.5%, 151).	Mine probably started about 12 years ago, I had viral thyroiditis, and my theory is that I had scar tissue left from the virus that turned into a nice big cancerous nodule. . . . I once read a theory that it takes 8 years for a cancer to grow to a point that it's detectable (Follicular Cancer, 26.2%, 131).
Example 2	I could have crushed puppies without remorse when my thyroid was at it's worst. For me, one of the worst things was about "loss of control". Sounds like you have issues with that too. In the end, you'll calm down, find the . . .way to acomplish what you know you have to do (Home Health, 16.5%, 33).	I was talking to a lady the other day and she told me that her doc says that the thyroid needs good progesterone levels to work correctly. Hmmmm. . . . Maybe that is why I'm having such a hard time with my Armour thyroid (Interactions, 26.5%, 106).	Most likely cause of my cancer is a chest x-ray that I had to have had done years ago to past employement physical. . . . Also I do not believe that my smokeing is related to it—my uncle smoked 2 pack of camel per day and was a coal miner (Home Health, 8%, 16).

[a]Thread title, relative incidence (percentage of text lines), and total text lines are given in parentheses. Also see table B1.

RELATIVE INCIDENCE OF REFLECTION, REFINING, AND EXPLORING BY DIFFERENT TIME PARTITIONS WITHIN AND ACROSS
INDIVIDUAL THREADS

	Reflection							Refining							Exploring						
	Relative incidence							Relative incidence							Relative incidence						
Thread title	Total	T_0	T_1	T_2	T_3	T_4	χ^2	Total	T_0	T_1	T_2	T_3	T_4	χ^2	Total	T_0	T_1	T_2	T_3	T_4	χ^2
Right Dosing	41	44	47	30	44	36	4.9	42	39	33	43	42	51	4.1	17	17	20	27	14	13	7.0
Hospitalization	45	79	48	9	NA	NA	**54.3**	34	21	46	34	NA	NA	**9.3**	21	0	6	57	NA	NA	4.1
Home Health	16	13	20	NA	NA	NA	1.5	76	74	77	NA	NA	NA	.6	8	13	3	NA	NA	NA	**93.4**
Thyroid Carcinoma	47	39	42	38	54	61	**8.9**	41	61	44	53	31	15	**32.6**	12	0	14	9	15	24	**14.1**
Follicular Cancer	38	28	41	35	40	44	4.2	36	54	40	31	29	27	**13.7**	26	18	19	34	31	29	7.7
Interactions	65	60	70	74	67	59	2.5	26	32	20	24	25	27	3.1	9	8	10	1	8	14	**10.8**

NOTE.—The relative incidence columns indicate the percentage of total text lines devoted to the corresponding inquiry concept for a given time period. Sequential time partitions, marked by T_0–T_4, are defined by distinct focal actor actions throughout the duration of the thread, with T_0 corresponding to the initiation of the discourse. Time partitions are used to examine within-thread variability. Chi-square values significant at $p < .10$ are in bold. The null hypothesis assumes no variation across time partitions in the percentage of text lines for any given inquiry concept within a thread. NA (not applicable) indicates that text lines were not coded because the focal actor did not report any action beyond the previous time partition.

Pully, December 14, 6:42 a.m.: Testing the progesterone level in day 4 is kind of irrelevant—it will always be low and therefore "normal." . . . On my blood tests from the hormones doc it always says—Day 21. How otherwise can your dr tell you if things are OK, because it is ONLY from day 14 (ovulation and corpus luteum formation) that progesterone is properly produced! At approx day 21, it is at its highest. (Interactions)

Rain, December 14, 3:05 p.m.: I talked to my compounding pharmacy guy today, and he says (you were right as usual Pully :)) that the testing of my progesterone during my period, blood work or not, wasn't worth two cents. SO, I've got an appointment with a new ob/gyn on the 23rd. (Interactions)

Finally, exploring is defined as ramifying the possible explanations into lay hypotheses and developing experiments that generate new experiences (e.g., altering diet or dosage to see its impact on weight gain) or reinterpret past experiences (Rodgers 2002). Dewey viewed inquiry as "reasoned" problem solving and emphasized the disciplined effort needed to explore the problem's various explanations by a series of "intellectual dry runs" (Rodgers 2002, 854). Our analysis revealed several instances of the community collectively linking beliefs distilled from reflecting and refining processes to explore causal connections (table 3). Consider how Meow inductively posits lay hypotheses about confusing symptoms as she develops the inquiry.

Meow, December 2, 7:57 p.m.: There are thyroid hormone receptors on the ovaries. IF the ovaries don't detect enough thyroid hormone they alter the levels of estrogen and progesterone, causing menopause-like symptoms. . . . I really believe that many cases of "perimenopause" and "early menopause" are actually un-treated or under-treated hypothyroidism. (Interactions)

While exploring may be short-circuited when individuals are left to themselves because of its cognitive demands, the social benefits of sharing and helping others who are similarly affected in a community appears to bolster exploring. For instance, Adam in the Follicular Cancer thread eagerly shares with the community his results from new explorations based on lay experimentation.

Adam, February 15, 2:32 p.m.: I just got the results of blood drawn this AM—TSH [thyroid-stimulating hormone] is 52. I expected/hoped for 60–65 but that didn't happen. Now I'm wondering if all the salsa I eat to keep me out of bed 24/7 has contributed to the slowing rate of my body's slow-down. Did anyone else graph their TSH while they were waiting for the level to reach a point where the RAI [radioactive iodine] treatment could commence? Was it steep at first, like mine, then a more gradual increase, toward a more level line? (Follicular Cancer)

Overall, our analysis indicated exploring to be less frequent than reflecting or refining in a community discourse, which suggests that exploring is relatively more effortful. Nevertheless, a steady progression in the incidence of exploring that is linked to reflecting and refining as the inquiry unfolds is indicative of a productive inquiry (Rodgers 2002).
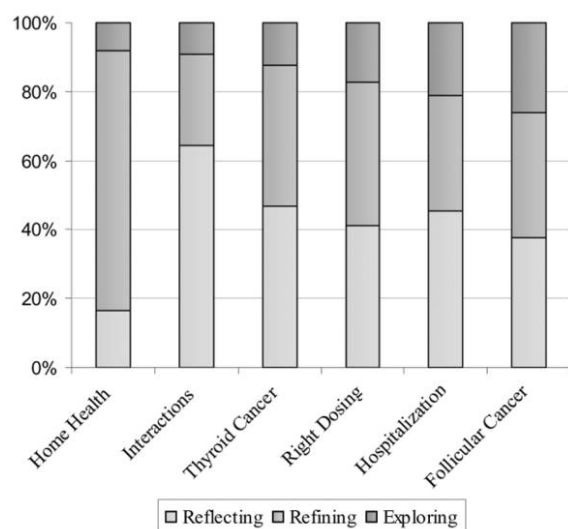
Patterns of Inquiry Concepts across and within Threads

Table 4 summarizes the relative incidence of each inquiry concept across and within threads. As noted earlier, each thread was partitioned into up to five time periods based on the focal actors' actions (T_0–T_4). However, the Home Health and Hospitalization threads did not evidence a sufficient number of distinct actions to allow more than two and three partitions, respectively.

Distinct patterns of variability are observed across and within threads. For instance, a plot of variability across threads (fig. 3) shows that some threads are dominated by a single inquiry concept that crowds out other inquiry con-

PLOTS FOR RELATIVE INCIDENCE OF INQUIRY CONCEPTS
ACROSS THREADS

NOTE.—Based on the percentage of total text lines.

cepts. For instance, Interactions is dominated by reflecting (65%), whereas Home Health is dominated by refining (76%). In other threads (e.g., Follicular Cancer), the incidence of the three PLT concepts is more balanced.

More specifically, the relative incidence of reflection varies from 65% in Interactions to 16% in Home Health ($p < .01$). Likewise, the relative incidence of refining ranges from 76% in Home Health to 26% in Interactions ($p < .001$). Finally, exploring was less commonly observed than was either reflection or refining, but with significant variability across threads—from 8% in Home Health to 26% in Follicular Cancer ($p < .01$).

The patterns within threads are more varied. The observed pattern within Follicular Cancer is plotted to illustrate this point in figure 4. In the initial time partitions (T_0 and T_1), reflecting and refining are more prevalent, with limited exploring (18% and 19%, respectively). However, by T_2, exploring expands to 34%, indicating that the community leverages the collective reflecting and refining to engage in deliberate positing and testing of lay hypotheses. This pattern of substantial exploring persists in T_3 and T_4.

