Exploring Genetic Counseling Communication Patterns: The Role of Teaching and Counseling Approaches

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Abstract:

The educational and counseling models are often touted as the two primary professional approaches to genetic counseling practice. Yet, research has not been conducted to examine how these approaches are used in practice. In the present study, we conducted quantitative communication analyses of BRCA1 genetic counseling sessions. We measured communication variables that represent content (e.g., a biomedical focus) and process (e.g., passive listening) to explore whether genetic counselor approaches are consistent with prevailing professional models. The Roter Interaction Analysis System (RIAS) was used to code 167 pre-test genetic counseling sessions of members of a large kindred with an identified *BRCA1* mutation. Three experienced genetic counselors conducted the sessions. Creating composite categories from the RIAS codes, we found the sessions to be largely educational in nature with the counselors and clients devoting the majority of their dialogue to providing biomedical information (62 and 40%, respectively). We used cluster analytic techniques, entering the composite communication variables and identified four patterns of session communication: *Client-focused psychosocial*, *biomedical question and answer*, *counselor-driven psychosocial*, and *client-focused biomedical*. Moreover, we found that the counselors had unique styles in which they combined the use of education and counseling approaches. We discuss the importance of understanding the variation in counselor communication to advance the field and expand prevailing assumptions.
KEY WORDS: communication - patterns - BRCA1 - genetic counseling - cluster analysis.

Article:

INTRODUCTION

The Ad Hoc Committee on Genetic Counseling (*1975*) described genetic counseling as a "communication process." Even though 30 years have passed since this statement was made, relatively little research has examined the process, content, and impact of genetic counseling. Leaders in the profession have strongly encouraged both descriptive and evaluative research directed at better understanding genetic counselor encounters (Kessler, *1992*; Biesecker and Peters, *2001*; McCarthy Veach *et al.*, *2002*; Clarke *et al.*, *1996*). Research on the effectiveness of counselor communication and an understanding of the range and variation in communication will

allow us to advance the profession and evaluate our current professional models and assumptions. An example of such a re-evaluation process is the work refining the concept of nondirectiveness and its uses and limitations in genetic counseling (Bartels *et al.*, *1997*; Bernhardt, *1997*; Biesecker, *1998*; Kessler, *1992*, *1997a,b*; McCarthy *et al.*, *2002*; Michie *et al.*, *1997*; Suter, 1998; Weil, *2003*; White, *1997*).

Brief Review of Models and Assumptions in the Field at Present

Kessler presented the educational and counseling models as two different professional approaches to genetic counseling practice (Kessler, *1997c*). Inherent in each model is a distinct manner of communicating with the client. Typically, the teaching model is aligned with a goal-directed approach of presenting biomedical information and interpretations of genetic events; whereas the counseling model is considered client-centered and thus aligned with the client's goals, strengths, and limitations (Kessler, *1997c*; Lewis, *2002*). A focus on a dichotomization of counseling approaches can lead to casual use of terminology and labeling of behaviors, and can cause us to overlook the diversity and richness of variations in patterns and styles of communication. Indeed, Kessler challenged the profession to combine the use of these two models (Kessler, *1997a,b,c*).

Weil (*2003*, p. 207) suggested that "The central ethos of genetic counseling should be to bring the psychosocial component into every aspect of the work," and suggests that the psychosocial aspects of genetic counseling should be provided in addition to the medical-genetic side of genetic counseling. However, initial findings from descriptive studies suggest that the teaching or educational model is the predominant mode of practice in the profession (Ellington *et al.*, *2005*; Lobb *et al.*, *2004*; Kessler, *1981*; Kessler and Jacopini, *1982*; Michie *et al.*, *1997*; Pieterse *et al.*, *2005*; Wolraich *et al.*, *1986*). Biesecker (*2003*) speculates that the precedence of "information giving" by counselors may be due to the influence of the medical model. Genetic counseling provides a unique service which necessitates unique models of practice (McCarthyVeach *et al.*, *2002*). With the surge in genetic information and technologies, there is increased interest in providing empirical data to evaluate the effectiveness of the services counselors provide and refine existing models of practice.

Despite very important and pioneering positions on approaches to genetic counseling, researchers have neither extensively nor rigorously tested these notions in clinical practice. Genetic counseling communication research has the potential to validate, refute, expand, and initiate professional dialogue on the prevailing assumptions of practice. The present study takes a step in measuring the teaching, counseling, biomedical focus and psychosocial orientations, and variation in usage in a small sample of cancer genetic counselors.

