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Anatomy of positive messages in healthcare consultations: component analysis of messages within 22 randomised trials

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Abstract

Background: Patients desire both honesty and hope from their healthcare practitioners. A recent systematic review of 22 randomised trials found that healthcare practitioners who deliver positive messages improve patient outcomes, most notably by reducing pain. However, the verbal and non-verbal components of positive messages within these trials varied greatly, which presents a barrier to the implementation of person-centered care.
Objective: This study investigates common components of positive messages within the reviewed trials.
Methods: We extracted the verbal and non-verbal language used to deliver positive messages in 22 trials from a recent systematic review. Three independent researchers coded the components of the messages using content analysis.
Results: Positive messages in our sample had between 2 and 18 different components. These were clustered into 5 areas: specifying the positive outcomes, making the message personal, drawing on associations and meanings, providing a supportive psychological context and providing a rationale. Messages were reinforced through repetition in half the studies. Within the clusters, the most common components of positive messages were suggestions of specific effects (18 studies) and personalised formulations (15 studies). Most studies did not describe the components of positive messages adequately.
Conclusions: Positive messages within randomized trials are complex interventions, with most including strong suggestions about specific effects, presented confidently and made personally relevant to the individual patient. Future trials of positive messages should report all components of these interventions.

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Introduction

Communication between patients and practitioners lies at the heart of person-centered healthcare, and good communication has many potential benefits including improved patient satisfaction [1-3], reduced medico-legal risk [4], increased patient safety [1,5] and improved adherence to medication [6]. Some evidence also suggests that enhanced communication may reduce healthcare practitioner burnout [7,8]. One aspect of patient-practitioner communication that is emerging as having a strong evidence base is the communication to patients of positive messages (encouraging the patient to believe they will experience a positive outcome) [9,10]. Encouraging positive patient expectations can lead to better outcomes [11-13] and even patients with serious illnesses desire (realistic) hope [14]. In addition, positive messages are taken to be a core component of empathy [15], which, in turn, is a core component of person-centered care [16].

Mechanisms by which positive messages may improve patient outcomes have been investigated at psychological and neurophysiological levels. The practitioner's positive message is assumed to lead to the patient's expectation of a positive outcome. In turn, the patients' outcome expectancies [17,18] are positively associated with actual symptom reduction [17,19]. At a neurophysiological level, positive outcome expectancies are thought to activate the neuronal reward mechanisms including increased dopamine activity in the nucleus accumbens [20,21].

The potential benefits of positive messages have recently been quantified in a systematic review of 22 randomised trials. The review included randomised studies that measured clinical outcomes and excluded other types of studies (such as observational studies), as well as trials that did not include clinical outcomes (e.g., experimentally induced pain). The trials included conditions ranging from chronic pain to coronary artery bypass surgery. Positive messages were found (by a small to modest amount) to reduce patient pain, anxiety, morphine use, length of stay in hospital, and improve lung function [22].

While the systematic review demonstrated that delivering positive messages can improve patient outcomes, a barrier to implementing the evidence is heterogeneity. The messages delivered to patients ranged from very simple sentences, (e.g., "I think this will work for you") to more comprehensive messages encouraging a positive outlook [23] and giving clear diagnoses [24]. The types of practitioners, training given to practitioners, medical conditions, and type of benefits to patients (such as reduced pain), also varied within the trials [22]. The heterogeneity makes it difficult to infer what healthcare practitioners should say or do in order to deliver an effective positive message. The aim of this study was to identify and describe the components of effective positive messages tested in the trials from a recently published systematic review [22].

Methods

We used a conventional content analysis [25,26] to describe the components of positive messages trialled in the systematic review of positive communication. The sections of the 22 studies describing the positive messages (reported across 20 papers) [3,23,24,27-43] were imported into NVivo for analysis. We also examined supplementary online material and one additional paper [44] when necessary. Descriptions of the positive messages were taken to include: the content and context of the positive messages as described by the authors, direct scripts or images showing the positive message (where available) and descriptions of non-verbal aspects of the message (tone of voice, body language, attire), as well as details of any other manipulation that might convey or support a positive message.

