Chapter 6

Gender, power, and non-verbal communication

Marianne Schmid Mast, Christina Klöckner, and Judith A. Hall

Introduction

Both non-verbal communication and gender play an important role in the clinical encounter. They not only affect the impact of the diagnosis, but also patient outcomes such as satisfaction and appointment-keeping. Dominance or power asymmetries in the provider–patient interaction have been assumed to affect the relationship, but have rarely been studied. Our goals in this chapter are:

(1) to give an overview of the empirical findings pertaining to non-verbal communication, gender, and power within the patient–clinician interaction;

(2) show how gender, non-verbal communication, and power are intertwined; and

(3) offer guidance about communication skills training to help physicians and improve outcomes for cancer patients.

Non-verbal communication

Definition

Non-verbal behaviour can be defined as 'communication effected by means other than words' (1, p.5). The distinction between verbal and non-verbal communication is not, however, clear-cut. Sign language, for instance, is 'non-verbal' behaviour through its use of gestures, but also 'verbal' in that each gesture has distinct linguistic meanings and there is an established grammar. Most non-verbal communication does not have such complex properties and, indeed, there is often ambiguity about how non-verbal cues should be interpreted. Examples of non-verbal behaviours include facial expressions conveying emotions, eye gaze, gestures, posture, touching, tone of voice and speech modulation and duration (2).

Whether verbal or non-verbal behaviour matters more as a source of information depends on the situation (3). In the case of an ambiguous verbal message or one of doubtful honesty, non-verbal cues provide key understanding. They become especially salient when they contradict the words being spoken or when the context is highly emotional. Non-verbal cues serve not just the expression of emotions but also signal attention, reflect physical symptoms like pain, convey attitudes about friendliness or dominance, and reveal personality characteristics such as shyness or extraversion.

Non-verbal communication in the medical encounter

In studying communication, researchers have paid relatively more attention to the verbal than the non-verbal. As a consequence, a number of different coding tools exist for the analysis of verbal content. Some of the most frequently used are: the Process Analysis System (4), the Verbal Response Mode (5), and the Roter Interaction Analysis System (RIAS) (6).

In the provider–patient relationship, emotions play a central role (7). Non-verbal behaviour is an important aspect to investigate because of its connection to emotions and interpersonal attitudes (7). Some of the verbal coding tools include ratings of non-verbal communication, like the global rating of provider dominance in the RIAS (6). With interest in non-verbal behaviours growing, non-verbal cue-coding schemes emerged. Gallagher and colleagues (8, 9) developed the Relational Communication Scale for Observational measurement (RCS-O), consisting of 34 items measuring intimacy, composure, formality, and dominance. Items such as 'The physician was willing to listen to the patient' are typically rated on non-verbal behaviours. Other studies use direct measures of non-verbal behaviour (e.g. how long the provider looked or how many times they smiled at the patient) and interpret their meaning based on knowledge about the correlates of certain non-verbal behaviours (10). However, because one and the same non-verbal behaviour can mean different things depending on context, the interpretation remains somewhat speculative.

Interplay between provider and patient non-verbal communication

The provider's non-verbal behaviour is not independent of the patient's, but dynamically interactive with it. Street and Buller (11) video-taped 38 patients and their 10 providers from a family practice clinic to analyse non-verbal behaviour. The more the provider gazed away from the patient, the more the patient looked away from the provider. Body orientation of clinician towards patient showed the same pattern. The authors concluded that when non-verbal behaviours are affiliative, the provider and patient show correspondence in their respective behaviours. This finding is in line with research reporting an association between feeling at ease in the medical encounter and ratings of interactional synchrony, including simultaneous movements, tempo similarity, and posture mirroring (12). In contrast, when behaviours are associated with power and dominance (e.g. speaking time), the provider and the patient show asymmetrical or complementary behaviour (11). The more the clinician talks, the less a patient talks. Reciprocity for affiliative and complementarity for dominance-related behaviours occur also outside the clinical setting in dyadic peer interactions (13).