Description of Findings from Quantitative Communication Research

There is a growing body of research on the study of clinical genetics communication via a quantitative approach, primarily in the area of cancer risk assessment. Various research teams have described the communication associated with *BRCA1* pre-test sessions (Butow and Lobb, *2004*; Ellington *et al.*, *2005*; Lobb *et al.*, *2004*, *2005*; Pieterse *et al.*, *2005*). Although these studies varied in method and design, multiple similarities in communication were found: genetic practitioners talk more than clients, sessions are biomedically focused, and counselors ask significantly more questions than clients. Although important, these studies largely depict the

general or average communication approach to *BRCA1* sessions without assessing for differences in patterns of communication. To use an example from physician communication research, in a study of primary care physicians, Roter *et al. (1997)* found five distinct communication patterns: narrowly biomedical, expanded biomedical, biopsychoscial, psychosocial, and consumerist. These patterns were evidenced by a complex combination of behaviors. For example, the pattern labeled psychosocial represented clients talking much more about psychosocial topics than in the other patterns and the physicians exhibiting a balance between biomedical and psychosocial talk. Interestingly, this pattern reflected little question asking on both the part of the client and the counselor. While this pattern was associated with the highest satisfaction rating by patients, a lack of question asking suggests a passive interaction style, which may be associated with reduced understanding (Butow and Lobb, *2004*) and thus illustrates the importance of linking patient outcome measures with communication patterns.

Although genetic counseling is unique and distinct in its health service role, adapting and applying research paradigms used in other health care disciplines provides guidance when exploring genetic counseling communication. Evidence from research on physician communication suggests that not only can communication variation be explained by a range of common communication patterns used across encounters, but providers have individual styles of communication. For example, Ford *et al. (1996)* compared the interviewing dialogue of six oncologists and found that the physicians differed from each other in the amount of biomedical information given, use of emotionally centered comments, psychosocial discussion, and partnership-building statements. The authors cautioned that because their cell sizes were extremely small, firm conclusions should not be drawn from their findings. In a study of six Italian general practitioners, Piccolo *et al. (2002)* found that each physician had an individualized communication style that they did not alter greatly in response to patient characteristics. Piccolo and colleague's work is further supported by Roter *et al. (1997)*, who found that primary care doctors had a predominant communication style that they maintained across different patient appointments.

One study in cancer genetic counseling supports these findings as well. Lobb *et al. (2005)* coded 150 transcribed *BRCA1* pre-test sessions that were conducted by five genetic consultants (two geneticists, two genetic counselors, and one oncologist). They found the individual consultants varied in facilitation of client involvement and understanding, in partnership-building statements, addressing client distress, and discussion of prophylactic mastectomy. One consultant's communication was associated with a decrease in client self-reported depression scores 4 weeks after the genetic counseling session. This decrease could not be explained by any particular set of communication skills demonstrated by the counselor. It may have been an idiosyncratic finding, or as the authors suggest, a nonverbal element accounted for a reduction in self-reported depression scores.

Valuable models and approaches have informed the practice of genetic counseling for many years; however, it is important to continue to increase our understanding and test our professional assumptions. Our current professional models can be enriched and expanded by conducting communication research in genetic counseling. In the current study, we attempt an examination in this regard. First, we categorize and define elements of communication in genetic counseling sessions in order to provide a general description across sessions. Second, we use

cluster analysis as a statistical tool to delineate multifaceted patterns of communication behaviors. This technique has been applied to primary care provider interactions and provided useful insights into the range of physician patterns of communication (Bensing *et al., 2003*; Roter *et al., 1997*), as well as consumer health expectations (Sewitch *et al., 2004*). Third, we explore factors (e.g., client gender, age, personal history of cancer) and whether these factors are associated with specific communication patterns. Finally, we examine whether counselors have unique communication styles.

METHODS

The current study was part of a larger investigation exploring the psychosocial and behavioral effects of *BRCA1* testing. The recruitment procedure, eligibility criteria, and research protocol have been described in detail elsewhere (Baty *et al., 1997*; Botkin *et al., 1996*) but are summarized here.

Participants

Study participants were members of a Utah-based kindred (K2082) of Northern European descent with an identified *BRCA1* mutation. Adult members of the kindred (n = 796) were invited to participate in the study, including members affected with breast and ovarian cancers. Four hundred and eight participants completed an initial telephone interview and 296 (59%) of them chose to participate in the pre-test counseling session. Audiotaping of the sessions was not included in the original design of the study, and was thus instituted during the project. One hundred and sixty-seven of the counseling sessions had tape recordings of sufficient quality to allow analysis. Clients whose sessions comprise the current study did not differ in client characteristics from those whose sessions are not analyzed here.