We then coded this material inductively using labels that summarised individual components of the positive message. Initial codes closely reflected the original authors' own terminology and concepts and were not mutually exclusive. We then compared and contrasted initial codes and their exemplars across the studies, merging them into categories and sub-categories based on common features that transcended idiosyncratic study-specific descriptions. All categories were then defined, and a coding manual was produced capturing category names, definitions, and examples. We used our knowledge of multiple theories (including, e.g., response expectancy theory, social cognitive theory, common sense model of illness representations, theories of persuasive communication and attitude change) to cluster the categories according to what these components and features were doing. For example, some categories described components that directly conveyed information about the likely outcomes of a treatment (and were clustered as 'specifying the positive outcome(s)'), while other categories described components that explained to patients why the clinician believed the intervention would have positive effects (and were clustered as 'providing a rationale'). To refine the coding manual and ensure the coding process could be reliably replicated, two authors

Figure 1 Overview of Components of Positive Messages
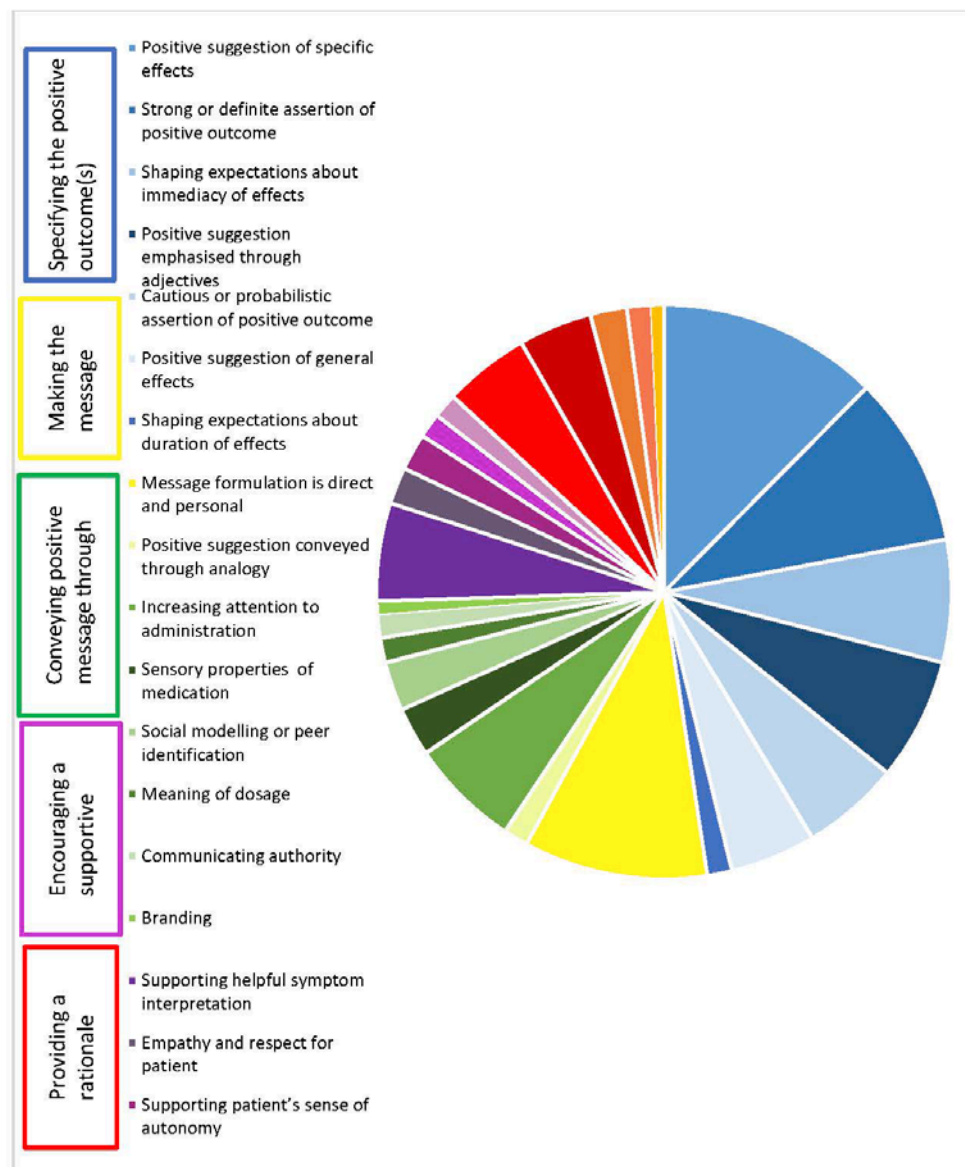
read and independently coded half of the papers each using the coding manual. This process identified some discrepancies which were discussed and resolved by discussion and, where required, adjustment of the coding manual. We used NVivo queries to help us examine patterns in the data and count the number of distinct components used in each study.