Effect of a clinician's non-verbal communication on patients

The clinician's non-verbal behaviour can definitely have an impact on patients. Thus, the distancing behaviour of physical therapists, such as absence of smiling and looking away from the patient, was related to decreases in patients' physical and cognitive functioning (14). Also, surgeons with a more dominant tone of voice were more likely to have been sued for medical malpractice than surgeons with a less dominant tone (15). Moreover, non-verbal behaviour can help to make possible more accurate diagnosis. Bensing, Kerssens, and van der Pasch (16) found that provider-gazing at the patient was related to more successfully recognizing psychological distress.

Much of the research on the effects of non-verbal communication has investigated patient satisfaction as an outcome. More patient satisfaction is associated with reduced time spent by the provider reading the medical chart and more leaning forward, nodding, gesturing, gazing, and closer interpersonal distance (17). Griffith and colleagues (18) showed that patient satisfaction was higher when clinicians smiled a lot, increased eye contact, leaned forward, used an expressive tone of voice and face, and gestured more.

Depending on context, one and the same non-verbal behaviour can mean different things. As a consequence of this context dependency, there is no precise dictionary of non-verbal behaviour and our understanding of what specific non-verbal cues signify remains scattered, at best. Factors that can change the meaning of a non-verbal cue include gender, age, and severity of disease (19).

Provider non-verbal decoding skills

To reach a diagnosis and form an impression about a patient, the astute clinician observes the patient's non-verbal behaviour. Research addressing non-verbal decoding skills reveals that people can be very accurate when forming opinions about others. Correct judgments are invariably made about traits such as dominance or intelligence (20, 21), the nature of a social relationship, which of two individuals is the supervisor of the other (20, 21), what the intentions or motives of people are (22, 23) and what they feel or think (26–28).

Similarly, how well a physician can appraise their patient, or in other words, how well he or she can read the patient's non-verbal behaviour, impacts substantially their overall relationship. In one study, medical students were on average poorer at reading others' non-verbal cues compared to other students (24). However, medical students who indicated a preference for primary care specialization had better non-verbal decoding skills than both of the aforementioned groups. Research also shows that providers who are good at correctly interpreting their patient's non-verbal cues have more satisfied patients (25) who are more likely to return for their next appointment (26). A pronounced ability to understand patients' non-verbal cues is advantageous for clinicians, because their patients are more satisfied and more willing to return for further appointments.

For cancer patients, the healthcare provider's ability to decode non-verbal cues is particularly important because of the frequency of psychological distress (27). Often, symptoms of distress are not detected and go untreated, with the potential for deterioration in a patient's well-being (27, 28). Given that affect is expressed non-verbally, the correct assessment of a patient's demeanour and non-verbal cues becomes crucial to the provision of responsive care.

Gender

Female and male providers communicate differently (29) and these differences affect patient outcomes, in particular patient satisfaction. Moreover, depending on the provider's gender, patients communicate differently (30). Thus both the gender of the clinician and the patient affects communication in the medical setting.

Differences in communication styles of male and female providers

In comparison to men, women in general differ in their communication style: they self-disclose more (31) and use a greater relationship-oriented style (2), with more smiling, more gazing at the other, less physical distance, and increased emotional expressiveness. Women also tend to adjust their status to equal their partner's, whereas men underscore status differences (32). In like manner, female clinicians differ from their male counterparts. On the one hand, Roter and colleagues' (29) meta-analysis revealed that both providers share the same amount and quality of medical information, as well as social conversation (medically irrelevant information), with their patients. However, female providers talked more about the psychosocial impact of a diagnosis or treatment and used more partnership building (e.g. soliciting expectations from, and including, the patient in decision-making processes).

Moreover, female clinicians used more positive communication (e.g. encouragement), emotionally focused talk (e.g. emotional probes, empathy), and supportive behaviours such as smiling and nodding (29). Last, but not least, consultations with female providers were on average two minutes longer than with male providers.

All in all, when clinicians are women, they talk more about the effects of an impediment on the patient, communicate in a more egalitarian manner, and like their patients more (33). These conclusions are valid for general practitioners, but may differ across other medical specializations.

