A test of concordance between patient and psychiatrist valuations of multiple treatment goals for schizophrenia

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Abstract

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Background While much discussion has been placed on the problem of poor compliance in the treatment of schizophrenia, there has been little discussion on the concordance between patients and psychiatrists, an important contributing factor to patient-centred care.

Objective To estimate the concordance between patients' and psychiatrists' (ordinal and cardinal) valuations of multiple goals for schizophrenia treatment and to illustrate the utility of the self-explicated method in valuing a large number of treatment goals.

Design Twenty treatment goals were identified during focus groups and literature review and were presented to patients and psychiatrists during structured interviews. Respondents were asked to rank the multiple treatment goals and rate them on a 5-point Likert scale. Three scores were calculated based on the ranking (1–20), rating (Likert scale) (1–5) and a self-explicated method estimated as the product of rating and ranking score (1–100). Concordance was tested using Spearman's rho for overall ordinal rankings and via ANOVA and *F*-test for the cardinal values assigned to a specific treatment goal.

Participants A total of 105 outpatients diagnosed with schizophrenia and 160 psychiatrists in Germany.

Results Patient and psychiatrist values were concordant when the ordinal properties of their valuations were assessed by rating ($\rho = 0.63$; $P = 0.002$), ranking ($\rho = 0.51$; $P = 0.02$) and self-explicated methods ($\rho = 0.54$; $P = 0.01$). Significant discordances were found when comparing the cardinal value placed on any given treatment goal using all three approaches, but the self-explicated method produced a more discerning statistic. Relative to patients, psychiatrists significantly ($P < 0.05$) overvalued reduced lack of emotion, improved sexual pleasure and improved communication

while undervaluing reuptake of activities of daily living, improved satisfaction and recovered capacity for work.

Conclusions While there is an overall concordance between patients' and psychiatrists' valuation, significantly different valuations on specific goals can be identified. Here, psychiatrists tend to focus on 'textbook' outcomes, while patients are more concerned with functioning and living a normal life. This study also demonstrates the importance of comparing the concordance in treatment goals and the importance of preference-based methods, such as the self-explicated method, in the study of concordance.

Introduction

The Oxford English Dictionary defines concordance as being '*The fact of agreeing or being concordant; agreement, harmony.*'¹ While the term has been regularly applied in music, mathematics, geometry and genetics, concordance has been applied more recently to medical decision making and the doctor–patient relationship.² In health, concordance has benefits over other definitions used to define agreement in decision making,³ specifically compliance (which implies obedience of the patient to the decrees of the doctor)⁴ and adherence (implying patients' ability to choose treatments or accept their doctors' suggestions).⁵ While these alternative terms imply more power to one or other of the dyadic partners, concordance reinforces the importance of agreement, or harmony, between them.

While there have been an increasing number of studies using the notion of concordance in this context,^{6–10} ambiguity remains with regard to its meaning.⁵ Furthermore, it is unclear whether concordance applies only to the selection of the best available treatment, the ranking of all possible treatments or agreement as to why a treatment is chosen. While it is important that patients and doctors need to agree on the chosen treatments, choice requires a deliberative process by which the benefits and risks of all treatments are discussed. Hence, a 'good' decision-making process may require the broader concordance that accommodates communication and the deliberative process.¹¹ To ensure this, patients and doctors need to have common values spanning the goals of treatment, or in economic

parlance, they need to share a common objective function or have similar preferences over the treatment goals.

Computationally, two approaches can be attempted in assessing the concordance of the objectives of doctors and patients. Specifically, we could compare the priorities of the two groups, or we could compare the absolute value obtained by each factor. Procedurally, the former requires an assessment of the ordinal aspects of value via a comparison of rankings of the outcomes provided by patients and doctors. The second approach requires a similar comparison but requires values provided by patients and doctors to be measured on some cardinal scale.