Results

We identified 25 distinct components of positive messages (see Figure 1). Included studies used between 2 [33] and 18 [3] different components to convey their positive message (Median = 4; Mean = 5.8). We clustered these components into 5 areas (see Table 1 for details):

1. Specifying the positive outcome(s)
2. Making the message personal and accessible
3. Conveying a positive message through enhancing associations
4. Encouraging a supportive psychological context
5. Providing a rationale

Eleven studies (50%) reinforced their positive message by presenting it repeatedly. Table 2 specifies which studies included components from each of the 5 clusters.

Table 1 Overview of Components of Positive Messages

Cluster	Component	Studies reporting component (n)
Specifying the positive outcome(s)	Positive suggestion of specific effects	18
	Strong or definite assertion of positive outcome	14
	Shaping expectations about immediacy of effects	10
	Positive suggestion emphasised through adjectives	10
	Cautious or probabilistic assertion of positive outcome	8
	Positive suggestion of general effects	7
	Shaping expectations about duration of effects	2
Making the message personal and accessible	Message formulation is direct and personal	15
	Positive suggestion conveyed through analogy	2
Conveying positive message through associations and meanings	Increasing attention to administration	9
	Sensory properties of medication	4
	Social modelling or peer identification	4
	Meaning of dosage	2
	Communicating authority	2
	Branding	1
Encouraging a supportive psychological context	Supporting helpful symptom interpretation	8
	Empathy and respect for patient	3
	Supporting patient's sense of autonomy	3
	Enhancing self-efficacy	2
	Allaying safety concerns	2
Appeal to evidence Providing a rationale	Message evidenced by verbal appeals to other patients	7
	Rationale for how the intervention may result in positive outcomes	6
	Message evidenced by verbal appeals to evidence	3
	Message evidenced by verbal appeals to clinician's experience	2
	Message evidenced by verbal appeals to institutional authority	1

Table 2 Component Clusters Identified in each Study

Study	Specifying the positive outcome(s)	Making the message personal and accessible	Conveying positive message through associations and meanings	Encouraging a supportive psychological context	Providing a rationale (including appeal to experience and authority)
1. Benedetti 2003 [46]	✓	✓	✓	✗	✗
2. Benedetti 2003 [64]	✓	✓	✓	✗	✗
3. Benedetti 2003 [65]	✓	✗	✓	✗	✗
4. deCraen 2001 [28]	✓	✗	✓	✗	✓
5. Dutt-Gupta 2007 [29]	✓	✗	✗	✓	✓
6. Goodenough 1997 [30]	✓	✓	✓	✗	✗
7. Kemeny 2007 [31]	✓	✓	✓	✓	✗
8. Knipschild 2005 [32]	✓	✓	✗	✓	✗
9. Lauder 1995 [33]	✓	✗	✗	✗	✗
10. Olsson 1989 [34]	✓	✓	✗	✓	✗
11. Petersen 2014 [35]	✓	✗	✓	✗	✓
12. Petersen 2012 [36]	✓	✗	✓	✗	✓
13. Phillips 2006 [37]	✓	✓	✓	✓	✓
14. Resnick 1996 [38]	✓	✓	✓	✓	✓
15. Rief 2017 [23]	✓	✗	✗	✓	✗
16. Ronel 2011 [39]	✓	✓	✓	✗	✓
17. Suarez 2010 [40]	✓	✓	✗	✗	✓
18. Szilagyi 2007 [43,44]	✓	✓	✓	✓	✓

19. Thomas 1987 [24]	✓	✓	✓	✓	✗
20. Varelmann 2010 [41]	✓	✓	✓	✗	✗
21. Wang 2008 [42]	✓	✓	✗	✗	✓
22. Wise 2009 [3]	✓	✓	✓	✓	✓

Specifying the Positive Outcome(s)

The messages varied in how specific the outcome was anticipated to be. Eighteen studies (82%) made a positive suggestion of specific effects such as "[your] pain will subside in a few minutes" [27]. In fewer cases (7, 32%) the messages was more general, for example, about "getting better," or the intervention being "effective," or communicating that the patient would be "living active and fulfilling lives" [3]. Ten studies (45%) specified how quickly the patient could expect to benefit and typically provided for a little variation within these descriptions, for example, "[This drug] will decrease the pain quickly after taking it" [28] and "You will be better within a week or so" [32]. Two studies (9%) specified how long the benefit should last. In 14 studies (64%), outcomes were specified using strong assertions such as telling patients "their pain was going to subside within a few minutes" [45] or that "the treatment would certainly make [the patient] better" [24]. Fewer studies (8, 36%) specified positive outcomes using more cautious or probabilistic language. For example, in a study of positive messaging for venepuncture in children "I am going to put some cream on your arm that *might* make it (the needle) hurt less" [30]. Ten studies (45%) used adjectives to emphasise a likely positive outcome in relation to analgesics/anaesthetics, painful procedures, and asthma; examples include "this drug is very effective" [39] and "we are trying out a new special cream" [30]. Stronger adjectives alluding to the power of drugs, such as "potent" [45] were also used to describe analgesics.

