The body's response to health care provider communication: The impact of dominant versus facilitative styles.

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Abstract:

Participant responses were compared for cancer genetic counselor provision of information provided in a dominant versus facilitative communication style. Participants watched two different segments of genetic counseling while heart rate (HR) and respiratory sinus arrhythmia were assessed. Communication style was determined by coding with the Roter interaction analysis system. Results supported a consistent contrast effect across measures, which was not moderated by trait emotional control. Individuals presented with the dominant style first exhibited a reduced HR for the facilitative segment as compared with participants who saw the facilitative style first. When viewing the dominant style first, participants rated the subsequent facilitative counselor as more friendly, submissive, and receptive and were more satisfied. An explanation for the findings is supported by positive and negative evaluative processes literature.

The stress response is being increasingly examined within the context of social interactions. The interpersonal contexts of hostility and of low social support are now accepted determinants of both laboratory and naturalistic-induced stress responses and contribute to the development of coronary heart disease (e.g., Gallo, Smith, & Kircher, 2000; Uchino, 2004). A specific interpersonal context that has been less widely examined in the social psychophysiological literature is the autonomic correlates of interpersonal responses to social constraint or social dominance. According to the Social Cognitive Processing Model (SCPM; Lepore, 1992; Lepore, Evans, & Schneider, 1991; Lepore, Silver, Wortman, & Wayment, 1996), experiencing a stressful, controlling social interaction can lead to inhibition of emotions and has implications for health and psychological adjustment. From this perspective, health care providers, through their

communication about a client's health or disease risk, have the potential to facilitate or hinder a client's emotional experience and response. In this analogue study, we compare acute autonomic responses to cancer genetic counselor provision of genetic risk information provided in two ways: social constraining and dominant style versus psychosocially and emotionally facilitative style. We suggest that acute cardiovascular reactivity associated with socially imposed emotional inhibition could impact the patient in two ways. First, acute cardiovascular reactivity, in the present study, is a marker for the distress associated with socially imposed emotional inhibition, which may or may not have consequences for long-term health. Second, we suggest that the acute effects may interfere with information processing and thus undermine the intended purpose of the provision of health information.

Article:

Social Constraint and Personality

When an individual is confronting a stressful event, unsupportive social interactions are likely to restrain his or her expression of emotions. Lepore and colleagues (Lepore, 1992; Lepore et al., 1991, 1996) define social constraint as an individual's perception that the interpersonal environment is unsupportive and unreceptive, which leads to a reluctance to discuss thoughts and feelings about stressful life events. Research findings indicate that meaningful emotional expression about a stressful life event may be related to psychological and physical health, whereas the suppression of emotional expression may lead to passive avoidance and subsequent rumination and may ultimately have harmful psychological and health effects (e.g., Cordova, Cunningham, Carlson, & Andrykowski, 2001; Pennebaker, Gonder-Frederick, Stewart, Elfman, & Skelton, 1982; Smyth, Stone, Hurewitz, & Kaell, 1999; Zakowski, Ramati, Morton, Johnson, & Flanigan, 2004). Having a receptive social forum in which individuals can share thoughts and feelings may elicit a process by which distressful thoughts associated with a stressful experience are reduced (Lepore, 1997; Zakowski, Valdimarsdottir, & Bovbjerg, 2001). However, personality characteristics, such as the trait of suppression or emotional control, may moderate the impact of social receptivity. In clinical settings, suppression has been linked to distress in cancer patients and to poor physical health (Classen, Koopman, Angell, & Spiegel, 1996; Stanton et al., 2000; Watson et al., 1991).

Social Constraint and Dominance in the Context of Provider–Patient Interactions

Studies on the systematic analyses of provider communication show the association between less dominant and more facilitative provider communication style and patient outcomes. For example, increases in satisfaction, treatment adherence, and physiological health change have been associated with less dominant and more facilitative physician communication styles (Ellington et al., 2008; Kaplan, Greenfield, & Ware, 1989; Roter & Hall, 1989; Zachariae et al., 2003). In general, these findings are consistent with the premise of the SCPM (Lepore, 1992; Lepore et al., 1991, 1996). The literature indicates that health providers have difficulty detecting patient emotional cues (Maguire, Faulkner, Booth, Elliott, & Hillier, 1996). Moreover, it is common for health care providers to block, minimize, and discourage the expression of feelings when a client wants to discuss a problem (Zimmermann, Del Piccolo, & Finset, 2007). When sharing an emotional concern, the fact that the provider fails to acknowledge or blocks client concerns is likely to lead to increased client distress via a suppression of emotions further evident in an acute autonomic response.