The nuances between ordinal and cardinal properties have been discussed for centuries in economics but have more recently come to the forefront of debate in the evaluation of healthcare interventions. Currently, the German health technology assessment agency is considering ordinal and cardinal approaches in the assessment of patient-relevant endpoints (PRE).¹² Specifically, they are aiming to develop methods to prioritize and value combinations of such outcomes as a means to inform their assessment of the relationships between benefits and costs,¹³ an important step in operationalizing their proposed efficiency frontier method.¹⁴

Mathematically, the notion of concordance can be applied to a comparison of different values of multiple random variables, primarily with regard to ranking (i.e. ordinal properties).¹⁵ The Spearman's rank coefficient is a simple method for comparing such rankings,¹⁶ but more complicated coefficients of concordance

exist.¹⁷ Similar approaches have been used to examine inter-rater reliability more broadly in medicine.¹⁸

The aim of the paper was to test the concordance between the valuations of multiple treatment goals by German patients diagnosed with schizophrenia and psychiatrists who treat them. This research was motivated by the poor compliance rates among patients with schizophrenia and the lack of emphasis on the broader concept of concordance. While this paper adds to the emerging literature on the values of patients with Schizophrenia in Germany,^{12,18} we also present a number of methodological contributions that can be applied more broadly. First, we present a rigorous analysis of concordance of treatment goals (as opposed to treatment decisions). Second, we contrast the outcomes of using traditional rating methods (i.e. Likert scales) with stated-preference methods and demonstrate the benefit of the self-explicated approach (a relatively simple stated-preference method that combines ranking and rating) in valuing many possible factors.^{19,20} Finally, we contribute to health technology assessment literature by demonstrating a method that can be used to prioritize (i.e. rank) and value large numbers of PRE. Here, the self-explicated approach offers a *bottom-up* alternative to the potentially more cognitively burdensome conjoint analysis methods that estimate values of attributes by decomposing assessments of often complicated profiles.^{13,14} This said, it is unclear whether the self-explicated method sufficiently captures the trade-offs across factors, a particular strength of conjoint analysis.

Schizophrenia

Schizophrenia is a severe, chronic and complex psychiatric disorder that imposes significant burdens on relatives, health-care providers and society.²¹ The treatment of schizophrenia now extends beyond symptom reduction, with improved quality of life and social interaction being seen as important treatment goals.^{22–24} Despite the movement towards being more patient-centred and the emphasis on ‘recovery’

in the management of schizophrenia,²⁵ relapse and re-hospitalization persist, and poor compliance with prescribed treatments is a major factor in this.²⁶

Despite recent emphasis on patient-centred care,^{12,27,28} there has been limited literature on the concordance between the treatment goals of patients and treating psychiatrists.^{29–32} Such comparisons are important as patients (and psychiatrists) may value outcomes beyond treatment efficacy and tolerability.³³ For example, previous research has demonstrated that patients value a supportive physician and clear thinking.^{12,13} Neglecting patient values and issues of concordance can impact on both compliance and subsequent outcomes.^{26,29,34} Placing more emphasis on concordance also offers an alternative to the *control* oriented managed care and incentive-based financing strategies to promote compliance that may, in fact, further distort the doctor–patient relationship.³⁵ Greater emphasis on concordance may promote shared decision making in the treatment of schizophrenia^{34,36,37} and help curb paternalism at all levels of decision making in the health-care system.^{34,38}

Previous international studies using a variety of preference methods have identified discordance in the valuation of treatment goals for schizophrenia between patients and psychiatrists.^{29–32,39,40} Not surprisingly, psychiatrists focus on traditional (or textbook) outcomes related to psychosis, such as the absence of positive and negative symptoms, while patients place greater value on global measures such as an improved quality of life.^{30,31,40} However, little is known about the generalizability of these results – both in a larger population and across a larger number of potential treatment goals.

