Communication Study

How the doc should (not) talk: When breaking bad news with negations influences patients’ immediate responses and medical adherence intentions*

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A B S T R A C T

Objective: We investigate the role of specific formulations in a doctor’s bad news delivery. We focus on the effects of negations and message framing on patients’ immediate responses to the message and the doctor, and long-term consequences including quality of life and medical adherence intentions.

Methods: Two lab experiments with 2 (language use: negations vs. affirmations) × 2 (framing: positive vs. negative) between-subjects designs. After reading a transcription (experiment 1) or seeing a film clip (experiment 2), participants rated their evaluation of the message and the doctor, expected quality of life, and medical adherence intentions.

Results: Positively framed bad news with negations score more negative on these dependent variables than positively framed affirmations (both experiments). For negatively framed negations, these results are reversed (experiment 2). Furthermore, the evaluations of the message (experiment 1) and the doctor (both experiments) mediate the interaction of framing and language use on medical adherence intentions.

Conclusions: Small linguistic variations (i.e., negations vs. affirmations) in breaking bad news can have a significant impact on the health message, doctor evaluation and medical adherence intentions.

Practice implications: Doctors should refrain from using negations to break positively framed news, and employ negations when breaking negatively framed news.

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1. Introduction

Next to being excellent health experts, doctors need to be good communicators. Doctors deliver bad news to patients thousands of times during their professional careers [1]. For patients, receiving bad news is stressful in itself [2], but when doctors deliver the news poorly, additional stress may be induced with negative effects on patients’ health [2], Furthermore, good doctor–patient communication can predict medical adherence [3–6]. Thus, breaking bad news to patients in an appropriate and effective way is a crucial task that bears important consequences [7]. Fortunately, many studies demonstrate that alerting and training doctors in these sensitive communication issues greatly improves doctor–patient interaction [8–10] and subsequent patient satisfaction [7]. In order to make

provider training as effective as possible, it is important to understand the factors that determine patients’ positive or negative psychosocial responses.

Yet, little is known about which specific elements make doctor–patient communication effective. Most studies on the required formulation and style of doctor–patient interaction are descriptive, which means that they describe current practices in breaking bad news (for overviews, see [11,12]). In fact, less than 2% of studies focusing on doctor–patient interaction explicitly address how doctors should formulate the information in such a way as to increase patient satisfaction [12]. The rare studies that did address this issue adopted a general perspective, and showed that doctors’ general communication styles (e.g., comforting or empowering styles) influence the effectiveness of doctor–patient conversations [7,13–15].

In the present study, we take a micro perspective by focusing on the actual words chosen by the doctor. Based on prior research, we argue that – next to the general communication styles employed (e.g., direct/indirect, comforting, empowering [7]) – specific words may also be important predictors of the effectiveness of doctor–patient interaction. Breaking bad news to patients and their family members entails a highly sensitive communicative exchange in
which small differences in word choices can make a big difference [7,16–18]. After all, doctors need to balance their words carefully. They need to be truthful, but at the same time, they want to preserve the hopes of the patient and mitigate the information. In this balancing act, subtle differences in word choice may influence a patient’s evaluation of the conversation and the doctor, which in turn have potential long-term effects on medical adherence [19].

A first aspect in message formulation is the framing used to deliver the diagnosis, which can be framed to emphasize either the positive or the negative outcomes of a diagnosis. The relative strengths of positive and negative framing of factually equivalent information has been studied with regard to the communication involved in health-related decisions, which has its conceptual roots grounded in prospect theory (see [20–22]). These studies show that individuals react differentially to information presented in different frames. In the health domain, various studies show occurrences of framing of health-related information [23–25] and their effects on patient perceptions [26–31]. With respect to breaking bad news, a framing differences may refer to emphasizing either the positive or negative aspects of a given diagnosis: given the range of possible diagnoses, is the particular diagnosis presented as relatively good (positive frame) or relatively bad (negative frame)?

An aspect that may moderate a framing effect [32] in the balancing act of breaking bad news is the actual words that doctors choose to formulate their message. Empirical evidence suggests that doctors tend to mitigate their words when they have to deliver relatively bad news compared to relatively good news [13]. One verbal strategy that doctors can use to mitigate information and to be polite is using negations (e.g., “this news is not good”) rather than affirmations (e.g., “this news is bad”: [33,34]). Indeed, empirical evidence suggests that doctors frequently use negations when making diagnoses [35–38].