For gynaecologists, for instance, these results are reversed: male gynaecologists create a more emotional interaction and their consultations last longer than female gynaecologists (29).

Patients communicate differently with male and female providers

The gender of the provider affects how patients communicate. One explanation is that, outside of the medical consultation, people react differently to women and men. Women are looked at and smiled at more, and are given more confidential information than men (2, 31). Another explanation is that, because female and male providers communicate differently (29), this directly affects the communication style of patients (11).

In a meta-analysis, Hall and Roter (30) showed that patients of female doctors talked more and conveyed more biomedical and psychosocial information than did patients of male physicians. Patients communicate more positively (e.g. reach agreement) with a female clinician and use more partnership-building statements. Interestingly, patients talk about emotions to the same extent with female and male providers.

In sum, female clinicians appear to have a diagnostic advantage because patients convey more medical information, despite the fact that providers do not differ in how much medical data they convey in return. As we shall see, patients are more assertive and dominant with women; they feel more empowered.

Effect of patient gender

Women seek medical advice more often than men and become more active in the medical encounter (34, 35). Thus, they ask more questions and show more interest than male patients (36). Moreover, the behaviour of the provider changes in response to the patient's gender. Female patients are treated more empathically (37, 38), asked more about their opinion and feelings, and may receive more information (39). This is most likely the result of asking more questions (34). Importantly, clinicians use a calmer and less dominant voice when speaking to a woman (37, 38). In sum, providers communicate with female patients in a more emotional and partnership-oriented way.

Gender composition of the dyad

Because both patient and provider gender affect medical communication, studies that consider both aspects simultaneously prove helpful in extricating the role of gender (19, 45–47). One noteworthy finding is that when the clinician and patient are the same gender, providers show more interest and prefer discussing personal matters (40). Comparison of all-male with all-female dyads reveals further differences. For all-female dyads, the patient and provider talk for fairly equivalent periods, whereas in male dyads, the provider speaks much more (37). Because speaking time is one indicator of dominance, (41) we conclude that an all-female interaction is more egalitarian, an all-male dyad more hierarchical. In a study including Western-European general practitioners, the woman-to-woman interaction was most likely to follow the biopsychosocial model in showing concern for the patient, her situation and treating her as a partner in decision-making (47).

In the case of behaviours that interrupt a conversation, patient satisfaction is reduced in all-male, and increased in all-female, consultations (37). Interruptions are experienced as a sign of dominance within the more hierarchically oriented male structure (42). In contrast, interruptions in all-female groups are welcomed and understood as mutual participation, with encouragement to go on talking, hence a sign of interest (43).

Consultations between a female clinician and male patient are the most problematic—the younger the provider and older the patient, the less satisfied the patient is (19, 37). When female providers interact with men, they can develop a potentially ambiguous style in that, although they smile more and use less jargon, they convey dominance and less friendliness through their voices (37). Female clinicians appear less at ease with male patients. In their turn, male patients tend towards a more dominant and bored vocal expression, and they share less biomedical information with a female doctor (44). This raises the question of role conflicts. The stereotypical view of a physician or surgeon is male (45). We will shed light on the effects of gender role expectations in the next section.

Role expectations

Patient satisfaction has a positive effect on outcomes and is an important indicator of the quality of the clinical interaction. From the patients' perspective, there is no gender difference in satisfaction with their providers (36, 46). On average, patients are not more or less satisfied with female or male providers (19). This finding is surprising, given ample research showing that patients are more satisfied with a patient-centred orientation, characterized by putting oneself in the shoes of the patient, exploring feelings, responding empathically, and promoting a sense of partnership (55–57). Female clinicians are more likely to exhibit exactly this communication style (29, 40, 47). Here we have a paradox! Patients seek a specific communication style, but are not more satisfied with female providers who demonstrate this. One explanation for this astonishing finding could be the gender role expectations that patients carry.