Making the Message Personal and Accessible

Fifteen studies (68%) made positive messages personal and direct (person-centered) by referencing the patient's name, directing the message to them personally as in "I think this will work for you" [40] or writing a personalised hand-written prescription or instruction. Two studies (9%) used analogy to make the message accessible and engaging to patients. For example, in a study of positive suggestion for ventilated patients: "Some imagine that these noises [made by the machines in intensive care] are that of a pleasant boat-ride, a cruise" [43,44].

Conveying a positive message through enhancing associations and meanings

Sometimes positive messages included references to positive associations or meanings patients might be likely to have. The most common of these (reported by 9 studies) involved increasing patient's attention to treatment. This was achieved by, for example, encouraging the patient to observe an injection being given. Presumably the medical procedure associated with a potent outcome for the patient that might enhance their response expectancy [46]. Messages in 4 studies aimed to call the patients' attention to the sensory properties of medication (such as taste, colour or texture). These properties have been shown in some studies to modify effects [47]. For example, in one study the practitioners were instructed to say, "We are going to inject the local anaesthetic that will numb the area where we are going to do the epidural/spinal anaesthesia and you will be comfortable during the procedure" [41]. In 4 studies, the patient was compared with other similar patients. For example, one study stated: "The commercial included positive messages showing attractive young adults with asthma leading apparently active healthy and fulfilling lives" [3]. This was intended to help the patient associate themselves with these healthy, fulfilled people in the commercials. Communicating authority also featured in 2 of the messages. This was accomplished in some trials by training practitioners to speak with authority and conviction [31], by modifying their appearance (e.g., having them wear a white coat) [36] or through the mere presence of a qualified, authoritative individual (doctor as opposed to a technician). Interventions were branded in one study, in order (according to the study) to benefit from the association between branding and increased perceived potency [3].

Encouraging a supportive psychological context

Eight studies (36%), provided a supportive psychological context. This was achieved by validating patients' experiences, reassuring patients about their symptoms, guiding patients concerning likely symptom trajectories for recovery, and helping to normalise the side effects of an intervention. For example, practitioners in one study were encouraged to "explain that what they are experiencing may not be an uncommon symptom considering what they have been enduring with their debilitation and hospitalization" [37]. Three studies included components that communicated empathy and respect to the patient, for example, by having the healthcare practitioner introduce themselves, shaking hands, and/or exploring the patients' perspective and emotional wellbeing. For instance, in one study of self-efficacy and outcome expectations in rehabilitation, patients are encouraged to identify their thoughts and feelings [38]. Three studies supported patient autonomy, by encouraging personal goal setting through the use of mental imagery and personal ideation. In one

study of pre-operative expectations and recovery from cardiac surgery "patients were encouraged to develop personal ideas and images about their future after surgery, including plans about activities and how they will enjoy their life afterwards (outcome expectations)" [23]. Two studies, both in rehabilitation settings, included components that enhanced patients' self-efficacy alongside their outcome expectations. For example, rehabilitation patients were encouraged to be realistically optimistic about their capacity to reach a goal, to find examples of previous success in order to engender a sense of mastery and to understand that the healthcare team believed patients were capable of achieving their stated goals [38]. Two studies used supportive comments to reassure the patient of the safety of the intervention. Practitioners in a study of acute care were instructed to say: "The machines around you continuously monitor the needs of your body. The beeps are signals for us, just serving your safety" [43,44].