Procedure

As part of the larger investigation, a letter was sent to potential participants in this previously identified kindred, inviting them to participate in a research study that offered free genetic counseling and *BRCA1* gene testing. Interested participants were contacted by phone and given study details and a written informed consent. Following receipt of the signed informed consent form, an interviewer called the subject to conduct a baseline interview. After the baseline interview was completed, those who were still interested in testing scheduled a pre-test session with a genetic counselor and a brief session with a Licensed Marriage and Family Therapist (LMFT). The role of the LMFT was to take a mental health history and assess participant readiness for testing. She also had the responsibility to defer participants if there was a mental health problem not being adequately treated or if she deemed genetic testing would be a health hazard. After this study, the research team eliminated the LMFT from future protocols because genetic counselors conducted mental health screening when needed and because there were so few problems of this nature.

Genetic counseling sessions were conducted by three certified genetic counselors with 10 or more years of experience. Counselors utilized a research protocol that dictated the following areas to be covered during a session: cancer and cancer disposition, *BRCA1* and its mode of inheritance, cancer risks associated with *BRCA1*, the method used for DNA analysis, and available prevention and surveillance options for *BRCA1* carriers and non-carriers (Baty *et al., 1997).* The clients were assigned to counselors based on scheduling availability of the counselor.

Counselor 1 met with 55% (n = 92) of the participants, Counselor 2 met with 26% (n = 43) of the participants, and Counselor 3 met with 19% (n = 32) of the participants.

Coding

The session audiotapes were coded using the Roter Interaction Analysis System (RIAS; Roter, *2002*). RIAS is a method of coding medical dialogue which uses a complete thought expressed as a statement, phrase, or single word as its unit of analysis. Each thought is assigned to a mutually exclusive and exhaustive code.

The audiotapes were coded by two coders at the University of Utah (N = 87) and by two coders at Johns Hopkins (N = 80). Intercoder reliability was calculated at each site based on the coding of 10 audiotapes. Pearson correlation coefficients for each communication category by speaker (genetic counselor, client) averaged = .90. Reliability between the two sites was calculated using 12 audiotapes. Pearson correlation coefficients between coders across the two sites averaged ≥.87 for speaker categories. The taped counseling sessions averaged 77.66 min (SD = 21.74; range = 26.62–134.67).

Codes were combined into four composite communication variables (see Table I for session examples): (1) biomedical information, including family and individual medical history, personal and population risk information regarding breast and ovarian cancer, and the role of the *BRCA1* gene; (2) psychosocial communication, including the discussion of possible psychological/emotional reactions to learning test results and talking about the results with family members; (3) question asking including closed- and open-ended questions of all types (e.g., medical, psychosocial, and lifestyle); and (4) receptive communication including statements of agreement and understanding. Ratios of the four communication categories were calculated for each speaker. Each ratio consisted of the speaker's talk assigned to a particular category to the total talk for that speaker. For example, the ratio of client biomedical talk to all client talk.

Table I. Examples of Session Dialogue Reflecting RIAS Composite Categories

RIAS composite categories	Statement examples
Biomedical information	GC: *The population risk is … Smoking has been associated with increased risk; If you have what we call a mutation, a change in the DNA, then you may have a higher chance of having a tumor start to form.*
	CT: *My sister was diagnosed with cancer last year; I have a mammogram about once a year.*
Psychosocial communication	GC: *Yes, it is kind of scary to think about cancer; Talking to your sister about testing, may be helpful.*
	CT: *I don't want to burden my family; I think a lot about the cost of the test.*
Question asking	GC: *Has anyone else in your family been diagnosed with cancer? How worried are you about your sister? Do you exercise regularly?*
	CT: *Can my daughters get cancer? What do other people in this situation do? Do I increase my risk by eating fatty foods?*

RIAS composite categories	Statement examples
Receptive communication	GC: *Yes, okay, right.*
	CT: *Right, okay.*

Analyses

Different analytic approaches were used to address each of the study goals. The four composite communication categories served as the primary variables for the study. Descriptive statistics were used to describe the 167 sessions. To find patterns of communication, we used a cluster analytic technique, Ward's method with Euclidian distances from SPSS (SPSS, *2004*). All members of the study team were blind to which style "belonged" to which counselor to allow for unbiased interpretation. Next, we tested for possible predictors of variation in communication patterns (clusters). Chi-square was used for categorical variables (gender, genetic counselor identity, education, personal cancer history, affected first-degree female relative) and one-way analysis of variance (ANOVA) was used for continuous variables (age and length of session).