This study is focused on Germany, a country that has been historically paternalistic in medical decision making,³⁸ but which is rapidly becoming more patient-centred – both in its evaluation methods and in treatment practices.^{12–14} For example, the German Association for Psychiatry and Psychotherapy (DGPPN) guidelines on the treatment of schizophrenia now advocate for the active involvement of patients in the therapeutic decision-making process.²⁷

Developing a better understanding of the patient's perspective in the assessment of treatment goals and promoting a movement towards concordance is critical given that schizophrenia affects so many facets of the patient's life.⁴¹ Furthermore, the traditional barriers to patient centredness in schizophrenia are being constantly eroded as it becomes clearer that such patients are able to both describe and evaluate their quality of life and treatment preferences in a reliable and valid way.^{12,41–44}

Methods and participants

Study design

This study utilized structured interviews to elicit the values for multiple treatment goals from a sample of patients diagnosed with schizophrenia and psychiatrists in Germany. These goals were identified and validated via previous research with patients diagnosed with schizophrenia¹² and a targeted literature review which identified several other relating to social contacts, family relationships and independence.^{27,30–32,45} The instrument was not psychometrically validated as such validations are not relevant for stated-preference research. However, we did follow best practices for the development of stated-preference instruments to ensure the validity of our results. Furthermore, both patients and psychiatrists valued an identical set of treatment goals to test the concordance between these two groups.

For the purpose of this study, two specific tests of concordance were constructed: one focusing on the ordinal aspects of value, a relatively weak test of concordance, and one comparing the cardinal aspects of value, stronger test of concordance. The difference between these two can be illustrated by a simple example. While both groups may value a particular factor the most, this is neither a necessary nor sufficient argument that they value the outcomes equally. For both the ordinal and cardinal tests of value concordance, our null hypothesis was that psychiatrists and patients had identical values (i.e. that they were concordant).

Setting and participants

This study recruited hospital and outpatient psychiatrists and outpatients diagnosed with schizophrenia. Currently, no guidelines have been established for sample size calculations for stated-preference studies. Furthermore, given the infrequency in the application of the self-explicated method in health care, no precedents could be gained from the literature. Here, we aimed for between 250 and 300 respondents in total, a number consistent with conjoint analysis studies in health.^{46,47} Such a sample size is far in excess of existing applications of a variety of stated-preference methods in schizophrenia.^{12,30–32,42}

Psychiatrists were contacted via a survey research company and informed about the study. Psychiatrists were asked to participate and support patient recruitment process (including a confirmation of eligibility). This implied that, during a regular visit, psychiatrists presented the study to patients who fulfilled the inclusion criteria. When a patient expressed an interest in participating, they completed a consent form and their contact details were forwarded to the survey research company who conducted the interviews.

1. *Patient inclusion criteria:* Age between 18 and 60 years; diagnosis of schizophrenia (ICD-10 German Modification (GM): F20-F29; corresponding to DSM IV 295.1–9) for at least 1 year; in a stable health state at the time of the interview, antipsychotic treatment for at least 1 year.
2. *Psychiatrist inclusion criteria:* Psychiatrist treating at least 20 patients diagnosed with schizophrenia in an average quarter; working in a hospital for at least 3 years or in a practice for at least 2 years; no participation in a health-care study in the past 3 months.

In addition to questions related to treatment goals, patients' age, gender, diagnosis (ICD-10 GM) and time since diagnosis (<6, 6–12, >12 years) were documented, as were psychiatrists' age and primary place of work (i.e. hospital or outpatient). As a non-interventional

study of respondents' preferences, a formal ethical committee approval was not required, which is consistent with our previous research.¹² This said, the study was explained to all participants, involvement was optional and could be stopped at any time, and informed consent was given. Psychiatrists received an allowance of 35€ for identifying, informing and recruiting patients with schizophrenia into the study. Patients participating in the study were given an allowance of 20€ for their time and psychiatrists participating in the survey received 25€. Prior to sharing the data with the study team, the survey research company (GfK, Nuremberg) stripped the data of any identifiers, and data were stored on a secure, password-protected computer.

