

Nonverbal sensitivity: Consequences for learning and satisfaction in genetic counseling.

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Abstract:

Purpose - This study aims to explore the role of interactants' nonverbal sensitivity, anxiety and sociodemographic characteristics in learning and satisfaction within the genetic counseling context. **Design/methodology/approach** - This is a combined simulation and analogue study. Simulations were videotaped with 152 prenatal and cancer genetic counselors and nine simulated clients. The videotapes were shown to 559 subjects recruited to act as analogue clients (ACs) with the instruction to imagine themselves as the client in the simulation. The profile of nonverbal sensitivity (PONS), a video and audio test of accuracy in the interpretation of nonverbal cues, was administered to both the genetic counselors and ACs. In addition, the ACs completed a literacy screen and post session measures of learning and session satisfaction. **Findings** - The study finds that ACs' post-session knowledge score was positively associated with both their own and the counselors' audio PONS scores. Also related to knowledge were clients' literacy, younger age and non-minority ethnicity. Ratings of session satisfaction were inversely related to ACs' and counselors' video PONS scores and ACs' literacy and anxiety. **Research limitations/implications** - While based on the performance of a large number of practicing genetic counselors, simulated and analogue clients are used to explore study questions. **Practical implications** - The nonverbal sensitivity of both providers and ACs plays a role in medical communication and its cognitive and affective consequences. These findings warrant greater attention to nonverbal dynamics in future research and interventions. **Originality/value** - No similar studies have investigated the role of nonverbal sensitivity in predicting learning and satisfaction for users of health care services.

Keywords: genetic counseling | learning | nonverbal sensitivity | sociodemographic characteristics | health education

Article:

Introduction

Concerns regarding medical care quality in both technical and interpersonal domains have grown in recent years. Calls for a more patient-centered medicine have come from all quarters, including those representing patients and consumers, health care delivery organizations, medical educators, and professional medical associations ([16] Institute of Medicine, 1999, [17] 2001). While there are varying definitions of patient-centeredness, common to all of these is recognition and sensitivity to the emotional, psychosocial, and life experiences that define a patient beyond the biomedical as a unique individual - as a person. It is in this arena that medicine disappoints. It can be argued that medical practitioners have increasingly lost confidence in their ability to interpret the significance of any but the most explicit hypothesis-driven exchanges and quantified findings. It has not always been so; with the transformation of medicine from largely an art to a science, the past century has also shifted the culture of medicine from a high to low context communication endeavor ([27] Roter and Hall, 2006). As noted by [10] Hall (1976), high context communication depends on sensitivity to nonverbal behaviors and environmental cues to decipher meaning, while low context exchanges are more verbally explicit with little reliance on the unstated or nuanced.

One manifestation of this shift in medicine is diminished attention to emotion and its role in the care process. It is our thesis that the doctor-patient relationship is an intrinsically high context phenomenon within which the communication of emotion is central. Because emotions are revealed through nonverbal behavior such as voice quality and body language, and are talked about with words, nonverbal behavior and nonverbal sensitivity has a significant role in medical care ([24], [25] Roter *et al.* , 2006a, b).

Considering its centrality to the care process, nonverbal behavior has received surprisingly little attention in the medical communication literature ([14] Heath, 1986; [12] Hall *et al.* , 1995). Research on physicians' nonverbal sensitivity is especially sparse; little is known about how accurate physicians are in judging patients' emotions or how skilled they are in consciously controlling their nonverbal behaviors in medical encounters. Nevertheless, a few studies do provide some insight into this domain of nonverbal sensitivity. In studies with two different physician populations, [6] DiMatteo *et al.* (1980) found that physicians who could more accurately identify the emotion conveyed in short video clips (decoding ability), as measured by the video channel of the Profile of Nonverbal Sensitivity (PONS), received higher satisfaction ratings in regard to physician caring and sensitivity, referred to as the art of care, from their patients. Physicians in this study who had greater capacity to express emotion through voice tone (encoding ability) also received higher art of care ratings.

Another study found that physicians who were more accurate at decoding voice tone (audio channel of the PONS) were less likely to have patients cancel medical appointments with them

([5] DiMatteo *et al.* , 1986). The authors of the study suggested that the nonverbal sensitivity of the physicians may have elicited greater patient satisfaction and commitment to treatment because they were better at recognizing patient distress compared to other doctors. Since many patients are unable or unwilling to express their distress directly in verbal exchange, attention to nonverbal behavior is especially important. Consistent with these conclusions, Robbins and colleagues found that physicians scoring higher on the video PONS test were significantly more likely to report depression and anxiety in their patients (regardless of whether they actually had those diagnoses). The authors conclude that the high PONS doctors might be over reporting anxiety and depression, but it is also possible that they are noticing subtle, but nonetheless real, cues in their patients' emotional state that a screening test missed ([22] Robbins *et al.* , 1994).

