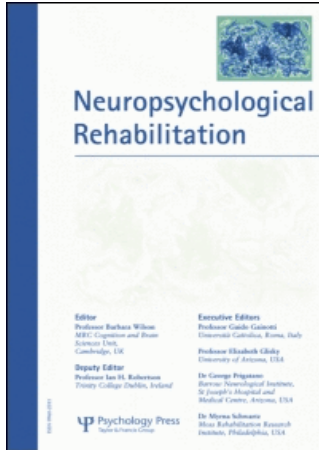


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Working alliance and patient compliance in brain injury rehabilitation and their relation to psychosocial outcome

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Employment and physical activity at follow up of 98 patients who underwent a holistic neuropsychological outpatient rehabilitation programme were examined in relation to therapeutic process factors. The patients had suffered a traumatic brain injury ($n = 26$), a cerebrovascular accident ($n = 58$) or another neurological insult ($n = 14$). Two staff members, a neuropsychologist and a physiotherapist, retrospectively rated patients' compliance with the therapeutic regime and their working alliances. They completed the ratings separately, but had some degree of common knowledge about the patients. While the compliance ratings were closely associated, working alliance ratings differed between the raters. The working alliance ratings were predictive of employment, but not physical activity. Both compliance ratings predicted physical training, but only the neuropsychologist's compliance rating was associated with follow-up employment. Post-hoc analysis showed that high compliance ratings given by the physiotherapist were also a predictor of employment. Overall, there was a tendency for the neuropsychologist's ratings to be more closely associated with employment than the physiotherapist's ratings. These results indicate that employment and physical activity are differentially predictable from different process measures rated from different professional perspectives.

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INTRODUCTION

The purpose of the present study was to investigate the impact of the therapeutic relationship and patients' compliance on the outcome of holistic neuropsychological outpatient rehabilitation.

The physical, psychological, and social consequences of brain injury are well documented (Masson et al., 1996; Thomsen, 1987) and considerable effort has been made to develop rehabilitation programmes that fit the needs of such patients. The success of holistically-oriented post-acute neuropsychological outpatient rehabilitation is documented in several studies (Ben-Yishay, Silver, Piaetsky, & Rattock, 1987; Christensen et al., 1992; Malec & Basford, 1996; Prigatano et al., 1994). However, treatment success varies between patients such that even a good programme does not have the same effect on all patients. This is partly due to what does and does not happen during therapy. In psychotherapy research, there is now a strong focus on the analysis of the therapeutic process and the impact of elements of this process on outcome. The therapeutic working alliance and patient's compliance with the treatment regimen are regarded as two important process elements.

The importance of a functioning working alliance for a successful therapy has been documented across a wide variety of therapeutic settings (for a review, see Constantino, Castonguay, & Schut, 2002; Horvath, 1994; Horvath & Symonds, 1991; Lambert & Barley, 2002; Shirk & Karver, 2003), making the alliance a prominent "non-specific" factor in therapy. Nevertheless, in different therapeutic approaches and different settings, different aspects of the alliance are regarded as being important, and the outcome is defined differently. For instance, in client-centred therapy, a good alliance has an intrinsic value by giving the client the opportunity to experience a positive relationship (Rogers, 1952). In medical therapy, the client-practitioner relationship may be seen as a tool to increase the patient's compliance with the medical regime (Meichenbaum & Turk, 1987). In all settings, the therapeutic alliance is a potential target for therapeutic intervention. The client-practitioner alliance, and thereby the treatment result, can be improved by clinical training of the therapist (Hilsenroth et al., 2002).

In the context of medical therapy, the importance of patients' compliance for outcome and the enormous costs of non-compliance are well documented (for a review, see Meichenbaum & Turk, 1987; Volmer & Kielhorn, 1998). The consistent findings are seemingly easy to explain. A treatment can only be effective if the patient complies with the treatment regimen. However, following Petermann and Mühlig (1998), compliance is more than the patient's willingness to do what he/she is told. A complex therapeutic intervention can only be fully effective if the patient not only follows the therapeutic advice, but also participates and engages actively

and independently. This requires that the patient should take responsibility for the course of therapy. Thus, compliance depends on the patient's motivation and cannot be prescribed by the health care professional. Compliance is not a stable personality trait, but rather a complex, dynamic, and situation-specific phenomenon that may change in the course of therapy (Petermann & Mühlig, 1998). Non-compliance damages the effect of even the most efficient therapy and is a source of error variance in the evaluation of therapy effectiveness. This makes patient motivation and compliance a primary target for therapeutic interventions. Meichenbaum and Turk (1987) and Petermann and Mühlig (1998) consider therapeutic implications of the research on compliance.