Assessment of treatment goals

Trained interviewers provided patients and psychiatrists with identical questionnaires to assess their values for the 20 treatment goals. For simplicity of presentation, we grouped these outcomes under four broad headings: *self-efficacy* (covering improvements in satisfaction, self-confidence, performance and self-independence), *social contacts* (spanning improvements in social contacts, activities of daily living, family relationships and sexual pleasure); *clear thinking* (involving improvements in cognition, capacity for work, communication and emotion), *mood* (involving decreases in hostility, depression, anxiety and irritability) and *psychosis* (covering restlessness, doctor/hospital visits, symptoms and physical health).

Patients participated in face-to-face interviews, and psychiatrists were faxed the survey and interviewed via telephone. Patient and psychiatrist interviews both lasted approximately 25 min. Following an introduction to the survey and to each of the treatment goals, all participants were asked to first rank the treatment goals from most important to least important. Participants were then asked to rate the importance of each goal on a scale from 'very important' to 'not important at all'.

From these data, three measures of value were estimated: a rating method (bounded by very

important = 5 and not at all important = 1); a ranking method (bounding by most important = 20 and least important = 1); and a self-explicated method, estimated by the product of the rating and ranking method, and as a consequence ranging from 1 to 100. Such self-explicated methods are used in marketing studies when a large number of attributes need to be assessed¹⁹ and when both cardinal and ordinal aspects of respondents' preferences need to be assessed.²⁰ While our self-explicated approach is most similar to those used by Chen *et al.*,⁴⁸ other self-explicated methods have been used in health.^{49,50}

Data analysis

The overall concordance of patient and psychiatrist preferences was estimated using the Spearman's rank test,¹⁶ although the Pearson's correlation gave near-identical results. The specific valuations of individual treatment goals were performed using analysis of variance (ANOVA).

While hypothesis testing for within-group valuations of the multiple treatment goals is possible using a multiple comparisons test, it is cumbersome and often incomprehensible when assessing a high number of outcomes – often indicating many overlapping strata.⁵¹ As an alternative, we tested the within-group reliability of the ranking and rating methods and explored the ordinal properties both patients and psychiatrists graphically.

To aid the interpretation of the results, the study team classified the 20 treatment goals into five themes, namely self-efficacy; social contact; clear thinking; mood; and psychosis-related outcomes. This conceptualization is aimed only to aid the interpretation of results and played no role in the analysis of the values of the 20 goals.

Results

Study population

Of the 105 patients and 160 psychiatrists, only a very small percentage failed to complete the interviews (8 and 2, respectively), leaving 97

patients and 158 psychiatrists who completed all choice tasks. Respondents' general characteristics are summarized in Table 1. The patients' mean age was 44 years, approximately half were men, approximately equal proportions had been first diagnosed with schizophrenia within the last 5 years, between 6 and 12 years, and for >12 years. The psychiatrists' mean age was 47 years, and they were equally drawn from hospital and outpatient services.

Comparison of treatment goal valuations

Based on the Spearman's rank test, a statistical test of relative concordance of the ordinal aspects of the values, patients and psychiatrists have relatively concordant valuations as estimated by the rating ($\rho = 0.63$; $P = 0.002$), ranking ($\rho = 0.51$; $P = 0.02$) and self-explicated methods ($\rho = 0.54$; $P = 0.01$). While this indicates some positive relationship between patients' and psychiatrists' valuations, it is a relative weak test of concordance, and the correlations were not that strong. In comparison, the within-group correlation between the rating and ranking valuations of patients ($\rho = 0.80$; $P < 0.0001$) and psychiatrists ($\rho = 0.85$; $P < 0.0001$) were far more significant.

The discordance between the valuations of patients and psychiatrists were more apparent when we explored the cardinal aspects of their valuations. Based on the rating method, four statistical differences were found between the valuations of psychiatrists and patients. As seen in Table 2, psychiatrists overvalued *improved sexual pleasure* ($P < 0.001$); *decreased mistrust/hostility* ($P = 0.002$); *improved capacity*

for emotion ($P = 0.001$); and *decreased psychotic symptoms* ($P = 0.042$).

