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Original experimental

Effects of validating communication on recall during a pain-task in healthy participants

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HIGHLIGHTS

- Validating/invalidating communication has an effect on memory recall.
- This effect is not due to decreases in interference (affect and catastrophizing).
- Instead, communication moderates the effects of pain catastrophizing on recall.

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ABSTRACT

Background: Increasing recall of instructions and advice in a pain consultation is important, since it is a prerequisite for adherence to treatment recommendations. However, interference due to pain-related distress may result in poor recall. Whereas there are some indications that recall can be increased by empathic communication that reduces interference, this interesting possibility remains largely untested experimentally.

The current experiment aimed at studying effects of empathic communication, and more specifically validation, on recall during a pain test and possible mediators and moderators of this effect.

Method: Participants received either validating ($N = 25$) or invalidating responses ($N = 25$) from the experimenter during a pain provoking task, followed by self-report measures of interference (affect, situational pain catastrophizing) and recall (accurate and false memories of words).

Results: As expected, the validated group exhibited higher accurate recall and less false memories following the pain test as compared to the invalidated group. This was partly due to the effect of interference being counteracted by moderating the relationship between pain catastrophizing and recall.

Conclusion: These novel results suggest that validating communication can counteract interference due to pain catastrophizing on recall, at least in a controlled experimental setting.

Implications: Good communication by health professionals is of utmost importance for adherence to pain management. The current results expand our knowledge on the effects of pain communication by establishing and explaining a clear link between empathic communication and recall, highlighting the role of pain catastrophizing.

1. Introduction

Difficulties with recall are common among people with pain [1]. Since recall and forgetting is linked to treatment adherence as well as non-adherence [2], this problem can have far reaching consequences. In other words, communicating efficiently is important so that patients can recall information, which in turn is a prerequisite for treatment adherence [3].

A novel approach to do this has been tested in the area of bad news consultations. Two experimental studies show that an empathic communication style [4,5] increased recall of a video vignette as compared to non-empathic communication, when delivering bad news. The authors concluded that this is likely due to empathic communication counteracting interference from distress that bad news itself bring about.

People in pain also experience potential interference of recall. For instance they are often distressed [6]. Also, ruminations in the form of catastrophizing [7] seem to adversely affect recall [8] and can thus be seen as a form of interference. If the same principles apply for pain as with bad news consultation, empathic

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communication can affect recall by counteracting interference due to distress and pain catastrophizing [9].

Defining empathic communication is more difficult than it may seem at first glance. There are many definitions of empathy, which in turn predicts different outcomes [10]. It is therefore important to operationalize empathy in a way that is fitting for the pain field. The definition of empathy used in the studies on bad news consultation [4,5] is akin to emotional reassurance, which in turn is a predictor for detrimental outcomes for pain patients [11], and is thus an untenable operationalization of empathy for the pain field. The pain literature offers an alternative suggestion in using validation [12–14] for this purpose instead. Validation is defined as the ability to convey that the recipient's experience is understandable, legitimate and normal [13,15,16], and thus adheres to a definition of empathy that in turn predicts favourable clinical outcomes [10].

The purpose of this study is to conduct an experiment that tests whether validation [15] has an effect on recall as compared to invalidation [15] on people subjected to a task that causes acute pain and whether this effect is due to interference being counteracted. As can be seen in the models in Fig. 1, this can be achieved two ways. Either the effect of communication is mediated by changes in interference, or communication moderates the effects that interference has on recall.

2. Methods

2.1. Participants

52 participants completed the experiment, two of which were excluded from analyses leaving a final sample of 50 participants of working age, mostly consisting of university students, see Table 1 for a more thorough walkthrough of the demographic properties of the participants. We included people of working age (18–65), fluent in Swedish, without hearing impairment and with no prior affiliations with the experimenter. Participants were randomly and blindly assigned to one of two conditions, ensuring that the groups were balanced with respect to the occurrence of a pain problem. A pain problem was defined as a recurring pain problem in head, abdomen, back, neck or shoulders that has meant a significant hindrance in an important area of life during the last six months. The trials were conducted in the psychological laboratory of Örebro University. The protocol of this study was examined and approved by the regional ethics committee.