Using negations, however, may come at a cost, because negations may provide implicit cues about the expectancies of the speaker [39–41]. For example, negations like “you will not die” may implicitly communicate that the doctor expected, or at least considered, that the patient would die. Such inferences are not likely when the doctor says “you will live”, because, in contrast to the former statement, the latter statement does not implicitly activate the concept of dying [34,40]. Moreover, from negations (e.g., not bad), recipients infer that the speaker had an opposite prior expectancy [39,40]. Consequently, using negations may implicitly give the impression that the doctor is insincere and hides the real message.

Given that patients are eager to understand the doctor’s real expectancies about their conditions [42], implicit messages can have a strong impact on psychosocial responses. We expect that in a positive frame, negations (e.g., “you will not die”) yield more dissatisfied participants, compared to affirmations (e.g., “you will live”). That is, in a positive frame, negations mitigate the good news, and imply that the doctor may actually have an opposite negative expectancy. In a negative frame, in contrast, negations (e.g., “you will not live”) may yield more positive responses, as compared to affirmations (e.g., “you will die”), because in these messages, negations functionally mitigate the negative message and implicitly activate positive inferences.

Following recent calls for more research using experimental methods to demonstrate causal relations in the field of doctor–patient interaction [13,43], we conducted two lab experiments, using a US and a Dutch sample. In our experiments, we investigated the inferences that potential patients draw in cases in which a doctor uses negations rather than affirmations when breaking bad news, using either a positive or negative frame. We measure evaluation of the message and the doctor, expected quality of life with the disease and medical adherence intentions.

We expect that a positively framed message yield more positive responses than a negatively framed message, but that these effects are moderated by the language used in the message (negations vs. affirmations). When negations are used to break news that is framed as relatively good (e.g., “not bad”), patients are expected to more negatively evaluate the message (H1a), the doctor (H2a) and their expected quality of life (H3a) and to have lower medical adherence intentions (H4a), compared to when affirmations are used (e.g., “good”). In contrast, when breaking news that is framed as relatively bad and more mitigated language is thus appropriate, we expect these effects to be reversed (H1b–H4b). We expect the strongest effects of language use in positively framed messages, because in these cases negations (e.g., “you will not die”) imply the negative inference that the doctor has a more negative expectation than the actual message conveys.

Furthermore, we expect the immediate responses to the message to be related to the more long-term outcomes. That is, given the link between patients’ impressions of the doctor–patient relationship and medical adherence [19], we expect that the long-term effects of framing and language use on medical adherence intentions are mediated by the immediate evaluation of the message (H5a) and the doctor (H5b).

2. Methods

2.1. Design and sample for experiment 1

A total of 100 US respondents participated in experiment 1, which had a 2 (framing of diagnosis: good vs. bad) × 2 (language use: negations vs. affirmations) between-subjects experimental design. Participants were healthy volunteers and recruited in forums on social network sites, such as Facebook, and participated in an online experiment by clicking on a link. The average age was 41.88 years (SD = 12.43). A large majority of participants (78.0%) was female.

2.2. Design and sample for experiment 2

Experiment 2 was a conceptual replication of experiment 1 in a Dutch sample. A total of 115 Dutch respondents completed the questionnaire. Where a written scenario was employed in experiment 1 to present a doctor’s bad news delivery to participants, experiment 2 used a film clip. 26 participants reported that they had experienced technical problems and could not properly see the film clip and were removed from the dataset, leaving a total of 89 participants. Their average age was 26.03 years (SD = 11.86). A large majority of participants (71.9%) was female.

2.3. Stimulus materials for experiment 1

Participants were presented with a written excerpt of a bad news conversation in which a patient was diagnosed with a disease. The conversation was about the relatively unknown Bekhterev’s disease to prevent previous knowledge about the disease from influencing results. Indeed, 99% of participants reported they had never heard of this disease prior to their participation (one participant did not complete this question).

