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Structuring Health in Colorectal Cancer Screening Conversations: An Analysis of Intersecting Activity Systems

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Abstract

This study used structuring activity theory to analyze 21 conversations between genetic counselors and individuals at increased risk for familial colorectal cancer (CRC). The qualitative analysis revealed ways elements of family, primary healthcare, cancer prevention and treatment, and other systems emerged in intervention conversations as shaping CRC screening attitudes and behaviors. Results indicate that family stories, norms, and roles are resources for enacting health practices in families and that the authority of healthcare providers is a resource for making screening decisions. Conclusions include practical implications for using findings in clinical applications as well as future research directions to build on this exploratory study.

Colorectal cancer (CRC) is one of the most common cancers and is the third leading cause of cancer death in the United States (American Cancer Society, 2015). Furthermore, there is convincing evidence that CRC is one of the more preventable cancers due to effective screening procedures (Richardson, Tai, Rim, Joseph, & Plescia, 2011). Several studies have demonstrated that theoretically-based health communication interventions increase positive behavior changes in people with increased risk for cancer, including CRC screening (e.g., Jensen et al., 2014; Lasser et al., 2009; Manne et al., 2010). Much existing research has emphasized individual choice in behavior and individual responsibility for healthcare and preventive screenings, such as by emphasizing evidence-based care and individual stages of decision making (e.g., Jensen et al., 2014; Taylor, 2009). However, recent research points to the need to include social and cultural elements when designing behavior interventions because peoples' abilities to take desired actions vary depending on socio-cultural and socio-economic factors (e.g., Alden et al., 2015; Blanch-Hartigan & Viswanath, 2015; Williams et al., 2013).

It remains to be clarified how these factors manifest in interactions that serve as resources for healthcare decisions. To address this need, we used structuring activity theory (SAT; Canary, 2010) to study counselor-participant conversations about CRC screening. SAT provided a framework to analyze how elements of different social systems, such as families and healthcare, shape ongoing activities related to CRC screening.

Communication-Centered CRC Screening Interventions

Despite demonstrated effectiveness, CRC screening rates are low (Courtney et al., 2013). Recent studies examined communication-centered interventions and found some success with one-on-one education between healthcare workers and recipients, client reminders (e.g., postcards or emails), reducing structural barriers to screening (e.g., scheduling or transportation assistance), and provider assessment and feedback evaluations (e.g., Community Preventive Services Task Force, 2012; Shankleman et al., 2014).

Several studies found tailored interventions to be effective (e.g., Manne et al., 2009; Myers, Sifri & Hyslop, 2007; Rawl et al., 2008). Tailored interventions include materials or messages that are personalized to participants' individual risk factors, including age, genetic risk, cultural practices or influences, diet, and lifestyle. However, others have not found appreciable improvements in screening by relying solely on tailored messages (e.g., Costanza et al., 2007; Jensen et al., 2014; Rubinstein et al., 2011). Some intervention programs have incorporated tailored intervention strategies with motivational interviewing (MI; e.g., Lasser et al., 2009; Manne et al., 2009). MI includes eliciting change in thought or ideas rather than telling a client what changes to make (Miller & Rollnick, 2002). Lasser et al. (2009) integrated MI with the Transtheoretical Model (Prochaska & DiClemente, 1983) and reported increased CRC screening outcomes among average-risk individuals. Among CRC siblings, however, Manne et al.'s (2009) tailored telephone counseling using MI techniques along with tailored print materials resulted in no significant difference from those who received only the tailored print materials. Myers et al.'s (2007) study of average-risk individuals produced similar results.

Better understandings of MI conversations may provide guidance in identifying why some interventions are more successful than others. Recent research hypothesizes that integration of MI with the Extended Parallel Process Model (EPPM; Witte, 1992) will meet with greater success due to an ability to focus on participants' reasons for resistance as well as on participant perceptions of self-efficacy (Pengchit et al., 2011). According to Witte (1992), perceived self-efficacy is "an individual's belief in his or her ability to perform the recommended response" (p. 332). According to EPPM, arousing a fear response regarding a significant threat (e.g., CRC) is useful when followed by feasible and effective recommendations for managing that fear (e.g., colonoscopy), and encouraging perceptions of self-efficacy in accomplishing the advised behavior (Witte & Allen, 2000). The current analysis builds on communication-centered CRC screening intervention research by using SAT to analyze interactions, answering the call for more theoretical attention to family systems and intersections of different social systems in healthcare behavior (Harris et al., 2009; McBride, Birmingham, & Kinney, 2015).

Structurating Activity Theory

SAT was developed to explain knowledge construction between lay people and professionals (Canary 2010b). SAT asserts that people engage in ongoing activities as part of *activity systems*, which include people, resources, and actions that accomplish activities over time. Activity is oriented toward an *object*, which is socially constructed by system members and exists to meet some need. For example, a family is a system that accomplishes the activity of nurturance and support of family members and primary healthcare accomplishes the activity of providing general healthcare to patients.

