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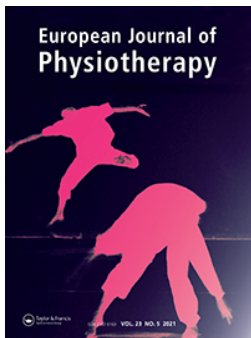
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Physiotherapists' validating and invalidating communication before and after participating in brief cognitive functional therapy training. Test of concept study

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ABSTRACT

Objective: The aim of this study was to investigate physiotherapists' validating and invalidating communication, before and after brief Cognitive Functional Therapy (CFT) training that included a session on validation skills. Associations between validation/invalidation and the characteristics of the interviews and physiotherapists were also explored.

Methods: Eighteen physiotherapists treating patients with low back pain participated in the study. The study had a within-group design in which validation and invalidation for physiotherapists were rated before and after training using a reliable observational scale. We also collected data on interview length and physiotherapists' and patients' speech percentages.

Results: The physiotherapists' validating responses increased and invalidating responses decreased from pre- to post-training. The within-group effect size was large for validating responses and medium for invalidating responses. The interview length increased from pre- to post-training (large effect size). However, the reason for this was related to factors other than validation and invalidation. The results indicate that increased validation is associated with an increase in physiotherapists' speech percentage.

Conclusions: The results of this study show changes invalidating and invalidating communication among physiotherapists from pre- to post-CFT training. The study also found associations between specific interview characteristics and validating communication. Future studies with larger samples and control groups are needed.

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Introduction

Major clinical guidelines for musculoskeletal pain (MSP) highlight the importance of patient-centered care, including effective communication [1]. However, patients with MSP commonly report dissatisfaction with their care [2], and for example describe their encounters in health care as "non-encounters" meaning, that they commonly feel they are not listened to, believed, or understood by health care professionals (HCPs) [2,3]. They also report feeling stigmatised by HCPs [4], being interrupted, and feeling that professionals are in a hurry and do not have enough time for them [2,3]. Instead, they value clear, empathetic communication [3,5,6].

Physiotherapists struggle with listening to and understanding their patients' perspectives in a biopsychosocial framework, which involves beliefs about the reasons for their pain, emotional distress, worries about the future, and expectations [4,7,8]. They also worry that letting patients tell

their stories and asking them open questions will take too much time, resulting in a reluctance to adopt person-centered communication [7–10]. Further, attempts to reassure the patient, such as informing them that their pain is not a serious problem that cannot be overcome, are sometimes unsuccessful and may even increase worry [11,12]. Overall, this indicates that while empathetic communication is both desirable and lacking from the patients' perspective, it is also viewed with some scepticism from HCPs. This highlights the importance of communication training for physiotherapists managing people with MSP and has given rise to psychologically informed physiotherapy practice [13].

One example of psychologically informed physiotherapy is Cognitive Functional Therapy (CFT). CFT training aims, among other objectives, to equip physiotherapists with skills in communication and clinical reasoning within a biopsychosocial framework to explore, identify and manage modifiable biopsychosocial barriers to recovery [14,15]. In qualitative

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studies, physiotherapists who have participated in CFT training have reported developing enhanced communication skills for dealing with their complex patients with MSP [9,16,17]. Patients who have undergone CFT also report recognising the value of communication and therapeutic alliance [18,19]. However, to date, it is unknown whether the training results in changes in physiotherapists' communication behaviours with patients [9,16,17].

One important communication strategy for people suffering from chronic pain is validation [20]. Validation communicates understanding and acceptance of a patient's experiences, feelings, actions, and worries [21,22]. There is evidence that validation regulates negative emotions, is associated with greater patient satisfaction, and builds trust and engagement [23,24]. Further, there are indications that validation may have a positive impact on treatment adherence [25] and that it is likely to enhance treatment effects [24,26]. In contrast, invalidation communicates that what a person feels, thinks, wants, or does is strange, questionable, or wrong [22,27]. It has also been suggested that invalidating communication can increase a patient's efforts to convince the other person that their pain symptoms are real, which in the long run can lead to greater disability due to pain [11,28]. Thus, validating communication addresses important aspects of effective communication applicable to patients with MSP.