RESULTS

Sample Characteristics

Participants had a mean age of 47.6 and a mean education level of 14 years. Females made up a little over half of the sample (56.9%) and a majority of the sample was married (83.8%). Most of the sample had no personal history of breast or ovarian cancer (83.2%), while 61.1% had a first-degree female relative diagnosed with breast cancer. Twenty-three participants did not undergo genetic testing or chose not to receive their results. Of those receiving their test results, 30.6% were found to be *BRCA1* carriers (26% of the total sample).

Descriptives of Session Communication

From Table II, one can see that these sessions are largely educational in nature with the counselors and clients devoting the majority of their dialogue to providing biomedical information (62 and 40%, respectively). Counselors and clients discussed psychosocial issues with approximately 4% of each party's statements being psychosocial in nature. Questions comprised 7% of the counselor dialogue and 4% of the client dialogue. Finally, both the counselor and client exhibited a proportion of talk that reflected receptiveness or agreement with what the other speaker was saying (12% for counselor and 34% for client).

Table II. Descriptive Statistics of Session Communication

	Across sessions
Genetic counselor	**Client**
Medical talk	
Ratio = .6237	Ratio = .3963
Mean = 792.84	Mean = 190.04
SD = 275.64	*SD* = 112.50
Range = 220—1406	Range = 7–746

	Across sessions
Genetic counselor	**Client**
Psychosocial talk	
Ratio = .0334	Ratio = .0360
Mean = 44.93	Mean = 20.23
SD = 35.17	*SD* = 29.691
Range = 0–170	Range = 0–192
Receptivity	
Ratio = .1165	Ratio = .3401
Mean = 146.08	Mean = 172.58
SD = 66.05	*SD* = 121.85
Range = 19—416	Range = 0–503
All questions	
Ratio = .0664	Ratio = .0394
Mean = 83.95	Mean = 19.12
SD = 36.01	*SD* = 30.18
Range = 9–206	Range = 0–334

Communication Patterns

Using cluster analyses, we entered the four standardized genetic counselor and the four client communication ratio variables into the model. We first studied the dendrograms to find instances where there was large information loss in the combining of clusters (Everitt *et al.*, *2001*). We further analyzed a graph of the distances between clusters being combined and the remaining number of clusters to support the dendrogram observations. The three genetic counselors who had conducted the initial sessions, met regularly with the rest of the research team to facilitate a clinically relevant interpretation of the communication patterns. The counselors labeled the four communication patterns as *client-focused psychosocial*, *biomedical question and answer*, *counselor-driven psychosocial*, and *client-focused biomedical pattern*. These patterns are depicted in Fig. 1 with the clusters being represented on the *x*-axis and the standardized mean amount of the communication variables being represented on the *y*-axis. No significant differences were found between the lengths of the sessions for the four clusters.