Activity systems include several elements that shape, or *mediate*, ongoing activity and accordingly influence the outcomes associated with that activity. A *subject* is a person, or sub-group, within the system. *Rules* (both explicit and implicit) are norms for accomplishing the activity. The *community* consists of all members of the particular activity system. The element of *division of labor* includes horizontal (functional) task divisions and vertical (authoritative) task divisions. Symbolic and material *mediating resources* include language and artifacts that shape how activity is accomplished. Figure 1 represents a family activity system with double arrows connecting elements, indicating co-influence of elements for ongoing activity accomplishment.

Combining tenets from cultural-historical activity theory (Engeström, 1999) with structuration theory (Giddens, 1984), SAT asserts that, “Mediated activity draws on social structure as it also reproduces and transforms structure over time through system transformations” (Canary, 2010, p. 34). Structuration theory proposes that action and structure are intertwined in such a way that action is constrained and enabled by social structure (rules and resources concerning meaning, norms, and authority) at the same time that structure is produced, reproduced, and sometimes transformed by action. Accordingly, actions and interactions within and between activity systems are both mediating (shaping current activity) and structurating (shaping future activity).

Previous applications of SAT include public policy implementation (Canary 2010a, 2010b; Canary & McPhee, 2009) and decision-making between professionals and lay people (Canary & Cantú, 2012). These studies identified ways members of intersecting activity systems use elements of their particular systems to influence practices over time and across systems. The current SAT-based study extends SAT to increase our understanding of health decisions and behaviors.

This theory is useful for understanding the complexities of people’s health behavior choices. Researchers recognize that many factors come into play when understanding cancer prevention behaviors (e.g., Friedman & Hoffman-Goetz, 2007), not all of which are accounted for in previous theorizing. By examining mediating elements of relevant activity systems as well as enduring social structure, explanations for health behavior move from *individuals* to *situated individuals* who have a variety of constraints and enablements. We propose that SAT will provide a rich explanation for what influences behavior over time. Accordingly, we asked: *How do counselors and clients draw on elements of intersecting activity systems to structurate health practices related to CRC risk?*

Method

The current study is a secondary data analysis from a larger study. The parent study was a cluster randomized trial study to determine whether a telehealth-based personalized risk assessment with EPPM-based motivational interviewing was superior to a mailed educational brochure for improving colonoscopy screening among individuals at increased risk for familial CRC (for parent study details, see Pengchit et al., 2011; Simmons et al., 2013). We undertook this exploratory qualitative study to analyze full conversations between counselors and participants.

Participants

Participants were recruited through state cancer registries in the western United States, the Cancer Genetics Network, and hospital-based registries. Inclusion criteria were: at least one first-degree relative (FDR; i.e., parent or sibling) who had been diagnosed with CRC before the age of 60 or one FDR and another relative (first or second degree) diagnosed at any age, 30–74 years old, no prior cancer diagnosis, no colonoscopy in the past five years, and ability to speak and read English (Simmons et al., 2013). Digital files of 21 recorded intervention conversations were randomly selected from the 175 total files (12% of total dataset), stratified by the five genetic counselors involved in the telephone counseling. Table 1 presents participant demographics.

Procedures

Participants were at increased risk for CRC due to family history; no genetic testing occurred as part of the parent study. The baseline survey included information about participants' medical history, family CRC history, barriers to CRC screening, CRC risk and severity perceptions, and response efficacy and self-efficacy regarding colonoscopy. Informational packets were tailored based on each participant's survey responses and sent prior to scheduled interviews, which then drew on packet material to structure discussion. Counselors had 16 hours of training, conducted an average of 13 practice interviews, and attended 40 supervisory sessions where they reviewed practice interviews and received feedback.

Data Analysis

The dataset included 705 pages of transcribed conversations. Data were analyzed in several stages using an iterative approach (Tracy, 2013), through which the research team systematically coded data based on sensitizing concepts from SAT as well as emerging meanings. The constant comparative method was used to develop and refine the code structure throughout the analysis process (Glaser, 1978). Data were unitized by identifiable system elements, such as a phrase that referenced screening guidelines (*rule*) or several phrases that together referenced family relationships (*community*).

One transcript for each of the five genetic counselors was used for the first round of coding (~25% of 21 files). Using the qualitative analysis software NVivo 9.2, the research team collaboratively coded the first set of transcripts, resulting in 58 codes organized in 11 theoretical categories. Two team members then independently coded a second set of five

transcripts (one for each counselor). Cohen's *kappa* was excellent, .77 (Fleiss, 1981). The team then discussed the codes and categories, which resulted in aggregating codes for a more parsimonious code structure. The entire dataset was then coded using the aggregated code structure. During this phase, the team noted that no additional codes were needed to explain the data, indicating that the 21 cases were sufficient for theoretical saturation (Tracy, 2013). Table 2 presents the final code structure with eight theoretical categories, sub-categories that identify involved activity systems, and 44 codes to denote specific processes or issues that emerged in the conversations.