Patients arrive at a consultation expecting different communication styles from male and female clinicians. Schmid Mast and colleagues (48) found that patient satisfaction correlated with stereotypically female behaviours (e.g. more gazing, less interpersonal distance, softer voice) from women providers. Correspondingly, satisfaction was high when male clinicians adhered to stereotypically male behaviours (e.g. more interpersonal distance, greater expansiveness, louder voice). In the same vein, participants—especially female patients—who were confronted with an emotional communication style in a female provider were more satisfied than when meeting a non-emotional style (49). This effect only emerged for female doctors' relational style. In sum, patients harbour specific expectations about how a provider should behave, based on gender. Particularly for female providers, patient satisfaction depends on the congruence of the provider's communication style with their gender-role expectation.

Dominance and power

The clinician–patient relationship is hierarchical, with the provider having more power, defined as 'access to scarce resources', than the patient (50). In general, doctors have more medical knowledge, thus more clinical competence than patients. Furthermore, help-seeking is fundamentally a position of powerlessness. Discomfort, pain, or anxiety about the prognosis or treatment might accompany the patient and contribute to his or her loss of power. In many cases, the provider has higher status in terms of social standing and earning capacity. Nevertheless, there will be differences in how dominantly any clinician behaves towards his or her patient; these affect outcomes, such as satisfaction. Schmid Mast *et al.* (51) found that patients spoke less, provided less medical information, and agreed more when interacting with 'high-dominance' compared to 'low-dominance' providers. The clinician who adopts a dominant style might, therefore, be at a disadvantage because the diagnosis is largely based on provision of the medical history. Moreover, provider dominance has correlated with reduced patient satisfaction (52).

Distribution of power in the provider–patient relationship

How much power or influence the clinician and patient have, respectively, during the medical encounter varies. Different models to explain the distribution of power have been proposed (53, 54). Roter and Hall (54) distinguish between a provider with high or low power interacting with a patient with high or low power, resulting in four different patterns.

- A 'high-power' provider linked with a 'low-power' patient is termed a paternalistic relationship, in which the clinician sets the goals and agenda for the visit, makes the decisions, and takes control. The patient's actual values and treatment preferences are bypassed, while the clinician acts as a guardian. This traditional form of the doctor–patient relationship is based on a biomedical paradigm of healthcare (55).
- The reverse of this pattern is called consumerist. The patient sets the goals and agenda, and takes on the role of a consumer seeking a specific service. The provider becomes the source of information but the patient makes all the decisions. However, not all clinician–patient relationships are characterized by such power asymmetry.
- When provider and patient have equal power and both value this balance, the relationship is called mutual. In this pattern, both are involved in decision-making about treatment, negotiate the goals and agenda for the visit, and the patient's values are respected. The role of the provider becomes one of advisor. This is the interaction advocated by the 'relationship-centred care' approach (56).
- Finally, in the default relationship, both patient and provider exercise 'low-power' and, therefore, remain relatively uninvolved. Neither of them wants to take responsibility for setting any goals or agenda, so that the patient's values and the provider's role remain vague.

This classification is a useful framework for studying communication between a clinician and patient. Either can show a more or less dominant stance. In the next section, we will discuss which non-verbal cues are related to dominance.

Non-verbal signs of dominance

Hall and colleagues (10) investigated which non-verbal behaviours are related to the perception of dominance, including those that dominant persons exhibit. Their meta-analysis showed that many different cues are assumed to be markers of dominance, whereas, in reality, the non-verbal cues indicating actual dominance (personality dominance or high status) are few and far between. People are perceived as dominant when they need less interpersonal distance, gaze at another more and smile less, use more gesture and self-touch, use a louder or deeper voice, interrupt more, speak faster and without pause, and so on. On the other hand, truly dominant people do approach others more closely, have louder voices, and interrupt more frequently. Note that many of the behaviours thought to reflect dominance were inconsistently related to actual dominance.

To investigate which non-verbal cues are perceived as dominant in providers, we presented short video-clips of 11 clinical consultations to observers who were asked to step into the shoes of the patient and judge how dominant each clinician was (57). Behaviours perceived as being dominant included: speaking more; looking at, smiling and nodding less; frowning and gesturing more; talking while doing something else; and being more oriented toward the patient. People use the same non-verbal indicators to judge dominance in clinicians as they do in other social settings.