Longitudinal Mapping of Focal Actors' Actions

Across the six threads, we found variability in the number, type, and pattern of focal actors' actions over the duration of the threads (see appendix tables B2–B4 in the online edition of the *Journal of Consumer Research*). For example, Hannah's actions in the Thyroid Carcinoma thread progress from a constrained repertoire (e.g., "scared," "just waiting" on June 18) at T_0 to an empowered approach (e.g., "will schedule a scan," "have RAI no matter what" on July 26)
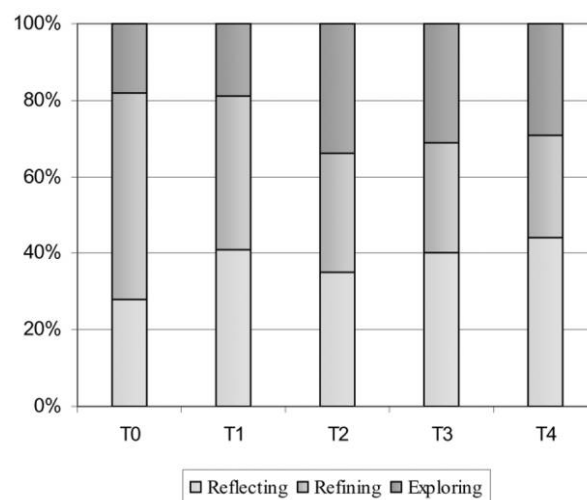
by T_3. Hannah recorded 15 distinct instances of action over the 58 days of the thread's duration. By contrast, Coffee's actions in the Home Health thread do not evidence such progression. Displaying a limited action repertoire, Coffee exhibits unwavering resistance (e.g., "totally unacceptable") and rejection ("refuse admittance under all circumstances") indicative of "functional fixedness" (Hoch and Deighton 1989, 4). In all, Coffee posts just four instances of action during the 28 days of the thread's duration, three of which occur on the first day. The action repertoires observed for other focal actors lie somewhere between the upper and lower limits of observed frequencies for Hannah and Coffee, respectively.

Longitudinal Tracing of PLT Dynamics

While the preceding affirms that the PLT concepts are reliably observed in the community discourse with nontrivial incidence, the dynamics focus on the interrelationships among PLT concepts. We mapped the observed interrelationships for the duration of each thread and across its distinct time partitions. Figures 5–9 display the PLT dynamics for the representative threads of Follicular Cancer, Hospitalization, and Right Dosing. The graphing of PLT dynamics in Home Health was precluded by the lack of engagement and action by the focal actor. Different shapes reflect different processes and concepts, as identified at the bottom of each figure. The map outlines the focal actor's queries and actions (e.g., boxed middle section) and depicts their linkages to inquiry mechanisms in the community (e.g., top section; figs. 5, 8, and 9). To keep the mapping manageable, we focused on key actions and mechanisms, omitting those that we judged were either less central or able to be inferred
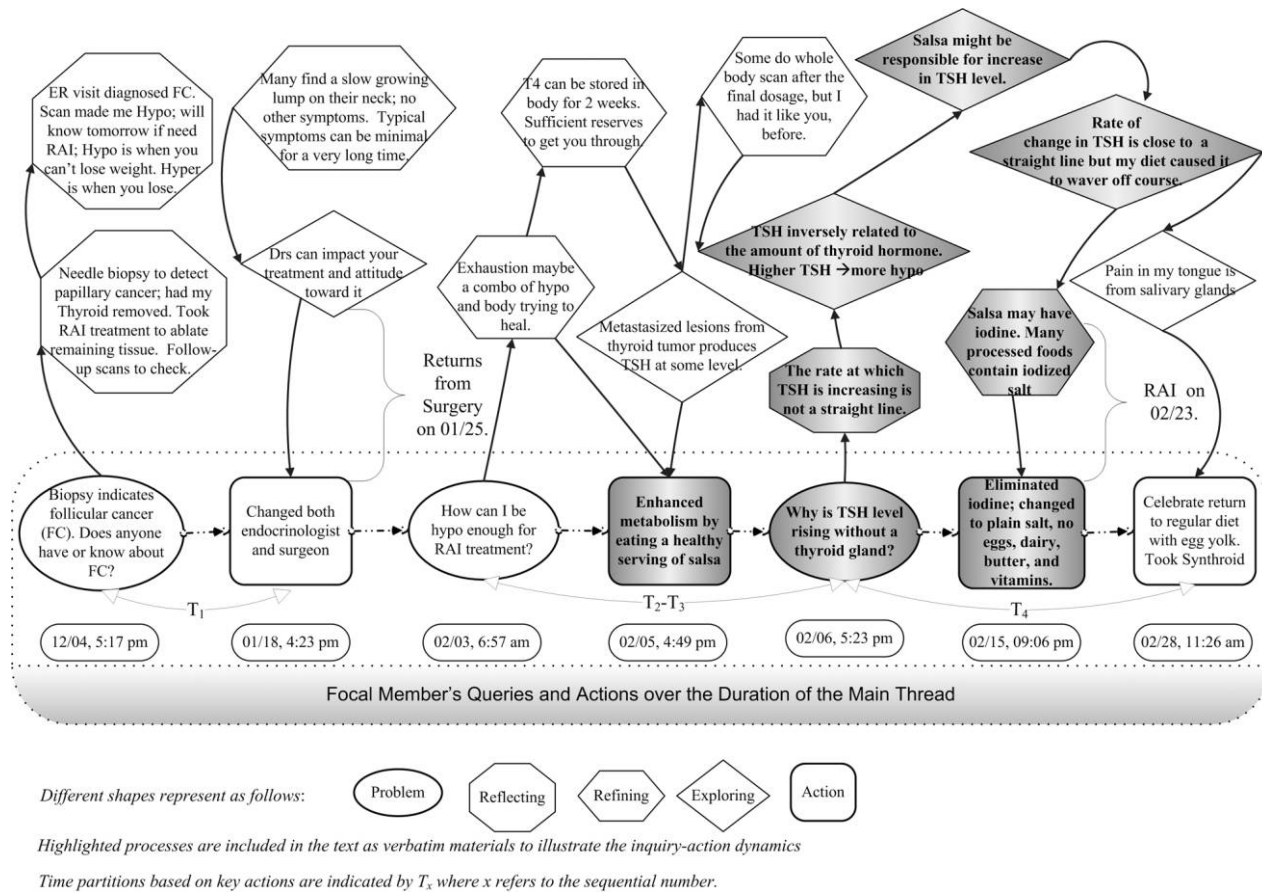
PLOTS FOR RELATIVE INCIDENCE OF INQUIRY CONCEPTS
WITHIN FOLLICULAR CANCER THREAD

NOTE.—Based on the percentage of text lines within each partition.

FIGURE 5

COLLECTIVE INQUIRY DYNAMICS AND THEIR LINK TO THE FOCAL ACTOR'S ACTIONS DURING THE DURATION
OF THE FOLLICULAR CANCER THREAD

Different shapes represent as follows: Problem | Reflecting | Refining | Exploring | Action

Highlighted processes are included in the text as verbatim materials to illustrate the inquiry-action dynamics

Time partitions based on key actions are indicated by T_x where x refers to the sequential number.

from those included. Since learning effects may spill over into follow-up threads, we longitudinally traced focal actors' actions in follow-up threads after the termination of the main thread (figs. 6 and 7), except in Interactions and Home Health, where follow-up threads were fewer than two and hence insufficient to provide useful insights.