Inspection of the rating results (Table 2) reveals two common pitfalls of using Likert scales for the valuation of treatment goals. First, there was relatively little variation in summed scores (ranging only from 3.4 to 4.1 in case of the patients and from 3.9 to 4.3 in case of the psychiatrists), which limits the ability to find difference within and across groups. Second, psychiatrists generally rated objectives more highly than patients, potentially blurring any underlying difference. We chose to leave this deviation unadjusted, as it remains possible that psychiatrists value all of the multiple treatment goals more highly than patients.

The ranking method identified 10 differences, only two of which were concordant with the rating method. Again, *improved sexual pleasure* ($P = 0.004$) and *decreased mistrust/hostility* ($P = 0.004$) were overvalued by psychiatrists, as were *decreased irritability* ($P = 0.0122$) and *improved communication* ($P = 0.005$). Psychiatrists undervalued *improved activities of daily living* ($P < 0.001$); *improved satisfaction* ($P < 0.001$); *improved capacity for work* ($P = 0.008$); *improved self-independence* ($P = 0.004$); *decreased depressive thoughts and feelings* ($P < 0.001$); and *improved physical health* ($P = 0.031$).

The self-explicated methods identified the most differences between patients and psychiatrists in terms of valuations of the treatment goals. While it identified most of the differences found using the other methods, previous identification was neither a necessary nor sufficient condition. One difference from both the rating and ranking method failed to reach significance in the self-explicated score (*decreased psychotic symptoms* and *improved physical health* respectively), and one new difference identified that neither the rating nor ranking method identified (namely *improved self-confidence*).

Six statistically significant overvaluations by psychiatrists were identified using the self-explicated method, the more discerning of our three ways of measuring concordance. Psychiatrists overvalued *improved capacity for emotion* by

Table 1 Study participants

Participants	Psychiatrists	Patients
Enrolled	160	105
Incomplete	2	8
Analysed	158	97
Age		
Range	30–62	18–60
Mean age	47	44