In oncology, three different styles of breaking bad news (patient-centred, disease-centred, and emotion-centred) were assessed for dominance (58). The disease-centred approach was perceived as significantly more dominant than the patient- or the emotion-centred styles. When the

oncologist was disease-centred, bad news was conveyed bluntly, with a focus on facts and not on the patient's reactions.

Gender and dominance

Within society, women behave less dominantly and are less likely to embrace hierarchies, be competitive, take on leadership positions, or emerge as group leaders than men (69). Although the sexes do not differ in how effectively they lead teams (59), their leadership style is different (32). Women are more democratic or participative, while men are rather autocratic and directive as leaders. In general, women exert influence more gently (e.g. offer advice), whereas men tend to be forceful and explicit (60).

Women in social positions of considerable power, who behave in a rather dominant or directive way, can be evaluated negatively because their behaviour does not correspond to gender-role expectations (61, 62). Healthcare providers are reacted to similarly. Female clinicians are perceived in a negative light if they adopt gender-incongruent behaviours. Burgoon *et al.* showed that variations in aggressive communication (non-aggressive, moderately aggressive, and aggressive) affected patients differently depending on the clinician's gender (63). Patient satisfaction decreased with greater aggressiveness in female providers, whereas satisfaction was less affected by male aggression.

There appears to be a greater expectation that female clinicians adhere to gender-specific norms. Because providers differ naturally in how they communicate (29), communication skills training should focus less on 'drilling' a particular communication style but rather encourage clinicians to be authentic individually. By authentic, we mean that if female physicians communicate in a certain way and male physicians in another, this should be accepted because patients make due allowance for gender. Nevertheless, avoiding a dominant communication style seems beneficial for all providers.

Significance in the cancer setting

The importance of communication in cancer care has been well documented (64). Care delivery may be different from standard medical settings in the length of relationships, nature of the treatment decisions, and complexity of medical data. The emotional dimension is omnipresent, given the fear related to diagnosis, treatment, recurrence, or threat of death. One vital element is establishing an interpersonal relationship characterized by support and empathy (64, 65). Indeed, research suggests that positive provider behaviour (e.g. support, empathy) is related to better cancer patient outcomes (e.g. quality of life, reduced anxiety) (66). For instance, Fogarty *et al.* (67) suggested that more provider compassion (touching the patient's hand, expressing reassurance, and support) would reduce patient anxiety. Moreover, in palliative care, emotional support is of the utmost importance: accompaniment, empathy, touch, and comfort (68, 69).

Given that researchers concur about the paramount importance of emotional connectedness in cancer care, the lack of research addressing which behaviours are associated with better patient outcomes is astonishing. Given the evidence supporting the importance of positive non-verbal communication (e.g. gazing, smiling, nodding) in standard clinical interactions, one can speculate that the relationship is even stronger in cancer care. Moreover, because the patient is regarded as a partner in decision-making (64), the negative impact of dominant communication might even be more pronounced and thus particularly avoided.

The role that gender plays in communication in oncology has been insufficiently explored. If the empathic and emotional aspect of communication is so important and female providers are more likely to offer this, cancer patients may prefer their clinicians to be women. However, as

with patient satisfaction, although patients in general prefer the communication style that is more likely exhibited by women, patients are not dissatisfied with male, when compared to female, providers. Unless we have empirical evidence, the question posed above cannot be answered in a satisfactory way.

Conclusion

As in standard provider–patient dyads, the gender composition might play an important role for adequate communication in cancer care. Moreover, it is very likely that, depending on the type of cancer, there might be preferences for one gender or the other. Women with breast cancer, for instance, might prefer a female provider, whereas men with prostate cancer might have a preference for a male provider.

It becomes clear, with respect to cancer care, that more research on the impact of non-verbal communication and the contribution of gender is needed.