Not only does the SCPM provide a valuable theoretical framework for the study of dominant versus facilitative provider communication behavior, but these behaviors are also consistent with the theoretical premise of the Interpersonal Circumplex Model. According to this model, and supported by a long line of psychological literature, interpersonal behaviors vary along two dimensions: control (dominance vs. submission) and affiliation (friendliness vs. hostility) (Kiesler, 1983; Wiggins, 1979). Researchers have applied the Interpersonal Circumplex Model to understand the impact of the social context on physiologic responses (e.g., Gallo et al., 2000); however, it has not been widely used to study patient–provider interactions. Kiesler and Auerbach (2003) stated that the Interpersonal Circumplex provides a valuable framework for the study of patient–provider interactions. Dominance and facilitative (akin to affiliation) behaviors have been identified as predominant health care provider communication styles and widely studied for their effect on patient outcomes (Kiesler & Auerbach). Rarely has there been work that operationalized the circumplex dimensions through coding communication behavior while also gathering subjective reports (Kiesler & Auerbach).

In the present analogue study, we examined dominant versus facilitative communication within the context of cancer clinical genetics. Each year, more than 192,000 American women discover they have breast cancer, of which 5%–10% have a hereditary form of the disease (National Cancer Institute, 2002). Researchers have found that genetic mutations render some women more susceptible to developing breast and other types of cancer. Specifically, alterations in the inherited genes called BRCA1 or BRCA2 have been found to greatly increase a woman's lifetime risk of getting cancer (Antoniou et al., 2003). Given the genetic link for these types of cancers, the field of genetic counseling has grown to assist individuals confronted with difficult decisions related to obtaining testing and managing results. Considering the uncertain nature of

genetic testing and its implication for health, client anxiety in response to counseling is likely to be significant, with its effects extending after the counseling session is over. There is wide variability in clients' psychological response to cancer genetic risk information (Coyne, Benazon, Gaba, Calzone, & Weber, 2000; Croyle, Smith, Botkin, Baty, & Nash, 1997; Diefenbach, Miller, & Daly, 1999; Lerman et al., 1995; Schnur, Valdimarsdottir, Montgomery, Nevid, & Bovbjerg, 2004). Behavioral scientists have begun to explore specific factors that may explain the variability in posttest adjustment, primarily in the area of BRCA1/2. Initial prospective research conducted on high-risk individuals suggests that history of cancer or cancer-related surgery (Croyle et al.), the test status of siblings (Smith, West, Croyle, & Botkin, 1999), and initial cancer-related distress levels (Lerman et al., 1998) all mediate the psychosocial effects of receiving BRCA1 test results or decision to test (i.e., declining testing). In addition to individual difference factors, other investigators have examined perceived social context on the distress levels of individuals at familial risk for breast cancer. For example, Schnur et al. found that among women with a family history of breast cancer, perceptions of social constraints were positively associated with both general and cancer-specific distress and that behavioral avoidance partially mediated those effects. Duric and colleagues (2003) found that if counselors ignored clients' first disclosure of distress, or if the counselor responded to none of the clients' disclosures of distress with empathy, the clients gave significantly fewer emotional cues throughout the consultation. A significant reduction in client depression at 3 weeks posttest was associated with genetic counselor attention to a clients' expression of distress.

Study Overview

The objectives of this exploratory study were threefold. First, we wanted to test the feasibility and clinical realism of identifying and selecting prototypic segments of clinicians communicating in dominant and in facilitative styles. The second objective was to compare the acute autonomic responses to socially constraining genetic communication with responses to emotionally facilitative communication. Related to this objective, we predicted that the dominant and socially constraining communication-provider style would be associated with an increased stress response as compared with the facilitative approach. The third objective of the present study was to assess for moderating effects of the personality trait of emotional suppression on self-report and heart rate (HR) responses to the different styles of interpersonal health communication. From a national sample of videotaped cancer genetic counseling sessions coded with the Roter interaction analysis system (RIAS; Roter, 2002) medical communication analysis system, two videotaped segments were selected as prototypes of verbally dominant (i.e., socially constraining) versus facilitative communication styles (Roter, Ellington, Erby, Larson, & Dudley, 2006).