Based on their clinical experience, Prigatano and Klonoff emphasise the importance of the therapeutic alliance specifically in neuropsychological rehabilitation (Klonoff, Lamb, & Henderson, 2001; Prigatano, 1999; for a description of the phenomenological approach applied at the Center for Rehabilitation of Brain Injury in Copenhagen, see Caetano & Christensen, 2000). A trusting client-practitioner relationship is seen as a prerequisite for the patient's willingness to face the facts and deal with the consequences of his/her brain injury. The awareness of the illness and the following consequences is seen as crucial for the patient's engagement in the rehabilitation process (compliance), and thereby—in the case of effective treatment—influences the therapeutic outcome.

Nevertheless, in the context of neuropsychological research, only a few studies have evaluated the working alliance and patients' compliance systematically. Prigatano et al. (1994) and Klonoff et al. (2001) showed that occupational outcome was better when the therapeutic working alliance was rated as positive by the therapists. Ezrachi et al. (1991) found that their therapist-rated measure of patients' acceptance of and coping with the programme routines, as well as patients' active engagement in the programme, was the most important predictor of employment outcome six months after programme completion. In other words, compliance strongly affected outcome. This may be an indicator of the efficacy of the programme with which the patients complied.

In summary, we know that the therapeutic alliance and compliance are important features of the therapeutic work, and we believe that this is also the case in neuropsychological rehabilitation. The aim of the present study is to examine the role of the therapeutic alliance and patient compliance in the therapeutic process in more detail.

1. We will compare the role of the therapeutic alliance and compliance in different elements of a holistic neuropsychological rehabilitation programme. Do patients comply equally with all programme elements, and do they build up a similar alliance with all staff members? Since

we view patient compliance and the therapeutic alliance as varying and changeable process factors, we assume that this is not necessarily the case.

2. We will examine working alliance and compliance in relation to each other. Does a good working alliance result in good compliance? How does a dysfunctional therapeutic alliance affect patients' compliance?
3. We will attempt to replicate earlier findings showing the importance of the working alliance and compliance in neuropsychological rehabilitation as related to outcome (Ezrachi et al., 1991; Klonoff et al., 2001; Prigatano et al., 1994).
4. Different rehabilitation programme elements have different goals. We will examine whether ratings based on observations in the neuropsychological and psychotherapeutic elements of the programme show different relations to outcome than ratings based on observations during physical training.
5. We will examine differences between working alliance and patient compliance in their relation to outcome. Are the therapeutic alliance and patient compliance differentially related to occupational status and physical activity at follow-up?

METHOD

Subjects

Subjects included in the present study comprised patients who underwent a post-acute neuropsychological rehabilitation programme at the Center for Rehabilitation of Brain Injury at the University of Copenhagen. The rehabilitation programme accepts adult patients with acquired brain injury. The programme involves attendance at the centre for four days a week for about four months with subsequent follow-up according to individual requirements. Patients commence the programme in groups of 15 to 20, twice yearly. The programme involves elements of cognitive, physical and social training; it is intentionally multidimensional and the centre's professional staff includes neuropsychologists, physiotherapists, speech pathologists, an occupational therapist and a special education teacher. Details of the programme are presented elsewhere (Caetano & Christensen, 2000; Christensen & Caetano, 1999; Rasmussen, 1994).