References

1. Knapp ML, Hall JA. *Non-verbal communication in human interaction*, 5th edition. Fort Worth: Thomson Learning; 2002.
2. Hall JA. *Non-verbal sex differences: Communication accuracy and expressive style*. Baltimore, MD: Johns Hopkins University Press; 1984.
3. Hall JA, Schmid Mast M. Sources of accuracy in the empathic accuracy paradigm. *Emotion* 2007; **7**: 438–446.
4. Bales RF. *Interaction process analysis: a method for the study of small groups*. Cambridge, MA: Addison-Wesley; 1950.
5. Stiles WB. *Describing talk: a taxonomy of verbal response modes*. Newbury Park, CA: Sage; 1992.
6. Roter DL, Larson S. The Roter interaction analysis system (RIAS): utility and flexibility for analysis of medical interactions. *Patient Education and Counseling* 2002; **46**: 243–251.
7. Roter DL, Frankel RM, Hall JA, *et al.* The expression of emotion through non-verbal behaviour in medical visits. *Journal of General Internal Medicine* 2005; **21**: 28–34.
8. Gallagher TJ, Hartung PJ, Gerzina H, *et al.* Further analysis of a doctor-patient non-verbal communication instrument. *Patient Education and Counseling* 2005; **57**: 262–271.
9. Gallagher TJ, Hartung PJ, Gregory SW. Assessment of a measure of relational communication for doctor patient interactions. *Patient Education and Counceling* 2001; **45**: 211–218.
10. Hall JA, Coats EJ, Smith LeBeau L. Non-verbal behaviour and the vertical dimension of social relations: a meta-analysis. *Psychological Bulletin* 2005; **131**: 898–924.
11. Street RL, Buller DB. Non-verbal response patterns in physician-patient interactions: A functional analysis. *Journal of Non-verbal Behaviour* 1987; **11**: 234–253.
12. Koss T, Rosenthal R. Interactional synchrony, positivity and patient satisfaction in the physician-patient relationship. *Medical Care* 1997; **35**: 1158–1163.
13. Tiedens LZ, Fragale AR. Power moves: complementarity in dominant and submissive non-verbal behaviour. *Journal of Psychology and Social Psychology* 2003; **84**: 558–568.
14. Ambady N, Koo J, Rosenthal R, *et al.* Physical therapists' non-verbal communication predicts geriatric patients' health outcomes. *Psychology and Aging* 2002; **17**: 443–452.
15. Ambady N, LaPlante D, Nguyen T, *et al.* Surgeons' tone of voice: a clue to malpractice history. *Surgery* 2002; **132**: 5–9.
16. Bensing JM, Kerssens JJ, van der Pasch M. Patient-directed gaze as a tool for discovering and handling psychosocial problem in general practice. *Journal of Non-verbal Behaviour* 2005; **19**: 223–242.