Materials and Methods

Participants

One hundred undergraduates were recruited from the University of Utah departmental participant pool. Participants were given extra credit for partaking in the experiment.

Procedure

In the present study, videotaped segments of BRCA1 genetic counseling sessions were used as the independent variable. From a study of a national sample of videotaped cancer genetic counseling sessions coded with RIAS, we selected two different genetic counseling sessions as prototypes of socially constraining versus facilitative communication styles (for details on the study of the national sample of genetic counselors, see Roter et al., 2006). From each session, a 10-minute segment2 was selected based on its prototypical representation of the two counseling styles. The counselor was speaking to a woman at familial risk for breast cancer; however, participants in the current study could hear but not see the female client. Participants were told that they were part of a study designed to provide information that would improve the new genetic counseling program at the university. Following the completion of initial questionnaires (i.e., 10-item background questionnaire, personal health history, Courtauld Emotional Control Scale [CECS], brief decision-making style assessment), participants were asked to sit quietly and rest for 10 minutes for baseline physiologic monitoring. Physiological monitoring was continuous throughout two rest periods and the two video tasks. After the initial rest period, participants were presented the first of two 10-minute genetic counseling video segments. They were instructed to imagine that they were the counselor's client (or if a male, their wife). After viewing the first session segment, physiological recording was halted while participants completed a series of questionnaires about their reactions to the session (i.e., Effectiveness of Analogue Situation Questionnaire, Analogue Client Satisfaction Questionnaire, octant scale Impact Message Inventory [IMI-C], Intrusiveness of Physiological Monitoring 2-Item Assessment). Upon completion of the questionnaires, physiological recordings were resumed, and participants were asked to sit quietly for a 5-minute resting period. This was done to ensure that participants returned to baseline levels prior to viewing the second video. They then watched the second tape segment followed by the same battery of questionnaires that were administered after the first segment. All participants viewed both the dominant and the facilitative tape segments; however, the order of viewing was randomly counterbalanced.

Pretask Measures

Background information.   Participants completed a standard demographic questionnaire. In addition, they were asked questions about their family history of cancer.

CECS.   The CECS (Watson & Greer, 1983) is a 21-item instrument measuring the extent to which individuals report they control or "bottle-up" feelings. Answers are rated on a 4-point Likert scale, with 1 being almost never and 4 being almost always. The measure has shown good reliability and validity for cancer patients (Owen et al., 2006). In the present study, mean interitem reliability for the scale was .90. Seven individuals did not complete this measure.

Posttask Measures

Four different sets of measures were used to assess participants' appraisal of the genetic counselor and of counselor behavior.

Items assessing clinical generalizability.   Employing items we have used previously (Ellington & Wiebe, 1999), participants were asked to rate on a 7-point scale how easy it was to imagine themselves in the counseling situation and how similar the videotape segments were to actual counseling sessions (Cronbach's alpha = .68). In addition, participants completed two face-valid items rating how intrusive the physiologic monitoring was for them (Cronbach's alpha = .79).

IMI-C.   The IMI-C (Kiesler & Schmidt, 1993) is a widely used and well-validated measure (Kiesler & Auerbach, 2003). It consists of 56 items, each scored on a 4-point Likert-type scale ranging from *not at all* to *very much so*. The instrument measures the participant's response to the speaker. In the present study, we used quadrant scale scores indicating how hostile, dominant, submissive, and friendly the participant rated each counselor. The scale (and its component subscales) demonstrated adequate internal reliability (average Cronbach'salpha across the four scales = .76; Cronbach's alpha$_{Dominant}$ = .64; Cronbach's alpha$_{Hostile}$ = .69; Cronbach's alpha$_{Friendly}$ = .69; Cronbach's alpha$_{Submissive}$ = .74).

Social receptivity. Stanton and colleagues (2000) developed a three-item scale for women with breast cancer. The authors intended the scale to measure perceived social receptivity of participants' cancer-related concerns. The original version was reliable and demonstrated acceptable 3-month test–retest reliability (Stanton et al.). For purposes of this proposal, we have modified the statements to measure clients' perceived receptivity of the genetic counselor. The items are rated on a 5-point scale (1 = strongly disagree; 5 = strongly agree) and averaged for a total score. The items were worded as follows: "The genetic counselor talked to me about my worries concerning cancer,""I felt free to express all my feelings about cancer to the genetic counselor," and "During the appointment, I could count on the genetic counselor to talk to about

my experiences of being at hereditary risk for cancer." The scale demonstrated good internal reliability (Cronbach's alpha = .86).