A total of 103 patients completed the rehabilitation programme between August 1998 and June 2001. However, five patients were not available to the present follow-up study owing to death or uncontactability. Table 1 shows

TABLE 1
Patients' demographic and medical characteristics

	<i>Mean (SD)</i>	<i>N (%)</i>
Age at injury (years)	42.4 (11.9)	
Duration of hospitalisation (days)	93 (97)	
Age at programme entry (years)	43.5 (11.8)	
Sex		
Male		57 (58)
Female		41 (42)
Type of injury		
Traumatic brain injury		26 (27)
Cerebrovascular accident		58 (59)
Other		14 (14)

basic demographic and medical data concerning the remaining 98 patients who thus entered the study. Older patients are rarely referred to the rehabilitation centre, and within our sample, the oldest patient was aged 65 years at the time of injury. There was considerable variation in the total duration of hospitalisation: median duration was 66 days. It can be seen that the time between injury and programme entry was comparatively short: 55% of patients entered the programme within one year of their injury, and 90% within two and a half years. The preponderance of male patients arises from the traumatic brain injury group. The proportion of males and females in the other two diagnostic groups was approximately equal. Included within the "other" injury category are patients with brain tumours, anoxia following cardiac arrest and infections, e.g., meningitis.

Measures

In order to evaluate working alliance and patient compliance within the programme we constructed a rating form which was completed for all patients by the senior neuropsychologist (FH) and the senior physiotherapist (PZ) at the centre. The rating form comprised six items (Table 2). The form was completed as part of a broader questionnaire comprising 11 items.

The raters were asked to judge working alliance, using four items based on the working alliance scale developed by Prigatano et al. (1994), namely, (1) percentage of patient attendance, (2) quality of verbal agreement between therapist and patient as to a course of action, rated on a three-point scale from 1 = no agreement 50% or more of the time to 3 = progressive verbal agreement as to the course of action that should be taken, (3) patient appreciation of accomplishments and services, rated in three categories, and (4) patient engagement rated on a five-point scale ranging from 1 = active

TABLE 2
Working alliance and compliance items and scales

		<i>Neurop.</i>	<i>Physioth.</i>	<i>Test</i>
1. Attendance (%)	Mean	97	86	$z = -7.52, p < .001^a$
	SD	7.0	13.7	$\rho = .58, p < .001^b$
2. Verbal agreement	Not established	5%	16%	
	Waxing and waning	35%	22%	$z = -1.40, p = .16^a$
	Progressive	60%	61%	$\rho = .39, p < .001^b$
3. Patient's appreciation of accomplishment	Underestimation	8%	24%	$X^b = 14.36, p < .01^c$
	Overestimation	14%	18%	$\kappa = .25, p < .001^d$
	Realistic appreciation	78%	58%	
4. Engagement	Little or no activity	3%	6%	
	Active when supported	8%	17%	
	Active without preparation	6%	12%	
	Active and prepared	65%	36%	$z = -2.16, p = .03^a$
	Active, independent and spontaneous input	17%	29%	$\rho = .57, p < .001^b$
5. Acceptance of programme	Not at all	2%	2%	
	Very little	3%	6%	
	A little	15%	15%	
	Somewhat	21%	36%	$z = -2.26, p = .02^a$
	A lot	58%	41%	$\rho = .37, p < .001^b$
6. Following therapist's advice	Not at all	2%	3%	
	Very little	9%	13%	
	A little	22%	19%	
	Somewhat	34%	34%	$z = -1.17, p = .24^a$
	A lot	33%	31%	$\rho = .59, p < .001^b$
Working Alliance Scale	Poor or fair	41%	54%	$X^b = 4.11, p = .04^c$
	Good or excellent	59%	46%	$\kappa = .3, p < .01^d$
Compliance Scale	Mean	4.0	3.8	$z = -2.19, p = .03^a$
	SD	0.9	1.0	$\rho = .62, p < .001^b$

^aWilcoxon's signed ranks test, ^bSpearman's Rho, ^cMcNemar-Bowker test, ^dCohen's Kappa, ^eMcNemar test.

and independent, spontaneous input to 5 = poor or no activity. For the present study, we have followed Prigatano et al. (1994) in computing a dichotomous score for working alliance: a "good or excellent" working alliance group was defined as (1) patient attendance at least 90%, (2) verbal agreement rated as 'progressive', (3) patient appreciation rated as 'realistic', and (4) patient engagement rated as at least 'active and prepared'. Patients not meeting this combined criterion were classed as a "poor or fair" working alliance group. Two dichotomous working alliance scores were thus derived from the neuropsychologist and physiotherapist rating forms separately.