Physicians' nonverbal behaviors have also been related to patient outcomes, most commonly patient satisfaction. Findings in this area have been generally consistent and positive; physicians who are more emotionally expressive, warm and attentive in their nonverbal behaviors are viewed more favorably by patients. A review of the literature in this area found that patient satisfaction was associated with nonverbal indicators of physician interest, including less time reading the patient's chart (probably associated with more eye contact), more physician immediacy (e.g. forward lean), more head nods and gestures, and closer interpersonal distance ([12] Hall *et al.* , 1995). Interestingly, the review also found that more touching by the physician was associated with lower satisfaction, perhaps suggesting that touch may be seen as dominating or controlling. The amount of time (both actual time and time as a proportion of the visit) the physician spends gazing at the patient has also been found to predict patient satisfaction ([18] Larsen and Smith, 1981; [2] Bensing, 1991). However, not all study results are consistent with these findings, and some studies showed moderating effects of other variables such as physician and patient gender on these relationships ([4] Comstock *et al.* , 1982; [13] Hall *et al.* , 1994).

In summary, the limited literature reflects wide variation in physicians' nonverbal behaviors. Physicians who exhibit more emotionally expressive, warm or attentive nonverbal behaviors - including facial expressiveness, eye contact, head nods, body posture, and voice tone - are generally viewed more favorably by patients. These behaviors, in turn, are linked to a variety of patient outcomes, including patient satisfaction, appointment keeping, and perhaps, functional status. We are unaware of any studies in which the nonverbal sensitivity of patients (or analogue patients) was explored in conjunction with providers' nonverbal sensitivity to predict learning or satisfaction.

The current study was designed to explore these questions within the genetic counseling context by employing simulation and analogue patient methodology.

Method

Study participants

A total of 89 prenatal and 63 cancer genetic counselors (GCs) participated in the study and had videotapes of sufficient quality for analysis. The GCs were broadly representative of the National Society of Genetic Counselors (NSGC) members and were predominantly female (95 percent) and Caucasian (80 percent). Minority GCs were primarily Asian (15 percent) or African American (5 percent) (see [24], [25] Roter *et al.* (2006a, b) for a more detailed description of the GCs).

The GCs conducted videotape recorded sessions with one of six female simulated clients and three male simulated spouses of African American, Hispanic, and Caucasian ethnicity, who were cross-trained to portray two different cases:

A woman seeking pre-amniocentesis counseling based on an indication of advanced maternal age (with or without a spouse present).

A woman with a family history of breast and ovarian cancer seeking information about BRCA1/2 genetic testing (with or without a spouse present).

In all cases, the scenario included a female client with a high school education and working class background with a 40-year-old spouse, also a high school graduate. The spouse was supportive of his wife but not particularly worried about genetic risks, although he did not have any more prior exposure or knowledge of genetics than his wife. Neither the client nor spouse was prepared to make a decision regarding genetic testing at the session. The counselors were invited to bring their visual aids to the session and commonly used aids (Myriad and Greenwood flipcharts) were provided. The GCs were told only to limit the time of their sessions as they would in their own practice. Details regarding recruitment of the GCs and simulator training and performance are presented elsewhere ([7] Erby, 2005), as is a descriptive analysis of communication patterns in genetic counseling ([24], [25] Roter *et al.* , 2006a, b).

The session videotapes were used in a second phase of the study in which 559 participants were recruited from the general community in two cities (Baltimore, Maryland and Salt Lake City, Utah) with the instruction to imagine that they were the client (female subjects) or spouse (male subjects) in the genetic counseling videotape and to evaluate the performance of the GCs in a variety of ways. In this manner the participants acted as an analogue client (AC) of the GC. Each AC viewed only one videotape.

Recruitment flyers were posted in public areas around the Johns Hopkins and University of Utah medical campuses and with organizations in each city that coordinated and promoted adult literacy programs. Eligibility criteria were designed to increase the likelihood that subjects would have some characteristics in common with the simulated client in the video that they would be asked to view. For the prenatal arm of the study, the study recruited men and women over the age of 35 who had experienced a prior pregnancy (or whose partner had experienced a pregnancy). Women who were currently pregnant based on self-report were excluded. For the cancer arm, the study recruited men and women who were 18 years of age or older, with a self-

reported family history of cancer and who were not currently undergoing cancer treatment themselves.