Previous studies indicate that even a short training intervention of 1.5 h in validation increases validating communication and decreases invalidating communication behaviours [29]. To date, this has not been studied in the context of physiotherapy practice and it is not known whether current methods in assessing validating communication are applicable in the context of physiotherapy consultations. As physiotherapists worry that this kind of approach may make the interview longer and on the other hand patients often feel the appointments are rushed, it is also important to understand whether the use of validating communication is associated with the length of the interview and the percentage of time physiotherapists and patients speak.

Therefore, the aim of this study was to investigate physiotherapists' validating and invalidating communication during LBP patient appointments, before and after receiving brief training in CFT that included a session on validation skills. In addition, we investigated the duration of the interview and the percentage of time physiotherapists and patients speak to investigate the association of these variables with validation and invalidation. Furthermore, the association between the length of the training the physiotherapists received (4 or 6 days) and validation and invalidation was assessed.

Methods

Overview of the design

We used a within-group design with pre- and post-intervention assessments. The initial physiotherapy sessions with LBP patients were video-recorded, one before and one after the physiotherapist received brief CFT training. The participating physiotherapists chose which specific patient interactions to

record. However, for the patient to be selected, the physiotherapist was not allowed to have treated the patient before, and the patient had to have non-specific persistent LBP and score at least a medium risk on the STarT Back Tool [30] or the short form of the Örebro Musculoskeletal Pain Screening Questionnaire (>40 points) [31,32,33]. The videos were subsequently blindly rated using observational methods for examining validating and invalidating statements. All participating physiotherapists and patients gave their informed consent to use the videos for research purposes. Ethics approval for the study was obtained from the Northern Ostrobothnia Hospital District Ethics Committee.

Training of the physiotherapists

Physiotherapists received four to six days of training in CFT. The CFT training included 1.5 h of validation training, and the participants saw four to eight patient demonstrations that included validating communication. The training also emphasised a person-centered and biopsychosocial approach in the management of LBP. A more detailed description of the training intervention can be found in Holopainen et al. [9], and more information on the principles of CFT can be found in O'Sullivan et al. [15].

Measures

Demographic data

When joining the study, the physiotherapists answered questions related to their age, work setting, and years of practice.

Assessment of validating and invalidating behaviour

The initial interview part of the physiotherapist–patient interaction was assessed and coded by trained observers to determine the level of validation and invalidation in the interactions. Validation and invalidation were coded using the Validating and Invalidating Behaviour Coding Scale (VIBCS) [28,34,35], which codes every verbal statement and categorises it as either validating, invalidating, or neither. A VIBCS coder also notes whether the specific statement is a lower- or a higher-level validation or invalidation. This is then compounded into two general scores, each of which represents the level of validation and invalidation throughout the interaction, on a scale of 1 (which means no validation/invalidation) to 7 (which means only validation/invalidation). Validation and invalidation scales are considered related yet separate from one another. It is, therefore, possible, though not likely, to score high levels of both validation and invalidation in the same interaction. However, in previous studies, the VIBCS has been shown to have good inter-rater reliability [28,34].

Examples of responses that are coded as validation are active listening (non-verbal behaviours that communicate attention, listening, and openness), asking relevant and clarifying questions (e.g. 'How does your pain affect your daily life?'), normalising (e.g. 'It makes sense that you feel like that') and showing respect for the other person in the

current context. Examples of responses that are coded as invalidating are not paying attention, changing the subject, saying that the other person should not feel the way they feel (e.g. 'You shouldn't worry about this'), and agreeing when the other person invalidates themselves. For more specific examples of validation and invalidation in the context of physiotherapy patient encounters from this study, see Table 1.

