

Patient characteristics and symptoms associated with perceived coercion during hospital treatment

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Objective: Large numbers of psychiatric patients either are involuntarily admitted to hospital treatment or feel coerced despite a legally voluntary admission. For ethical and clinical reasons, their perceived coercion should be reduced as far as possible. There is however limited evidence on patient characteristics associated with perceived coercion during hospital treatment. This study aimed to identify i) sociodemographic and clinical characteristics associated with perceived coercion at admission and ii) changes in symptoms and global functioning associated with changes in perceived coercion over time.

Method: Three thousand and ninety three in-patients who were involuntarily admitted or felt coerced to hospital treatment despite a legally voluntary admission were recruited in the European evaluation of coercion in psychiatry and harmonization of best clinical practice – EUNOMIA project in 11 European countries. Perceived coercion, global functioning and symptoms were assessed after admission and at a 3-month follow-up.

Results: Involuntary admission, female gender, poorer global functioning and more positive symptoms were associated with higher levels of perceived coercion at admission. Perceived coercion significantly decreased over time, and the improvements in global functioning and positive symptoms were associated with reduction in perceived coercion.

Conclusion: Female patients perceive more coercion in psychiatric hospital treatment. Effective treatment for positive symptoms and improving patients' global functioning may lead to a reduction in perceived coercion.

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Significant outcomes

- Involuntary admission, female gender, poorer global functioning and more positive symptoms are linked with higher levels of perceived coercion at admission.
- Perceived coercion improves significantly over time.
- Improvements in global functioning and positive symptoms are associated with reduction in perceived coercion.

Limitations

- The sample may not be representative for all in-patients who either are involuntarily admitted or feel coerced despite a legally voluntary admission.
- Treatment components and their associations with perceived coercion were not assessed.
- Perceived coercion was assessed only by a global measure.

Introduction

The use of coercive measures is common in psychiatry throughout the world (1–5). However, the development of a conceptual framework for understanding coercion is relatively recent (6), with the distinction between objective coercive measures, such as involuntary admissions, forced pharmacological treatments, use of restraint and isolation (4, 7) and patient's subjective experience of being coerced when receiving a psychiatric treatment. The latter, defined as 'perceived coercion', may occur in patients who have not been subjected to objective coercive measures (6, 8).

Recently, perceived coercion has been extensively analyzed in several studies that were carried out on a national level (6, 8, 9). Studies suggest that perceived coercion may be influenced by several sociodemographic and clinical variables, such as age (6, 11), belonging to ethnic minorities (2–6), diagnosis of psychosis, poor insight into illness and more severe symptoms (6, 8, 10–12). Aspects of the relationship to hospital staff such as negative pressure and lack of patients' involvement in clinical decisions also appear important (13, 14).

Another field of research has explored whether the levels of perceived coercion vary according to the type of admission (voluntary vs. involuntary). As one would expect, involuntarily admitted patients tend to perceive higher levels of coercion as compared to voluntarily admitted ones (8–15). However, many voluntarily admitted patients also experience some levels of coercion. Approximately 10–29% of voluntary patients perceive the admission to an in-patient unit as coercive (16, 17). Poulsen (15) suggested subdividing voluntary patients into two groups, i.e. those who experience deprivation of liberty after admission and those who do not. Some voluntary patients might accept hospitalization because they are pressured by their

family or staff or to avoid an involuntary treatment, although they are not fully convinced that the hospitalization is appropriate (8).

Ethical considerations (18, 19) emphasize that psychiatric treatment should be provided in the least restrictive setting and that psychiatric care should aim at reducing the levels of perceived coercion as much as possible (6). Strategies for reducing perceived coercion should be informed by an understanding of what patient characteristics are associated with lower or higher levels of perceived coercion both at admission and over time (20). To date, only a few studies conducted in rather small samples have explored such characteristics (6, 8–10). There is no evidence on whether perceived coercion improves in line with the reduction in symptoms and, if so, which types of symptoms are most closely associated with perceived coercion (6).

Aims of the study

Against this background, we addressed the following research questions: i) What sociodemographic and clinical characteristics of in-patients are associated with the level of perceived coercion at admission? ii) Are changes in global functioning and symptoms associated with changes in perceived coercion over time?