Results and Interpretations

We address our guiding research question below, identifying mediating elements and the structuration of CRC risk-related health practices that emerged through analysis.

Family System Mediating Elements

Some family system elements that emerged are consistent with prior research, such as material mediating resources of "Money" and "Transportation." Due to space constraints, we discuss the more surprising elements referenced by participants.

All counselors asked participants to talk about conversations in their families regarding CRC and colonoscopies. These references represent the mediating element of *community*. Fourteen of the 21 participants noted that they had "Brief or Nonexistent Conversations" about CRC or colonoscopies with their family members. One participant observed that colonoscopy conversations are not comfortable in his family, "You know, uh, it's not like-- it's not like we -- it's taboo for some reason." Only eight of the 21 participants indicated that they had "Substantial Conversations" about those topics. These conversations were very directive, with family members exerting pressure to have a colonoscopy.

Although not a topic initiated by counselors, 13 participants described the importance of their "Family Relationships." The following exchange summarizes the importance of family relationships in one participant's cancer experience:

Counselor: So you've had a lot of personal issues that have kind of played a role in here, too, with this family history of colon cancer.

Participant: Yeah.

Counselor: Well...

Participant: And so everything kinda went to kaput after my dad died. You know, like, I think he kinda held the family together sort of, whatever, and then it just-- kind of everything just went bad after he died, and I was close to my dad, so, yeah, it was hard.

Counselor: So he must've been an important part of the family, then, for everybody, huh?

Participant: I think so.

Two additional family system elements are of particular interest due to their absence in previous health communication theorizing. First, five participants referenced the importance of their role in the family of caretaker, teacher, or role model. Family roles (*division of labor*) shape ways that families accomplish their activity and accordingly shape health practices as part of that overall activity. For example, one participant noted, “And my kids and stuff . . . make them aware of what to look for too in like your stool and stuff like that, you know, things that I’ve read up on.” Another prevalent family element was *rules*. Many participants discussed their attitudes and behaviors concerning CRC screening as situated within their broader family system norms for health and sickness. One participant conveyed her hesitancy to seek medical care:

I guess, my mom was kind of this way that, ‘Oh, you know, you’re overreacting. You don’t need to go see a doctor.’ . . . I’m kind of the same way. It’s like I like to make sure I’m not overreacting and it’s nothing, before I actually go see a doctor.

Another finding was that 16 participants stated that they lacked requisite knowledge. Counselors asked if participants had any questions and many did. For example, one asked, “I guess maybe my one question would be how early really do I really- is it recommended that I should get one?” Expressing a lack of knowledge reveals an aspect of their *subject* identity, which influences health-related practices in family systems. Seven participants also explicitly noted how their personal identities impact their view on CRC screening, such as, “Also I say don’t be stupid. . . . When you could so easily prevent it, why wouldn’t you?”

Medical System Mediating Elements

Counselors and participants also referenced elements of the CPT and primary healthcare (PH) systems. Most elements of the CPT activity system reflect the theories that guided the parent study, such as discussing risk and checking for participant understanding (Table 2). Importantly, these CPT system elements were primarily reflected in counselor messages, not in participant narratives. The following excerpt represents the “screening guidelines” code, as conveyed by one counselor:

So that’s the typical recommendation for somebody kind of with a family history like yours. And the reason is because they have that increased risk, and doing it a little bit more frequently because of that increased risk to try to prevent colon cancer from ever developing like in the situation with your brother.

Most participant references to CPT system elements were coded as “Intersections,” discussed below.

Activity System Intersections

Several intersections emerged in conversations. One finding was that of the 15 participants who discussed positive intersections with CPT system providers, 11 specifically mentioned that the current intervention made a difference in their screening intentions. One woman commented, “Uhm, well I mean I’m much more aware especially with this survey thing that you guys are doing. But I don’t know. I will pursue pre-screenings and all that stuff, whereas I probably wouldn’t have done it before.” Additionally, many counselors and participants talked about the two-way intersection of PH-family activity systems. These references

included discussions of providers and mediating resources of the PH system (e.g., medical equipment or procedures), which were framed as either positive/effective or negative/ineffective. References to three-way intersections of CPT-family-PH systems primarily concerned referral processes, including comments such as, “I’ve been thinking about making a doctor’s appointment so I can do that. And then at the same time, I would have him schedule me for a-- or give me a referral for a colonoscopy.”