Video recordings of interviews

In total, 36 initial physiotherapy sessions were recorded. Eighteen of the videos were recorded within 1.5 months before the physiotherapists received training and the other eighteen were recorded on average five months after the training. Physiotherapists in previous studies have expressed worry that using empathetic techniques would lengthen visits and disrupt the balance between the physio and the patient [7–10]. To address these worries, we viewed the videos and calculated the total interview length in minutes, and calculated the percentage of minutes for which the physiotherapist and patient respectively spoke during the interviews.

Training and selection of coders

To have access to reliable coders of validating and invalidating communication in the physiotherapist-patient interactions, we used a specific training procedure that was familiar from previous studies focusing on validation and invalidation [34]. Eight psychology students received two days of training, of which the first focused on validating communication in general and the other specifically how to use the VIBCS.

To select the most reliable and valid coders for the study, several precautions were taken. Two additional videos of interactions between the physiotherapist and the patient were coded using the VIBCS, both by two master coders and the psychology students who had received training in the use of the instrument. This first additional coding was done at the end of the second training day and the second during the week after the training. The inter-rater reliability between each of the coders and the master coders was then calculated. In line with de Vet et al. [36], the Standard Error Method (SEM) was used to assess inter-rater agreement. In this method, the agreement is measured by the scale steps of the used scale (in this case, the VIBCS, which has a scale of 1–7). A lower score with this metric indicates a higher level of inter-rater agreement, whereas a higher score indicates lower interrater agreement. Based on their scores, the five coders with the best agreement with the master coders were selected to rate the videos in the study. The inter-rater agreement was 0.5–0.79 in relation to the master coders among the five coders with the best agreement. This means that on a scale of 1–7, the standard error of measurement between the coders was between 0.5 and 0.79. To ensure the quality of the coders' ratings, the inter-rater agreement among the five coders was also calculated for the sample as a whole after the 36 videos were coded. The ratings were

once again compared to those of the master coders, and an SEM was calculated. At this time point, the obtained SEM was 0.84, meaning that the standard error of measurement between agreements was 0.84 on a scale of 1–7.

Coding procedure

Coding was conducted using VIBCS on the initial interview part of the videotaped physiotherapy sessions. Because the length of the interviews varied greatly (5.39–57.40 min), the middle eight minutes of each video interview were coded. The decision to code eight minutes specifically was based on previous studies that successfully coded clips ranging from seven to ten minutes [29,34,37]. If the video was shorter than eight minutes, the whole interaction was coded. The middle part of the videos was chosen for coding because validating communication on all levels is facilitated and easier to code when the initial information has been gathered. This is due to validation being contingent on prior information, which makes higher levels of validation more likely to occur a few minutes into the consultations rather than right at the start. The coders were instructed to watch each video from the beginning so that they had a better grasp of the context of the interaction, and then to watch the eight-minute sequence for coding at least twice. The order in which the videos (pre- and post-) were viewed was randomised using an internet-based randomisation tool (www.random.org), and the coders were blind to which videos were pre- and post-training. The coders had no information about the physiotherapists and patients who appeared on the videos, the only knowledge they had was that they were coding physiotherapy consultations.

Statistical analyses

All statistical analyses were performed using SPSS version 25.0. To test for significant differences between pre- and post-training measurements, we used paired-samples *t*-tests. The distribution of the differences between the dependent variables was visually examined and found to approximate normality. Cohen's *d* was employed to determine the size of the effect of the training (95% confidence intervals) and the recommended cut-offs were used (>0.20, small effect; >0.50, medium effect, and >0.80 large effects) [38]. Change scores were calculated for the following variables: Validation, invalidation, interview length, therapist's speech percentage, and patient's speech percentage. Pearson correlations were used for the association between the length of the training the physiotherapists received and (in)validation. Physiotherapists' work experience worked as a control variable and we did not expect it to be relevant.

Results

Participants

Eighteen physiotherapists out of 23 who were earlier recruited for the research project, and who participated in

Table 1. Examples of physiotherapists' validation and invalidation in this study.