Satisfaction with communication.   Fourteen questions used in previous work with simulated genetic counseling sessions were used in the current study to assess client satisfaction (Roter et al., 2006). Items were measured on a 6-point Likert scale and reflect informational, interpersonal, and collaborative aspects of communication. For example, "How much did your genetic counselor inquire about your emotions and feelings?""How much did your genetic counselor act supportive and give you the feeling that she is a partner with you?" The scale demonstrated good internal reliability (Cronbach's alpha = .94).

Heart rate and respiratory sinus arrhythmia.   The ECG was continuously monitored using a DataLab 2000 Biopotential amplifier Model 70,702 (Lafayette Instruments, Lafayette, IN) interfaced with Mindware data acquisition software (Mindware Technologies, Gahanna, OH). Ag/AgCl electrodes were placed on the nondominant wrist and both ankles after first cleaning the area with an alcohol pad. The ECG was edited for artifacts using the detection algorithm of Berntson, Quigley, Jang, and Boysen (1990), and aggregated across minutes within epochs (e.g., baseline) to increase reliability. Respiratory Sinus Arrhythmia (RSA) provides a noninvasive measure of parasympathetic control of the heart and was calculated based on the digitized interbeat intervals. After linear detrending, the heart period time series was band pass filtered from .12 to .40 Hz using an interpolated finite impulse response filter (Neuvo, Dong, & Mitra, 1984). RSA was then calculated as the natural log of the area under the heart period spectrum (calculated by a fast Fourier transform and scaled to msec2/Hz). RSA was calculated on a minute-by-minute basis and aggregated across minutes within epochs to increase reliability.

Physiological data were edited using a graphic program according to standard guidelines (Cacioppo, Bernston, & Larsen, 2000). HR assessments were examined for equipment failure, and it was found that 16 participants' HR data had been improperly or incompletely recorded. Thus, these cases were removed, and the remaining 84 were used in all subsequent analyses.

We also collected measures of skin conductance; however, a significant amount of skin conductance data was lost because of technical problems (e.g., electrical noise, sensor attachment). As a result, following data cleaning, we were left with a total of 54 participants for whom we had complete skin conductance recordings. Thus, we treated these data as exploratory, and key results are presented in footnotes.

Interpersonal Health Communication Conditions: Dominant Versus Facilitative Cancer Genetic Counseling

As stated previously, two 10-minute segments of videotaped cancer genetic counseling sessions were selected as prototypes of dominant versus facilitative communication styles. The two counselor segments matched on the topics covered (i.e., introduction of the session and discussion of the BRCA1/2 genetic test), but differed on the manner in which the topics were conveyed. The actual client (in the video) was not visible to the participants in the current study, but client comments were audible. These tapes are part of a larger study in which all genetic counseling sessions were coded with RIAS (Roter et al., 2006). The unit of analysis for RIAS coding is defined as the smallest speech segment that expresses a complete thought. This may be a statement, a phrase, a clause, or a single word. Each complete thought is assigned to a mutually exclusive and exhaustive category. Thus, the RIAS codes provide a comprehensive accounting of every thought expressed during an interaction.

For purposes of the current study, the following composite categories were examined to ensure that the segments represented dominant and facilitative communication patterns: (1) biomedical information, which includes statements of medical history, information related to breast cancer risk, and information regarding the test for the BRCA1 gene mutation; (2) psychosocial communication, which includes the discussion of psychosocial issues related to genetic testing (e.g., "the test results may have psychological implications for your children"); (3) data gathering or question asking, which includes all open and closed questions; (4) relationship building, which includes emotionally responsive comments (e.g., empathy, concern) and social chit-chat; and (5) activating and partnering with the client. This composite category includes paraphrasing, orienting statements, and back channeling.

As can be seen in Table 1, the RIAS coding results indicate that the counselor in the dominant session devoted nearly 46% of her talk to providing biomedical information and 13.3% of her talk to asking questions of the client. In contrast, the counselor in the facilitative session only devoted 10% of her speech to providing biomedical information, provided more psychosocial information, asked more questions of her client, and engaged in more relationship-building and partnering statements. In summary, the RIAS coding results indicate that these two segments are respectively representative of dominant versus facilitative styles of provider communication.