Structuring Health and Expert Knowledge

Our analysis revealed a contradiction between participants’ articulated positions that their healthy living and eating practices constitute sufficient preventive behaviors and counselors’ positions that genetics play a large role in risk for CRC that healthy living alone cannot avert. Many participants referenced family *rules* as shaping their cancer prevention choices, including philosophies for healthy lifestyle and family norms concerning health and healthy living. This contradiction is also evident in participant responses to counselor discussions of increased risk based on family history, which reflected the CPT *symbolic mediating resource* of risk messages that would induce fear (an EPPM construct). Although all participants acknowledged or agreed with such statements by counselors, nine participants also resisted or rejected their increased genetic risk. One response exemplifies such rejections, “I mean, in my mind it’s slightly elevated, but I’m not sure that I’m necessarily at more risk than the next guy.”

Using the lens of SAT, we see a potential transformation of structures of “health” and “healthy,” both in terms of meaning and in terms of who has authority to deem a person as healthy. Many participants noted that they have no symptoms of having colorectal problems, they live active lives, and they eat healthy diets. Several participants made overt identity statements that they are not “like” their family members who had CRC due to their personal healthy choices, as one participant noted, “I tell myself, well my dad really had a pretty sedentary lifestyle sitting behind a desk for eight hours a day and, you know, I don’t do that so maybe he had more of a risk than I do.” It makes sense that clients would resist a representative of the CPT system, whom they do not know, informing them that they were at increased risk of having a fatal disease, in spite of their personal healthy behaviors. However, recent advances in cancer research and genetics indicate that experts may be in positions to identify disease in ways that defy our deeply ingrained notions of health and healthy.

Interactions with primary healthcare providers are also structuring. Primary healthcare providers emerged as important in the colonoscopy referral process as well as in overall health practices, consistent with previous research. References to effective or positive interactions with primary healthcare providers were more frequent than negative or ineffective interactions. Both types of references, however, point to the structuration of expert power through such interactions. Some participants noted that they had not sought colonoscopies because their primary healthcare provider did not indicate it was necessary at the time, exemplified by:

... and I said, ‘Do I need to come in and get a checkup every now and then and he said, ‘No,’ so, you know, I don’t know if- if that was- those were correct answers,

but ... you know, that may have contributed to my putting it off is what the doctor told me.

Ten participants discussed this type of missed or negative intersection in the referral process. This finding points to an over-reliance by primary healthcare providers on general guidelines for getting routine colonoscopies beginning at age 50 years. Many people are not aware of their increased risks but they expect that their primary care providers have expert knowledge to recommend appropriate screenings.

Structuring Health in Family Systems

A third type of structuration that emerged involves family activity systems. Previous health behavior research demonstrates the importance of family influence on health practices (McBride et al., 2015). In our analysis we noticed a qualitative difference between references to “substantial conversations” about CRC and “brief or nonexistent conversations.” These conversations exemplify interactional structures in family systems, which serve as rules and resources for enacting relationships and health practices. Such interactions also reproduce structures of what constitutes acceptable conversational topics in families, who has the right to bring up health issues and recommend preventive screenings, and what health practices are normative for family members.

Elements of family activity systems represent important resources and rules for enacting health. By engaging in healthy practices, including preventive screenings such as colonoscopies, people draw on those rules and resources embedded in their families. At the same time, engaging in healthy behaviors reproduces those elements as structures for everyday living. In this way, family activity system elements both shape current practices and structure future practices. Participants indicated that they rely heavily on their family roles, rules, and relationships to shape how they approach CRC screening. Attitudes developed over a lifetime -- of thinking that healthy living will prevent disease and that going to the doctor constitutes over-reacting -- are not likely to change easily.

Discussion

This study demonstrates SAT's value in enhancing our understandings of client choices. Most generally, these results suggest that by analyzing entire conversations rather than focusing solely on intervention strategies and messages, we can see that clients routinely invoke their family activity systems. Conversations about CRC risk and screening choices are not simply interactions between two individual, autonomous agents. Rather, counselors and clients are embedded within several intersecting activity systems, with clients conveying that their health behaviors are related to their family systems. This calls for reconstituting our theories of the client in healthcare to understand client decision making as it is embedded in intersecting activity systems.

Furthermore, the analysis indicates ways in which mediated activity is also structuring over time. That is, family health experiences and stories, relationships, roles, philosophies for healthy living, and rules for health and sickness are instantiations of enduring social structures that are both medium for and outcome of practice. These elements of family

systems shape current activity, including preventive health behavior, as they also serve to recursively structure meanings of health, norms for talking about and enacting health, and authority concerning health knowledge and decision making over time. Intervention conversations provide an intriguing context for observing a potential transformation of social structures constraining and enabling interpretations of what constitutes health and healthy, which in turn shape decisions. Professionals drew on genetic information and medical system elements as resources in the conversations much more than client participants did. Intervention efforts need to continue to make connections between expert knowledge resources and family resources for structuring health practices. Our analysis indicates that a key is recognizing the importance of mediating elements of family systems that go beyond material resources, such as transportation, identified in previous research.