Example 1: validation <i>The patient is depressed and feels lonely, she is divorced and many of her friends have died and she has more pain during holidays. The physiotherapist reflects on what the patient has said</i>	Physiotherapist: Patient:	Are you still active, even if you feel down and ... ? This Mothers' day it was quite hard. I was at home all day. I didn't even go to the grocery store. I thought I'd go to that local restaurant to eat, but I didn't.
	Physiotherapist:	So, these kinds of holidays are often harder for you?
Example 2: validation <i>Physiotherapist rephrases what the patient has said when she talks about factors that make her pain worse</i>	Patient:	... yes I know, I can anticipate very well what I will feel when I get up from that position.
	Physiotherapist:	One thing I'm hearing is that it has led you to completely avoid certain postures.
Example 3: validation <i>Physiotherapist and patient talk about the patient's difficult previous life situation. The patient starts to cry and apologises.</i>	Physiotherapist:	I'm used to everything, don't worry. I can get you some tissues ... [continues] ... how do you perceive your life balance at the moment?
	Patient:	Ok, I think. I can't think of anything particular right now ...
	Physiotherapist:	So, no big stress factors ...
Example 4: invalidation <i>Physiotherapist and patient discuss the patient's physical activity levels and the physiotherapist does not take the patient's distress into consideration</i>	Physiotherapist: Patient:	How many times a week do you exercise? Once or twice [sighs]
	Physiotherapist:	Well, that's not enough ... it should be three or four times a week
Example 5: invalidation <i>Physiotherapist starts by asking about fears related to pain but when the patient answers, she is unresponsive and then changes the subject</i>	Physiotherapist: Patient:	Do you have fears related to your pain? Well, not really, but yes. I'm very careful with the movements that hurt. The pain's not nice but I'm not really afraid of it ... But I get scared when I think about whether it will ever stop.
	Physiotherapist:	[quiet, looks at the computer and takes notes] hmm ... let me get back to what you said earlier about what makes it worse, certain movements ... so what movements are the most difficult?

the CFT training, were included in this study. One physiotherapist withdrew from the project because she changed jobs, and four did not return the video after the training (one was retired, the work responsibilities of two physiotherapists changed and one did not give any reason for not returning the video). One of the physiotherapists was male and 17 were female. Their mean age was 45 (SD = 8) years and they had an average of 20 years of work experience (SD = 7.8). The physiotherapists worked in primary health care (five in occupational and 13 in public health care) across Finland. Ten physiotherapists received six days of CFT training, and the other eight participants received four days as their employers did not enable them to participate in the booster training sessions.

Interview-related changes after CFT training

According to the VIBCS scores, after the training, the physiotherapists' validating responses had increased and their invalidating responses decreased in comparison to before the training. The within-group effect size was large (0.84) for the validating responses and medium (0.64) for the invalidating responses (Table 2). The interviews were longer (mean length pre-training 16.36 min, post-training 27.71 min) after training. The within-group effect size was large (0.93) (Table 2). In addition, the percentage of time for which the physiotherapist spoke, which is the proportion of time taken by the physiotherapist in relation to interview length, decreased overall after the CFT training (from 37% to 32%), an effect that had a small effect size (0.36) (Table 2).

Table 2. Means (standard deviations) in raw scores and z-scores pre-treatment.

Variable	Pre M (SD)	Post M (SD)	ES	t (df)	p
Validation: VIBCS	3.31 (0.70)	3.97 (0.84)	.84	-4.00 (17)	<.001
Invalidation: VIBCS	2.18 (0.73)	1.74 (0.62)	.64	3.94 (17)	<.001
Interview length: Minutes	16.36 (9.97)	27.71 (14.15)	.93	-4.27 (17)	<.001
Therapist's speech percentage	37.33 (12.5)	32.06 (11.47)	.36	1.56 (17)	<.001

N: number of participants; M: mean; SD: standard deviation; t: t-value; df: degrees of freedom; VIBCS: Validating and Invalidating Behaviour Coding Scale.