Genetic counselor codes	Dominant (%)	Facilitative (%)
1. RIAS = Roter interaction analysis system.		
Provision of information		
Biomedical related	45.9	10.0
Psychosocial related	2.3	17.5
Total	48.2	27.5
Data gathering	13.3	17.5
Relationship building		
Emotional talk	1.7	14.2
Social chit-chat	2.3	4.2
Total	4.0	18.4
Activating and partnering	13.4	22.5

Table 1. *RIAS Summary of Prototypic Genetic Counseling Session Segments*

Results

Sample Characteristics

From the total sample of 100 participants, 45 were female and 55 were male. Although participant ages ranged from 18 to 51 years, the mean age was 22.19 years ($SD = 5.59$). It should also be noted that the majority of participants were Caucasian (68%) and single (77%) and had a family history of cancer (84%). These descriptive statistics for the total sample do not differ from the reduced sample that was used for physiological analyses, which ranges from $\chi^2(4) = 2.791$, $p = .593$ to $\chi^2(4) = 4.401$, $p = .354$.

Generalizability Items

When asked to rate on a 7-point scale (1 = *not at all easy*, 4 = *easy*, and 7 = *extremely easy*) "how easy it was [for you] to imagine yourself as actually being the client in the genetic

counseling session you viewed," participants indicated that it was easy to imagine being the client ($M = 4.13$; $SD = 1.57$). Moreover, when asked to rate how similar the recorded genetic counseling sessions were to an actual clinical session on a 7-point scale (1 = *not at all similar*, 4 = *similar*, and 7 = *extremely similar*), participants indicated that the session segments were in fact similar to actual clinical counseling sessions ($M = 5.27$; $SD = 1.33$). In addition, when asked "to what extent did the physiological monitoring (the sensors on your hands and ankles) affect your ability to imagine that you were the client?" the participants indicated on a 5-point scale (1 = *not at all*, 2 = *not much*, 3 = *somewhat*, 4 = *most of the time*, and 5 = *always*) that the physiologic monitoring did not affect their participation much ($M = 1.87$; $SD = .82$). A similar finding was that when asked on a 5-point scale (1 = *not at all*, 2 = *not much*, 3 = *somewhat*, 4 = *most of the time*, and 5 = *always*) "to what extent did you notice the physiological monitoring (the sensors on your hands and ankles)?" participants indicated that they did not notice the monitoring much ($M = 2.25$; $SD = .96$). It should also be noted that participant responses did not significantly vary by counselor condition or order of condition.

Rating of Genetic Counseling Video Segments

IMI-C.   Because of the nature of the crossover design, individual counselor differences were examined using paired-sample *t* tests. As expected, findings revealed a significant difference in participant ratings of the two communication styles. Specifically, participants rated the facilitative counselor as significantly more friendly ($M = 2.28$; $SD = 6.65$), $t(53) = 2.52$, $p = .015$, and submissive ($M = 1.22$; $SD = 3.46$), $t(53) = 2.59$, $p = .012$, than the dominant counselor, across order conditions. In contrast, the dominant counselor was deemed marginally more dominant ($M = 1.17$; $SD = 4.47$), $t(53) = 1.92$, $p = .060$, and no significant differences were observed in counselor hostility ratings ($M = 1.20$; $SD = 4.87$), $t(53) = 1.82$, $p = .075$. These results confirmed our selection of prototypically dominant versus facilitative communication segments of provider communication.

Lastly, subscales of the IMI-C were examined. Significant counselor differences were observed, such that the facilitative counselor was evaluated as significantly more friendly-dominant ($M = 1.04$; $SD = 3.82$), $t(53) = 1.99$, $p = .051$, friendly-submissive ($M = 1.56$; $SD = 4.87$), $t(53) = 2.35$, $p = .023$, and affiliative (i.e., friendly-hostile; $M = .54$; $SD = 1.83$), $t(53) = 2.16$, $p = .035$. No other significant differences were observed.

Using analysis of variance (ANOVA) we were able to examine the interactions between order and IMI-C ratings. Findings indicated that order significantly affected ratings of counselor submissiveness, $F(1, 97)$ 7.01, $p = .009$, and friendliness, $F(1, 97)$ 9.13, $p = .003$. That is, when participants watched the facilitative tape segment after the dominant tape, the facilitative genetic counselor was rated as significantly more submissive and simultaneously more friendly. No other significant interaction effects were observed.