The excerpt consisted of seventeen sentences divided over four paragraphs. The total number of words differed between 186 and 192 in the four conditions. The first paragraph introduced the topic of the conversation. In the second paragraph, the diagnosis was given to the patient. The third paragraph dealt with the patient’s

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7 One participant did not complete the questionnaire seriously, as this person paraphrased the conversation in an improper way. This person was removed from the data.
prognosis and the doctor’s advice to take specific medications. In the fourth paragraph, the doctor gave the patient the option of obtaining further advice about the condition and ended the conversation.

In the first to third paragraphs, we manipulated the framing of the diagnosis (negative vs. positive) and language use (affirmations vs. negations). The diagnosis was either framed as relatively positive (giving the range of possible diagnoses, the particular diagnosis was relatively good) or negative (the particular diagnosis was relatively bad). In these frames either negations (e.g., not bad, not good) or affirmations (good and bad) were used. Table 1 shows our manipulations in the third paragraph of the conversation. In total, the manipulation was applied to four of the seventeen sentences. The fourth paragraph was equal across conditions.

2.4. Stimulus materials for experiment 2

For experiment 2, the materials from experiment 1 were translated into Dutch. In translation, the total number of words differed between 167 and 173 between the four conditions. Furthermore, in order to simulate a more realistic doctor–patient interaction, we created film clips in which a male actor posed as a doctor and read the text directly to camera. To participants watching the film clip, this made it seem as if the doctor directly addressed them. More participants (15.7%) indicated that they were familiar with Bekhterev’s disease and were able to correctly identify at least one major symptom associated with the disease.

2.5. Instrumentation for experiment 1

We measured all dependent variables with multiple-item, 7-point Likert scales, ranging from 1 = completely disagree to 7 = completely agree. First, participants were asked to evaluate the message and the doctor. To measure the evaluation of the message, participants indicated how much they agreed that the message was informative, clear, understandable and took away hope (reverse-coded; \( \alpha = .70 \)). For evaluation of the doctor, participants indicated their overall impression of the doctor and the degree to which they thought the doctor was nice, polite, considerate, compassionate, and respectful (\( \alpha = .93 \)). Next, participants rated their expected quality of life living with the disease, and the quality of life they thought the doctor expected (two items, \( \alpha = .93 \)). Finally, medical adherence intentions were tapped by three items asking whether following the doctor’s advice was wise, a good idea, and if participants would actually try to follow the recommendations (\( \alpha = .95 \)). Since all variables proved reliable, we calculated a mean overall score for each variable.

2.6. Instrumentation for experiment 2

The questions used in experiment 1 were translated into Dutch. Reliability for the measures evaluation of the message (\( \alpha = .69 \)), evaluation of the doctor (\( \alpha = .89 \)), expected quality of life (\( \alpha = .69 \)) and medical adherence intentions (\( \alpha = .89 \)) was again satisfactory and we calculated a mean overall score for each variable.

3. Results

Next to a main effect of framing, we expected an interaction effect of framing and language use on the evaluation of the message, the evaluation of the doctor, the expected quality of life and medical adherence intentions (H1–4). For both experiments, we conducted 2 (framing: positive vs. negative) × 2 (language use: affirmations vs. negations) multivariate analyses of variance (MANOVA) with evaluation of the message and the doctor, expected quality of life and medical adherence intentions as dependent variables. Tables 2 and 3 show the means and standard deviations of these variables per condition for the two experiments.

3.1. Experiment 1: main effects

The MANOVA showed a main effect of framing on psychosocial responses to the breaking of bad news (Wilk’s \( \lambda = .26 \), F(4, 93) = 64.86, \( p < .001 \), \( \eta^2_p = .74 \)). Subsequent univariate analyses revealed that framing had a significant effects on the evaluation of the doctor (F(1, 96) = 12.30, \( p < .01 \), \( \eta^2_p = .11 \)) and the expected
quality of life ($F(1, 96) = 261.01, p < .001, \eta_p^2 = .73$), but not on the evaluation of the message ($F(1, 96) = 1.60, p = .21$) or medical adherence intentions ($F(1, 96) = 2.47, p = .12$). Participants receiving a positively framed message were more positive about the doctor ($M = 4.04, SD = 1.38$) and the expected quality of life ($M = 5.07, SD = 1.24$) than participants receiving a negatively framed message (evaluation of the doctor: $M = 3.20, SD = 1.17$; expected quality of life: $M = 1.92, SD = .72$). No main effect of language use was observed (Wilks’ $\lambda = .99, F(4, 93) < 1$).