Table 2 A comparison of valuation of patients and psychiatrist

Variable	Rating method			Ranking method			Self-explicated method		
	Patient mean (SE)	Psychiatrist mean (SE)	Difference percent (P-value)	Patient mean (SE)	Psychiatrist mean (SE)	Difference percent (P-value)	Patient mean (SE)	Psychiatrist mean (SE)	Difference percent (P-value)
Self-efficacy									
Improved satisfaction	4.031 (1.26)	4.120 (0.77)	2.2 (0.483)	13.402 (5.60)	10.544 (5.70)	-21.3*** (<0.001)	54.433 (30.83)	45.589 (28.95)	-16.2* (0.022)
Improved self-confidence	4.021 (1.20)	4.228 (0.78)	5.2 (0.096)	10.433 (4.88)	11.449 (6.12)	9.7 (0.167)	42.361 (25.00)	50.892 (31.06)	20.1* (0.023)
Improved performance	4.124 (1.22)	4.108 (0.71)	-0.4 (0.894)	12.454 (5.45)	11.778 (5.74)	-5.4 (0.353)	52.608 (29.18)	50.063 (28.17)	-4.8 (0.490)
Improved self-independence	4.062 (1.27)	4.108 (0.73)	1.1 (0.715)	12.124 (5.10)	10.234 (5.05)	-15.6** (0.004)	51.309 (29.02)	43.576 (24.98)	-15.1* (0.025)
Social contact									
Improved social contacts	3.990 (1.15)	4.120 (0.74)	3.3 (0.272)	11.124 (5.35)	10.987 (5.10)	-1.2 (0.839)	45.309 (27.32)	46.804 (25.21)	3.3 (0.657)
Improved activities of daily living	3.866 (1.24)	3.943 (0.76)	2.0 (0.538)	11.526 (5.39)	8.544 (5.33)	-25.9*** (<0.001)	45.093 (27.37)	35.456 (25.04)	-21.4** (0.004)
Improved family relationships	3.825 (1.08)	3.956 (0.88)	3.4 (0.293)	9.567 (5.49)	9.823 (5.75)	2.7 (0.726)	38.856 (27.26)	41.152 (29.12)	5.9 (0.532)
Improved sexual pleasure	3.392 (1.38)	3.905 (0.89)	15.1*** (<0.001)	6.247 (5.43)	8.342 (5.55)	33.5** (0.004)	24.175 (25.64)	35.133 (27.67)	45.3** (0.002)
Clear thinking									
Improved cognition	4.144 (1.21)	4.209 (0.74)	1.6 (0.597)	13.113 (5.26)	13.272 (5.68)	1.2 (0.824)	55.887 (30.48)	57.500 (28.96)	2.9 (0.672)
Improved capacity for work	3.722 (1.43)	3.911 (0.77)	5.1 (0.171)	10.835 (6.53)	8.734 (5.83)	-19.4** (0.008)	43.546 (33.51)	35.905 (26.70)	-17.5* (0.046)
Improved communication	3.722 (1.12)	3.962 (0.87)	6.5 (0.058)	9.072 (5.25)	11.184 (6.14)	23.3** (0.005)	35.897 (26.56)	47.342 (30.94)	31.9** (0.003)
Improved capacity for emotion	3.722 (1.14)	4.114 (0.77)	10.5*** (0.001)	7.392 (4.83)	10.937 (5.24)	48.0 (0.110)	28.536 (23.80)	46.513 (26.03)	63.0*** (<0.001)
Mood									
Decreased mistrust/hostility	3.639 (1.06)	4.025 (0.88)	10.6** (0.002)	8.216 (5.40)	10.310 (5.69)	25.5** (0.004)	31.866 (25.68)	43.627 (28.58)	36.9** (0.001)
Decreased depressive thoughts and feelings	4.103 (1.15)	4.177 (0.76)	1.8 (0.536)	13.619 (5.59)	11.930 (4.64)	-12.4*** (<0.001)	58.454 (31.68)	51.152 (24.18)	-12.5* (0.039)
Decreased anxiety	4.155 (1.18)	4.063 (0.76)	-2.2 (0.452)	10.711 (5.50)	10.443 (5.66)	-2.5 (0.711)	46.649 (29.74)	44.519 (27.61)	-4.6 (0.562)
Decreased irritability	3.680 (1.15)	3.873 (0.77)	5.2 (0.110)	7.670 (5.00)	9.430 (5.58)	22.9* (0.012)	30.804 (25.64)	38.475 (25.98)	24.9* (0.022)
Psychosis-related outcomes									
Decreased restlessness	3.928 (1.17)	4.070 (0.71)	3.6 (0.232)	9.041 (5.29)	9.810 (5.54)	8.5 (0.275)	36.907 (27.51)	40.633 (25.28)	10.1 (0.270)
Decreased visits to the doctor/hospital	3.773 (1.32)	4.000 (0.81)	6.0 (0.089)	9.577 (5.76)	9.544 (5.68)	-0.3 (0.964)	36.804 (27.29)	40.222 (27.52)	9.3 (0.335)
Decreased psychotic symptoms	4.031 (1.29)	4.291 (0.74)	6.5* (0.042)	11.856 (5.72)	12.538 (6.50)	5.8 (0.395)	48.907 (30.85)	56.285 (33.22)	15.1 (0.078)
Improved physical health	4.124 (1.20)	4.057 (0.81)	-1.6 (0.078)	12.021 (5.30)	10.418 (5.96)	-13.3* (0.031)	50.134 (28.61)	44.133 (28.18)	-12.0 (0.102)

*Significant at 5%, **Significant at 1%, ***Significant at the 0.1% level.

63% ($P = 0.001$), *improved sexual pleasure* by 45% ($P = 0.002$), *decreased mistrust/hostility* by 37% ($P = 0.001$), *improved communication* by 32% ($P = 0.003$), *decreased irritability* by 25% ($P = 0.022$) and *improved self-confidence* by 20% ($P = 0.023$).