17. Hall JA, Harrigan JA, Rosenthal R. Non-verbal behaviour in clinician-patient interaction. *Applied & Preventive Psychology* 1995; **4**: 21–37.
18. Griffith CH, Wilson JF, Langer S, *et al.* House staff non-verbal communication skills and standardized patient satisfaction. *Journal of General Internal Medicine* 2003; **18**: 170–174.
19. Hall JA, Irish JT, Roter DL, *et al.* Satisfaction, gender, and communication in medical visits. *Medical Care* 1994; **32**: 1216–1231.
20. Barnes ML, Sternberg RJ. Social intelligence and decoding of non-verbal cues. *Intelligence* 1989; **13**: 263–287.
21. Schmid Mast M, Hall JA, Murphy NA, *et al.* Judging assertiveness in female and male targets. *Facta Universitatis* 2003; **2**: 731–743.
22. Malone BE, DePaulo BM. Measuring sensitivity to deception. In: Hall JA, Bernieri FJ, eds. *Interpersonal sensitivity: Theory and measurement. The LEA series in personality and clinical psychology*. Mahwah, NJ: Lawrence Erlbaum Associates; 2001, pp.103–124.
23. Rosenthal R, ed. *Skill in non-verbal communication: individual differences*. Cambridge, MA: Oelgeschlager, Gunn, & Hain; 1979.
24. Giannini AJ, Giannini JD. Measurement of non-verbal receptive abilities in medical students. *Perceptual and Motor Skills* 2000; **90**: 1145–1150.
25. DiMatteo MR, Taranta A, Friedman HS, *et al.* Predicting patient satisfaction from physicians' non-verbal communication skills. *Medical Care* 1980; **18**: 376–387.
26. DiMatteo MR, Hays RD, Prince LM. Relationship of physicians' non-verbal communication skills to patient satisfaction, appointment noncompliance, and physician workload. *Health Psychology* 1986; **5**: 581–594.
27. Ryan H, Schonfield P, Cockburn J, *et al.* How to recognize and manage psychological distress in cancer patients. *European Journal of Cancer Care* 2005; **14**: 7–15.
28. Fallowfield L, Ratcliffe D, Jenkins V, *et al.* Psychiatric morbidity and its recognition by doctors in patients with cancer. *British Journal of Cancer* 2001; **84**: 1011–1015.
29. Roter DL, Hall JA, Aoki Y. Physician gender effects in medical communication: a meta-analytic review. *Journal of the American Medical Association* 2002; **288**: 756–764.
30. Hall JA, Roter DL. Do patients talk differently to male and female physicians? A meta-analytic review. *Patient Education and Counseling* 2002; **48**: 217–224.
31. Dindia K, Allen M. Sex differences in self-disclosure: a meta-analysis. *Psychological Bulletin* 1992; **112**: 106–124.
32. Eagly AH, Johnson BT. Gender and leadership style: a meta-analysis. *Psychological Bulletin* 1990; **108**: 233–256.
33. Hall JA, Epstein MA, DeCiantis ML, *et al.* Physicians' liking for their patients: More evidence for the role of affect in medical care. *Health Psychology* 1993; **12**: 140–146.
34. Wallen J, Waitzkin H, Stoeckle JD. Physician stereotypes about female health and illness: a study of patient's sex and the informative process during medical interviews. *Women & Health* 1979; **4**: 135–146.
35. Gabbard-Alley AS. Health communication and gender: a review and critique. *Health Communication* 1995; **7**: 35–54.
36. Hall JA, Roter DL. Patient gender and communication with physicians: results of a community-based study. *Women's Health* 1995: 77–95.
37. Hall JA, Irish JT, Roter DL, *et al.* Gender in medical encounters: an analysis of physician and patient communication in a primary care setting. *Health Psychology* 1994; **13**: 384–392.
38. Hooper EM, Comstock MS, Goodwin JM, *et al.* Patient characteristics that influence physician behaviour. *Medical Care* 1982; **20**: 630–638.
39. Stewart M. Patient characteristics which are related to the doctor-patient interaction. *Family Practice* 1983; **1**: 30–36.