For the measurement of patient compliance, we computed the average of three items, again separately for the neuropsychologist and physiotherapist ratings, namely, (1) patient engagement, (2) patient acceptance of programme elements and objectives, and (3) patient following the therapist's advice. With the engagement item, the compliance scale overlaps with the working alliance scale. The two latter items were derived from a study reported by Ezrachi et al. (1991). For the purpose of our study, these two items were rated on a five-point scale from 1 = not at all to 5 = a lot.

For the analysis of the relationship between working alliance and compliance ratings, we recoded the compliance scales into three categories. Patients were divided into three groups of approximately equal size with low, average, and high compliance ratings, respectively. Cutoff scores were chosen separately for the neuropsychologist's and the physiotherapist's compliance ratings. Patients' recoded compliance scores were then compared with their own scores on the working alliance scale, again separately for each rater.

The rating forms were completed retrospectively between December 2002 and January 2003, i.e., between 18 months and 4 years after the patients finished the programme. The neuropsychologist and the physiotherapist had had close, daily and separate contact with the patients while they were in the programme, and their ratings were made independently of each other.

As part of a separate study, in December 2001, a semi-structured psychosocial follow-up schedule was completed for the same 98 patients. This schedule comprised items concerning employment, living conditions and leisure activities. It was completed, collaboratively, by the clinical staff most familiar with the individual patients, with reference to the most recent knowledge concerning them. The time intervals between programme completion and follow-up information ranged between 2 months and 3 years (*mean* = 16 months, *SD* = 9 months). It should be noted that, for some patients, some of this information was not available. For present purposes, we categorised patients' occupational status and physical training activity as shown in Table 3.

It should be noted that "supported employment" involves return to a normal working situation where the patients' wages are partially refunded to the employer by the state. The "physical training" variable divides patients into those training intensively and at least weekly (typically fitness or running training), those training only coincidentally or being physical active for leisure purposes or to get to work by bike, and those being physically inactive.

For the comparison with the process measures, we dichotomized the outcome measures. Unemployed patients were contrasted with those who had some form of competitive or voluntary work. Patients who trained at least weekly were contrasted with those training infrequently or never.

For inferential statistic testing, we used non-parametric procedures with α set to .05 (2-tailed). Analyses were performed using SPSS 11.5.

TABLE 3
Distribution of outcome measures

	<i>N</i> (%)
Employment	
Competitive	12 (13)
Retraining	19 (20)
Supported	32 (33)
Voluntary	5 (5)
Unemployed	27 (28)
Physical training	
No training	37 (39)
Leisure physical activity or infrequent physical training	22 (23)
At least weekly physical training	35 (37)

RESULTS

As a first step, we examined the working alliance and compliance ratings. At the single item level, ratings were generally positive (Table 2). Attendance was usually rated as being high ($m = 97\%$), by the neuropsychologist, while the physiotherapist reported more missed appointments ($m = 86\%$ attendance). Verbal agreement between patients and therapists was typically progressive. The majority of patients were judged as having appreciated accomplishments and services realistically. Most patients were at least rated as being active and prepared in therapy. One third of the patients were rated as following the therapist's advice "somewhat", and one third as following advice "a lot". Prominent differences between the two raters can be seen in four items: The physiotherapist rated patients' attendance, patients' appreciation of accomplishments and services, patients' engagement, and their acceptance of the programme routines less positively than did the neuropsychologist (Table 2). Inter-rater agreement for the single items was low to moderate (Table 2).

The neuropsychologist and the physiotherapist rated 59% and 46%, respectively, of the patients as having a "good or excellent" alliance (Table 2). Cronbach's α for the neuropsychologist's working alliance rating scales was .63, and for the physiotherapist's rating .85. Inter-rater agreement was significant, but relatively low (Cohen's Kappa = .3, $p < .01$); 35% of all patients were rated as having a good or excellent alliance by both raters, 30% as having a poor or fair alliance. The neuropsychologist was more positive in his alliance ratings (McNemar's test $X^2 = 4.11$, $p = .04$).