Five treatment goals were undervalued by psychiatrists, the most dramatic was *improved activities of daily living*, which was undervalued by 21% ($P = 0.004$). *Improved capacity for work* was undervalued by 18% ($P = 0.046$), *improved satisfaction* by 16% ($P = 0.022$), *improved self-independence* by 15% ($P = 0.025$) and *decreased depressive thoughts and feelings* by 13% ($P = 0.039$).

There was no systematic overvaluation or undervaluation of any of the five conceptual groups (self-efficacy, social contact, clear thinking, mood and psychosis-related outcomes), but no significant differences were identified for clinical outcomes using the self-explicated methods, indicating the greatest concordance in valuations.

A comparison of patient and psychiatrist priorities

While no within-group rankings of the treatment goals were analysed statistically, the scores given by the self-explicated method offer a somewhat robust method for reviewing and qualitatively comparing priorities of patients and psychiatrists. Figure 1 illustrates these priorities, allowing for comparisons and offering further insights into the concordance and discordance between the value of patients and psychiatrists.

As seen on the left of Fig. 1, the five highest priorities for patients are *decreased depressive thoughts and feelings*, *improved cognition*, *improved satisfaction*, *improved performance* and *improved self-independence*. The five lowest priorities for patients are *improved communication*, *decreased mistrust/hostility*, *decreased irritability*, *improved capacity for emotion* and *improved sexual pleasure*.

The five highest priorities for psychiatrists are *improved cognition*, *decreased psychotic*

Figure 1 A comparison of patient and psychiatrist priorities (self-explicated method).

symptoms, decreased depressive thoughts and feelings, improve self-confidence and improved performance. The five lowest priorities are *decreased visits to the doctor/hospital decrease irritability, improved capacity for work, improved activities of daily living and improved sexual pleasure.*

Qualitatively, we also see some differences between patients and psychiatrists. Most prominently, psychiatrists valued *decreased psychotic symptoms* more than patients (a result not found above) and undervalued *improved activities of daily living*. Figure 1 also illustrates some differences in emphasis by patients and psychiatrists that, while subtle, may have important implications in clinical practice. For example, while psychiatrists' value *improved self-confidence* more highly, patients' value *improved satisfaction* higher than psychiatrists.

Discussion

While our results are consistent with previous findings comparing the preferences of patients and psychiatrists,^{30–32} we present one of the most methodologically comprehensive concordance studies focused on multiple treatment goals. While concordance has traditionally related to treatment decisions,^{3–5} more recent applications have applied the concept to communication⁸ and quality of life.¹⁰ By focusing on concordance in treatment goals, we extend upon this literature in a way that is consistent with the original conceptualization.²

In this application, we have focused on a broad array of treatment goals identified from both qualitative research¹² and a targeted literature review. This has allowed us to identify important trends in the sources of discordance between patients and psychiatrists that have not been identified in previous studies on schizophrenia.^{30–32} For example, we find that psychiatrists overvalue more traditional treatment goals. Returning to Fig. 1 reveals that the five most prominent treatment goals overvalued by psychiatrists are *decreased psychotic symptoms, improved self-confidence, improved communication, improved capacity for emotion*

and *decreased mistrust/hostility*. These are rather 'textbook' treatment goals for the management of schizophrenia, so it comes as little surprise that patients do not value them as much.³²

Our results show that patients valued the more tangible and integrated concepts including *improved satisfaction, improved self-independence, improved physical health, improved activities of daily living and improved capacity for work*. While this is partly semantics, it does point to a need to translate treatment objectives into something that the patient can both understand and value. For example, while *improved communication* (something that psychiatrists valued more highly) is a vital step to having *improved capacity for work* (something valued more highly by patients), stressing the impact of, say, treatment adherence on the former may not be as powerful a message that stresses the latter.