Relationship between changes

The change in validation was positively associated with the change in the percentage of time for which the physiotherapist talked during the session (Table 3). This implies that a physiotherapist who is more validating is more active and talks more during the interview. Conversely, a change in invalidation was negatively associated with changes in the percentage of time for which the patient spoke during the session (Table 3), implying a smaller proportion of the patient's speech. However, there was no significant relationship between change in validation/invalidation and change in interview length (Table 3). We also found no significant relationship between the pre- and post-training level of validation/invalidation and interview length (Table 4). This indicates that although the interviews were significantly longer after the training, factors other than increased validation and decreased invalidation accounted for this change. Lastly, no

Table 3. Pearson correlations of change scores.

	Validation	Invalidation	Interview length	Therapist's speech percentage	Patient's speech percentage	Length of training	Work experience
Validation	1.00						
Invalidation	-0.23	1.00					
Interview length	-0.03	-0.01	1.00				
Therapist's speech percentage	0.48*	-0.38	-0.48*	1.00			
Patient's speech percentage	-0.53*	0.34	0.49*	-0.96**	1.00		
Length of training	0.24	-0.21	0.06	0.10	-0.12	1.00	
Work experience	0.11	0.18	-0.46	-0.46	-0.07	-0.31	1.00

Note. * $p < .05$ ** $p < .01$.

Table 4. Spearman's rho coefficients for validation, invalidation, and interview length, before and after training.

	Validation pre	Validation post	Invalidation pre	Invalidation post	Interview length pre	Interview length post
Validation pre	1.00					
Validation post	0.62**	1.00				
Invalidation pre	-0.65**	-0.62**	1.00			
Invalidation post	-0.38	-0.60**	0.38	1.00		
Interview length pre	0.06	0.11	-0.04	-0.13	1.00	
Interview length post	-0.27	-0.03	0.06	0.00	0.70**	1.00

Note. ** $p < .01$.

significant associations were found between changes in validation and invalidation and the length of the CFT training (four or six days) or the work experience of the physiotherapist (Table 3).

Discussion

Using VIBCS, we found that physiotherapists who received brief CFT training with a specific validation training component were more validating (large effects size) and less invalidating (medium effect size) after the training compared to before. Validating communication increased irrespective of the work experience of physiotherapists and the length of the CFT training (four or six days).

In addition, the average interview length increased after the training and the physiotherapists' average speech percentage decreased and the patients' speech percentage increased. Interestingly the overall increase in interview length was statistically unrelated to validating and invalidating communication, both at baseline and in terms of change. Comparison of change in validation and the percentage of speaking time of physiotherapists and patients before and after the training showed that the average decrease in the percentage of physiotherapists' speech was not only unrelated to validation but showed a reverse association. This indicates that although the physiotherapists' speech percentage on average decreased, validating communication was associated with an increased physiotherapist speech percentage. However, an association was also found between increased validation and increased physiotherapist speech percentage, indicating that a more validating physiotherapist is also more verbally active during the interview.

It could be interpreted that using validating communication gave the patient more space to express their views, but on the other hand, validation involves being active and asking reflective questions, summarising, etc., which takes more time. It has been suggested that validation encourages the description of feelings and experiences and that it enhances

the patient's description of important aspects in the pain context [20,23,27]. However, this does not necessarily mean it takes more time – it can mean more accurate and efficient ways of communicating.

The finding that increases in invalidation is associated with a greater proportion of physiotherapist speaking time but not interview length is also intriguing. Clinicians have been reluctant to ask open, reflective questions and discuss broader issues in patients' lives because they are afraid of long answers that they do not have time for [9,10]. The data in this study speak against this concern, as there was no significant correlation between increases in validating communication and increases in interview length. Rather, validating communication increased without necessarily leading to longer interviews. While speculative, the significant increase in interview time may reflect a greater exploration of the multi-dimensional factors linked to LBP during the interview post-training, thus leading to more open, wider-ranging communication.