Our analysis uncovered varied patterns of PLT dynamics, ranging from some that were recognizable and consistent to others that were unexpected, inconsistent, or counterintuitive. In two of the six threads, recognizable dynamics indicative of generative learning emerged. However, PLT dynamics mingle and mix in unique patterns, such that pathways for generative learning are often punctuated by diversions, setbacks, and muddling through. In addition, for the remaining four threads, we found one instance of degenerative learning and three instances of nongenerative learning that are interpretable. To avoid synthetic and reified presentation, we discuss our interpretive insights by emphasizing the intrinsic qualities of community discourse.
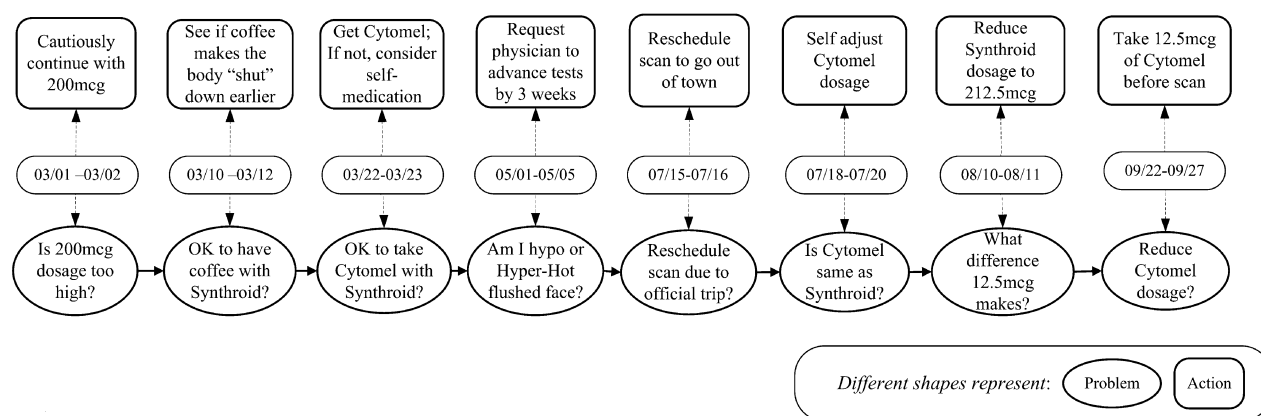
Connected Communities Foster Generative Learning.
Our analysis suggests that communities formed around the Follicular Cancer (focal actor: Adam) and Thyroid Carcinoma (focal actor: Hannah) threads depict characteristics of generative learning. Figure 5 graphs the interconnections among inquiry concepts and Adam's actions in the Follicular Cancer thread. The specific sequence of linkages is highlighted for discussion in figure 5. Appendix figure B2 (available in the online edition of the *Journal of Consumer Research*) includes similar dynamics for Hannah in the Thyroid Carcinoma thread. We provide a detailed analysis of learning dynamics in Follicular Cancer (fig. 5) and then draw parallels with those obtained in Thyroid Carcinoma by summarizing the latter. Space does not permit detailed reporting of both.

Overall, a hallmark of generative communities is the collective effort to engage in PLT processes of reflecting, refining, and exploring, so that they iteratively link to build a scaffold of productive inquiry. Reflecting is a common

FIGURE 6

LONGITUDINAL TRACING OF ADAM'S ACTIONS FOLLOWING THE TERMINATION OF THE MAIN THREAD

entry point for community members as they try to make sense of their problems and devise means to solve them. For instance, Adam's initial reflections indicate curiosity about impending surgery (see fig. 5). Within minutes, Adam is connected to a social world of fellow sufferers bound by a commonality of ailments and goals. Follicular Cancer community members assure Adam by reflecting on their own experiences to outline typical procedures with a similar cancer ("needle biopsy to detect papillary cancer") as well as ponder the peculiar nature of a similar diagnosis ("ER visit diagnosed FC," December 4; fig. 5). Others attempt to mitigate Adam's concern by noting that the lumps on the neck associated with thyroid cancer are "usually slow growing cancers that can actually be cured" and urge him to "keep believing you will beat this, because you can and you will." These reflective processes germinate swift social bonds (Putnam 2000) among concentric circles of community members to establish a consciousness of kind (Muniz and O'Guinn 2001) among those who suffer from similarly debilitating ailments. This intrinsic and empathetic connection encourages active sharing of distributive expertise validated through helping the newly diagnosed navigate their treatments.

Hannah's experience in the Thyroid Carcinoma thread evidences a similar pattern. Hannah opens the thread by noting that she is "scared" and worried that the cancer may metastasize to her lungs and bones. The Thyroid Carcinoma members soothe Hannah's fears by noting, "Thyroid cancer is almost 100% curable" (fig. B2, June 18), and they implore her to "take care, be healthy, worry a little because it makes you research and become educated, but don't worry so much [that] it consumes your life." Members explain the indicators for spread ("check lymph nodes"), the surgical procedures involved ("remove entire thyroid gland"), and the irradiation of residual cancerous tissue ("RAI"). Others counter by noting that while this is a "good cancer to have," it is important to be informed and to "be your own advocate."
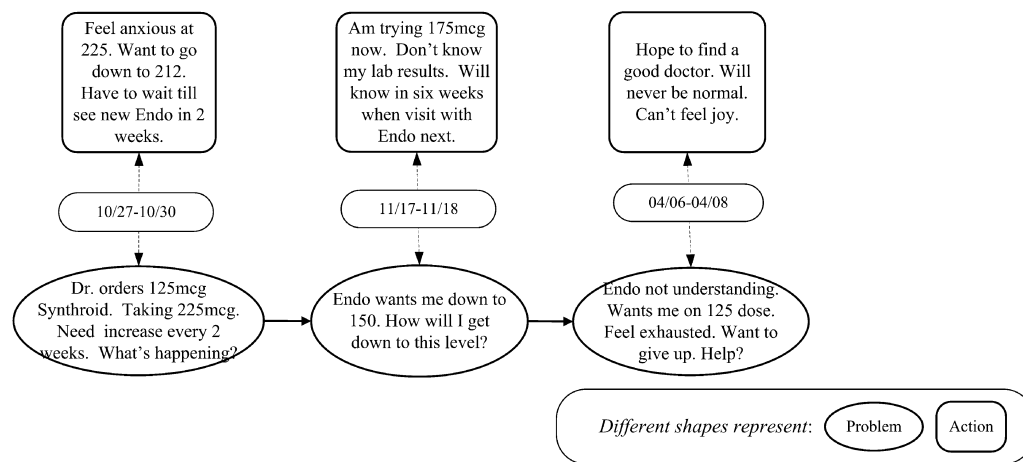
We observed repeated instances that affirmed and amplified the social bonds among community members. This social glue is conducive for uninhibited self-disclosure that germinates productive inquiry by linking introspective reflections to effortful refining and lay causal connections. Typically, self-presentation involves a projection of desired or ideal selves (Berg and Derlega 1987), where participants repress personal information and/or embellish it for a favorable projected image. By contrast, our participants arduously peeled away fabrications to actively reveal their true selves. For instance, Adam reflects on his hurting ribs as he coughs and acknowledges that, as a "former smoker," he might have to cough a lot to clear his lungs. Such self-disclosure untainted by the concern for social desirability reveals our participants' self-recovery as opposed to the self-discovery suggested in past research (Schau and Gilly 2003). Partly, this self-recovery is motivated by vulnerability to a disease with uncertain, possibly fatal etiology, but a significant motivation is our participants' problem-solving goal. Goal resolution is problematic unless the actors reveal their authentic selves, however replete with embarrassing and unflattering content (Turkle 1995). This candid exposure of self anchored in reality fosters problem solving through a deliberate process of refining and exploring.

Undertaking action based on feedback from participants who have never met face-to-face entails considerable risk. Mutuality, emotional ties, and shared experience (Bender 1978) typical of a virtual community help our participants carve out a social space for learning and prevail over barriers erected by a mechanical, depersonalized, and mass-produced health care system. As social trust takes root and bonding capital grows, our focal actors' bolstered self-efficacy makes them receptive to problem-solving suggestions from anonymous collaborators in a virtual world. Over time, as the community develops the inquiry, the focal actors show evidence of expansive repertoires, in terms of engaging in new actions as well as the diversity of actions. For instance, both Adam and Hannah seek second opinions and switch doctors (endocrinologist and surgeon)—actions they had not contemplated when they initiated their inquiries. Likewise, the

FIGURE 7

LONGITUDINAL TRACING OF BUG'S ACTIONS FOLLOWING THE TERMINATION OF THE MAIN THREAD

actions range from reading resource materials to ordering and reviewing one's own lab tests and posting lab results online to get the community's input. This empowered action is evident in the way the focal actors negotiated with their doctors.

> *Adam, February 11, 6:56 a.m.*: Concerned that I might not be able to crawl out of bed by then, I emailed the R. Onc. [radiation oncologist] and pointed out the progression would put me at 60 long before my appointment. Surprise, surprise, he replied that he would bring me in two days earlier and would test me at that time and probably go ahead with the 131 doseage. (Follicular Cancer)

> *Hannah, July 26, 11:17 p.m.*: My surgeon told me I didn't really need to get an endo[crinologist], but I went ahead and made an appt. with one for another opinion. I think I will feel better to have the RAI no matter what the scan shows. (Thyroid Carcinoma)

Generative learning is indicated by persistent links between inquiry and action repertoires that signal transformation of experience to experiential knowledge. Collective inquiry expands individual actions that pose new problems for inquiry in a seamless progression of inquiry-action linkages across time (fig. 5). This persistence leads to novel actions that depart from past behaviors and routines in accordance with the PLT framework. Thus, both Adam's and Hannah's actions depict a progression from a sense of helplessness (T_0) to confident engagement in medical decisions (T_4) as they persistently link community inquiry with expansive action.