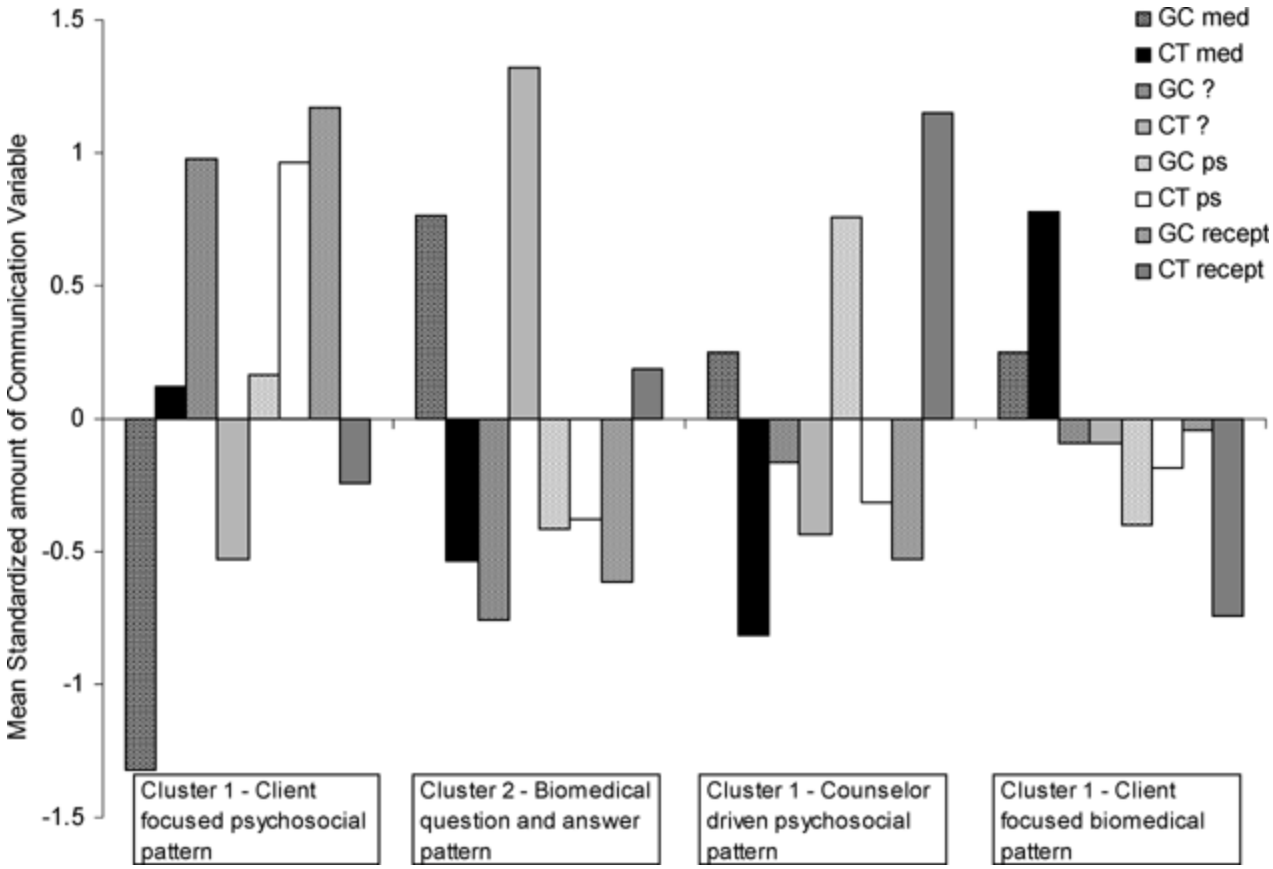

Fig. 1. Cluster analysis of composite communication variables.

As can be seen in Fig. 1, the *client-focused psychosocial pattern* was characterized by a relatively high ratio of genetic counselor questions and receptiveness and a low ratio of genetic counselor biomedical information. This pattern of counselor talk was associated with a relatively high rate of client psychosocial talk and minimal-to-moderate biomedical talk. It is possible that the client is responding in a psychosocial nature to counselor questions and the counselor, in turn, is showing agreement and other forms of passive verbal receptiveness to client comments; however, without a sequential analysis, we cannot determine the sequence of exchange. This pattern represents 22% (n = 37) of the sessions with an average length of 79.52 min (SD = 15.66).

Unlike the first cluster, the second cluster represents biomedically focused encounters. This pattern, *biomedical question and answer*, is characterized by relatively high levels of client question asking and genetic counselor biomedical talk, and substantially less genetic counselor question asking than was evident in the *client-focused psychosocial pattern*. This pattern was seen in 19% of the sessions (n = 32), with an average length of 94.68 min (SD = 35.38).

The third pattern reflects a relatively high level of genetic counselor psychosocial talk and high client receptiveness with low levels of client biomedical talk. In contrast to the other patterns, the genetic counselor appears to be facilitating a focus on psychosocial issues related to *BRCA1* testing with the client expressing agreement and listening; therefore, we described this pattern as

counselor-driven psychosocial. This communication pattern accounted for 29% (n = 40) of the sessions and averaged 88.52 min (SD = 19.52).

The last cluster reflects a *client-focused biomedical* pattern. This cluster is characterized by sessions in which the client provided relatively high levels of biomedical information and the counselor provided moderate levels of biomedical information. In comparison to the other three patterns, clients made fewer statements associated with receptiveness and agreement. This was the most common of the four patterns, accounting for 35% of the sessions (n = 58) and averaging 82.80 min (SD = 20.19).

Variation in Patterns of Communication

Another focus of the study was to explore possible predictors of the four different communication patterns we found in pre-test *BRCA1* sessions. As can be seen in Table III, the only variable to show a significant relationship to cluster assignment was genetic counselor identity (χ^2 = 62.842, 6; $p < .001$).