Material and methods

Design and participants

In the period between September 2003 and December 2005, a multicentric prospective cohort study was carried out as part of the European evaluation of coercion in psychiatry and harmonization of best clinical practice – EUNOMIA project in 11 European countries, i.e. Bulgaria, Czech Republic,

Germany, Greece, Italy, Lithuania, Poland, Slovakia, Spain, Sweden and the United Kingdom. Data on the characteristics of hospital and other mental health services at each site and the overall aims and methods of the project have been described in detail elsewhere (7). Each center was expected to recruit 250 legally involuntarily admitted patients who were between 18 and 65 years of age and able to give informed consent, and 375 voluntarily admitted patients who were screened according to their subjective experience of feeling coerced to admission (i.e. those scoring higher than three at the Mac Arthur Scale for Perceived Coercion were considered as 'patients with high levels of perceived coercion' and asked to participate in the study) (7, 21, 22).

Among the 9123 patients who were assessed for eligibility to the study, 3818 (41.8%) reported high levels of perceived coercion (≥ 3 at the Mac Arthur Scale) and were invited to participate; 2815 were assessed at the baseline, with a response rate of 73.7%. From those, 1997 (70.9%) were followed up at 3 months.

Patients affected by eating disorders, dementia, alcohol or drug acute intoxication, or severe cognitive impairment were excluded from the study for the following reasons: i) people with anorexia nervosa and dementia often follow different procedures and are admitted to specific wards so that the practice for them is different; ii) practice for these patients varies more across countries than for the included groups so that an international study would have explored very inconsistent settings and procedures; and iii) many intoxicated and demented patients would have lacked capacity to give informed consent (7). All enrolled patients, aged between 18 and 65 years, before expressing informed consent, received information on the study and its objectives. Patients were assessed within the first 7 days after admission and after 3 months.

Procedures and measures

Information was collected on the following sociodemographic characteristics: age on admission, gender (male vs. female), years in school education, living status (living alone vs. living with other people), employment status (employed vs. unemployed) and previous hospitalizations (yes vs. no). Diagnoses, recorded at discharge according to ICD-10, were collected into three major groups: 'schizophrenia or other psychoses' (F20–29), 'affective disorders' (F30–39) and 'Others'. The Global Assessment of Functioning (GAF) (23) was used to rate the patients' global functioning. The severity

of patients' symptoms was evaluated by the 24-item version of the Brief Psychiatric Rating Scale (BPRS), grouping the score into four subscales: manic-hostility symptoms, positive symptoms, negative symptoms and depression–anxiety symptoms (24).

The Mac Arthur Scale for perceived coercion was used as an inclusion criterion. However, as it specifically and exclusively refers to coercion perceived at admission, it could not be used to assess changes over time. Thus, to capture changes in perceived coercion over time, the Cantril Ladder of Perceived Coercion (25, 26) was used at baseline (referred to the admission and initial period in the hospital until the interview) and at follow-up (referring to hospital treatment until the follow-up). The Cantril Ladders used at both time points thus referred to the most recent experience of perceived coercion, which is rated on a 10-point scale, from one corresponding to the minimum level of perceived coercion to 10, the maximum level. The correlation between Cantril Ladder and Mac Arthur Scale for perceived coercion at T0 was explored by the Pearson's test for bivariate correlations, and it was 0.825, $P < 0.001$.

Sociodemographic characteristics, global functioning, symptoms and perceived coercion were assessed at baseline. Global functioning, symptoms and perceived coercion were re-assessed at the 3-month follow-up. Perceived coercion at follow-up referred retrospectively to the admission and hospital stay.

Statistical analysis

Clinical and sociodemographic characteristics of the sample were analyzed by descriptive statistics. Linear regression models have been used to identify the sociodemographic and clinical variables, which were associated with perceived coercion at baseline and to test the associations of changes in time of GAF and BPRS subscale scores with perceived coercion. The sociodemographic and clinical variables that, in bivariable analyses, were significantly associated with perceived coercion at admission were then entered in a multiple linear regression model, adjusted for the participating countries. *T*-tests for paired samples were used to assess whether perceived coercion, symptoms and global functioning significantly changed over time. Finally, associations of changes over time of BPRS subscales and GAF score with changes in perceived coercion were analyzed. In a multivariable regression model, perceived coercion after 3 months was used as the dependent variable, adjusted for

perceived coercion at baseline and for the participating countries. All participating countries were inserted in the two multivariable models as dummy variables, in which 1 = patients from a given country and 0 = patients from other countries. Independent variables were changes between baseline and 3-month follow-up of GAF and BPRS subscales, calculated as the difference between the scores at the baseline and those after 3 months. In the two multiple linear regression models, variables that became non-significant at 5% level were removed one by one, until all remaining variables in each model were significant. The multicollinearity of the independent variables was explored by the variance inflation factor, accepting the model if the maximum VIF value was < 5.