3.2. Experiment 2: main effects

Similar to experiment 1, the MANOVA showed a main effect of framing on the psychosocial responses to the breaking of bad news (Wilks’ $\lambda = .69, F(4, 82) = 9.30, p < .001, \eta_p^2 = .31$). Subsequent univariate analyses revealed that framing had significant effects on the evaluation of the message ($F(1, 85) = 12.84, p < .01, \eta_p^2 = .13$) and expected quality of life ($F(1, 85) = 16.14, p < .001, \eta_p^2 = .16$), but not on the evaluation of the doctor ($F(1, 85) = 1.72, p = .19$) or medical adherence intentions ($F < 1$). Participants in the condition with positive framing were more positive about the expected quality of life ($M = 4.29, SD = 1.59$) and more negative about the message ($M = 3.41, SD = 1.24$) than participants in the condition with negative framing (evaluation of the message: $M = 4.29, SD = 1.23$; expected quality of life: $M = 2.96, SD = 1.32$). Like in experiment 1, no main effect of language use was observed (Wilks’ $\lambda = .91, F(4, 82) = 1.93, p = .11$).

3.3. Experiment 1: interaction effects

In line with hypotheses 1–4, we observed an interaction between framing and language use on psychosocial outcomes (Wilks’ $\lambda = .90, F(4, 93) = 2.67, p < .05, \eta_p^2 = .10$). Subsequent univariate analyses revealed that the interaction was significant for the evaluation of the message ($F(1, 96) = 6.56, p < .05, \eta_p^2 = .06$), the evaluation of the doctor ($F(1, 96) = 5.39, p < .05, \eta_p^2 = .05$) and the expected quality of life ($F(1, 96) = 6.22, p < .05, \eta_p^2 = .06$). The interaction for medical adherence intentions was non-significant ($F(1, 96) = 1.82, p = .18$).

Because our hypotheses predict distinctive effects within frames, we conducted pairwise comparisons for the significant interaction effects that, for negatively framed messages, no effects of language use were observed on the evaluation of the message ($p = .12$) and the doctor ($p = .27$). The expected quality of life was marginally higher ($p = .081$) when negations were used compared to affirmations. For positively framed messages, however, the evaluation of the message ($p < .05$) and the doctor ($p < .05$) and the expected quality of life ($p = .052$) were all more negative when negations were used compared to affirmations (see Table 2).

3.4. Experiment 2: interaction effects

Again, we observed an interaction between framing and language use on psychosocial outcomes (Wilks’ $\lambda = .87, F(4, 82) = 3.13, p < .01, \eta_p^2 = .13$). Subsequent univariate analyses

Table 4

Mediation analysis with the evaluation of the message and the doctor as hypothesized mediators of the interaction of framing and language use on medical adherence intentions. Main effects of framing and language use are included as covariates.

<table>
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<th>Normal theory $p$</th>
<th>Bootstrap 95% CI</th>
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<td><strong>Experiment 1</strong></td>
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<tr>
<td>Covariate main effect of framing</td>
<td>-.08</td>
<td>.41</td>
<td>.84</td>
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<tr>
<td>Covariate main effect of language use</td>
<td>-.11</td>
<td>.35</td>
<td>.76</td>
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<td>Interaction framing x language use</td>
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<tr>
<td>Total effect (c path)</td>
<td>-.85</td>
<td>.63</td>
<td>.18</td>
<td></td>
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<tr>
<td>Direct effect (c’ path)</td>
<td>.21</td>
<td>.53</td>
<td>.70</td>
<td></td>
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<tr>
<td>Total indirect effect (via mediators)</td>
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<td>.43</td>
<td>-1.99, -3.07</td>
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<tr>
<td>Evaluation of the message</td>
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<td>.30</td>
<td>-1.32, -1.15</td>
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<tr>
<td>Evaluation of the doctor</td>
<td>-.42</td>
<td>.22</td>
<td>-1.00, -0.08</td>
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<tr>
<td>Model $R^2(p)$</td>
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<td><strong>Experiment 2</strong></td>
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<td>Covariate main effect of framing</td>
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<td>Covariate main effect of language use</td>
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<td>Interaction framing x language use</td>
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<td>Total effect (c path)</td>
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<td>Direct effect (c’ path)</td>
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<td>Total indirect effect (via mediators)</td>
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<td>-1.76, -2.37</td>
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<td>Evaluation of the message</td>
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<td>.21</td>
<td>-.81, .05</td>
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<tr>
<td>Evaluation of the doctor</td>
<td>-.63</td>
<td>.28</td>
<td>-1.31, -2.17</td>
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<tr>
<td>Model $R^2(p)$</td>
<td>.37 (&lt;.001)</td>
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Note: Mediation with 5000 bootstrap samples.