Table III. Chi-Square and Analysis of Variance to Determine Predictors of Cluster Membership

	χ^2	*df*	*p*
Genetic counselor	62.842	6	.000
Client gender	3.185	3	.364
Client cancer history	1.602	3	.659
Client family history [a]	.417	3	.937
Age	1.256 [b]		.291
Length of session	2.06 [b]		.112

[a] Affected first degree female relative
[b] Values of *F*

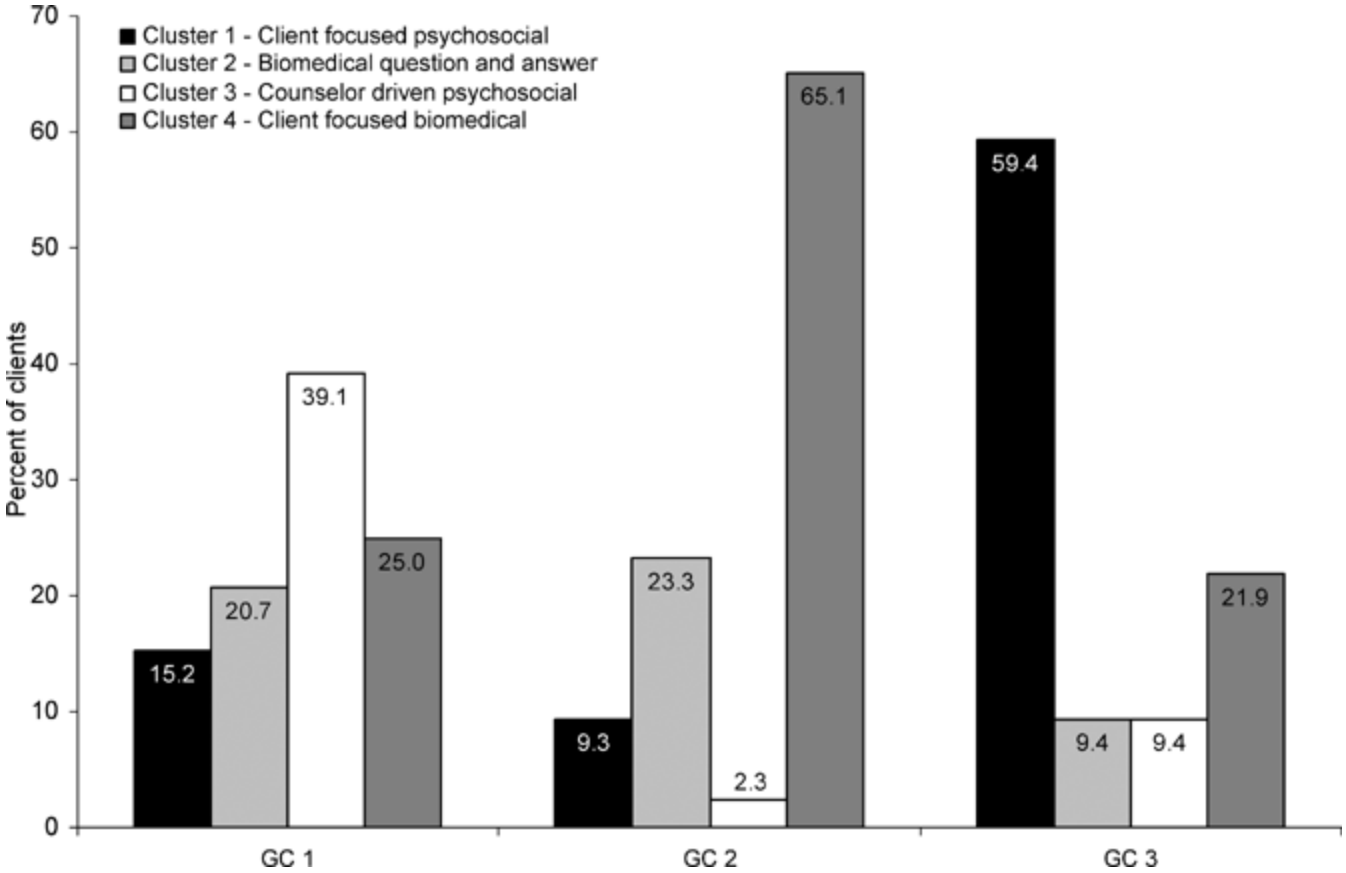

Fig. 2. Percent of pattern occurrence for each genetic counselor.