Finally, subjects who had any prior contacts with a genetic counselor were excluded from the study.

By design, female ACs ($n=433$) outnumbered male ACs ($n=126$) as female ACs viewed a session with or without a spouse while males only viewed a session with a spouse. Similarly, the age distribution of ACs varied by session type as noted above; the average age of ACs viewing the prenatal sessions was 43 (SD=4.8 years, range 33-56) and viewing the cancer sessions was 37.1 (SD=11.6 years, range 18-76). The ethnic distribution of ACs was 45.6 percent Caucasian, 41.1 percent African American, 4.5 percent Hispanic, and 6.4 percent other (with 2.3 percent unclassified).

The study was approved by the Committee on Human Research of the Johns Hopkins Bloomberg School of Public Health and the University of Utah and all GCs and ACs gave full informed consent for their participation.

Measures

Profile of Nonverbal Sensitivity (PONS): both the GCs and the ACs completed the audio and video subtests of the PONS ([23] Rosenthal *et al.* , 1979). Each subtest includes 40 two-second clips of nonverbal behaviors reflecting everyday scenarios enacted by a young Caucasian woman followed by a two-second rating pause. The scenarios include both positive and negative emotion and both dominant and submissive demeanor (e.g. talking to a lost child, criticizing someone for being late, expressing gratitude, and talking about one's divorce). The video channel presents the 40 scenarios in two-second silent video clips of face only or body only (neck to knees) of the same clips. The auditory channel presents 40 two-second clips of the content-masked speech (without video) that originally accompanied the video clips. In content-masked speech, the words are unintelligible but nonverbal characteristics such as rhythm, speed, and loudness remain. For each item that is seen or heard, subjects choose the more accurate of two scenario descriptions from a printed answer sheet.

Subjects who attempted the PONS test but had missing data or failed to complete the PONS were given half credit for each missing item so that the item score was equal to the probability of a correct answer given a forced choice guess.

Video and audio PONS scores were related; Pearson correlations were 0.36 ($p < 0.0001$ for GCs and 0.46 ($p < 0.0001$) for ACs.

State/trait anxiety

GCs and ACs completed the Spielberger State-Trait Anxiety Inventory ([28] Spielberger *et al.* , 1983). GCs completed the measure prior to conducting their counseling session and ACs

completed the measure twice, before being exposed to the session videotape and following completion of the study tasks. In the current study, the measure showed good psychometric properties (average Cronbach's alpha = 0.91).

Literacy

An eight-item genetics-specific health literacy screen, the Rapid Estimate of Adult Literacy in Genetics (REAL-G), patterned after the Rapid Estimate of Adult Literacy in Medicine (REALM), was administered to all ACs. Prior work has established concurrent validity between the REAL-G and REALM (Pearson correlation = 0.83; $p < 0.0001$). Based on receiver operating characteristic curve analysis, a cut-off score of 6 on the short version of the REAL-G corresponds to a score of 60 on the REALM (which is equivalent to an 8th grade reading level or below). Using the REALM as the gold standard, the short REAL-G score would correctly identify 89.1 percent of participants whose REALM literacy level was at the eighth grade level or below, with a sensitivity of 93.2 percent and a specificity of 77.6 percent ([8] Erby *et al.* , 2008).

Analogue client outcome measures

After viewing the genetic counseling videotape, the AC rated the session and the GC on a variety of affective and cognitive dimensions.

Knowledge acquisition score

After watching the video, the AC completed a genetics knowledge questionnaire with items administered verbally to those who scored below the 8th grade level on the literacy screen. ACs watching prenatal videos completed an unpublished seven-item measure developed by Biesecker and Marteau (personal communication). Items in this measure were expected to be covered in the session and included questions about amniocentesis, maternal age risks, and the characteristics of Down syndrome. The measure had an acceptable level of internal consistency (Cronbach's alpha = 0.79). Those participants watching cancer videos completed a subset of items derived from a larger previously developed measure used to assess client knowledge after cancer genetic counseling ([9] Green *et al.* , 2001; [19] Lerman *et al.* , 1997). The eight items chosen reflected information expected to be covered during the session based on the simulated case script and included questions about breast and ovarian cancer risks, the risk interpretation for a positive test result for a BRCA1 or BRCA2 gene mutation, and family testing. The measure had a high level of internal consistency (Cronbach's alpha = 0.93). Since screening criteria excluded subjects with any prior genetic counseling contact, we consider the ACs' questionnaire accuracy a proxy for knowledge acquisition consequent to viewing the study videotapes. In this way, the knowledge scores can be considered as an indicator of ACs' learning and GCs' teaching effectiveness.