*Indirect effect is significant with a certainty of $p < .05$, because the confidence interval does not include zero.
revealed that the interaction was significant for the evaluation of the doctor \(F(1, 85) = 9.56, p < .01, \eta^2_p = .10\) and medical adherence intentions \(F(1, 85) = 8.65, p < .01, \eta^2_p = .09\). In contrast to experiment 1, the interaction for the evaluation of the message \(F(1, 85) = 1.98, p = .16\) and the expected quality of life were non-significant \(F < 1\).

Pairwise comparisons revealed that, for negatively framed messages, using negations increased the evaluation of the doctor \(p = .056\) and medical adherence intentions \(p < .05\) compared to affirmations. In contrast, for positively framed messages, using negations decreased the evaluation of the doctor \(p < .05\) and medical adherence intentions \(p < .05\) compared to using affirmations. Although – in contrast to experiment 1 – the interaction term was non-significant for evaluation of the message, pairwise comparisons to test H1a replicated the expected significant difference \(p < .05\), see Table 3.

3.5. Experiment 1: mediation analyses

To test whether evaluation of the message and the doctor mediated the interaction effect of framing and language use on medical adherence intentions (H5), we conducted mediation analyses and estimated indirect effects with 5000 bootstrap samples [44,45]. These analyses revealed significant indirect effects of the evaluation of the doctor and the message on medical adherence intentions (see Table 4), indicating that the interaction of framing and language use indirectly influences medical adherence intentions, via the evaluation of the message and the doctor.

3.6. Experiment 2: mediation analyses

As in experiment 1, mediation analyses revealed a significant indirect effect of the evaluation of the doctor on medical adherence intentions. In contrast to experiment 1, however, we did not observe mediation for the evaluation of the message (see Table 4).

4. Discussion and conclusion

4.1. Discussion

Two experiments support the claim that formulation differences in breaking bad news have psychosocial effects on patients. Both experiments suggest that positively framed messages have positive effects on patients’ evaluations as compared to negatively framed messages. More importantly, within these frames, the use of negations or affirmations makes a difference. Negations tend to have positive effects in negatively framed messages, presumably because they mitigate the message’s direct blow. These effects are reversed in positively framed messages, probably because they make the doctor seem insincere. Findings are generally comparable across our experiments, but specific differences on separate variables were observed between experiments. We now discuss results per specific dependent variable.

Evaluation of the message: Participants in both experiments evaluated the positively framed message more negatively when it contained negations (e.g., “the news is not bad”) rather than affirmations (“the news is good”), which supports H1a. No effects of language use were observed in negatively framed messages, disconfirming H1b.

Evaluation of the doctor: Participants in both experiments evaluated the doctor more negatively when s/he used negations rather than affirmations in a positively framed message, which supports H2a. In experiment 2 (but not in experiment 1), participants evaluated the doctor more positively when s/he used negations rather than affirmations in a negatively framed message (H2b).

Expected quality of life: Only in experiment 1 did participants rate their expected quality of life lower when the doctor used negations rather than affirmations in a positively framed message (H3a). In both experiments, we observed no differences between negatively framed messages with affirmations or negations on this dependent variable.

Medical adherence intentions: In both experiments, negations influenced medical adherence intentions [19]. We observed a direct effect only in experiment 2: participants reported lower medical adherence intentions when the doctor used negations rather than affirmations in a positively framed message (H4a), and this effect was reversed in negatively framed messages (H4b). Furthermore, we found indirect effects of the interaction between framing × language use on medical adherence intentions via the evaluation of the message (experiment 1) and the doctor (both experiments, H5).