While these discordances between patients and psychiatrists present a barrier to communication and to providing patient-centred care, they present important evidence that patients do in fact have preferences over treatment goals⁴⁵ and can complete reasonably complicated stated-preference tasks on topics that are relevant to them.⁴² While stated-preference methods provide an increasingly popular research tool,^{46,47} they may also have a broad array of applications in clinical practice.⁴⁶ For example, such tools can be used as a means to motivate and inform the doctor–patient encounter and to serve as a shared decision-making tool.⁵² They could also be used as a means to target education or discussion⁴² or as a means to personalize treatment plans.²⁸

This study makes several important contributions to the literatures on concordance, stated-preference methods and schizophrenia; however, it does have a number of limitations. Firstly, given the recruitment strategy, the extent to which such results are generalizable to the wider population or to other countries is unclear. That said, our sample size is larger than other preference studies in schizophrenia^{1,12,13} and similar to those for other mental health conditions.⁵³ Given

that preferences are often heterogeneous, it is uncertain to what extent one could make generalizable statements in any case.⁵⁴

Secondly, our study has focused on stable outpatients. It is unclear how these differ to the preferences of acute or subacute patients or to inpatients and whether such patients have the capacity to complete the survey. More research is needed to understand how patient preferences vary with disease severity and across other indicators of performance.

Third, as is the case with most stated-preference survey instruments, we did not utilize cognitive testing to ensure a standardized interpretation across all respondents. It is possible that psychiatrists and patients interpreted the meaning of our treatment goals in different ways, and it was this difference in interpretation that accounted for the differences in priorities. Any attempt to control for this problem by limiting our analysis to factors that patients and psychiatrists interpreted identically would have limited the range of outcomes that we could have investigated and would, as a consequence, have led to an underestimation of the differences between the groups.

Lastly, while patients and psychiatrists participating in this study were sampled from the same environment, we did not study patient–psychiatrist pairs and, as a direct consequence, psychiatrists were not directed to focus on a specific patient when determining their priorities. While specific patient–psychiatrist pairs have been studied in other environments, it is uncertain whether any stated-preference studies have utilized this recruiting strategy.

Conclusion

Despite the progress that has been made in broadening the treatment goals for the clinical management of patients diagnosed with schizophrenia over the past 60 years, we find a lack of concordance between patients' and psychiatrists' valuations for many treatment goals. In order to achieve patient-centred care, programmes need to be established to narrow this divide. Shared decision making offers one possible avenue to

promote concordance, but our results indicate that psychiatrists and patients may be speaking a completely different language. Thus, concordance of treatment goals may be a prerequisite for shared decision making; hence, more effort must be taken to understand preferences for treatments.

This paper has also presented important methodological findings that are directly relevant to the measurement of preferences and the study of concordance more generally. Specifically, we have demonstrated the utility of the self-explicated methods of measuring stated preferences as an approach to measuring respondents' values across a large number of treatment goals and for providing a statistically robust method for the assessment of concordance between stakeholders.

By incorporating both ordinal and cardinal aspects of preference, we have also demonstrated that the self-explicated is superior to either the rating or ranking methods alone. We have also pushed the 'envelope' in terms of the complexity of the choice tasks that can be used in patients diagnosed with schizophrenia. Other stated-preference methods,⁵⁵ specifically choice-based conjoint analysis, may also prove to be beneficial research tools. Despite much resistance to using such methods in patients diagnosed with schizophrenia, Bridges *et al.*⁴² have demonstrated such patients can meaningfully complete such choice tasks.

Stated-preference studies, whether they use the self-explicated approach or choice-based conjoint analysis, should also play an increasing role in the measurement of concordance and more broadly in the evaluation of medicine. Here, the principles of concordance can transcend the doctor–patient relationship to examine agreement across various types of subgroups. Recent studies have explored such concordance between clinicians in different practice settings⁵⁶ and with different professional training.⁵⁷ Stated-preference methods can also be used to explore variation in preference across different types of patients⁵⁸ or even be used to identify segments of patients with different preferences.⁵⁴

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Conflict of interest

No conflicts of interest have been declared. Lara Slawik is employed by Janssen-Cilag, Neuss, Germany, and Annette Schmeding was also employed by Janssen-Cilag at the time of the study.

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