Satisfaction with session communication

A satisfaction questionnaire used in prior work ([26] Roter *et al.* , 1995) was modified for use in the current study and included items such as "How much did your genetic counselor act warm and open to you, for example by sitting near you, smiling, or looking you in the eye?" and "Did you and your genetic counselor decide together which of your concerns were most important to you?" "How much did your genetic counselor ask to hear your ideas and explanations?" The 14 items, measured on a six-point Likert scale, demonstrated good internal reliability (Cronbach's alpha = 0.95) and reflected interpersonal and partnership aspects of communication.

Analysis

Regression analyses using generalized estimating equations (GEE) ([30] Zeger and Liang, 1986) to account for correlations among ACs who viewed the same genetic counseling visits were conducted using Intercooled Stata 8.2 ([29] Stata Corporation, 2004). Because of the exploratory nature of this research, the results of multivariate models using video and audio PONS scores are presented separately.

Covariates in the models included GC's state and trait anxiety; AC's age, gender, ethnicity, pre-task and post-task state anxiety, and literacy; and PONS interaction terms made up of the product of the GC's and AC's relevant PONS scores (video or audio, depending on the model). Ethnicity was dichotomized as Caucasian or non-Caucasian because the small number of non-African American minorities reduces meaningful interpretation of finer categorization. Literacy was represented by a continuous score on the REAL-G screening measure (mean score reflects 8th grade equivalency; range = below 5th grade to greater than 12th grade).

The theoretical means are presented for each outcome, accounting for covariates, by outcome tertiles.

Results

Table I [Figure omitted. See Article Image.] displays the audio and video PONS scores for the GCs and ACs. GCs' PONS scores were significantly higher than ACs' PONS scores for both the video and audio tests, and video scores were significantly higher than audio scores for all participants.

ACs' video and audio PONS scores were positively correlated with ACs' literacy scores (Pearson correlation = 0.40, $p < 0.0001$ and 0.19, $p < 0.0001$, respectively) and were negatively related to ACs' age (Pearson correlation = -0.20, $p < 0.0001$; -0.19, $p < 0.0001$, respectively). PONS scores were also related to ethnicity; African American ACs scored significantly lower on both video and audio PONS tests than did Caucasians, with other minorities scoring in an intermediate range (see Table I [Figure omitted. See Article Image.]). Also displayed in Table I [Figure omitted. See Article Image.] are ACs' PONS scores stratified by literacy (below 8th grade equivalency and 8th grade and above) and ethnicity.

PONS scores were not related to ACs' gender.

Knowledge scores

The multivariate model predicting knowledge acquisition shows a significant positive relationship with PONS scores of both ACs and GCs, as reflected in the regression coefficients presented in Table II [Figure omitted. See Article Image.]. In addition, a significant interaction of GC and AC PONS scores on ACs' knowledge is evident. Other significant predictors of knowledge acquisition in the model include greater levels of client literacy, non-minority ethnicity, and younger age. ACs' state anxiety (pre-task) was marginally related to knowledge suggesting that low anxiety was associated with greater learning.

Inspection of Table III [Figure omitted. See Article Image.] shows predicted means at tertiles (accounting for covariates) to illustrate the magnitude of the main effects and the nature of the interaction on knowledge scores. The interaction effect is evident in the decreasing knowledge scores for high audio PONS ACs as the GCs' audio PONS scores increase from low to high (Table III [Figure omitted. See Article Image.] bottom row). The opposite pattern is evident for low audio PONS ACs; their knowledge scores increase as the GCs' audio PONS scores increase from low to high (Table III [Figure omitted. See Article Image.] top row).

The predicted knowledge means for GCs' and ACs' video PONS scores show a similar pattern to that of the audio scores, although it is not statistically significant.