Findings also extend previous research concerning barriers to CRC screening. For instance, research indicates that primary provider recommendations are an important predictor of CRC screening (e.g., Hudson et al., 2012). In this study, 62% of participants reported that their primary healthcare provider had recommended CRC screening before the study but they had not yet followed those recommendations. On the one hand, analysis indicated that participants expected their physicians to recommend appropriate preventive procedures. On the other hand, participants clearly pointed to their family roles, conversations, and norms as perhaps more salient resources influencing their screening behaviors than their physician recommendations. This finding warrants further investigation to tease out the relative importance of physician recommendations and family system elements.

The role of contradictions in transforming health practices, including screening behaviors, warrants future attention. Although counselors drew on established screening practices and research-based risk assessments, participants did not voluntarily use these mediating resources of the CPT system to construct their narratives. Rather, they drew on their own identities, family philosophies for healthy living, family roles and relationships, and family norms for health practices to make sense of their cancer risk and screening intentions. These findings, in conjunction with the structuration of expert knowledge, point to an interesting dynamic of wanting to be in control of one's health practices while also wanting to rely on a trusted expert for guidance. These findings comport with those of Persson et al. (2012), in which participants at increased risk for familial cancer indicated both trying to make sense of cancer and distancing themselves from it.

Implications for Practice

These findings, if replicated in future research, suggest avenues to direct intervention strategies. For example, if individuals commonly manage their genetic risks by invoking their healthy lifestyles, messages that emphasize the importance of genetic risk can be designed to explicitly state that genetic risk is not avoidable through lifestyle choices. General practitioners, who may best understand their patients' family relationships, roles, and rules (such as a tendency to avoid medical tests) can intervene by suggesting ways these rules can be harmful. In addition, these results suggest that some patients need to be prompted by their primary care physicians to engage in appropriate colonoscopies. Primary care physicians can be encouraged to recommend more frequent colonoscopies for higher

risk patients. Prior research indicates the importance of primary care physicians for colonoscopy screening (e.g., Shankleman et al., 2014), and results of this study underscore that importance.

Health care providers may consider ways to work with entire families rather than individual patients to more directly intervene in the family rules and resources that shape individual choices. This suggestion comports with a recent recommendation to increase family-based communication interventions for improved use of genomics information in contexts of cancer risk (McBride et al., 2015). Inspiration for this shift can draw on well-established family system models used in mental health contexts. Furthermore, acknowledging contradictions individuals and families face could serve to reveal the dangers in distancing strategies and encourage more active choices.

At a minimum, these results suggest that listening to patient comments about family influences should provide opportunities for challenging and shifting patient awareness. Such comments by patients should not be considered extraneous by health care providers. Similarly, by identifying and discussing contradictions patients face, health care providers can help patients acknowledge and thereby change their distancing choices. Additionally, physicians should be encouraged to maintain electronic records with the capability of alerting them when to recommend colonoscopies. Physicians should routinely make information-inclusive recommendations, expect to need to repeat the recommendations, and implement follow-up processes to track patients more systematically.

By considering individuals as they are situated within intersecting activity systems rather than simply as they interact with one other individual, we are able to better understand how they make health decisions such as CRC screening. SAT enables us to understand that individuals experience themselves as embedded within intersecting activity systems. If findings from this exploratory study are replicated, we can conclude that persuasive strategies will be more successful to the extent that they are able to identify and respond to individuals' understandings of their own identities, family practices, and their family roles. Future studies with larger sample sizes could use the code structure developed in this study as a conversational coding system to study connections between conversational codes and CRC screening or other health-related outcomes.

Limitations

We recognize that this study has several limitations, including the sample and the cross-sectional nature of the study. We also did not examine behavioral outcomes. Future research may expand on the findings of this exploratory study by including a larger, more diverse sample, investigating how system elements identified in this study predict behavior, and studying system transformation over time.

Conclusion

While we found the family system to be central in this case, SAT opens the possibilities of identifying a wide variety of meaningful activity systems, intersections, and mediating resources as we continue to examine health communication. People at increased risk for

cancer are situated within a number of intersecting activity systems that influence their behavior and decisions. SAT provides a promising analytical lens for developing interventions that take these influences into consideration.