The mean compliance score for the neuropsychologist was 4.0 ($SD = 0.9$), and for the physiotherapist it was 3.8 ($SD = 1.0$; Table 2). Although the difference between the ratings appears to be small, Wilcoxon's signed rank

test was significant ($z = -2.19, p = .03$). The two compliance ratings were strongly correlated (Spearman's $\rho = .62, p < .001$). Cronbach's α for both the neuropsychologist's and physiotherapist's compliance rating scales was .90.

As can be seen in Table 3, the majority of patients had returned to some form of employment at follow-up, with "supported employment" being the largest single category. Only a minority of those who were employed at follow-up were working full-time (25%) and similarly only a minority of them (33%) returned to their pre-injury place of employment. The large majority (69%) were living with a partner (in almost all cases, with the partner they had pre-injury). Most patients (74%) were involved at least weekly in some form of leisure activity such as sports, hiking, reading, membership of societies, evening classes, etc. (passive activities such as watching television were excluded). About one third of the patients trained intensively and at least weekly at follow-up (Table 3).

We examined the relationships between patients' demographic and medical characteristics (see Table 1) and working alliance and compliance ratings. No significant associations were found (Mann-Whitney U -tests and X^2 -tests; $p > .05$). We also examined the relationships between patients' demographic and medical characteristics and their outcome at follow-up. The only associations were between patients' age and occupational status, and between patients' type of injury and physical training. Patients with a lower age at injury or at programme entry were more likely to have a job at follow-up (Mann-Whitney U -tests; $p < .05$) and patients with a cerebrovascular accident were more likely to train weekly than traumatic brain injury patients (X^2 test; $p < .05$).

We compared the lowest, intermediate and highest third of the compliance ratings with the working alliance ratings, separately for both raters. The association between compliance and alliance ratings was strong (Cramér's $\phi = .79$ and $.76$ for the neuropsychologist and the physiotherapist, respectively; $p < .001$ for both associations; Table 4). Whereas optimal compliance was almost always associated with good or excellent alliance ratings, low compliance ratings were always associated with poor or fair alliance ratings. While the physiotherapist's intermediate compliance ratings were associated with both good and poor alliance ratings, the neuropsychologist's intermediate compliance ratings were more often given when the alliance was rated as good or excellent.

Next, we examined the working alliance and compliance ratings in relationship to employment and physical training at follow-up. Both the neuropsychologist's and the physiotherapist's working alliance ratings were significantly related to employment at follow-up. Table 5 shows that a good/excellent working alliance is not a necessary, but (in most cases) a sufficient, condition to have a job at follow-up: Patients who had a good or

TABLE 4
Working alliance and compliance ratings in relationship with each other

Working alliance rating	Neuropsychologist Compliance rating				Physiotherapist Compliance rating				Total
	<4	4-4.5	>4.5	Total	<3.5	3.5-4.5	>4.5	Total	
Poor/fair	29	7	4	40	30	21	2	53	
Good/excellent	0	25	33	58	0	14	31	45	
Total	29	32	37	98	30	35	33	98	
$X^2(1, n = 98) = 60.59,$ $p < .001$ Cramér's $\phi = .79,$ $p < .001$					$X^2(1, n = 98) = 56.61,$ $p < .001$ Cramér's $\phi = .76,$ $p < .001$				

TABLE 5
Working alliance in relationship to outcome measures

		<i>Outcome</i>					
		<i>Employment</i>			<i>Weekly physical training</i>		
		<i>No</i> <i>N (%)</i>	<i>Yes</i> <i>N (%)</i>	<i>p</i>	<i>No</i> <i>N (%)</i>	<i>Yes</i> <i>N (%)</i>	<i>p</i>
Working alliance rating	Neuropsychologist	20 (51)	19 (49)		27 (73)	10 (27)	.17
	Good/excellent	7 (12)	50 (88)	<.01	32 (56)	25 (44)	
Physiotherapist	Poor/fair	19 (37)	33 (64)		37 (70)	16 (30)	.11
	Good/excellent	8 (18)	36 (82)	.05	22 (54)	19 (46)	