By way of illustration, we highlight a set of inquiry-action linkages for Adam in figure 5 (shaded portions for T_3 to T_4). In T_3, Adam reports to the community his discovery that eating hot salsa can effectively suppress the debilitating effects of hypothyroidism.

> *Adam, February 5, 4:49 p.m.*: Without realizing it I managed to jump-start my slowing metabolism Friday evening by eating a healthy serving of hot salsa. . . . The result was I was up for about 4 hours straight—didn't get cold and weak as had been the norm. I had resigned myself to a terrible weekend of weakness and napping; instead I feel almost normal, even though I'm very hypo at this point. If your diet allows I suggest anyone forced to the hypo phase due to upcoming RAI eat salsa or other spicy foods. (Follicular Cancer)

Adam's euphoria is short-lived, since his lab test results, which he posts the next day, show that his TSH levels are not rising as expected, thereby delaying his RAI therapy. Adam leverages community inquiry to explore the role of his diet in inducing a hypothyroidism situation (TSH levels > 60), a prerequisite for RAI treatment. Trying to mitigate what he calls the "terrible" state of exhaustion, weakness, and constant napping induced by his medications, Adam experiments with diet to "jump-start" his slowing metabolism without hurting the rising trend of TSH levels—an effort that iteratively links action and exploring punctuated by reflection and refining.

> *Adam, February 17, 11:31 a.m.*: I saw my Rad. Onc. for the first time this morning. He may have cleared up the mystery of why salsa has made me feel better and why my TSH rate-of-increase has slowed. . . . He said many processed foods contain iodized salt even though the ingredients list may just state "salt." . . . The salsa has some salt, too, but it is way down the list so it is a tiny amount of iodine if they, too, use iodized rather than plain salt. From here on out I am planning to minimize the amount of prepared foods I eat and eat only things I've cooked or put together from raw ingredients. (Follicular Cancer)

> *Adam, February 21, 4:01 p.m.*: The rate of change in TSH took some interesting turns in my situation: from 26 to 39

in four days (steep increase), then 39 to 52 in eight days (rate of increase half of previous), then 52 to 67 in six days (steep again but slightly less than at first). This experience suggests that, all things being equal the rate of change in TSH will be pretty close to a straight line. My diet caused it to waver off course. (Follicular Cancer)

Similar evidence of empowered decision making seeded by the iterative linking of inquiry and action is evident in the case of Hannah in Thyroid Carcinoma (see shaded portions for T_3 to T_4 in appendix fig. B2). For instance, in T_3, after surgery on July 6, Hannah posts that she is advised against RAI treatment by the surgeon who sees no reason for it if the postsurgery scan comes out "clean." Some participants reflect about not needing RAI (per the advice of their surgeons), while others hypothesize about factors influencing the RAI decision, including tumor size ("no, if less than 1cm," July 26) and encapsulation ("no, if contained"), that her surgeon had not discussed. Armed with the knowledge, Hannah obtains her pathology report and posts her results. Hannah learns that "minimally invasive" means that the cancer "hasn't gone far," that the surrounding tissue shows "chronic lymphocytic thyroiditis," which suggests that she might have "hashimoto's disease," that the tumor size is about 2.2 centimeters, and that a full body scan is needed to determine whether there is residual cancerous tissue. Community members note that tumors larger than 1 centimeter warrant attention, and they suggest consultation with an endocrinologist. By T_3, Hannah is swayed into action and schedules an appointment with an endocrinologist (against the advice of her surgeon); by T_4, her comments show comfort with technical terms (e.g., "path report showed a focal point of vascular invasion"), reduced anxiety (e.g., "I will feel better"), and empowered action (e.g., "I went ahead . . . no matter what," July 26; appendix table B2, available in the online edition of the *Journal of Consumer Research*).

Finally, the longitudinal tracing of Adam's and Hannah's actions in follow-up threads provides further evidence of generative learning. From March 1 to September 22, Adam manages several issues pertaining to postsurgery treatment, including experimenting with his Cytomel dosage ("self adjust Cytomel dosage," July 18) to personalize his medications (the "difference 12.5 mcg makes," August 10) for maximal effect (fig. 6). After September 22, Adam's postings become more involved as he inquires into the link between thyroid cancer and neurological symptoms of migraine/olfactory auras; this sparks a community discourse that lasts well into February. This extensive follow-up thread for Adam is an exception to the pattern evidenced in all other follow-up threads and is not depicted in figure 6. However, this follow-up thread reaffirms Adam's sense of empowerment as he continues to engage in iterative cycles of productive inquiry linked to a growing repertoire of actions to exert control over his treatment choices. In one posting, he reports visiting the medical records office to review all

his radiation reports for 2007 and 2008, "with an eye to piecing together the puzzle."

Likewise, from August 23 to May 4, Hannah manages her postsurgery treatment by querying her physician when medication does not work (to discover prescription error, August 30), adding Armour Thyroid medication to reduce hyperthyroidism symptoms (changing doctors, January 31), locating a different endocrinologist (to balance her TSH and side effects, February 10), and developing a personalized regimen (May 1; see appendix fig. B3 in the online edition of the *Journal of Consumer Research*). Such behaviors underscore the focal actors' transformation of capabilities gated by social learning for empowered decision making in stark contrast to their deficient knowledge and impoverished engagement in the initial stages.

The incidence of PLT inquiry concepts (table 4) and the plotting of relative incidence across time for the Follicular Cancer thread (fig. 4) supplement the preceding insights. For instance, in the case of Follicular Cancer, the incidence of exploring increases from 18% in T_0 to 19% by T_1 and to 29% by T_4 ($p < .10$). Also note that the Follicular Cancer community develops a balanced emphasis on inquiry processes (e.g., in T_3, reflecting = 40%, refining = 29%, exploring = 31%). These patterns are indicative of productive inquiry. The Thyroid Carcinoma community shows a similar pattern of increasing incidence of exploring but struggles to attain balance, alternating between overemphasis on refining in T_2 (53%) and on reflecting in T_4 (61%). Overall, both communities succeed in fostering sustained levels of productive inquiry.

Focal Actor Disengagement in Conflicted Communities Promotes Degenerative Learning. Not all communities we analyzed were successful in fostering generative learning. Here, we outline the interdependent dynamics that stall inquiry and divert discourse in Home Health, as it represents a unique thread in which evidence of degenerative learning emerged.

The degenerative process in Home Health is seeded by the focal actor's disengagement following an atypical query. This disengagement stalls the mobilization of skills and resources for empowered decision making. Coffee begins the thread by seeking affirmation of his stance that the removal of his cancerous thyroid at the hospital would be "totally unacceptable" for several reasons—he would be unable to smoke, he has no tolerance for an IV, his freedom would be reduced, and he is unwilling to live on a liquid diet (e.g., Jell-O). Coffee queries about going to another country "like Mexico" where the treatment would be more "humane." Community members challenge Coffee's position as ill-conceived and question his assumptions by reflecting on their own experiences to provide alternative perspectives to help him redefine and reconstruct the problem.

Hannah, August 1, 1:34 p.m.: I have had two surgeries to remove my thyroid for cancer. My first surgery, I got to go home that same day and my second, I got to leave the next day. Why don't you see if your dr. might let you leave the

morning after surgery? Please reconsider the surgery. This is your life. (Home Health)

Anne, August 1, 2:17 p.m.: Personally I would rather have a few minor inconviences rather than die a horrible death wasting away from a totally treatable form of cancer. Your reasoning for not having surgery seem very small. So you don't smoke for a few days, so you can't eat a steak for a day, so you have an IV for a few hours. Remember, if you do end up having terminal cancer it will be a lot worse. (Home Health)

This moral suasion is accompanied by hostility and disapproval of Coffee's problem framing.