References

- Alden DL, Friend JM, Lee AY, de Vries M, Osawa R, Chen Q. Culture and medical decision making: Healthcare consumer perspectives in Japan and the United States. *Health Psychology*. 2015 Advance online publication <http://dx.doi.org/10.1037/hea0000229>.
- American Cancer Society. Cancer Facts & Figures 2015. 2015 Retrieved from <http://www.cancer.org/acs/groups/content/@editorial/documents/document/acsfc-044552.pdf>.
- Blanch-Hartigan D, Viswanath K. Socioeconomic and sociodemographic predictors of cancer-related information sources used by cancer survivors. *Journal of Health Communication*. 2015; 20:204–210. [PubMed: 25495027]
- Canary HE. Constructing policy knowledge: Contradictions, communication, and knowledge frames. *Communication Monographs*. 2010a; 77:181–206.
- Canary HE. Structuring activity theory: An integrative approach to policy knowledge. *Communication Theory*. 2010b; 20:21–49.
- Canary HE, Cantú E. Making decisions about children's disabilities: Mediation and structuration in cross-system meetings. *Western Journal of Communication*. 2012; 76:270–297.
- Canary HE, McPhee RD. The mediation of policy knowledge: An interpretive analysis of intersecting activity systems. *Management Communication Quarterly*. 2009; 23:147–187.
- Community Preventive Services Task Force. Updated recommendations for client- and provider-oriented interventions to increase breast, cervical, and colorectal cancer screening. *American Journal of Preventive Medicine*. 2012; 43(1):760–764.
- Costanza ME, Luckmann R, Stoddard AM, White MJ, Stark JR, Avrunin JS, Cleow L. Using tailored telephone counseling to accelerate the adoption of colorectal cancer screening. *Cancer Detection and Prevention*. 2007; 31:191–198. [PubMed: 17646058]
- Courtney RJ, Paul CL, Carey ML, Sanson-Fisher RW, Macrae FA, D'Este C, Simmons J. A population-based cross-sectional study of colorectal cancer screening practices of first-degree relatives of colorectal cancer patients. *BMC Cancer*. 2013; 13:13. [PubMed: 23305355]
- Engeström, Y. Activity theory and individual and social transformation. In: Engeström, Y.; Miettinen, R.; Punamäki, R-L., editors. *Perspectives on activity theory*. Cambridge: Cambridge University Press; 1999. p. 19-38.
- Fleiss, JL. *Statistical methods for rates and proportions*. 2nd. New York: John Wiley; 1981.
- Friedman DB, Hoffman-Goetz L. An exploratory study of older adults' comprehension of printed cancer information: Is readability a key factor? *Journal of Health Communication*. 2007; 12:423–437. [PubMed: 17710594]
- Giddens, A. *The constitution of society*. Berkeley, CA: University of California Press; 1984.
- Glaser, B. *Theoretical sensitivity*. Mill Valley, CA: Sociology Press; 1978.
- Harris J, Bowen DJ, Badr H, Hannon P, Hay J, Sterba KR. Family communication during the cancer experience. *Journal of Health Communication*. 2009; 14:76–84. [PubMed: 19449271]
- Hudson SV, Ferrante JM, Ohman-Strickland P, Hahn KA, Shaw EK, Hemler J, Crabtree BF. Physician recommendation and patient adherence for colorectal cancer screening. *Journal of the American Board of Family Medicine*. 2012; 25(6):782–791. [PubMed: 23136316]
- Jensen JD, King AJ, Carcioppolo N, Krakow M, Samadder NJ, Morgan S. Comparing tailored and narrative worksite interventions at increasing colonoscopy adherence in adults 50–75: A randomized controlled trial. *Social Science & Medicine*. 2015; 104:31–40. <http://dx.doi.org/10.1016/j.socscimed.2013.12.003>. [PubMed: 24581059]
- Lasser KE, Murillo J, Medlin E, Lisboa S, Valley-Shah L, Fletcher RH, Ayanian JZ. A multilevel intervention to promote colorectal cancer screening among community health center patients: Results of a pilot study. *BMC Family Practice*. 2009; 10(37) Retrieved from <http://www.biomedcentral.com/1471-2296/10/37>.