Ratings of session satisfaction

The multivariate model predicting ACs' satisfaction suggests that the video PONS scores of both GCs and ACs have a marginal negative ($p < 0.07$) main effect and a marginal interaction effect on satisfaction (Table IV [Figure omitted. See Article Image.]). Significant covariates include lower levels of AC literacy, lower AC post-task state anxiety and higher GC pre-task state anxiety. Sociodemographic characteristics were unrelated to satisfaction ratings. Thus, the more nonverbally sensitive ACs tended to rate sessions as less satisfying than other ACs, and the more nonverbally sensitive GCs tended to receive lower satisfaction ratings than their lower PONS scoring counterparts. ACs' satisfaction ratings were also inversely related to their level of literacy and their post-task state anxiety. That is, the less literate the ACs were, and the less anxious they were after reviewing their session, the higher their satisfaction. GCs' state anxiety was also related to ACs' satisfaction, but the direction was positive (marginal significance), so that the more anxious the GCs were prior to conducting their interview, the higher their ACs' satisfaction tended to be.

Inspection of Table V [Figure omitted. See Article Image.] shows predicted satisfaction means at tertiles (controlling for covariates) to illustrate the magnitude of effect for GCs' and ACs' PONS scores on satisfaction ratings.

Discussion

This study contributes to a small literature exploring the cognitive and affective consequences of nonverbal sensitivity in health care communication. While the application of the current study is in genetic counseling, we believe that our findings have relevance for interpersonal communication in all medical care contexts. We found that the nonverbal sensitivity of both the GCs and ACs was a significant predictor of knowledge acquisition and ratings of session satisfaction. These relationships, however, were not consistent for the audio and video PONS measures, and moreover, the findings were not consistently positive.

Nonverbal sensitivity, at least in terms of the audio PONS measure, appears to enhance both teaching and learning. In this regard, the audio PONS scores of both the ACs and the GCs were positively associated with higher knowledge acquisition. There is some literature to support that nonverbal sensitivity is associated with learning. [3] Bernieri (1991) assigned high school students to be teachers and learners of nonsense words. He measured the number of words the learner retained and then related the learner's performance to PONS scores. Student learning was related to their own PONS score, but was not related to their teacher's PONS score. Our findings are largely consistent with those of Bernieri; we found that the audio PONS scores of both GCs and ACs were significantly related to knowledge acquisition and we note with interest that the pattern of predicted knowledge mean scores was in a similar direction for the video PONS (as presented in Table III [Figure omitted. See Article Image.]). We wonder if a relationship between teacher PONS scores and learning would be evident in the Bernieri study if the audio and video PONS scores had been inspected separately, as in the current study. While there are many differences in the number and type of study subjects and the tasks performed in the two studies that may account for differences in outcome, both studies point to the importance of nonverbal sensitivity in effective teaching and optimal learning.

While on the whole our findings in regard to the PONS are straightforward, there is a caveat to the results; high audio PONS scoring ACs learned more when viewing low PONS scoring GCs while the opposite was true for lower PONS scoring ACs. It is possible that the high PONS counselors were more distressed by the simulated clients' anxiety and communicated their discomfort through nonverbal behaviors in some way. If so, then counselor distress would be more evident to ACs with greater nonverbal sensitivity than others.

In addition to the main effects of nonverbal sensitivity on learning, the current study also points to several sociodemographic characteristics including literacy, age, and ethnicity that played an independent role in knowledge acquisition. The relationship between literacy and learning was anticipated; individuals with restricted or limited literacy skills were expected to be less successful than others in accurately synthesizing new and complex information - and they were.

Clients' age and ethnicity also had an independent effect on learning such that younger and non-minority ACs had higher knowledge scores. We can think of several ways in which age and

ethnicity may have affected learning. First, the degree to which young ACs identified with the genetic counseling client in the videotape may have been greater than for their older counterparts since the actors in the videotape were relatively young (ranging in age from 25 to 40). Second, genetic issues may be regarded as more relevant to younger subjects than to their older counterparts. At least one study has shown that older patients are less likely to seek genetic counseling than younger patients with similar levels of risk ([1] Armstrong *et al.* , 2005). In regard to ethnicity, the study presented equal numbers of Caucasian, African American, and Hispanic simulated clients in sessions, thus providing equal opportunity for the analogue clients to identify with the simulators on the basis of ethnicity. Perhaps the African American ACs identified less fully with the simulators because they held more negative or ambivalent attitudes about genetic counseling and testing than white ACs ([1] Armstrong *et al.* , 2005; [21] Peters *et al.* , 2004; [15] Hips *et al.* , 2003). These attitudes may have reduced both identification with the simulators and attentiveness to the information presented during the sessions.