Pez, August 1, 2:02 p.m.: I feel really sorry for you. You sound like an angry, frusterated person who really could use a lot more than just a thyroidectomy. Perhaps some counceling or an exorcism would help. (Home Health)

JBell, August 18, 6:23 a.m.: I've never read such an ill considered post in my life; you ought to be ashamed . . . for, taking advantage of all the kind folk who have only your best interests at heart. . . . You can't spell either. (Home Health)

Nana, August 18, 2:22 p.m.: If I was your mother, I would say, "turn around and bend over Junior, you're going to get a good, swift kick in the arse!" (Home Health)

Online environments are devoid of social cues, and members depend on the linguistic qualities of words to infer the social intentions of participants. In such environments, successful problem resolution is likely to be tied to the rhetorical effectiveness of the community's linguistic choices. While Coffee uses crisp words that lack emotion, members use disapproving phrases bordering on contempt and ridicule that appear to thwart swift social bonding and induce corrosive emotions. In turn, they threaten and curb Coffee's engagement by promoting a sense of defiant helplessness evident by an absence of any postings by Coffee for 27 consecutive days.

Coffee, August 1, 3:51 p.m.: Well thanks for your answers—your answrs basically confirm that I really don't have any options. When I go Monday for my post op I'll just find out how long I have. . . . I'm sick of healthcare . . . that I refuse admittance under all circumstances. (Home Health)

When Coffee returns on August 28, although his actions continue to demonstrate a defiant stance, he exhibits surprising capability to negotiate a treatment plan with his physician.

Coffee, August 28, 4:14 p.m.: I will get surgury round 2 on the 12th. Also I will be taking food to hospital—hospital will allow if I sign a paper not holding them responsible for its superior quality. doctor and i disagreed. . . . I told him to

keep me sedated for my entire stay and wake me up when its time to go home—he didn't want to do that. I wanted let go after 1 day, he said i can sign myself out but he won't be responsible. (Home Health)

The Home Health community exhibits sensitivity to the tension between supporting a fellow member's ideological frames (however unconventional) and promoting reasoned healthy choices. Navigating this tension without precipitating focal actor disengagement is a challenge to learning. The community responds to Coffee's disengagement by framing it as a problem.

Tammy, August 30, 10:07 p.m.: Maybe you should start a new thread, Coffee. . . . It seems the title you chose for this post, didn't get you the kind of reaction you were looking for, as most people were too busy responding to your statement, and never thought about offering any helpful alternatives. Guess your feelings were too inflammatory for some to handle, and they failed to see the real meaning behind your words. (Home Health)

Coffee does not return to the community after August 28; however, the community discourse continues for another 18 days thereafter. What sustains community discourse despite focal actor disengagement? Our analysis points to the community's commitment to introspectively learn from the collective failure to engage Coffee. The community refines the "problem" to consider norms of social exchange that are more effective in navigating the diversity of distributed experiences, beliefs, and action choices. True to the description of the online environment as the Wild West, some members resist attempts to censor Coffee's idiosyncratic choices by advocating a safe harbor for less empowered members. Others reject the premise of unconditional support by discrediting Coffee's position and actively seek to assert real world social norms.

Tammy, August 30, 10:07 p.m.: Even if Coffee never replied, it concerned me to see responses to his post that lacked any kind of compassion or understanding for another person's feelings. I'm sure other people will read this post who feel just as Coffee did, ready to refuse to be hospitalized even if it meant death, and I didn't want them to have the impression that they would be hated and loathed for having such feelings, and not being anything but the perfect, willing patient. (Home Health)

Lyla, September 1, 4:21 a.m.: I still maintain that Coffee is a pot stirrer. My opinion only (if you'll allow me to have one). Have you read his posts about committing a crime and "doing time" so he can get his surgery done free? . . . Oh, i know what you'll say: Coffee has a right to feel any way he wants, and if he's frightened yadda yadda—but really, need you be so obnoxious, Coffee? (Home Health)

This exchange polarizes the community as members attempt

to negotiate a delicate balance between support and censorship in a discourse characterized by lighthearted verbal sparring.

> *Lyla, September 1, 3:07 p.m.*: Never at any point have I been upset about your posts. I am extremely hard to ruffle (thank you T3 [a type of thyroid hormone]). I even agreed with alot of it, just not how you said it. But that's what makes the world go round, our differences. I would love to tease you about being the "Posting Policy Police." . . . One thing we absolutely agree on is some posts were mean and non-supportive. I was so suprised because in general people have been wonderful. (Home Health)

> *Mary, September 2, 2:08 p.m.*: Isn't it nice that your cat can express itself whatever way it wants. In all honesty, I had to become almost obnoxious to finally be heard. Sometimes it's the only way. (Home Health)

> *JBell, September 4, 12:55 a.m.*: Coffee, Believe it or not we're there for yah. You've given us alot of good reasons to poke at each other. Of course I'm right and they're not (kidding, sort of). Hope you're feeling okay. (Home Health)

Nevertheless, the Home Health community realizes the collective failure implied by Coffee's disengagement. This probably explains the heavy incidence of refining (76%) in this thread and a declining trend in exploring across time partitions (from 13% to 3%; $p < .01$), indicating a stalled inquiry (see table 4, "Total" column under "Exploring"). As noted, Coffee evidences only four actions, three of them on the same day, which necessitates only one additional time partition within the Home Health thread. The lack of productive inquiry in Home Health precluded the charting of the relative incidence of inquiry concepts across time partitions. In addition, Coffee contributes only 14% of the discourse text, which indicates his low level of engagement. Although the thread ends positively as the community resolves its differences, Coffee remains absent, and his rigid and static action repertoire curtails any potential for learning gains. Moreover, our attempts to locate follow-up threads by Coffee were unsuccessful, which provides further evidence of degenerative learning.

Faltering Inquiry-Action Links Entail Nongenerative Learning. The Hospitalization, Right Dosing, and Interactions communities indicate PLT dynamics that are neither generative nor degenerative. Unlike degenerative threads, these communities support PLT processes associated with productive inquiry; however, they lack robust inquiry-action linkages typical of generative threads. Individual action remains constrained, hesitant, or unchanging, and the potential for empowered decision making is missed. Figure 8 and appendix figure B4 (in the online edition of the *Journal of Consumer Research*) display the inquiry-action linkages for the main and follow-up threads for the Hospitalization community. Likewise, figure 9 depicts the inquiry-action linkages for the duration of the Right Dosing thread. Similar linkages for the Interactions thread are available in appendix

figure B5 (in the online edition of the *Journal of Consumer Research*). Follow-up threads for Bug are charted in figure 7, whereas such charting was not feasible for Rain since she posted only one follow-up thread that did not attract much response (fewer than five postings). While each community represents a unique microcosm of robust inquiry and faltering action, we emphasize common themes below.

The focal actors face diverse problems—Bug in Right Dosing experiments with her dosage to overcome anxiety about her debilitating symptoms. Rain in Interactions struggles to cope with confusing symptoms of hypothyroidism and perimenopause and takes a cynical attitude toward her physician. Princess in Hospitalization painfully works through her postsurgery rehabilitation while trusting her physician with unwavering compliance. Akin to generative threads, swift social bonds help connect Bug, Rain, and Princess to a wealth of distributed experiences, where members comfort one another by placing their symptoms within the larger context of collective experiences and point to action possibilities to relieve suffering. For instance, as displayed in figure 8, when Princess experiences discomforting symptoms including a swollen neck, pain due to metal staples, weight gain after surgery, increasing numbness in her hands, tingling lips, and exhaustion, the community refines her experiences ("Neck will be stiff and sore," October 12) and explores various options ("Path[ology] report will tell you," October 14).

