



Contents lists available at ScienceDirect

Schizophrenia Research

journal homepage: [www.elsevier.com/locate/schres](http://www.elsevier.com/locate/schres)

## Characterizing outcome preferences in patients with psychotic disorders: a discrete choice conjoint experiment<sup>☆</sup>

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### ARTICLE INFO

#### Article history:

Received 9 October 2016

Received in revised form 14 December 2016

Accepted 17 December 2016

Available online xxx

#### Keywords:

Schizophrenia

First episode psychosis

Outcomes

Discrete choice experiment

Conjoint analysis

Patient preferences

### ABSTRACT

The majority of individuals with schizophrenia will achieve a remission of psychotic symptoms, but few will meet criteria for recovery. Little is known about what outcomes are important to patients. We carried out a discrete choice experiment to characterize the outcome preferences of patients with psychotic disorders. Participants (N = 300) were recruited from two clinics specializing in psychotic disorders. Twelve outcomes were each defined at three levels and incorporated into a computerized survey with 15 choice tasks. Utility values and importance scores were calculated for each outcome level. Latent class analysis was carried out to determine whether participants were distributed into segments with different preferences. Multinomial logistic regression was used to identify predictors of segment membership. Latent class analysis revealed three segments of respondents. The first segment (48%), which we labeled "Achievement-focused," preferred to have a full-time job, to live independently, to be in a long-term relationship, and to have no psychotic symptoms. The second segment (29%), labeled "Stability-focused," preferred to not have a job, to live independently, and to have some ongoing psychotic symptoms. The third segment (23%), labeled "Health-focused," preferred to not have a job, to live in supervised housing, and to have no psychotic symptoms. Segment membership was predicted by education, socioeconomic status, psychotic symptom severity, and work status. This study has revealed that patients with psychotic disorders are distributed between segments with different outcome preferences. New approaches to improve outcomes for patients with psychotic disorders should be informed by a greater understanding of patient preferences and priorities.

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### 1. Introduction

Optimizing the treatment of individuals experiencing a first episode of schizophrenia has become an important mental health priority internationally (Jackson and McGorry, 2009; Kane et al., 2016; Zipursky and Schulz, 2002). We now appreciate that approximately 80% of individuals who experience a first episode of schizophrenia will achieve a remission of their symptoms in their first year of treatment (Lieberman et al., 1993). However, it is estimated that only one out of seven patients will meet criteria for recovery when it is defined as requiring both sustained improvement in symptoms and in functioning (Jaaskelainen et al., 2013). Greater understanding of the factors that contribute to

the gap between rates of remission and recovery is needed (Zipursky et al., 2013). Characterizing the outcomes that are of importance to patients may contribute to our understanding of the outcomes currently observed and provide new insights about how to improve outcomes in the future.

Outcomes found to be of highest priority to patients with schizophrenia have varied greatly across studies and have included better social support and housing (Fischer et al., 2002), improved functioning (Shumway et al., 2003), reduced confusion (Rosenheck et al., 2005), and decreased positive symptoms (Leviton et al., 2015). Previous studies have often elicited priorities using ranking or rating tasks (Fischer et al., 2002). These approaches are vulnerable to demand characteristics that lead respondents to answer in ways that they feel are correct or socially desirable (Streiner and Norman, 2008). Conjoint analysis surveys, on the other hand, are more likely to reflect unconscious values that contribute substantially to real-world decision making (Caruso et al., 2009).

Conjoint analysis or Discrete Choice Experiment (DCE) methodology was developed in the fields of mathematical psychology, marketing, and

<sup>☆</sup> This paper was presented at the 5th Biennial Schizophrenia International Research Society Conference in Florence, Italy, April 2–6, 2016.

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economics and is increasingly utilized for understanding the healthcare preferences of consumers (Cunningham et al., 2008). Bridges et al. (2011b) demonstrated, in a “proof of principle” study, that when patients with schizophrenia were asked to participate in a choice-based conjoint task, they were able to complete the tasks, to articulate their preferences, and to make meaningful trade-offs between choices. In this study, we developed a DCE to characterize outcome preferences in patients receiving treatment for psychotic disorders. We were interested in investigating whether respondents were distributed into classes or segments with different outcome preferences (Hauber et al., 2016) and whether segment membership was associated with demographic and clinical measures.