Statistical analyses were performed using the Statistical Package for Social Sciences (SPSS), version 17.0 (IBM SPSS Chicago, Illinois, USA). For all analyses, the level of statistical significance was set at $P < 0.05$.

Results

Sample description

Baseline sociodemographic and clinical characteristics of all patients enrolled in the study and of those patients who were followed up at 3 months are shown in Table 1.

Table 1. Baseline sociodemographic and clinical characteristics of the total sample and of the patients who were followed up after 3 months

Variables	Total sample (n = 2815)	Follow-up patients (n = 1997)
Legal status, involuntary, n (%)	2051 (72.9)	1428 (71.5)
Gender, male, n (%)	1539 (54.7)	1053 (52.7)
Age, mean (± SD), years	39.1 (11.2)	39.4 (11.1)
Marital status, married, n (%)	698 (24.8)	521 (26.1)
Employment, yes, n (%)	533 (19.0)	377 (19.1)
Years of education, mean (± SD)	13.3 (4.1)	13.5 (4.3)
Living alone, yes, n (%)	1671 (59.4)	1146 (57.4)
Previous hospitalizations, yes, n (%)	2008 (71.3)	1474 (73.8)
Diagnosis		
Psychotic disorders, n (%)	1694 (60.2)	1243 (62.2)
Affective disorders, n (%)	509 (18.1)	379 (19.0)
Other disorders, n (%)	612 (21.7)	375 (18.8)
Global Assessment of Functioning, mean score (± SD)	33.2 (14.7)	33.2 (15.0)
BPRS total score: sum score (± SD)	53.4 (15.6)	54.9 (15.8)
BPRS subscales		
Positive symptoms: sum score (± SD)	13.1 (5.9)	13.6 (6.1)
Negative symptoms: sum score (± SD)	8.6 (3.9)	8.7 (3.9)
Manic-excitement: sum score (± SD)	12.7 (6.1)	13.2 (6.4)
Depression/anxiety: sum score (± SD)	9.1 (4.6)	9.1 (4.6)
McArthur PCS, mean score (± SD)	4.4 (0.8)	4.4 (0.8)
Cantril Ladder, mean score (± SD)	6.5 (3.3)	6.5 (3.3)

BPRS, Brief Psychiatric Rating Scale.

The patients were predominantly men, single and unemployed. They had a mean age of about 40 years, and most suffered from psychosis. Most of them had been previously admitted to psychiatric hospitals. With respect to the current admission, one-quarter of them were voluntarily admitted and three-quarters compulsorily. The sample that was followed up 3 months later had similar characteristics as the total sample. At the time of the follow-up, 87% had been discharged from in-patient treatment.

Factors associated with perceived coercion at admission

Results of bivariable and multivariable associations with perceived coercion at admission are shown in Tables 2 and 3.

In bivariable analyses, involuntary admission, female gender, more years in school education, poorer global functioning, a diagnosis of psychotic disorder, lower levels of depressive symptoms and higher levels of all other BPRS subscales were significantly associated with higher levels of perceived coercion. In a multivariable analysis, the four variables remaining in the model were female gender, involuntary admission, poorer global functioning and more positive symptoms, which were associated with more perceived coercion, explaining 10.4% of the variance. The variance inflation factor value for the variables included in this model ranged from a minimum of 1.039 to a maximum of 1.902.

Table 2. Sociodemographic and clinical characteristics associated with perceived coercion: bivariable models

Predictor variables	Bivariable models				
	B	Beta	95% CI	P	
Legal status: voluntary vs. involuntary admitted	1.824	0.250	1.506	2.142	<0.001
Gender: male vs. female	-0.836	-0.130	-1.158	-0.568	<0.001
Age at admission	-0.003	-0.010	-0.016	0.010	0.673
Years in school education	0.033	0.043	-0.004	0.070	0.077
Employment status, employed vs. unemployed	-0.076	-0.044	-0.154	0.002	0.058
Living alone, yes vs. no	-0.093	-0.039	-0.201	0.015	0.091
Previous hospitalizations, yes vs. no	0.074	0.010	-0.272	0.420	0.674
Diagnosis					
Psychotic disorders, yes vs. no	0.473	0.069	0.167	0.779	0.002
Affective disorders, yes vs. no	-0.456	-0.054	-0.834	-0.078	0.018
Other disorders, yes vs. no	-0.268	-0.032	-0.649	0.113	0.168
Global functioning (GAF)	-0.043	-0.198	-0.053	-0.034	<0.001
Brief Psychiatric Rating Scale subscales					
Positive symptoms	0.131	0.239	0.107	0.155	<0.001
Negative symptoms	0.020	0.024	-0.018	0.058	0.302
Manic-hostility	0.099	0.193	0.076	0.122	<0.001
Depression-anxiety	-0.085	-0.117	-0.118	-0.053	<0.001