> *Cormac, October 14, 9:36 a.m.*: Ice, ice, ice . . . that is what did it for me. I have heard that stapling causes much more pain and inflammation than the internal stitches I had so I am sure you are much [more] sore and stiff than I was. You could still have hashi's. . . . About 10% of those with it never do test positive for antibodies, they should have been able to tell in your path report if you had lymphocytes in your thyroid. (Hospitalization)

> *Skate, November 5, 1:08 a.m.*: If you are still having troubles with your tingling lips etc, then you can ask your dr. about getting a parathyroid hormone (PTH) test done. (Hospitalization)
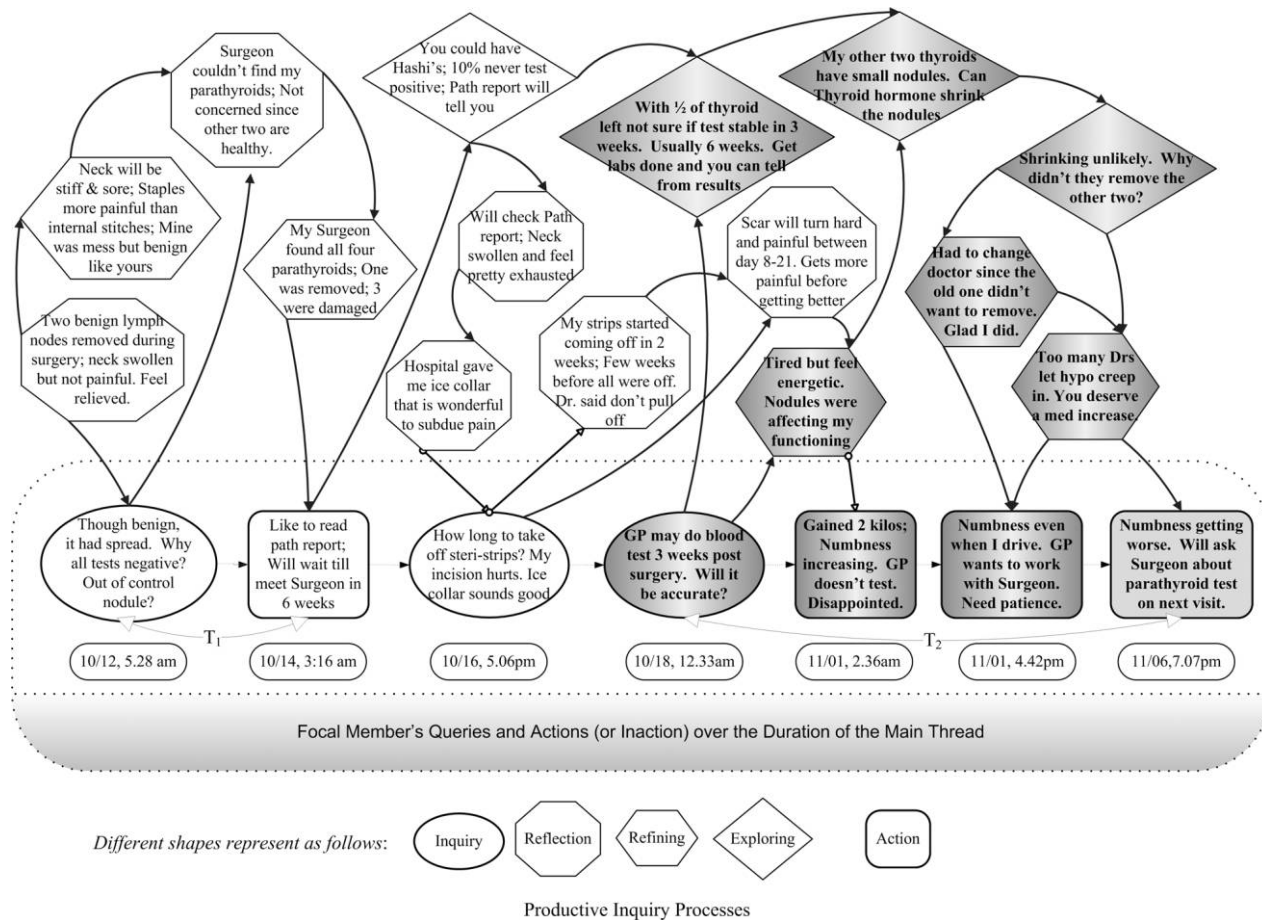
> *Cormac, November 5, 9:55 a.m.*: The numbness and tingly is from not having enough thyroid hormone. I cannot believe you are on no meds yet. You need to be tested and be treated proactively to prevent severe hypo from creeping in on you. (Hospitalization)

Bug, on the other hand, faces a dilemma of self-medication and experimentation with her dosage without knowledge about its consequences and without physician consent.

> *Bug, September 23, 9:35 p.m., and September 25, 10:05 a.m.*: The last time I was at my endo's I was on .75 synthroid. . . . Since then I have self medicated my self. . . . My doc. won't raise this until he sees bloodwork. . . . When my dosage is too low I look terrib[l]e and everyone sees it. People . . . tell me you look so tired and . . . you should get some

FIGURE 8

COLLECTIVE INQUIRY DYNAMICS AND THEIR LINK TO THE FOCAL ACTOR'S ACTIONS DURING THE DURATION
OF THE HOSPITALIZATION THREAD

rest. . . . When I increased everyone noticed how much better I look. . . . Is 125 a really high dose? Why did I need to go so high? Is my thyroid complete[l]y not working? Also is there a dosage [that] comes between 100 and 125? Believe me I would love [to] go on a lower dosage if I did [not] feel so bad. Will this happen? (Right Dosing)

Some members supportively admit to having "tweaked their dose" as well. Others advocate patience by allowing the body to adjust to the new dosage, which takes "up to 6 weeks," and suggest that she "come clean" and develop a trusting relationship with the physician (fig. 9, September 23).

Karen, October 12, 11:13 p.m., and October 13, 12:03 a.m.: What dose were you on when these labs were taken? See the problem is they are useless. Your tsh doesn't mean a thing once you are on synthroid and in fact it may need to come down still for you to feel good. . . . If your dr wants to know where you are on a dose he needs to be testing your

free t3 and your free t4! You can never see how you are doing by that dang ole tsh test. Keep in perspective! Layer your clothes and if you have a doctor that doesn't "get it"—it would actually be better for ALL of us, if we were objective and educated them, rather than just run to ANOTHER doctor. Trust yourself, trust your doctor, be reasonable. . . . And give him/Her the facts. (Right Dosing)
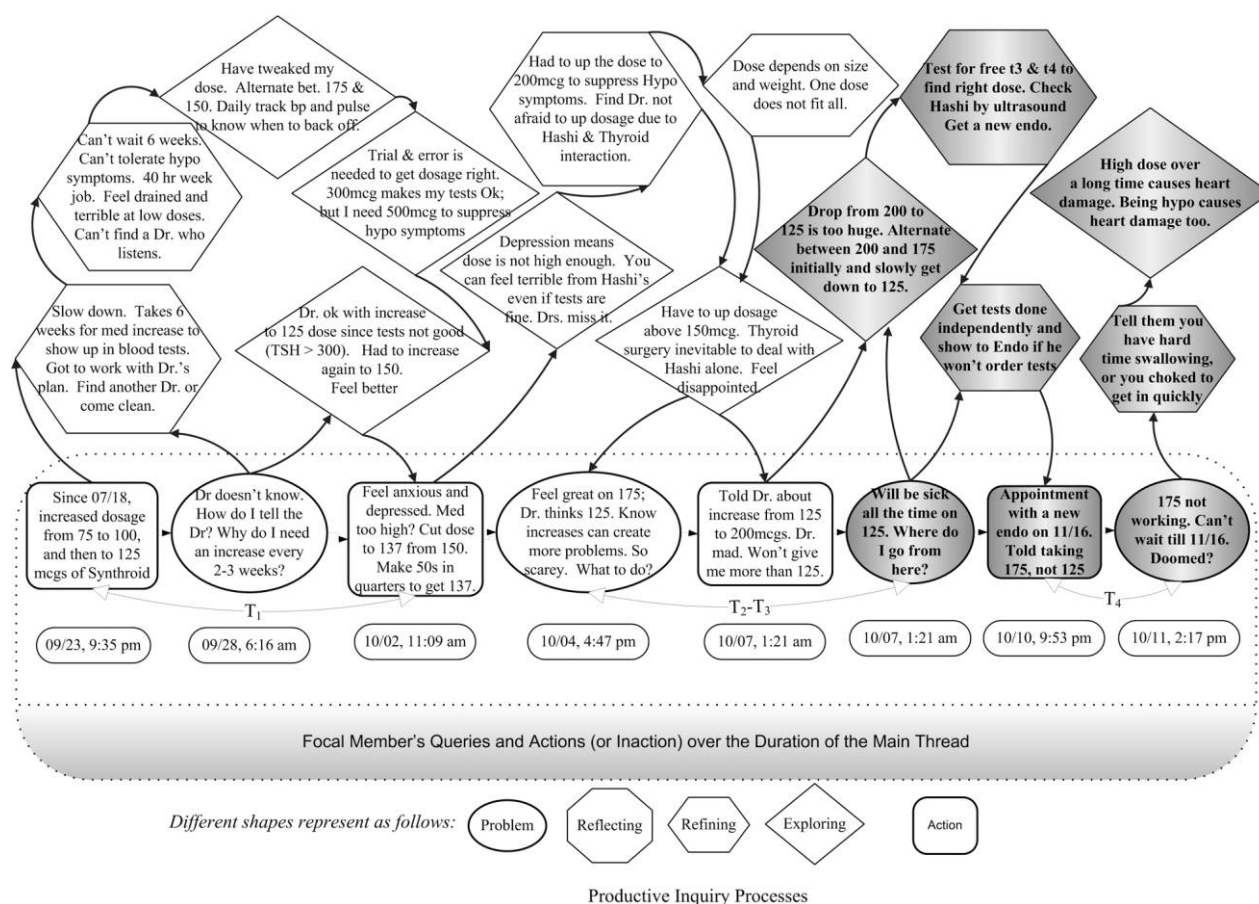
Similarly, the Interactions community shapes the inquiry by reflecting and refining Rain's efforts to manage her confusing symptoms by pursuing alternative medicine.