The results of some previous studies that have trained physiotherapists for example to deliver biopsychosocial or evidence-based interventions have shown challenges in changing their practice [39,40]. However, the results of this study are in concordance with those of other studies in which validating communication was taught to HCPs. Linton et al. 2017 found that brief validation training of medical students improved their communication through increasing validating and decreasing invalidating responses [29]. In addition, Murray et al. studied self-determination-based communication skills training of physiotherapists and found that eight hours of training had a large positive influence on physiotherapists' communication and that those who participated in training gave patients' needs greater support [41].

Many of the physiotherapists who participated in this study reported communication skills as being among the easiest to implement in practice after the training. They also perceived that their communication was significantly enhanced as a result of the training [9]. Some of them reported that earlier

when their patients had started to talk about more-difficult topics, they had changed the subject because they did not feel prepared to listen to these stories or thought that personal problems were not relevant to physiotherapy. Moreover, the patients in the 'after videos' were interviewed as part of a separate study, and most of them reported a great therapeutic alliance with their physiotherapists [18].

Some physiotherapists also reported insecurity when dealing with psychosocial factors and time constraints because the interview now took longer, but many reported that this was compensated through shorter time used for clinical assessment as they were now able to focus on what was essential, rather than performing all the clinical tests on everybody. Time constraints are a common theme that physiotherapists often report after biopsychosocial training, but many also report that they learn to deal with this after practising the new way of working for a while [7].

Strengths and limitations

There are several strengths of this study including utilising pre- and post-intervention measurements in an ecologically valid environment, with actual patients and their real concerns. This complements several of the previous studies conducted in the field which have often been either experimental [25,28] or have used actors [29]. The use of a previously validated measurement tool (VIBCS) was also a strength of this study. Future research evaluating the effectiveness of training in validating communication should thus also include a control group and assess the long-term effects of the training.

However, there are several limitations that are important to acknowledge. First, previous studies using video recordings of physiotherapy treatment sessions have indicated that the presence of a camera can reduce physiotherapists' empathic behaviours and nonclinical communication compared with their usual practice [42]. On the other hand, when people are aware that they are filmed, this may have resulted in a performance bias related to their training. Furthermore, only one video per physiotherapist was evaluated before and after the training and this one appointment may not be representative of their ways of working in general. Another possible limitation is video quality. The patients' faces were not visible in all the videos, which might have caused challenges in rating the communication. However, the verbal exchange is probably the main basis for rating validation and invalidation. Because this study lacked a control group, potential confounding factors could not be controlled for. Moreover, the lack of a control group and the small sample size limit the generalisability and conclusions regarding the causality of these results. As only one of the participating physiotherapists was male, there was also a gender bias towards women in this study.

Conclusions

Based on this test of concept study, physiotherapists showed more validating and less invalidating communication behaviours in filmed physiotherapy sessions after a brief CFT

training (that included validating communication). Overall, the interviews were longer after training compared to before training. However, when the percentage of speaking time for physiotherapists and patients was explored, physiotherapists talked less and patients talked more after training compared to before. Interestingly, the length of the interview was not related to validating and invalidating communication indicating that it does not take more time to validate patients. A practical implication of this study is that clinicians may engage in validating communication without fear of prolonging the length of the interview. This is of importance because time and effectiveness are a constant struggle in the clinic. To further disentangle the specific effects of validating communication as well as other aspects of communication, future studies should include a larger sample and control groups, as well as measurements of other aspects of communication.

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Disclosure statement

Peter O'Sullivan, Mikko Lausmaa, and Riikka Holopainen have received fees for speaking at conferences and providing clinical workshops for health care professionals in the management of MSK conditions. Jaro Karppinen has received fees for lectures from MSD, Pfizer, and Orion. Scientific advisory board: Axsome Therapeutics Inc. Sara Edlund, Johan Carstens Söderstrand, and Steven Linton have no conflicts of interest to declare.

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