Given that the experiments differed in method (written scenario vs. film clip), language of experimental materials and cultural background of the sample (USA vs. Netherlands), the comparable general pattern of results is striking. For both experiments, the choice of negations over affirmations is particularly influential in positively framed messages. In these cases, negations yield more negative responses compared to affirmations. These findings are aligned with the idea that negations (e.g., “not bad”) activate negative associations, and imply that the doctor may actually have an opposite negative expectancy [34,39,40].

In negatively framed messages, however, the effects of linguistic formulation was less pronounced, although the Dutch experiment revealed that negations yielded more positive responses compared to affirmations. This is in line with the idea that negations mitigate bad news (e.g., not good rather than bad) and imply a positive expectation. Why we find this effect for Dutch participants only may be explained by cultural differences in doctor–patient interaction [46]. In feminine cultures like the Netherlands, doctors use more instrumental (task-oriented) communication, while in masculine cultures (like the USA), doctors more often use affective communication in which information may be mitigated [46]. Because affective communication is less common in Dutch doctor–patient interactions, mitigating with negations for negatively framed news may be more unexpected and thus increase positive psychosocial responses. For the American participants, in contrast, an affective style is more commonly used and thus patients’ default expectation of what effective breaking bad news should be. For these participants, an affective style does not lead to more positive responses compared to a more direct approach.

It should be noted, however, that differences between experiments are not necessarily due to culture, given that the stimuli also differed: where participants in experiment 1 read a transcript of the conversation, participants in study 2 saw a film clip. Participants in experiment 2 may have been more transported into the scenario and thus more open to empathetic remarks (i.e., negations in negatively framed news) made by the doctor than those in experiment 1 [47,48]. Future research comparing and contrasting these factors may provide further insights.

Some limitations about our study should be noted. We used healthy volunteers as subjects, whose responses may differ from those of real patients, and a relatively unknown disease, which may lead to different responses than well-known diseases. Furthermore, even though intentions are one of the strongest predictors of behavior [49–51], patients can always act differently from their intentions. Future research may monitor the language of real doctors while breaking bad news concerning various medical conditions. By connecting specific observations to real patients’ survey responses over multiple waves, more information can be
obtained about the relations between doctor behavior and patients’ subsequent satisfaction and medical adherence over time.

In sum, our findings demonstrate that subtle linguistic variations in breaking bad news may influence patients’ immediate evaluation of the message and the doctor, as well as their long-term views on living with the disease and medical adherence intentions. Furthermore, in both experiments, we observed that medical adherence intentions were indirectly influenced via the measures of message and doctor evaluation. These results replicate earlier findings [19] that found that the quality of the doctor–patient relationship was an important predictor of medical adherence. This highlights the importance of effective delivery of bad news.

4.2. Conclusion

In two experiments, we investigated the influence of specific message formulations on the evaluation of the message, the doctor, expected quality of life, and medical adherence intentions. Findings indicate that negations have negative effects on these variables in positively framed messages (e.g., not bad rather than good), while negations in some cases have positive effects in negatively framed messages (e.g., not good). Furthermore, immediate responses to differentially formulated messages as well as doctors delivering messages indirectly influence long-term medical adherence intentions. Results showed that seemingly harmless linguistic variations in doctors’ bad news delivery can have significant consequences. We conclude that doctors should balance their use of negations carefully when breaking bad news. Furthermore, future research into the effectiveness of doctor–patient interactions may consider looking beyond general communication styles [7,13–15] and additionally investigate more subtle differences in linguistic variations.

4.3. Practice implications

Given the negative effects that poor doctor–patient interaction may have on medical adherence [4–6] and patients’ health in general [2], the present results provide important practice implications for improving doctor–patient interaction. While it remains important to train practitioners in adopting an appropriate general communication style when breaking bad news, the present results underscore the importance of specific linguistic variables such as negations. Awareness of the impact of specific words in message formulation may improve doctors’ communication effectiveness. Our results suggest that subtle formulation differences can even affect medical adherence. When these results are replicated in other studies and additional linguistic variables other than negations are explored, we recommend that educators training doctors in breaking bad news incorporate our results into their protocols. We hope that, in addition to studying general communication styles, future studies also focus on important and understudied linguistic variables in health contexts.

Disclosure statement

The authors confirm that all patient/personal identifiers have been removed or disguised so the patient/person(s) described are not identifiable and cannot be identified through the details of the story.

References