Genetic Counselor Communication Style

Figure 2 depicts the distribution of each of the four communication patterns by counselor. Each of the three counselors exhibited a distinct communication style. Genetic counselor 1 exhibited the most varied communication style, as indicated by a relatively equal use of the four patterns as compared to the other two counselors. Genetic counselor 2 exhibited a communication style which focused primarily on *BRCA1*-related biomedical topics. The majority (65%) of her sessions reflect a *client focused-biomedical* pattern followed by 23% of her sessions being characterized as *biomedical question and answer* pattern. Genetic counselor 3 exhibited a style that was client-focused in nature with the predominant session topic being less consistent. Fifty-nine percent of her sessions were characterized by the *client-focused psychosocial* pattern and 22% were characterized by the *client-focused biomedical* pattern.

Given that participants were not randomly assigned to the counselors, but assigned according to counselor availability, we tested for differences among the three counselors on client characteristics (e.g., age, gender). No significant differences were found.

DISCUSSION

An aim of this project was to further vitalize the ongoing professional discussion of prevailing models and assumptions in the field of genetic counseling by conducting quantitative communication research on *BRCA1* research protocol genetic counseling sessions. By using RIAS and cluster analytic techniques, we provide findings on the multifaceted nature of

counseling communication patterns and individual counselor style, shedding light on both process and content.

We have presented our descriptive communication results in detail elsewhere (Ellington *et al., 2005*) and found them consistent with other literature (Butow and Lobb, *2004*; Pieterse *et al., 2005*) which suggest that the typical or general approach to *BRCA1* sessions is biomedical and educational in nature. Our current findings and those of Lobb *et al. (2005)* suggest when going beyond general descriptions which collapse across all sample sessions, there is substantial variation in communication patterns and counselor styles. We employed the cluster analytic technique to RIAS communication variables and used it as a tool to explore the teaching and counseling approaches, which are so much discussed in the field. Via a team approach suggested by McCarthy Veach *et al., (2002),* three genetic counselors, all with strong clinical, research, and scholarly backgrounds, guided the interpretation of the findings. We identified four patterns of communication that broadly illustrate degree of variation in the content and process of *BRCA1* genetic counseling encounters.

Two of the four patterns indicated a session focus on psychosocial content. The *counselor-driven psychosocial* pattern was dominated by the counselor talking about issues of a psychosocial nature and only moderately talking about biomedical issues. The client's voice is largely absent as evidenced by responses indicative of passive listening and agreements and by sharing relatively minimal information. This pattern suggests the counselor is exercising verbal control and presenting or "teaching" information, although not as one might expect. Typically, it is thought that the teaching approach is synonymous with biomedical talk rather than psychosocial talk (Lewis, *2002*). In cancer sessions, genetic counselor psychosocial information frequently reflects topics such as anticipatory coping with test results and how to talk to family members about cancer risk and carrier status. Sessions within this cluster are not dense with biomedical and technical genetic information, but are likely to reflect a psychosocially guiding or directive process.

Also of a psychosocial focus, but inconsistent with counselor verbal control is the pattern of *client-focused psychosocial* encounters. In this pattern, the genetic counselor appears to be facilitating the client's opening up and sharing of psychosocial information. The counselor asks the client a relatively large number of questions and exhibits many verbal agreements. The latter is thought to signal counselor attentiveness (Farrara, *1994*). This pattern suggests an indepth discussion of psychosocial issues on the client's part and minimal focus on biomedical information by either party. The *client-focused psychosocial* pattern clearly contrasts with a "pure" genetic counseling teaching approach. Of the four, this pattern is associated with the least amount of biomedical information presented by the counselor.

The remaining two patterns are consistent with a biomedical topic focus, but differ in their associated communication processes. In the *biomedical question and answer* pattern, the client is actively asking questions and listening and the genetic counselor is providing biomedical information. Unfortunately, in this study, we cannot determine if the counselor is responding to the client's questions or the client is responding to the counselor's biomedical information with multiple questions. Describing a similar pattern found in primary care encounters, Roter *et al. (1997)* labeled it a "consumerist pattern." Applying their interpretation to our pattern of

biomedical question and answer, the client would be seen as seeking information and utilizing the counselor as a consultant with expertise in cancer genetics. Investigators of provider–client communication have generally shown, that when averaging across all study sample encounters, clients tend to ask few questions (Beisecker and Biesecker, *1990*; Ford *et al.*, *1996*; Pieterse *et al.*, *2005*; Street, *1991*). Thus, the *biomedical question and answer* pattern helps to expand our view of encounters beyond what is typical or "the average" in medical practice and reflects an active-engaged process on the part of the client.