TABLE 6
Compliance in relationship to outcome measures

			Outcome							
			Employment				Weekly physical training			
			No	Yes	<i>p</i> ^a	<i>N</i>	No	Yes	<i>p</i>	<i>N</i>
Compliance rating	Neuropsychologist	Mean	3.7	4.1	.03	96	3.9	4.2	.03	94
		SD	1.0	0.8			1.0	0.8		
	Physiotherapist	Mean	3.6	3.9	.13	96	3.6	4.1	.03	94
		SD	0.9	1.0			1.1	0.9		

^aMann-Whitney *U*-test.

excellent alliance with their therapists, especially with their neuropsychologist, were very likely to find a job. There was a tendency for the neuropsychologist's alliance rating to make a better prediction of employment than the physiotherapist's rating. Neither of the alliance ratings was significantly related to physical training at follow-up.

Table 6 shows the compliance ratings in relation to follow-up outcome. While both the neuropsychologist's and the physiotherapist's compliance ratings were significantly related to physical training at follow up, only the neuropsychologist's compliance rating was related to employment at follow-up.

DISCUSSION

The neuropsychologist and the physiotherapist completed the rating forms independently of each other. Nevertheless, the interdisciplinary work at the Center for Rehabilitation of Brain Injury involves close communication between the staff members to ensure that all therapists are informed about the patients' activities in all parts of the programme. This means that the ratings obtained for this study were made independently, on the basis of the therapists' own knowledge about the patients, but that the therapists shared some knowledge. The neuropsychologist's ratings were thus influenced by what he had heard about the patients' behaviour in physiotherapy, and the physiotherapist's ratings would have incorporated information about patients' neuropsychological and psychotherapeutic activities.

While the raters agreed to a large extent in the rating of patients' compliance, the inter-rater differences on the working alliance scale are considerable. The question arises, whether the differences in the ratings reflect differences in patients' behaviour or in the therapists' rating style. Such a

rater bias should have an impact on all ratings and the fact that rater agreement was strong in one scale and weak in the other could therefore mean that the differences between the raters reflect differences in the processes under observation. Thus, whereas patients' compliance seems to be quite similar in neuropsychological and physical training, the therapeutic alliances differed to a greater degree between the settings and were generally less positive in physical training.

The low inter-rater agreement on the working alliance scale could also be a consequence of the low internal consistency of this scale as rated by the neuropsychologist. A reason for this inhomogeneity could be that a very large proportion of the patients (96%) was rated as having attended the psychological part of the rehabilitation programme 90% or more of the time (compared with 64% of the patients having attended the physical training 90% or more of the time). That is, a lack of variance in the neuropsychologist's attendance ratings could be the reason for the near-zero correlation between this variable and the others, resulting in a low scale homogeneity.

The question of whether differences between the raters are due to differences in the rating styles or differences in patients' behaviour nonetheless remains open. The problem could be solved by involving a larger number of raters and averaging ratings for each programme component.

The comparison of patients' working alliance with their compliance with the rehabilitation programme shows that the patients did not fully comply, if the alliance was not functioning. On the other hand, if the therapeutic alliance was good or excellent, patients were never rated as being uncompliant. This finding corresponds to the general assumption that the development of a "good enough" working alliance is necessary before the therapeutic work can succeed (Horvath, 1994). The finding that the therapists never rated the working alliance as being good or excellent if the patient did not comply may reflect the fact that many clinical neuropsychologists see patients' compliance as crucial for their therapeutic work and tend to define the quality of the therapeutic relationship by the degree of their patient's compliance.

It might be argued that the high concordance between our compliance and our working alliance scale is due to an overlap of content. The working alliance scale we used examines whether client and practitioner work effectively and whether they agree on therapy goals, but it neglects the emotional bond between client and practitioner. This may have augmented the statistical association with the compliance scale. However, the scales overlap in a meaningful way, because engaged work on tasks is both part of a functioning working alliance and of patient compliance. It should also be pointed out that some patients were actually rated as being very compliant, although their working alliance was poor.