Social receptivity.   In a repeated measures ANOVA, there was a contrast effect for order on participant ratings of counselor receptivity, $F(1, 97) = 34.66, p < .0001$. That is, when participants viewed the dominant counselor first, they found the facilitative counselor significantly more receptive to their concerns. No significant difference was found when participants viewed the facilitative followed by the dominant counselor.

Satisfaction with communication.   The contrast effect for order was also found in participant ratings of satisfaction with counselor communication, $F(1, 94) = 27.91, p < .0001$, such that when participants viewed the dominant counselor first, they were significantly more satisfied with the facilitative counselor's communication. Once again, no significant effect was observed when they viewed the facilitative followed by the dominant counselor.

Baseline Physiologic Results

None of the physiological parameters significantly differed from Baseline 1 to Baseline 2. In addition, we conducted a paired-sample t test comparing baseline measures with experimental measures. Findings indicated that mean baseline HR ($M = -2.95, SD = 5.49$), $t(81) = -2.11, p = .018$, and RSA ($M = .26, SD = .97$), $t(81) = 2.47, p = .016$, differed significantly from the mean levels measured during the experimental task.[3]

Physiological Response to Communication Style

Using repeated measures analysis of covariance (ANCOVA), controlling for baseline with the order of tape as the between-subjects effect, we found a marginally significant contrast effect for order on HR, $F(1, 81)$ 3.95, $p = .059$ (see Figure 1). When the dominant approach was presented first, we observed a greater reduction in the mean HR during the facilitative video segment, as compared with when the facilitative segment was presented first, followed by the dominant approach. As predicted, RSA did not vary significantly for the two communication styles, nor did it moderate the HR effects.[4]

Figure 1 has been omitted from this formatted document.

Controlling for Trait Emotional Control

Using repeated measures ANCOVA, controlling for baseline and CECS with order of tapes as the between-subjects effect, did not significantly alter the HR and RSA findings mentioned previously. With CECS entered as a covariate, the contrast effect for order on HR as mentioned was retained, $F(1, 75)$ 3.88, $p = .053$, and RSA results remained nonsignificant.[5] Furthermore, we examined whether individual differences in CECS moderated participant stress responses; however, these findings were not significant, suggesting that individual differences in CECS do not influence participant HR responses.

Discussion

The three objectives of this exploratory study were met: (1) assess feasibility and clinical realism of analogue design; (2) assess stress response of two communication styles (i.e., dominant and facilitative); and (3) assess for the moderation effect of the trait of emotional control. Although unexpected, the results of the present study support a consistent contrast effect across both physiologic and self-report measures. Participants who were presented with the dominant counselor communication style first exhibited a significant reduction in their HR for the facilitative communication counselor segment as compared with those participants who saw the facilitative style before the dominant style. When viewing the dominant counseling style first, participants rated the subsequent facilitative counselor as much more friendly, submissive, and emotionally receptive and were more satisfied with communication than participants who were assigned the opposite order of communication styles. The consistency of this pattern of response across measures indicates a robust contrast that was not moderated by the trait of emotional control.

Our baseline physiological results suggest the first "encounter" with the genetic counselor, regardless of communication style, was equally stressful as indicated by change from baseline. The facilitative counselor style following the dominant style appeared to provide some sort of release from the stress of the initial encounter. A possible explanation underlying this contrast effect may be found in the social psychologic literature on the positivity and negativity evaluative processes (Cacioppo & Berntson, 1994; Cacioppo, Gardner, & Berntson, 1997; Rozin & Royzman, 2001). Consistent with findings on social perceptions, when the more interpersonally positive genetic counseling scenario (i.e., facilitative) is presented first, it is likely to "offset" the impact of the dominant, more interpersonally negative scenario and may have even led to a mild habituation experience. In contrast, when the dominant scenario is presented first, it has a stronger impact on subsequent participant ratings and physiologic recordings in response to the second encounter. This latter process is known as the "negativity bias." Evidence for the impact of negative stimuli evoking stronger and more lasting effects than positive stimuli has been supported on cognitive, emotional, social, and physiological responses (Cacioppo et al.; Taylor, 1991).