Providing a rationale (including appeal to evidence and experience)

There were two types of rationales provided in some of the studies. The first described the mechanism of action of the intervention. For example, from a study in rehabilitation noted that the exercises would lead to improved strength, leading to improved confidence, and therefore improved function [37]. Another study stated that the experimental drug "improves many aspects of asthma by blocking leukotrienes" [3]. The second type of rationale was a reason why the practitioner believed (and hence why the patient should expect) the intervention to be effective. These rationales included appeals to other patients' experience (7, 31%), external evidence (3, 14%), clinician experience (2, 10%) and institutional authority (1, 5%). Appeal to other patients' experience often involved simple messages such as "most of my patients get better" [40]. Three of the studies appealed to evidence (e.g., "The PCA pump was very effective in removing the postoperative pain affliction" [42]) and one study to an institutional authority (e.g., "the US Food and Drug Administration has judged it to be safe and effective for asthma" [3]).

Other features of positive messages: reinforcement through repetition

Repetition, while not a feature *per se*, was used in 11 (50%) of studies. Repetition occurred before or during treatment administration [3], by multiple individuals (e.g., trial and medical personnel) [33] or in different formats (such as in person and *via* digital or printed material) [37]. The timing of positive message provision varied. All the studies delivered a message at some time point, so timing *per se* is not a component of a positive message. However, whether the message was delivered before, during, or after varied, and is potentially important. Most studies (n=14) conveyed their positive message before administering the treatment (typically immediately before administration or prescription). Six studies (27%) conveyed their positive message while administering the treatment (typically for

procedural interventions) and 3 (14%) conveyed their positive message after administering the treatment (having already conveyed it prior to administration) [35-37].

Discussion

Positive messages can be simple verbal instructions or more complex interventions that comprise multiple components. Strong verbal suggestions of specific effects are the most common features of positive messages. Other clusters of components that may influence the effectiveness of positive messages include making the message personal and accessible; conveying a positive message through enhancing associations; encouraging a supportive psychological context and providing a rationale.

Our paper adds to the literature on the clinical benefits of positive messages by providing more detail about the content of these messages [10,22,48]. Our study also reflects what many mechanism studies have shown, namely that positive messages can activate the neuronal reward mechanisms including increased dopamine activity in the nucleus accumbens [49] as well as endorphins [50]. In addition, previous literature shows that patients' pre-existing expectations regarding treatment, influence compliance, attrition and outcomes across a wide range of clinical presentations and subsequent treatments [51-53]. A positive message could - indeed is intended to - encourage patients to have more positive pre-intervention expectations. In addition, some of the components of positive messages that we have identified can be mapped to previously studied sources of outcome expectancies such as (i) repeated pairings of specific stimuli and outcomes (conditioning), (ii) observing others' responses to stimuli (social learning) and (iii) being persuaded about the likely response to stimuli (instructional learning) [54]. Specifying the positive message uses instructional learning to generate positive outcome expectancies. Our findings also related to the research on persuasion [55], motivation [56], (improving) illness perception [57,58], empathic care (which includes positive communication) [59], self-determination theory (by using expectations to promote patient autonomy) [60], enhancing self-efficacy [61] and medication adherence [62].

This is the only study we are aware of that analyses the components of positive messages. We achieved this by examining randomised trials that had been identified within a systematic review. This approach allowed us to focus on good quality trials (the systematic review excluded more potentially biased, non-randomised, trials). There were also some limitations to this study. The first is that the interventions often lacked detailed description of the content and delivery of the positive messages. Hence, the messages actually used may have included additional components that we did not identify. More complete descriptions may have generated more components in positive messages and possibly a different distribution. Another limitation is that we do not know which component (or combination of components) was most effective for generating the clinical effect. This might have been achieved by comparing components of positive

messages that were effective with components of positive messages that were not effective (this was not possible using this dataset, as all but one of the 22 studies in our sample review reported positive effects). The fact that a component was frequently used does not necessarily indicate that it is most effective. Mitigating this limitation somewhat, all but one of the trials suggested a positive effect of the package of components, which provides weak support for the claim that the common components were effective. Finally, the ethics of positive communication was not explored. Even if positive messages are effective, it does not imply that they are ethically acceptable to patients as they risk violating patient autonomy if they prove to be deceptive.

Future studies of positive messages should consider and build on this evidence base, describe the components of their interventions adequately, and investigate which components of positive messages are most effective. Pragmatic studies and training with healthcare practitioners could consider the extent to which their current communication of positivity reflects the research evidence.

Conclusion

Positive messages used by healthcare practitioners to improve patient outcomes within randomized clinical trials are complex. Many include repeated strong suggestions about specific effects, are presented confidently, and made personally relevant to the individual patient. A limitation is that interventions are often not well described. Future trials of positive messages should report all components of their interventions. Our detailed analysis could inform more effective intervention development, assessment, as well as clinical practice.

Acknowledgements and Conflicts of Interest

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