Rain, December 13, 8:21 p.m.: I think the ideal time to test a ladies hormones is between the 20th–23rd day of her cycle. I'm going to talk to my compounding pharmacy guy tomorrow to find out more. I thought that it was normal for the progesterone to "run out" first. (Interactions)

Lane, December 13, 9:44 p.m.: I don't want you to assume that your hormone levels are "normal" because remember,

FIGURE 9

COLLECTIVE INQUIRY DYNAMICS AND THEIR LINK TO THE FOCAL ACTOR'S ACTIONS DURING THE DURATION
OF THE RIGHT DOSING THREAD

just hitting the "middle" of these ranges, may NOT be optimal. (Interactions)

Pully, December 14, 6:42 a.m.: Testing the progesterone level in day 4 is kind of irrelevant—it will always be low and therefore "normal." But what you need to know is the level of day 21, when it is at its peak! (Interactions)

Consistent with community efforts toward productive inquiry, the incidence of reflection exceeds 40% of the text in each thread, with substantial refining that exceeds 25% of the text (see table 4, "Total" column under "Reflection"). Likewise, the incidence of exploring ranges from 9% in Interactions to 21% in Hospitalization. The observed incidence across time partitions indicates that exploring declines with time for Right Dosing (20% by T_1 to 13% by T_4; $p < .10$) and recovers after declining for Interactions (10% by T_1, 1% by T_2, and 14% by T_4; $p < .10$). However, exploring increases dramatically for Hospitalization (6% by T_2 to 47% by T_3). Finally, focal actors contribute to community discourse at varying levels, with focal actor postings as a proportion of the total postings ranging from 17% for Rain (Interactions) to 54% for Bug (Right Dosing; table 2).

More significantly, the observed patterns are indicative of weak linkages between community inquiry and individual efforts to expand action repertoires. For instance, in Right Dosing, Bug is unable to modify her action repertoires to negotiate a personalized treatment plan with her physician. The community suggests that Bug should find a new endocrinologist, slowly taper down her dosage from 200 mcg to 125 mcg to avoid a big crash, and obtain independent lab tests to bolster her position with the physician (October 7; see fig. 9). At the same time, the community acknowledges that Bug "shouldn't have upped" her dose. However, Bug falters in expanding her action repertoires. Trapped in habitual action, she continues to take 200 mcg while ignoring physician advice. Follow-up threads (fig. 7) indicate her frustration and helplessness in bringing her dose down to 125 mcg ("Feel depressed, miserable, and sick at 125,"

October 27) and negotiating with her new endocrinologist ("This never ends. My first Endo the same," April 6).

In Interactions, the highlighted set of inquiry-action linkages for Rain suggests that the community is initially successful in refining and exploring Rain's query about hormonal testing, which Rain follows up with expanding action.

> *Rain, December 14, 3:05 p.m.*: I talked to my compounding pharmacy guy today, and he says (you were right as usual Pully:) that the testing of my progesterone during my period, blood work or not, wasn't worth two cents. SO, I've got an appointment with a new ob/gyn on the 23rd to get all my hormones tested. This lady doc works with my compounding pharmacy, thank God. (Interactions)

However, Rain falters in persisting to expand her action repertoire as the thread develops. As noticeable in the following postings, although the community develops working hypotheses about "optimal hormonal balance" and the importance of "adjusting meds," Rain neither acts to negotiate this issue with her physician nor returns to the community to report her continuing frustrations. Instead, Rain passively accepts her compounding pharmacist's advice, which indicates her constrained action to assert control over her treatment choices.

> *Lucy, December 18, 12:47 p.m.*: It's important to find a Dr. for this . . . because what we are TRYING to accomplish is "balance" not too much, or too little. That's the goal. After all, we are OUT OF BALANCE prior to taking hormones. . . . But to go to the extreme is not being balanced either. WE can cause additional harm, or DIFFERENT harm to ourselves by taking too much progesterone. . . . We, especially those of us with thyroid conditions are really in need of proper guidance . . . not guessing and hoping. (Interactions)

> *Rain, January 13, 12:35 p.m.*: I've talked with my compounding pharmacist guy and here is what he wants me to be on. . . . I'm supposed to take this form to my doc and have my doc sign it. (Interactions)

Rain posts only one follow-up query, which elicits fewer than five responses, indicating stalled action. While the Hospitalization thread also evidences similar inquiry-action gaps, Princess's constrained action is rooted in her overly compliant disposition. She hesitates to initiate any action, while community members repeatedly urge her to negotiate with her doctor because she really "deserves a med increase" to control for "creeping hypo" problems. However, unlike Rain, Princess begins to evidence an expanding action repertoire in follow-up threads. Relative to her November 11–13, 2005, postings, Princess appears more confident in her November 29 posting.

> *Princess, November 29, 6:58 a.m.*: I spoke with him at length about the different kinds of thyroid medz and he was very open to using T3 if I need it. . . . In fact, he was impressed that I knew about that and said that he feels that that knowl-

edge has been underutilised in the past by thyroid doctors including himself. (Hospitalization)

Almost a year later (January 1–3, 2007; fig. B4), Princess reports proactively managing her medication.

> *Princess, January 2, 4:59 p.m.*: I've never had heart problems and have always had low blood pressure so I think my heart's okay but I'll certainly ask my doctor about it next time I visit her. The last two mornings I haven't taken my thyroxine until later in the day and my pulse rate has been . . . back in the normal range. I wouldn't have even known it was irregular except they get us to check it every few minutes at Curves. (Hospitalization)

DISCUSSION AND FUTURE RESEARCH

Can social learning facilitate an empowered role for consumers? What processes are central to social learning? Why are some consumer communities more effective in social learning than others? The PLT perspective offers a unique view on the preceding questions of social learning that differs from and, in a sense, bridges the learning paradigms rooted in ALT and RLT. Thus, our study contributes to the literature by providing interpretive insights into the (*a*) concepts and mechanisms of PLT for the study of social learning in consumer communities and (*b*) PLT dynamics of inquiry-action linkages to understand learning leaps and lapses for consumers struggling to cope with medical decisions. We discuss each in turn.

Concepts and Mechanisms of Pragmatic Learning

Our interpretive analysis helps define the key inquiry concepts of reflecting, refining, and exploring; highlights their distinctiveness by identifying exemplars; and examines their patterns and interconnections over time to discern evidence of productive inquiry. Specifically, our study shows that the proposed inquiry concepts are important in understanding scaffolding mechanisms by which consumer communities collectively transform the knowing embedded in individual actions. Past studies have established that moving consumers from experience to expertise requires three facilitators: (*a*) a focus on diagnostic attributes as opposed to irrelevant attributes, (*b*) a reduction in memory load by providing information concurrently rather than sequentially, and (*c*) an intentional exploration of working hypotheses related to individual experiences (Eisenstein and Hutchinson 2006; Hutchinson and Alba 1991). In a socially networked community, consumers appear to scaffold reflecting, refining, and exploring to augment and grow their stocks of actionable knowledge. Swift social bonds encourage members to help one another introspectively make sense of their experiences and uncover diagnostic attributes as they deliberately reflect on their experiences. As community members engage in a triangulating process of refining, they reframe their experiences to reject irrelevant attributes or to reconfirm them

by affirming the diagnosticity of identified attributes. Bolstered by reflecting and refining, members explore lay models and cause-effect connections through pointed discussion of relevant information and short-circuit the need for each individual to look up archival information. Moreover, intentional problem solving is bolstered initially by swift social bonds and, subsequently, by productive scaffolding. Consumers initiate discussion threads with much hesitancy but, in five of the six threads examined, become motivated problem solvers as the discourse unfolds. While it is likely that consumers drawn to communities are qualitatively different, the proposed inquiry concepts have broad relevance for understanding mechanisms of inquiry in social learning, and a sufficient empirical foundation exists to develop these concepts as viable constructs for future studies of consumers' learning from experience.