## 2. Method

### 2.1. Subjects

This study was conducted at St. Joseph’s Healthcare Hamilton, a tertiary care teaching hospital affiliated with the Michael G. DeGroot School of Medicine at McMaster University in Hamilton, Ontario, Canada. Participants were recruited between June and November of 2015 from the waiting rooms of two clinics that specialize in the treatment of psychotic disorders: the Schizophrenia Outpatient Clinic and the Cleghorn Early Intervention Clinic. As the study aimed to sample a representative group of participants, the only criteria for study involvement was that participants needed to be registered outpatients currently receiving services from one of these clinics. Participants provided informed consent and completed the survey on a laptop computer. No identifying information was collected. The study required approximately 30 min to complete. The study was approved by the Hamilton Integrated Research Ethics Board.

### 2.2. Survey development and study design

Outcome attributes were initially identified through a review of the literature. A series of individual patient interviews and a patient focus group were carried out to refine the selection of outcome preferences (Bridges et al., 2011a). Twelve outcome attributes were selected: psychotic symptoms, medication side effects, physical health, work, income, housing, recreational activity, family, friends, relationships, religion, and independence. Each of these attributes was defined at three levels for presentation in the choice tasks.

After providing informed consent, participants were asked to respond to questions about their demographics and illness history. Maternal education was used as a proxy for socioeconomic status (Cirino et al., 2002). The survey also included four rating scales: the Single-Item Happiness Questionnaire (SIQ) (Abdel-Khalek, 2006), the Satisfaction with Life Scale (SWLS) (Diener et al., 1985; Pavot and Diener, 1993), the BASIS-24® psychosis subscale to assess the severity of psychotic symptoms (Eisen et al., 2004), and the K6 to assess the level of psychological distress (Kessler et al., 2010).

The DCE utilized a partial profile design (Johnson et al., 2013) and consisted of 15 choice tasks each of which began with the following statement: “Below are three possible outcomes of mental health treatment. Click on the outcome you would prefer.” Each choice involved different levels of two outcome attributes (Fig. 1). The survey was determined to be at a Flesch–Kincaid grade level of 5.8 as calculated by Microsoft Word (Kincaid et al., 1975). Sawtooth Software SSI web version 8.3.8 The CBC system for choice-based conjoint analysis version 8, (2013) was used to generate the survey with each participant randomly assigned one of 999 possible versions. A warm-up choice task was included in addition to two identical holdout tasks that were intermixed with the other tasks to assess predictive validity.

### 2.3. Statistical analysis

Latent class analysis was carried out using Latent Gold software version 5.0 (Vermunt and Magidson, 2013) to determine whether participants were distributed into segments with different outcome preferences (Hauber et al., 2016). This software uses a finite-mixture model to generate maximum likelihood solutions for models that would involve one to five classes (Berlin et al., 2014; Lanza and Rhoades, 2013); the software completes this process 16 times starting with different randomly generated seed values. Identification of the optimal latent class solution was based on Bayesian Information Criteria (BIC) (Dziak et al., 2015; Nylund et al., 2007). Part worth utilities quantify the component of desirability that can be ascribed to each level of an attribute for a given segment (Orme, 2014). Zero-centered utility coefficients were converted to Z-scores to assess the degree to which they deviated from zero. Importance scores were then derived for each segment by dividing the range of utility values associated with each attribute by the sum of the ranges for all attributes. Importance scores indicate the percentage of the total variance in preferences that is attributable to the variation observed for a given outcome. If utility

Below are three possible outcomes of mental health treatment.  
Click on the outcome you would prefer.

| Outcome 1   | Outcome 2   | Outcome 3  |
|---|---|--|
| Full time job<br>Often hear voices or have unusual thoughts | Part time job<br>Sometimes hear voices or have unusual thoughts | No job<br>Never hear voices or have unusual thoughts |

Next

0% 100%

Fig. 1. Sample choice task in a DCE survey.<sup>a</sup> Twelve 3-level attributes were experimentally varied into 15 choice tasks in a discrete choice conjoint experiment (DCE) survey. In each task, participants selected attributes of the outcome they would prefer the most.

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