The findings in regard to ACs' ratings of satisfaction are intriguing, but must be regarded with caution since the findings are only suggestive. ACs with higher video PONS scores tended to be more critical of GCs' performance than low PONS scoring ACs. This result was not surprising, as we would expect more PONS-sensitive ACs to be more discerning and attentive to the nonverbal performance of GCs. What was unexpected was that more visually PONS sensitive GCs received lower satisfaction ratings than their less visually sensitive counterparts. It is possible that the more PONS sensitive GCs accurately perceived high levels of simulated client distress and anxiety (as scripted), and that this heightened awareness increased their own distress which was communicated in some way to the ACs. For instance, the more nonverbally sensitive counselors may gaze more intently at their clients than others and thus communicate emotional intensity that is anxiety provoking. Interestingly, a recent Dutch study of genetic counseling processes with actual clients reported that greater levels of counselor eye gaze was associated with higher levels of client anxiety ([20] Pieterse *et al.* , 2007). While we do not currently have any evidence to support our speculation linking PONS scores and eye gaze, we are exploring the association in current work.

In addition to GCs' nonverbal sensitivity, we also found that their state anxiety (assessed before their session) was a significant positive predictor of client satisfaction. We think GCs' state anxiety may be a marker of heightened attentiveness to task and of motivation to perform well - with some aspect of that performance perceived by the ACs as particularly satisfying. We do not know how GCs' nonverbal behavior actually related to their PONS or anxiety scores; however, as noted, we plan to conduct additional analyses on this question.

Client covariates of state anxiety (following the rating task) and literacy were also related to session satisfaction. In this regard, one can well imagine why ACs who experienced increased anxiety as a result of viewing the videotape would rate the counselor as less satisfying than those for whom anxiety was resolved during the session, or never elicited. Literacy, like nonverbal sensitivity, was inversely related to satisfaction. Perhaps more literate ACs had higher

expectations or applied higher standards in regard to GCs' performance than ACs with restricted or limited literacy. This finding is consistent with what is known of the general association between satisfaction and education; a meta-analysis of the satisfaction literature found that patients with lower level of education were more satisfied with their medical care than better-educated patients ([11] Hall and Dornan, 1990).

Limitations

Several limitations of our study should be considered. While the study included a large number of practising GCs, the counseling sessions were artificial in that they were videotaped at a national conference with actors taking the role of simulated clients. Nevertheless, the majority of GCs reported that their session did not differ very much from their usual practice ([24], [25] Roter *et al.* , 2006a, b). The ACs used in the study were volunteer subjects recruited to perform experimental tasks, not actual genetic counseling clients. Only limited background information was collected on these subjects and it is possible that their attitudes toward health care or health care professionals differed from actual clients and moderated their ratings in some way.

Actors were trained to restrict questions to only those scripted and to elaborate concerns only when encouraged to do so by the counselor. In this regard, we believe their behaviors were consistent with what would be expected of clients with limited educational background, as described in the case. However, the simulators were all college educated and we do not know if there were any simulator mannerisms that appeared unauthentic to the analogue clients.

Practical implications

The study has relevance for the care of patients and the training of health professionals in many disciplines. A recent review of nonverbal behavior in medical visits identified several obstacles to progress in this area ([24], [25] Roter *et al.* , 2006a, b). First, the literature on nonverbal sensitivity in the medical context is sparse and we found only one study in the area of genetic counseling that addressed the consequence of nonverbal behaviors on client outcomes ([20] Pieterse *et al.* , 2007). The teaching and evaluation of nonverbal communication skills has received relatively little attention within medical curriculum, and as a consequence, little is known about the teaching, evaluation or remediation of poor skills in the nonverbal domain or if these skills are related to proficiency in the more commonly studied arena of verbal skills.

Even in the broader arena of communication research, nonverbal communication and nonverbal sensitivity are infrequently studied and rarely related to patient outcomes. Our current review found only a handful of studies with this focus. Nevertheless, as poorly explored as the topic is in regard to clinicians' nonverbal sensitivity, there is virtually nothing known about how patients' nonverbal sensitivity may affect learning and judgments of performance and quality of care. It is known that patient characteristics such as literacy, health status, gender, age, and ethnicity affect how patients evaluate services ([27] Roter and Hall, 2006). Perhaps nonverbal sensitivity also

plays a similar role. Exploration of these issues is important because understanding this facet of the patient profile may allow better recognition and accommodation of patient needs.

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