The most common of the four patterns was the *client-focused biomedical* pattern in which both the client and the counselor are involved in exchanging biomedical information. However, the counselor is not dominating the dialogue as evidenced by a relatively moderate amount of biomedical talk by the counselor. The counselor and the client are engaged in relatively equal proportion of question asking. Finally, the client is expressing the lowest level of receptive or listening behaviors of the four patterns. Thus, the *client-focused biomedical* pattern represents an interactive dialogue related to *BRCA1* biomedical issues.

Although findings from other health provider disciplines may provide empirical guidance, genetic counseling plays a unique role that warrants its own models and methods (McCarthy Veach *et al.*, *2002*). In contrast to physician–patient interactions, genetic counseling clients have no common social interaction template for encounters with genetic counseling (Bernhardt *et al.*, *2000*; Hallowell *et al.*, *1997*). Typically clients do not develop an ongoing relationship of care with a genetic counselor as that same client might with a primary care physician. We did not find a "pure" biomedically dominant pattern which is so prevalent in the physician–patient literature (e.g., Roter *et al.*, *1997*); however, caution must be used in comparing the communication findings from the current study with only three providers to a study in which 127 physicians encounters were analyzed. As can be seen from the results of the cluster analyses, there was fairly equal distribution in the four patterns (19–35%) of 167 *BRCA1* research protocol sessions. When mapping our findings onto the current models of genetic counseling, we find a range in usage reflecting both content (biomedical and psychosocial) and process (teaching and counseling).

An additional goal of the study was to explore counselor style. Given that we had multiple sessions for each counselor, we wanted to see how they varied in their use of the identified patterns of communication. Recall that the counselors were all experienced (i.e., 10 or more years of experience) and followed a research protocol checklist. Despite this attempt at standardization, the counselors varied considerably in their style. Counselors 2 and 3 had a predominant style which was client-focused in nature (i.e., 65% of Counselor 2's sessions were represented by the *client-focused biomedical* pattern and 59% of Counselor 3's sessions were represented by *client-focused psychosocial* pattern). Counselor 1's style could be described as versatile, in that she exhibits a moderate amount of each of the communication patterns across sessions.

It is possible that any variation in an individual counselor's style reflects an effort to tailor to client needs or preferences; however, our cell sizes were too small to quantitatively assess whether client factors predicted individual counselor variation. Other investigators have found evidence of genetic consultant communication tailoring, however, not at the individual counselor

level (Lobb *et al.*, *2002*; Pieterse *et al.*, *2005*). Client factors such as age, personal history of cancer, and professional status were found associated with differences in *BRCA1* genetic consultants' communication (Lobb *et al.*, *2002*). Pieterse *et al. (2005)* found that clients' pre-visit needs did not result in tailoring with the one exception that counselors' provided more psychosocial information to clients in greater need of emotional support.

Limitations and Goals for Future Research

Despite growing research on genetic counseling communication, the field needs more studies with multiple counselors, with counselors conducting multiple sessions, and with diverse client populations. The findings of this study are based on BRCA1 sessions conducted by three counselors and thus further studies are needed to asses the generalizability of our findings. As this study was part of larger project in which tape recording of sessions was not conducted for the purpose of communication analyses, future studies can be specifically designed at the outset to examine the impact of genetic counseling communication and its variation on meaningful client outcomes. The field is in need of research on all the many forms of communication in which genetic counselors engage: pre-test sessions, post-test sessions, phone follow-ups, and multidisciplinary meetings with clients and their families. These interactions may be qualitatively different from each other and an understanding of them will elucidate salient communication links to client adjustment.

CONCLUSIONS

In this study, we examined variation in genetic counseling communication among a small number of experienced counselors conducting multiple sessions with a relatively homogenous sample in a large *BRCA1* research project. Even within these protocol-driven sessions, we found substantial variation which reflected a range in combined usage of both teaching and counseling communication strategies (Kessler, *1997c*). Furthermore, we found that these counselors appeared to have their own personal styles of communicating. Our findings have implications for the profession, particularly for those in positions of teaching and clinical supervision. It is important to be sensitive to the fact that there are a variety of communication patterns that are likely to be effective and that counselors may vary in their ability to use different patterns. Without having tested the link between communication patterns and client outcomes, our findings remain at the descriptive level. Future research of contemporary counseling practice and exploration of the rich variation within clinical practice, which are likely to be associated with client outcomes, can help the profession advance in guiding clients to interpret and make informed decisions about their genetic care.

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