40. Zaharias G, Piterman L, Liddell M. Doctors and patients: Gender interaction in the consultation. *Academic Medicine* 2004; **79**: 148–155.
41. Schmid Mast M. Dominance as expressed and inferred through speaking time: a meta-analysis. *Human Communication Research* 2002; **28**: 420–450.
42. Ng S, H., Brooke M, Dunne M. Interruption and influence in discussion groups. *Journal of Language and Social Psychology* 1995; **14**: 369–381.
43. Aries EJ. *Men and women in interaction. Reconsidering the differences.* New York: Oxford University Press; 1996.
44. van den Brink-Muinen A, van Dulmen S, Messerli-Rohrbach V, *et al.* Do gender-dyads have different communication patterns? A comparative study in Western-European general practices. *Patient Education and Counseling* 2002; **48**: 253–264.
45. Lenton AP, Blair IV, Hastie R. Illusions of gender: stereotypes evoke false memories. *Journal of Experimental Social Psychology* 2001; **37**: 3–14.
46. Hall JA, Dornan MC. Patient sociodemographic characteristics as predictors of satisfaction with medical care: a meta-analysis. *Social Science and Medicine* 1990; **30**: 811–818.
47. Roter DL, Hall JA. Physician gender and patient-centred communication: a critical review of empirical research. *Annual Review of Public Health* 2004; **25**: 497–519.
48. Schmid Mast M, Hall JA, Klöckner C, *et al.* Physician gender affects how physician non-verbal behaviour is related to patient satisfaction. Manuscript submitted for publication 2007.
49. Schmid Mast M, Hall JA, Roter DL. Disentangling physician gender and communication style effects on patient satisfaction and behaviour in a virtual medical visit. *Patient Education and Counseling* 2007; **3**: 1–28.
50. Schmid Mast M. Dominance and gender in the physician-patient interaction. *Journal of Men's Health and Gender* 2004; **1**: 354–358.
51. Schmid Mast M, Hall JA, Roter DL. Caring and dominance affect participants' perceptions and behaviours during a virtual medical visit. Manuscript submitted for publication 2007.
52. Buller MK, Buller DB. Physicians' communication style and patient satisfaction. *Journal of Health and Social Behaviour* 1987; **28**: 375–388.
53. Emanuel EJ, Emanuel LL. Four models of the physician–patient relationship. *Journal of the American Medical Association* 1992; **267**: 2221–2226.
54. Roter DL, Hall JA. *Doctors talking with patients/patients talking with doctors: improving communication in medical visits*. Westport, CT: Auburn House/Greenwood Publishing Group, Inc; 1992.
55. Engel GL. The need for a new medical model: a challenge for biomedicine. *Science* 1977; **196**: 129–136.
56. Beach MC, Inui T. Relationship-centered care: a constructive reframing. *Journal of General Internal Medicine* 2006; **21**: 3–8.
57. Schmid Mast M, Hall JA, Klöckner C. Which physician non-verbal cues do patients perceive as dominant? Unpublished manuscript 2007.
58. Schmid Mast M, Kindlimann A, Langewitz W. Patients' perception of bad news: how you put it really makes a difference. *Patient Education and Counseling* 2005; **58**: 244–251.
59. Eagly AH, Karau SJ, Makhijani MG. Gender and the effectiveness of leaders: a meta-analysis. *Psychological Bulletin* 1995; **117**: 125–145.
60. Bjorkqvist K, Lagerspetz KMJ, Kaukiainen A. Do girls manipulate and boys fight? Developmental trends in regard to direct and indirect aggression. *Aggressive Behaviour* 1992; **18**: 117–127.
61. Eagly AH, Karau SJ. Role congruity theory of prejudice toward female leaders. *Psychological Review* 2002; **109**: 573–598.
62. Eagly AH, Makhijani MG, Klonsky BG. Gender and the evaluation of leaders: a meta-analysis. *Psychological Bulletin* 1992; **111**: 3–22.

63. Burgoon M, Birk TS, Hall JR. Compliance and satisfaction with physician-patient communication: an expectancy theory interpretation of gender differences. *Human Communication Research* 1991; **18**: 177–208.
64. Arora NK. Interacting with cancer patients: the significance of physicians' communication behaviour. *Social Science and Medicine* 2003; **57**: 791–806.
65. Finset A, Smedstad LM, Ogar B. Physician–patient interaction and coping with cancer: the doctor as informer or supporter? *Journal of Cancer Education* 1997; **12**: 174–178.
66. Baile W, Aaron J. Patient–physician communication in oncology: past, present, and future. *Current Opinion in Oncology* 2005; **17**: 331–335.
67. Fogarty LA, Curbow BA, Wingard JR, *et al.* Can 40 seconds of compassion reduce patient anxiety? *Journal of Clinical Oncology* 1999; **17**: 371–379.
68. Kruijver IP, Kerkstra A, Bensing JM, *et al.* Nurse-patient communication in cancer care. A review of the literature. *Cancer Nursing* 2000; **23**: 20–31.
69. Yates P, Hart G, Clinton M, *et al.* Exploring empathy as a variable in the evaluation of professional development programs for palliative care nurses. *Cancer Nursing* 1998; **21**: 402–410.