One of the objectives of the current study was to assess the feasibility and clinical relevance of using videotaped segments of actual clinicians representing, via their communication styles, the underlying mechanisms of the SCPM and the Interpersonal Circumplex Model—dominant versus facilitative. The results indicate that videotaped and coded communication of real practitioners shows promise as an approach to study interpersonal theoretical mechanisms

applied to health care encounters. Study participants found it relatively easy to imagine themselves as a client, found the situation clinically realistic, and were notbothered by the psychophysiologic monitoring. Our sample is relatively homogenous, and like most individuals, the participants were likely to be naïve to the topics of genetic testing and BRCA1/BRCA2. Although participants found it relatively easy to imagine themselves as clients, and their ratings indicated that the videotape stimulus was realistic, it is unlikely that this relatively young group (i.e., mean age of 22 years) felt any strong threat to the predictive risk of breast cancer. Indeed, genetic risk of cancer is a predictive risk for the future and thus is difficult even in the clinical setting to instill an immediate sense of urgency. Previous research has indicated that those with a family history report feeling more distressed (Croyle et al., 1997); however, we found no differences in our results when examining the role of participant family history of cancer. Even though the analogue task for participants may not have been highly personally relevant, the observed increase in HR during the experimental task lends strength to the significant and consistent pattern of findings in the current pilot study. Although promising as an approach, future interpersonal health research should continue to test the clinical relevance of this analogue approach with increased heterogeneity among participants.

Potential limitations of this pilot project warrant consideration. As discussed, this sample was relatively homogenous, particularly in the characteristics of age and ethnicity. Typically, laboratory studies include a control or neutral condition to determine whether the effects are due to individual communication styles or a combination of styles. We did not include a neutral communication condition because (1) we selected video segments from a national sample of cancer genetic counselors and no segment appeared neutral, and (2) we question whether it is feasible to capture a protypic provider communication style that balances/midpoints both dominant and facilitative style, especially given order effects. Given that we only had substantial HR and RSA data to report (i.e., usable skin conductance data were limited) for the current study, our ability to present more comprehensive physiologic response to the communication styles is limited. For example, skin conductance activity may be especially sensitive to dominant and socially constraining interpersonal encounters with a health care provider. Several investigations confirm a relationship between emotional inhibition paradigms and skin conductance activity (Gross & Levenson, 1993; Pennebaker & Chew, 1985; Pennebaker, Hughes, & O'Heeron, 1987); thus, future work examining the interpersonal context of social constraint should also include skin conductance activity for a more comprehensive understanding of this interpersonal process.

The clinical relevance of future work would be enhanced by the examination of clients' cognitive outcomes in response to variation in health care provider styles of communication, such as recall, understanding, and comprehension. For example, in previous research, positive impressions led

to more information processing than negative impressions (Ybarra, 2002). Furthermore, future work would be informed by examining the physiologic correlates of clients' information processing of provider variation in communication styles.

In conclusion, our study used a laboratory paradigm to study the salient interpersonal processes associated with the Social Cognitive Processing and the Interpersonal Circumplex Models within a health communication context. Moreover, our contrast effect findings have clinical implications for the order and manner in which important health information is presented to at-risk individuals. Furthermore, our results indicate that the laboratory provides a unique opportunity to apply social and psychophysiological theory to address clinical health communication processes. Much of the current interpersonal health communication research has lacked conceptual or theoretical underpinnings (Arora, 2003). A theoretically based biopsychosocial approach holds much promise for enhancing our understanding of health communication and related patient outcomes.

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Footnotes

2 Ten-minute segments were selected because this duration allowed for adequate monitoring of physiological changes without habituation to the stimuli.

3 Furthermore, significant differences between mean baseline and mean experimental skin conductance levels (M = −1.90, SD = 1.41), t(53) = −9.91, p = .000, and mean skin conductance responses (M = −1.96, SD = 1.83), t(53) = −7.88, p = .000, were observed.

4 A similar interaction pattern was found in the skin conductance responses (SCRs) as with HR, although it was only marginally significant F(1, 51) 3.19, p= .08. Individuals who viewed the

dominant communication approach first, followed by the facilitative approach, showed a significantly greater decrease in mean skin conductance level than those who viewed the facilitative first. Results of the repeated measures ANCOVA of the mean skin conductance levels indicated a main effect for time, $F(1, 48)$ 8.75, $p = .01$, such that the mean skin conductance level decreased over time regardless of task order, $Ms = 5.28$ (.37) vs. 5.64 (.33).

5 When controlling for trait emotional control, the contrast effect for SCR, which was only marginally significant when not controlled, is now significant, $F(1, 47) = 6.23$, $p = .02$. No significant effects were found for mean skin conductance levels when CECS was included in the repeated measures ANCOVA.