We were able to replicate the relationship between working alliance, compliance and occupational outcome reported by Prigatano et al. (1994) and

Ezrachi et al. (1991). In other words, the therapeutic work appears to impact on the patients' status at follow-up. This finding underlines the importance of the therapeutic alliance and compliance as such, as well as supporting the efficacy of holistic, neuropsychologically oriented outpatient rehabilitation. However, the interpretation of the results is limited by the retrospective nature of the data. The raters had knowledge about the patients' outcome, and this may have biased their ratings. It should be noted that the study by Prigatano et al. (1994) bears the same limitation, and that their findings could be replicated by Klonoff et al. (2001) with a prospective study design.

One could argue that we have measured stable patient characteristics, rather than the therapeutic process. These characteristics may have been present throughout therapy in the same way as they have been under job search and when the patient decided to stay physically active after rehabilitation. Patient attributes may be contributors to outcome in their own right, independently of the therapeutic work. This may be true; however, the differential effects we found suggest that we also measured different processes which vary over time. It seems most likely that our measures reflect both stable patient characteristics and process variables. The therapeutic process and its elements cannot be seen independently of patient and therapist characteristics.

Beyond the overall relationship between process and outcome, we had asked the question whether ratings done by clinicians from different professions would, on the basis of their therapeutic work with the patients, be differentially related to outcome—and indeed they are, but only with regard to patients' occupational status at follow-up: The neuropsychologist's compliance rating was related to employment, the physiotherapist's rating was not (despite the two ratings being strongly correlated). A similar trend can be seen for the alliance ratings. Thus, the neuropsychologist's process ratings seem to be the better predictor of employment. This finding again supports the viewpoint that we did not—at least not solely—measure stable patient characteristics, but variable elements of the therapeutic process. When interpreting these results, one should bear in mind that it is an important part of the psychological work at the Center for Rehabilitation of Brain Injury to help the patients to find and retain a job, whereas physiotherapeutic work aims at enhancing the patients' ability to participate in daily life activities, which in turn should improve patients' employability. In other words, employment is a direct goal of the psychological work at the Centre for Rehabilitation of Brain Injury, and an indirect goal of physiotherapy. This might explain why a positive psychological work process seems to be more closely related to occupational outcome than a positive physiotherapeutic work process.

We also found differences between the working alliance and compliance ratings in their relation to outcome. Both the neuropsychologist's and physiotherapist's compliance ratings, but neither of their alliance ratings,

were related to physical training. The association between compliance and physical activity could be understood as an association between two compliance measures: The patients who are physically active at follow up comply with the therapists' advice to do so, and this can be predicted from compliance with the programme.

In the prediction of employment, the difference between working alliance and compliance is less clear. It should be observed that a compliance score given by the physiotherapist of 4.5 or higher (achieved by 33% of the patients) was a statistically sufficient condition to finding a job: 29 of 32 of the patients (91%) with such a score were occupied at follow-up, but only 63% of those with a lower compliance score given by the physiotherapist. Post-hoc analysis showed this finding to be significant (Cramér's $\varphi = .295$, $\alpha < .01$). In summary, it can be said that both working alliance and patient compliance are related to employment at follow-up, but that only patient compliance during the programme shows a relationship to physical training at follow-up. Our process measures are thus differentially related to outcome, despite the fact that the scales overlap in content. A prospective study with repeated measurement of process variables could elucidate in more detail the presumably complex interactions between therapeutic alliance, patient compliance and other process variables, such as patients' awareness of illness and consequences, in neuropsychological rehabilitation.

In conclusion, our results indicate that we are better at predicting outcome when we have a detailed and differentiated view of the therapeutic process. Different kinds of outcome are differentially predictable by different process ratings done by professionals with differing experiences with the patients.

In this study, we asked the therapists for overall, retrospective ratings. It could be argued that the therapeutic alliance is a process unfolding in the client-therapist dyad. Our global, retrospective ratings summarised across the dynamic and variability of the individual therapeutic process. We asked for changes in the individual therapeutic process in only one question (verbal agreement). Again, a prospective, repeated-measurement design would be fruitful. Moreover, such a design would make it possible to examine the therapeutic alliance more directly, including the development of the emotional relationship between client and therapist, as well as the patients' view of the alliance.

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