- Manne S, Jacobsen PB, Ming ME, Winkel G, Dessurealt S, Lessin SR. Tailored versus generic interventions for skin cancer risk reduction for family members of melanoma patients. *Health Psychology*. 2010; 29:583–593. [PubMed: 21090893]
- McBride CM, Birmingham WC, Kinney AY. Health psychology and translational genomic research: Bringing innovation to cancer-related behavioral interventions. *American Psychologist*. 2015; 70(2):91–104. <http://dx.doi.org/10.1037/a0036568>. [PubMed: 25730717]
- Miller, WR.; Rollnick, S. *Motivational interviewing: Preparing people for change*. New York, NY: Guilford; 2002.
- Myers RE, Sifri R, Hyslop T, Rosenthal M, Vernon SW, Cocroft J, Wender R. A randomized controlled trial of the impact of targeted and tailored interventions on colorectal cancer screening. *Cancer*. 2007; 110:2083–2091. [PubMed: 17893869]
- Pengchit W, Walters ST, Simmons RG, Kohlmann W, Burt RW, Schwartz MD, Kinney AY. Motivation-based intervention to promote colonoscopy screening: An integration of a fear management model and motivational interviewing. *Journal of Health Psychology*. 2011; 16:1187–1197. [PubMed: 21464114]
- Persson E, Lindholm E, Bemdtsson I, Lundstam U, Hultén L, Carlsson E. Experiences of living with increased risk of developing colorectal and gynaecological cancer in individuals with no identified gene mutation. *Scandinavian Journal of Caring Sciences*. 2012; 26:20–27. [PubMed: 21595729]
- Prochaska JO, DiClemente CC. Stages and processes of self-change of smoking: Toward an integrative model of change. *Journal of Consulting and Clinical Psychology*. 1983; 51(3):390–395. [PubMed: 6863699]
- Rawl SM, Champion VL, Scott LL, Zhou H, Monahan P, Ding Y, Skinner CS. A randomized trial of two print interventions to increase colon cancer screening among first-degree relatives. *Patient Education and Counseling*. 2008; 71(2):215–227. [PubMed: 18308500]
- Richardson LC, Tai E, Rim SH, Joseph D, Plescia M. Vital signs: Colorectal cancer screening, incidence, and mortality --- United States, 2002–2010. *Morbidity and Mortality Weekly Report*. 2011; 60(26):884–889. Retrieved from <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6026a4.htm>. [PubMed: 21734636]
- Rubinstein WS, Acheson LS, O'Neill SM, Ruffin MT 4th, Wang C, Beaumont JL, Rothrock N. Clinical utility of family history for cancer screening and referral in primary care: A report from the Family Healthcare Impact Trial. *Genetics in Medicine*. 2011; 13:956–965. [PubMed: 22075527]
- Shankleman J, Massat NJ, Khagram L, Ariyanayagam S, Garner A, Khatoun S, Duffy SW. Evaluation of a service intervention to improve awareness and uptake of bowel cancer screening in ethnically-diverse areas. *British Journal of Cancer*. 2014; 111:1440–1447. [PubMed: 24983374]
- Simmons RG, Lee YA, Stroup AM, Edwards SL, Rogers A, Johnson C, Kinney AY. Examining the challenges of family recruitment to behavioral intervention trials: Factors associated with participation and enrollment in a multi-state colonoscopy intervention trial. *Trials*. 2013; 14:116. [PubMed: 23782890]
- Taylor K. Paternalism, participation and partnership – The evolution of patient centeredness in the consultation. *Patient Education and Counseling*. 2009; 74:150–155. [PubMed: 18930624]
- Tracy, SJ. *Qualitative research methods: Collecting evidence, crafting analysis, communicating impact*. Malden, MA: Wiley-Blackwell; 2013.
- Williams A, Erb-Downward J, Bruzelius E, O'Hara-Cicero E, Maling A, Machin L, Viera-Delgado M, Valera P, Maysonet N, Weiss E. Exploring cancer screening in the context of unmet mental health needs: A participatory pilot study. *Progressive Community Health Partnership*. 2013; 7(2):123–134.
- Witte K. Putting the fear back into fear appeals: The extended parallel process model. *Communication Monographs*. 1992; 59:329–349.
- Witte K, Allen M. A meta-analysis of fear appeals: Implications for effective public health campaigns. *Health Education & Behavior*. 2000; 27:591–615. [PubMed: 11009129]