Perceived coercion in psychiatric in-patients

Table 3. Sociodemographic and clinical characteristics associated with perceived coercion: multivariable model adjusted for countries

Predictor variables	Multivariable model					
	B	Beta	95% CI	P	R ²	
Legal status: voluntary vs. involuntary admitted	1.781	0.244	1.453	2.110	0.000	0.040
Gender: male vs. female	-0.806	-0.122	-1.081	-0.532	0.000	0.010
Global functioning (GAF)	-0.041	-0.186	-0.052	-0.029	0.000	0.021
Brief Psychiatric Rating Scale subscales						
Positive symptoms	0.054	0.099	0.025	0.084	0.000	0.033
Negative symptoms	-0.074	-0.087	-0.116	-0.031	0.001	
Manic-hostility	0.010	0.019	-0.016	0.036	0.461	
Depression-anxiety	-0.039	-0.054	-0.072	-0.007	0.019	
Country						
Germany	-0.331	-0.027	-0.944	0.282	0.290	
Czech Republic	0.949	0.079	0.335	1.564	0.002	
Greece	0.102	0.008	-0.528	0.732	0.751	
Italy	-2.055	-0.212	-2.596	-1.515	0.000	
Lithuania	-1.012	-0.066	-1.728	-0.296	0.006	
Poland	-0.797	-0.068	-1.395	-0.200	0.009	
Slovakia	0.980	0.083	0.378	1.582	0.001	
Spain	-0.348	-0.035	-0.911	0.216	0.226	
UK	-1.367	-0.116	-1.960	-0.774	0.000	
Sweden	-0.440	-0.022	-1.324	0.444	0.329	

Changes in perceived coercion, global functioning and symptoms

Changes in symptoms, global functioning and perceived coercion between baseline and 3-month follow-up are listed in Table 4.

On average, patients showed improvements in perceived coercion, global functioning and all symptom subscales. The differences were statistically significant on each scale. The drop-out analysis showed that the patients who dropped out from the study, when compared with patients who completed the follow-up, showed lower levels of negative (8.1 ± 3.7 vs. 8.7 ± 3.9 , $F = 15.512$, $P = 0.000$), positive (11.8 ± 5.5 vs. 13.6 ± 6.1 , $F = 55.113$, $P = 0.000$) and manic-hostility symptoms (11.6 ± 5.2 vs. 13.2 ± 6.4 , $F = 39.781$, $P = 0.000$), a lower BPRS total score (49.7 ± 13.1 vs. 54.9 ± 15.8 , $F = 65.789$, $P = 0.000$) and were younger at admission (38.2 ± 11.4 vs. 39.4 ± 11.1 , $F = 6.090$, $P = 0.014$). No significant differences were

found as regards perceived coercion at Cantril Ladder (6.4 ± 0.8 vs. 6.5 ± 3.3 , $F = 0.308$, $P = 0.579$).

Associations of changes in symptoms and global functioning with changes in perceived coercion

Table 5 shows the bivariable and multivariable associations of symptoms and global functioning with perceived coercion over time.

In bivariable analyses, changes in perceived coercion were significantly associated with the reduction in positive symptoms, manic-hostility symptoms and improvement in global functioning. In the multivariable analysis, only the reduction in positive symptoms and improvements in social functioning were correlated with changes in perceived coercion, explaining 11.8% of the variance. The variance inflation factor value for the variables included in this model ranged from a minimum of 1.102 to a maximum of 1.665.

Discussion

Main findings

Several patient characteristics were associated with perceived coercion at admission. In the multivariable analysis, involuntary admission, female gender, poorer global functioning and more positive symptoms showed a significant association with higher levels of perceived coercion.

Perceived coercion was significantly reduced over a 3-month period. The improvement in global functioning and positive symptoms was associated with the reduction in perceived coercion. Levels of perceived coercion and the association between patients' clinical and social outcomes with perceived coercion showed a significant variation among different countries, possibly linked to differences in the national mental health legislations (27, 28). However, the findings presented in this study held true when the influence of country differences was controlled for.