2.2. Materials

2.2.1. Pain test

For the pain test, participants' task was to hold a bucket filled sand (1.6 kg for women; 2.4 kg for men) with a straight arm for as long as they can, while listening to a distressing sound. This procedure was repeated four times (i.e., four trials) with short breaks in between. This pain provoking task has successfully been used in previous experimental protocols [17] and proved to work as a painful task for the purpose of this experiment (see Table 2 for pain ratings).

2.2.2. Video recorder

Each session was video recorded, using a Panasonic AG-AC90AEJ, mounted on a tripod.

2.2.3. Measurements

2.2.3.1. Main dependent variable (delayed recall). Following the pain tests, participants were presented with a prerecorded list of 10 words via a loudspeaker next to the participant, for a translation of the word lists, please see the online supplement. This was followed by a 15 s long distracting signal, after which participants were prompted to recall as many words as possible (immediate recall). Upon completion of the pain test, with an approximate delay of seven minutes since the fourth word list, participants were, without any prior instructions, participants were prompted to recall (delayed recall) as many of the words from all the word lists as possible (40 words in total). The main dependent variables are (1) the total number of words accurately recalled and (2) the total number of words falsely recalled during delayed recall.

In total we administered four different prerecorded word lists, one for each test trial, consisting of 10 words each. Each word list consisted of two words that were pain related (such as burning, throbbing), two words that were related to activity (such as training, lifting), two words that were related to passivity (such as pause, resting), two words that were emotionally positive (such as happiness, pleasure) and two words that were unrelated to the other categories (such as computer, always). Prior to the experiment, the word lists were tested on a small independent sample of students ($N = 20$), to ensure equivalence of the different lists.

2.2.3.2. Pretest.

2.2.3.2.1. PCS trait. The pain catastrophizing scale [7] is a 13 item numerical scale ranging from 0 to 52. The pain catastrophizing scale measures the tendency to catastrophize about pain and has shown good validity in predicting various important variables such as pain [7], distress [18] and disability [19]. The scale averages 21.99 in a clinical sample and 16.56 in nonclinical samples [20]. Cronbach's $\alpha = .865$ in the current sample.

2.2.3.2.2. PANAS trait. The positive and negative affect scale [21] is a 20 item numerical scale, divided into two independent subscales, positive affect and negative affect. The scores of the two subscales ranges from 0 to 40. In the dispositional version of the scale participants are prompted to rate how much of an affect they generally experience. Examples of positive items include "Happiness" and "Curiosity", while examples of negative affect entails items such as "Hostile" and "Sad". In this sample Cronbach's $\alpha = .907$ and .769 for the positive and negative subscales respectively.

2.2.3.3. Experimental assessments.

2.2.3.3.1. Pain rating. For state pain ratings we used a single-item 0–10 numerical scale with verbal anchors at the end-points (not at all; extremely).

2.2.3.3.2. PANAS situational. For the post-pain tests a modified version of the positive and negative affect scale, was administered. This prompted participants to report the level of affect they were experiencing during the latest pain trial. The purpose of this measurement was to measure situational affect throughout the experiment. 10 items were presented on a five point numerical scale with verbal anchors (very little or none at all; a little; moderately; quite a bit; very much) at each possible step of the scale. Cronbach's α varied between .768 and .909 and, .618 and .833, for the positive and negative subscale respectively.

2.2.3.3.3. Situational pain catastrophizing. Situational pain catastrophizing was measured with three items from the Pain catastrophizing scale, "I keep thinking of other painful events.", "I can't seem to keep it out of my mind.", and "I keep thinking about how much it hurts." The items were picked with several considerations in mind. First, we wanted items that had a high level of internal consistency as well as a good correspondence with the PCS scale, which is why we selected items from the same subscale of the PCS. Second, we wanted items that were likely to be related to interference, making rumination the logical subscale. Third, we aimed for items that were credible in the specific experimental context. Items were rated on a numerical scale from 0 to 10 with verbal anchors at endpoints (not at all; extremely much). Throughout the experiment α varied between .606 and .824.