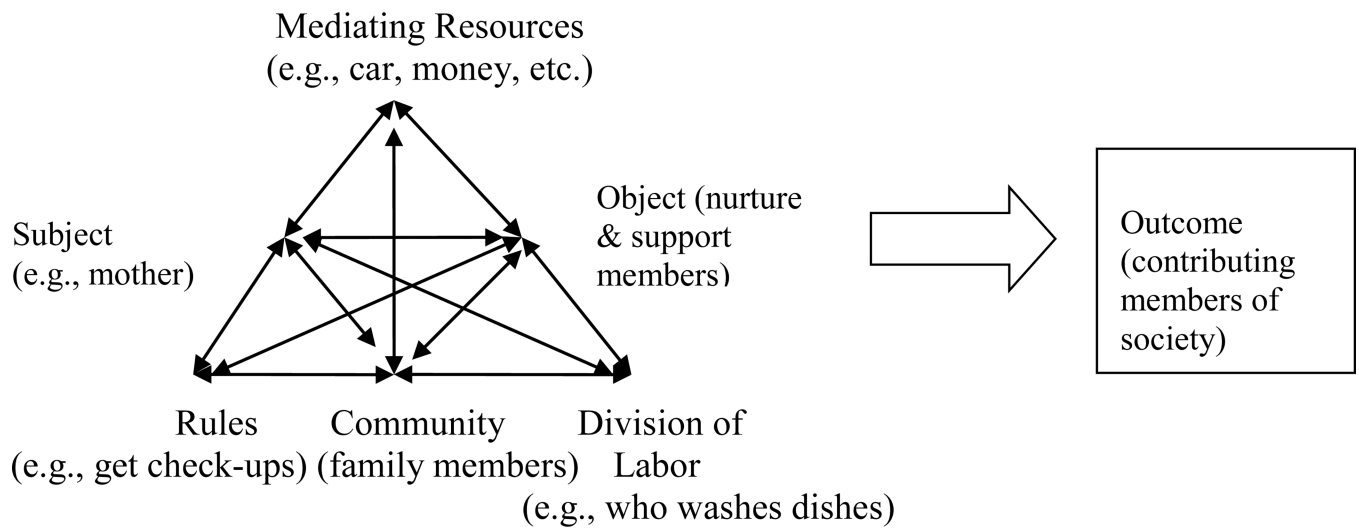


Figure 1. Family Activity System. Adapted from “The Mediation of Policy Knowledge: An Interpretive Analysis of Intersecting Activity Systems,” by H. E. Canary and R. D. McPhee, 2009, *Management Communication Quarterly*, 23, p. 153

Table 1

Participant Demographics

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- **Race:** White (n = 20; 95.2%); non-White (n = 1; 4.8%);
 - **Ethnicity:** Hispanic (n = 2; 9.5%); non-Hispanic (n = 19; 90.5%)
 - **Gender:** Female (n = 15; 71.4%); Male (n = 6; 28.6%)
 - **Age:** Mean age 52.48 (SD = 10.04) years; range from 40–72 years
 - **Marital status:** Married (n = 16; 76.2%); Divorced (n = 2; 9.5%); Widowed (n = 2; 9.5%); Never married (n = 1; 4.8%)
 - **Education levels:** High school diploma (n = 1; 4.8%); Some college (n = 6; 28.6%); Vocational/technical college (n = 1; 4.8%); Associate of Arts/Associate of Science (n = 4; 19%); Bachelor of Arts/Bachelor of Science (n = 6; 28.6%); Advanced degree (n = 3; 14.3%)
 - **Household income:** Less than \$70,000 per year (n = 10; 47.6%); \$70,000 or more per year (n = 9; 42.9%); unreported (n = 2; 9.5%)
 - **Employment:** Employed outside the home at the time of the study (n = 11; 52.4%); Self-employed (n = 3; 14.3%); Out of work (n = 2; 9.5%); Homemaker (n = 2; 9.5%); Retired (n = 3; 14.3%)
 - **CRC screening:** Recommended by primary healthcare provider (n = 13; 61.9%); Not recommended by primary healthcare provider (n = 8; 38.1%)
 - **Health insurance:** Provided through current or former employer (n = 12; 57.1%); Purchased directly from insurance company (n = 2; 9.5%); Medicare (n = 2; 9.5%); No coverage (n = 5; 23.8%)
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Table 2

Categories and Codes

Theoretical Category	Involved Activity System	Codes	
Community	Family	Substantial Conversations	
		Brief or Nonexistent Conversations	
		Family Health Experiences & Stories	
		Family Relationships	
Division of Labor	Family	Family Role - Caretaker, Teacher, Role Model	
Mediating Resources - Material	Cancer Prevention and Treatment (CPT)	Questionnaire Information	
		Written Information Materials	
	Family	Health Insurance	
		Money	
		Other Material Resources or Barriers	
	Primary Healthcare (PH)	Time and Work Schedule	
		Transportation	
Mediating Resources – Symbolic	CPT	Diagnosis, screening, and treatment	
		Cancer Information Dissemination	
		Risk Awareness - Agreement or Acknowledgement	
		Risk Awareness - Resistance or Rejection	
		Ruler to the End	
Rules	CPT	Interview Interaction Rules	
		a. Checking Participant Understanding	
		b. Inviting Additional Questions	
		c. Logistics of Interview	
		d. Suggestive Prompt	
		Practice Rules	
		a. General Preventive Practices	
		b. Screening Guidelines	
		Family	Health & Sickness Practices
			Healthy and Good Living
Philosophy for healthy lifestyle			
Subject	Family	Expressing Intentions	
		Expressing Lack of Knowledge	
		General Health	

Theoretical Category	Involved Activity System	Codes
		Identity Knowledge ability and Perceptions Personal Barriers to Screening or Treatment <ul style="list-style-type: none"> a. Emotional Barriers b. Health Barriers
Intersections of Family & Medical Systems	CPT-Family-PH	Effective or Positive Intersections Missed or Negative Intersections
	Family-CPT	Effective or Positive Intersections through CPT Mediating Resources Effective or Positive Intersections through CPT Provider Effective or Positive Intersections through CPT Rules Ineffective or Negative Intersections through CPT Mediating Resources
	Family-PH	Ineffective or Negative Intersections through CPT Rules Effective or Positive Intersections through PH Provider Effective or Positive Intersections through PH Mediating Resources Ineffective or Negative Intersections through PH Provider
	Family-Insurance	Insurance System Rules
	Family-Friends	
	Family-Work	
Intersections of Family & Other Activity Systems		

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