Table 4. Symptoms, global functioning and perceived coercion at admission and 3 month follow-up

Variables	Baseline	After 3 months	Test	P
Global Assessment of Functioning: sum score (\pm SD)	33.2 (15.0)	51.9 (17.1)	$t = -47.144$; $df = 1.1994$	<0.001
BPRS – positive symptoms: sum score (\pm SD)	13.6 (6.1)	8.1 (3.8)	$t = 42.661$; $df = 1.1984$	<0.001
BPRS – negative symptoms: sum score (\pm SD)	8.7 (3.9)	6.5 (3.2)	$t = 26.629$; $df = 1.1969$	<0.001
BPRS – manic-hostility: sum score (\pm SD)	13.2 (6.4)	8.4 (3.7)	$t = 36.234$; $df = 1.1965$	<0.001
BPRS – depression/anxiety: sum score (\pm SD)	9.1 (4.6)	7.2 (3.6)	$t = 19.134$; $df = 1.1965$	<0.001
Cantril Ladder: sum score (\pm SD)	6.5 (3.3)	4.6 (3.3)	$t = 23.623$ $df = 1.1838$	<0.001

Statistical differences between the two groups (T-test for paired samples). BPRS, Brief Psychiatric Rating Scale.

Table 5. Association of changes in global functioning and symptoms with perceived coercion at 3-month follow-up, adjusted for baseline perceived coercion (the multivariable model is also adjusted for countries)

Changes between baseline and 3-month follow-up	Bivariable models					Multivariable model					
	<i>B</i>	Beta	95% CI	<i>P</i>		<i>B</i>	Beta	95% CI	<i>P</i>	<i>R</i> ²	
Global functioning	-0.018	-0.090	-0.027	-0.009	<0.001	-0.027	-0.135	-0.036	-0.018	<0.001	0.054
Brief Psychiatric Rating Scale subscales											
Positive symptoms	0.025	0.042	0.002	0.049	0.036	0.034	0.055	0.004	0.063	0.026	0.057
Negative symptoms	0.018	0.020	-0.024	0.060	0.406	0.010	0.011	-0.029	0.049	0.611	
Manic-hostility	-0.027	-0.045	-0.054	0.001	0.055	0.035	0.082	-0.014	0.083	0.158	
Depression-anxiety	0.024	0.030	-0.012	0.060	0.194	-0.015	-0.019	-0.048	0.018	0.366	
Perceived coercion at T0						0.135	0.198	0.063	0.208	<0.001	
Country											
Germany						-1.931	-0.268	-2.679	-1.183	<0.001	
Czech Republic						0.186	0.016	-1.114	1.486	0.778	
Greece						-0.416	-0.037	-1.667	0.835	0.513	
Italy						-2.750	-0.232	-3.963	-1.537	<0.001	
Lithuania						-1.973	-0.262	-2.751	-1.196	<0.001	
Poland						0.622	0.065	-0.378	1.622	0.222	
Slovakia						-0.059	-0.008	-0.975	0.857	0.899	
Spain						-1.120	-0.041	-3.948	1.708	0.436	
UK						-0.697	-0.088	-1.509	0.115	0.092	
Sweden						-3.748	-0.137	-6.521	-0.975	0.008	

Strengths and limitations

To our knowledge, this is the largest prospective study on patient characteristics associated with perceived coercion at admission and with changes in perceived coercion over time among psychiatric patients admitted to psychiatric hospitals ever conducted. Furthermore, this is the first study using the same protocol and methods across sites in several countries. It included hospitals in eleven European countries with different legislations (7, 29) and practice of psychiatric admissions. The study included patients with legal and subjective definitions of coercion. Among legally voluntary patients, only those with a defined level of perceived coercion were included, thus avoiding a skewed distribution of perceived coercion as it would be found if all voluntary in-patients were included. All patients were recruited and interviewed within the first week after admission and assessed face to face by trained researchers using a validated symptom scale for establishing clinical outcome. Perceived coercion was also assessed on validated instruments. The large sample size and the reasonable response rates provided sufficient statistical power to interpret negative findings.

The study also has some methodological limitations: i) The study was conducted in a small number of settings in each country, and a substantial proportion of potentially eligible patients could not be recruited. The sample may therefore not be representative for those patients who meet the inclusion criteria (23). While non-representativeness would be a problem for establishing the absolute

levels of perceived coercion, it should not so much affect the identification of associations between variables, which was the main aim of this study. ii) Patients with eating disorders, organic brain disorders and substance abuse disorders who often experience high levels of perceived coercion were excluded from the study, and factors influencing perceived coercion may be different in those groups. iii) The effect of different practices and treatment components on perceived coercion was not considered in the study. iv) Perceived coercion was assessed on only one global measure, although with a well-validated assessment instrument.