More significantly, our study places these inquiry concepts within a framework that outlines pragmatic learning mechanisms in consumer communities. Compared with current approaches for consumer learning rooted in ALT or RLT, the proposed inquiry-action framework has three distinct features: (*a*) it distinguishes between knowing and knowledge to reflect experience- and acquisition-based epistemologies, and it specifies inquiry mechanisms that bridge these domains; (*b*) it conceptualizes inquiry and action as connected by cyclical, mutually enhancing, and continuously evolving linkages, thereby directing attention to how and when experiential knowledge seeds empowered decision making; and (*c*) it parsimoniously maps learning trajectories over time that reflect diverse learning modes anchored by generative and degenerative learning. Thus, the proposed framework, together with the hermeneutical development of its key concepts, offers a foundation for motivating inquiries into consumer learning that adopt alternative perspectives to situate them in novel contexts.

The PLT framework offers a unique perspective on experience that contrasts with notions of experiential knowledge or value cocreation that do not involve expanding action repertoires for transaction with the environment, an idea central to PLT. The transformation of knowing embedded in one's own actions motivated by the possibility of using experiential knowledge to enlarge repertoires for transacting with the environment is a quintessential hallmark of pragmatism and is as common for our community members as it appears to be practical for their everyday coping with a chronic condition. To the extent that empowered action enhances efficacy, sense of control, and active coping, pragmatic learning has normative value in enhancing the quality of life for suffering patients. Thus, our initial evidence on the surprising ability of lay consumers to learn from complex experiences in relatively short durations for empowered decision making calls for policy initiatives that leverage the power of social learning.

Such policy questions must be informed by the downsides of transforming experiences to expertise from community inquiry, especially in medical decision making. For instance, the risks of misguided inquiry and/or the adoption of ill-conceived actions are not ameliorated in communities. This indicates a fine line between empowering and overpowering, since open forums are easy prey for privacy violations and abuses, particularly when personal health information is posted (Zwick and Dholakia 2008). The legitimacy of knowledge generated in consumer communities is also questionable. While PLT recognizes the distinction between acquisitive and participative knowledge, it is appropriate to question whether experts such as physicians would be sidelined or challenged by the force and pervasiveness of knowledge generated in consumer communities. We believe that communities are here to stay and that policy implications involve promoting pragmatic learning in social networks to build consumer expertise, such that this expertise is shaped and then benefited by interaction with experts (i.e., physicians). Thus, rather than erect boundaries around legitimate knowledge, we argue that the social construction of health narratives can coexist with legitimate information, so that consumers can learn from both forms of expertise to cope with and shape their health choices.

Learning Leaps and Lapses in Consumer Communities

Learning leaps are evident when individuals leverage community resources to develop inquiry-action linkages that persist over time to exhibit capabilities for empowered action. Our interpretive analysis shows that, in generative communities, initial postings are indicative of consumers who are usually passive, uninformed, and ill prepared to make sense of their medical conditions or to engage in medical decisions. Adam in Follicular Cancer begins the thread tentatively, lacking capabilities for sense making and action. However, as the thread progresses, Adam demonstrates expanding capabilities that include changing his endocrinologist and his surgeon, experimenting with his diet to manage his TSH levels, and opening new lines of e-mail communication with his physician to negotiate medical treatment. Likewise, Hannah in Thyroid Carcinoma initially appears to helplessly await her surgery, but as the inquiry unfolds, her capabilities grow to include locating an ear, nose, and throat surgeon to perform her first surgery, replacing the surgeon when the appointment is cancelled, actively consulting for her RAI treatment, and voluntarily going on a low-iodine diet. In these threads, the transformative influence of productive inquiry to shape empowered roles for engagement in medical decisions is compelling. That this transformative influence emerges in communities populated entirely by consumers, without moderation by a medical expert, and over durations less than 3 months is remarkable. To the extent that engaged participation in market decisions is central to consumer learning, the observed transformation of focal actors from helpless inaction to empowered action speaks to the leaps in learning afforded by generative communities. More significantly, our study suggests that this transformation is largely irreversible as focal actors continue to expand their action repertoires in follow-up threads. Thus,

our study pushes the boundaries of PLT by demonstrating that consumer communities are incubators of participatory inquiry, akin to communities of practice, that act as learning catalysts for individuals who lack personal inquiry ability.

Admittedly, the learning leaps are not found universally, and learning lapses are prevalent. Specifically, community lapses in productively building the inquiry appear in one of the six communities examined (Home Health), while individual lapses in linking inquiry and action appear to different degrees in three of the six communities (Hospitalization, Interactions, and Right Dosing). Diagnosing these lapses can provide useful guidelines for future research, as well as implications for consumer learning.

Our study suggests that focal actor disengagement is instrumental to learning lapses in the degenerative thread. Without swift social bonds and community self-regulation, the focal actor's engagement is challenged, as indicated by the discourse in the Home Health community. Coffee's atypical postings created conflict and polarization in the community, contradicting popular claims that Internet-mediated social networks break down traditional hierarchies to create leveled spaces for interaction. In fact, the anonymity afforded by virtual communities may foster a playful lack of inhibition, making it easier for participants to engage in hostile and adversarial individual censorship. Without skills for responding to and building on hostile reflections, individuals may feel helplessly overwhelmed and opt out of the discourse. Potentially, the anonymity and openness of EBBs also offer the hope that individuals like Coffee will seek and find communities that are more supportive and that communities such as Home Health will self-regulate and use their polarized discourse to reestablish social trust.

By contrast, nongenerative communities overcome inquiry challenges, but focal actors falter in linking them to empowered action, which results in learning lapses. For some, like Princess in Hospitalization, faltering is a result of the struggle to overcome ingrained norms of deference and respect toward physicians. For others, like Bug in Right Dosing, faltering is an individual handicap resulting from an inability to change habitual action in response to new information and from a lack of effective negotiation with physicians.

The preceding learning lapses for individuals who remain engaged in community discourse but falter in linking inquiry and action should not be interpreted as learning failures. Our study suggests that community participation leaves beneficial traces even when individual action falters. For instance, Princess gains capability for understanding that her experience of numbness and tingling are indicative of creeping hypothyroidism, which requires follow-up tests and physician supervision. Likewise, Bug leverages the community's productive inquiry to understand that dosage variations can be managed through careful tracking and testing of blood TSH combined with open physician dialogue. As long as the focal actor continues to participate, our study suggests that effective communities expand individual capabilities for sense making. Lapses occur when focal actors falter in trans-

lating these bolstered capabilities into expanding action repertoires. This does not mean that the translation is elusive. For Princess, the translation is a slow process and is evident only in follow-up threads almost a year later. For Bug and Rain, the evidence of translation is dim but not absent. In this sense, individual actors who falter may be viewed as late bloomers rather than as hopeless failures.

Limitations and Future Research

Medical decision making is a high-involvement context, and it is unclear how PLT dynamics may differ for other less involving consumer contexts. Useful extensions may involve communities that vary by involvement and member composition (experts/novices), as well as studies that use a multimethod design. We have no way of ascertaining consumers' initial inquiry abilities so that we can gauge the relative leaps in learning as they engage in community discourse. We also cannot verify the veracity of members' postings, which leaves open the possibility of hyperbole, duplicity, and charade. Our analysis suggests that community participants show a remarkable lack of hesitation in posting their private medical records and sharing personal experiences, and they use a tone and language that is indicative of uninhibited self-disclosure. Possibly, patients may be motivated to expose their experiences not simply to provoke a response but in the hope that the distributed knowledge will help them understand and seek relief from their ailment.

We recognize that the knowledge generated in consumer communities is action-based, socially constructed, and unlikely to meet scientific standards of knowledge. Our point is not that social communities will enable consumers to acquire sufficient knowledge to engage in self-diagnosis or self-medication. Rather, our point is that community participation enables consumers to develop capabilities for making sense of their experiences and for coaxing empowered action so that they can partner with physicians to serve their best interests. Against the rising prevalence of chronic disease and desire for self-management, much rides on the premise that patient power can be mobilized to reform medical markets so they serve society's best interest. We hope that the proposed PLT framework provides a useful guide for future research inspired by this goal.

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