Comparison against the literature

The finding that involuntarily admitted patients have higher levels of perceived coercion in comparison with voluntary admitted patients should be expected and is consistent with data reported in other studies carried out with smaller samples (6, 8–16).

Female patients tend to feel more coerced. This is probably due to the fact that they feel more vulnerable in the often rough atmosphere of acute in-patient settings or to a higher tendency to report coercion as well as other types of psychological discomfort (30). On the other hand, male patients may be more reluctant to report to have received coercive measures, but data from our study show no statistically significant differences between male and female patients (4).

Diagnostic groups are associated with perceived coercion only in bivariate analyses, whereas the

symptom dimensions are associated with perceived coercion also in the multivariable regression models. These findings are in line with other studies (31–34) that documented specific correlations of symptom dimensions with objective and subjective outcome measures in hospitalized patients.

Perceived coercion tends to improve over time. This can be partly due to a recall bias effect (35), with patients ‘forgetting’ the coercion they had perceived in hospital, while feeling better. On the other hand, the positive effects of treatments during hospitalization may have improved patients’ insight into the illness and fostered patients to acknowledge the usefulness of received coercive measures and treatments (35, 36). The latter explanation is consistent with the association of improvements in global functioning and positive symptoms with reductions in perceived coercion identified in this study.

The cross-sectional analysis of associations at admission and the analysis of changes over time yielded consistent findings. Both identified global functioning and positive symptoms as variables with significant associations with perceived coercion.

Patients with a better global functioning have less perceived coercion. This is probably due to the fact that these patients are more willing to be treated to regain their functioning level. Thus, the perception of coercion into treatment may be linked to the functioning level that patients expect to regain at admission and, at a later stage, to the functioning level they actually achieve during treatment.

In addition to the functioning level, symptoms have also been identified as relevant. Out of the tested subscales of the BPRS, positive symptoms were the only ones significantly associated with perceived coercion in the multivariable model. One might have hypothesized that other symptoms, e.g. depression resulting in a more negative appraisal of treatment, should also be linked with perceived coercion, but this did not materialize, neither in the cross-sectional nor in the longitudinal analyses. Based on the findings in this study, one can only speculate about the reasons for the importance of positive symptoms for the perception of coercion during in-patient treatment. Patients with positive symptoms may feel particularly distressed in a contained ward environment, with usual coping strategies of avoidance and withdrawal being difficult on often crowded and busy in-patient wards. Hospitalization and the change in environment may exacerbate the reasoning bias and tendency to externalization of patients with paranoia and hallucinations (37), inducing in them a particularly intense perception of being coerced.

Implications

Perceived coercion into treatment is likely to undermine patients’ motivation to treatment and impair positive therapeutic relationships (38, 39). Thus, strategies should be developed to reduce perceived coercion, both at admission and over time. Female patients deserve particular attention in such efforts as they perceive more coercion. It remains unclear for the time being what type of settings or gender-sensitive interventions may improve their perception.

Improvements in global functioning and reduction in positive symptoms are aims of psychiatric treatment anyway. The findings of this study add a new angle to this as they show that improving functioning and positive symptoms are also likely to be an effective way to reduce perceived coercion. Yet, even substantial improvements in functioning and symptoms are not likely to make perceived coercion disappear as the amount of variance of perceived coercion explained by functioning and symptoms in this study was rather small.

Further research should explore patients’ experiences of coercion in more depth and identify treatment components associated with reductions in perceived coercion. Such studies may use quantitative and qualitative methods and lead to further experimental research in which the features of in-patient settings, overall therapeutic approaches and specific treatment components are varied to test the impact on patients’ perceived coercion and other outcomes.

In conclusion, the results of our study highlight that effective in-patient treatments resulting in improvements in global functioning and positive symptoms may also reduce perceived coercion and that this is independent of the influence of various other patient characteristics, such as the diagnostic category, previous hospitalization and the formal legal status of the current hospitalization.

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Declaration of interest

Jiri Raboch has been on the speakers’ list with Serviere and Medicom and has received grants from Pfizer and Medicom. Lars Kjellin has been on the speakers’ list with Janssen-Cilag. The other authors have nothing to declare.

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