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Determinants of recreational outcomes in schizophrenia: An exploratory study focusing on gender differences

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Determinants of recreational outcomes in schizophrenia: An exploratory study focusing on gender differences

While recreation is impactful for recovery in schizophrenia, no study has examined the effects of schizophrenic symptoms on recreational outcomes. This study examined the determinants of recreational outcomes based on gender. We investigated the relationship between recreational outcomes, positive and negative symptoms, cognitive function, and factors such as negative self-evaluation and evaluation by others. Motivation had a significant impact on both men and women. However, participation in recreational activities was impacted by negative self-assessment for men and evaluations from others for women. The importance of matching strategies based on gender when using recreation therapeutically was emphasized.

Keywords: motivation; recovery; recreational outcomes ; self-evaluation

Subject classification codes: schizophrenia

Introduction

According to the National Consensus Statement on Mental Health Recovery, recovery is defined as a “journey of healing and transformation enabling a person with a mental health problem to live a meaningful life in a community of his or her choice while

striving to achieve his or her full potential” (Department of Health and Human Services, 2005). Recent integrated literature reviews have found that fun and meaningful recreation contributes to the recovery and quality of life of people with mental illness, including those with schizophrenia (Fenton et al., 2017; Iwasaki et al., 2010). The potential of recreation as a positive, strength-based, and potentially cost-effective means to help people cope with the challenges of living with a mental illness needs to be emphasized. (Fenton et al., 2016). To conceptualize an active life in this manner requires a unique and culturally sensitive recreational experience that contributes to recovery, good health, and quality of life. The recent national framework for recreation in Canada states that recreation is an “experience that results from freely chosen participation in physical, social, intellectual, creative, and spiritual pursuits that enhances individual and community well-being” (Canadian Parks and Recreation Association, Interprovincial Sport and Recreation Council, 2015). Therefore, recreation includes sports and physical, creative, and leisure activities in the community.

Recreational implementation and participation in recreation are significant in the recovery orientation. It is also essential to provide meaningful involvement. Like work, community recreation provides a daily structure to relieve boredom and a means for people with mental illness to feel a sense of contribution and belonging. Similarly, it

can foster social inclusion (Iwasaki et al., 2014; Lipe et al., 2012). Furthermore, due to the tremendous impact of recreation on recovery, various treatment techniques utilizing recreation are currently being developed for people with schizophrenia (Picton et al., 2019; Soubam et al., 2020; Wilkinson et al., 2019). Many staff involved in the treatment of schizophrenia, including nurses, encourage participation in recreation and use it as a treatment technique (Picton et al., 2019; Soubam et al., 2020; Wilkinson et al., 2019). However, these are often interventions based on psychotherapy and cannot be considered specialized methods for disease characteristics, including schizophrenia. Furthermore, although research on the relationship between recreation and various symptoms is progressing, a conclusion cannot yet be drawn. For example, motivational disorders that significantly impact schizophrenia community participation have been identified as essential in maintaining participation in therapeutic recreational activities (Lloyd et al., 2007). In a quantitative study of 44 people with severe mental illness, a significant positive association was found between leisure motivation and recovery from mental illness (Lloyd et al., 2007) However, this study did not consider the core ability to participate or perform in recreation. Thus, the question is, should we focus on an individual's motivation or core abilities to encourage participation in recreation? It is imperative to find an answer to this question to intervene in recreational implementation and participation. Moreover, participation in recreation is also

significantly associated with reduced negative emotions but not with increased positive emotions (Snethen et al., 2012). It is equally important to examine in more detail which psychological aspects require our attention to encourage recreational implementation and participation.

Some factors have led to a flawed research on the determinants of recreational outcomes in patients with schizophrenia. Many large-scale studies consider recreation a part of the real-world outcomes of daily living, such as self-care and shopping (Harvey et al., 2017; Galderisi et al., 2020). Therefore, this study used the Social Functioning Scale (SFS; Birchwood et al., 1990), which evaluates the recreational outcomes recognized in validating the measurement of real-world functional outcomes (VALERO) study (Harvey et al., 2011) among the batteries that evaluate real-world outcomes. Like past studies, this study examines the relationship between real-world outcomes of recreation in the community and the key factors that significantly impact schizophrenia outcomes (Harvey et al., 2017; Galderisi et al., 2020). Recent studies on schizophrenia outcomes have clearly distinguished between actual performance and the ability and cognitive function to perform various activities and real-world outcomes (Harvey et al., 2019). A high ability combined with cognitive function does not necessarily equate to a high-performance outcome in the real world and community. In

brief, ability (i.e., cognitive function) influences the real-world outcomes of schizophrenia. The real-world outcome is influenced by various symptoms of schizophrenia. For example, positive symptoms, negative symptoms, cognitive function, and psychological factors (including negative self-evaluation) have significantly influenced outcomes in recent years (Harvey et al., 2017; Galderisi et al., 2020). A particular interest in recent years is the impact of negative symptoms on real-world outcomes. Negative symptoms can be divided into decreased emotional expressions (such as blunted affect and alogia) and decreased motivation (such as avolition and anhedonia) (Marder et al., 2017; Harvey et al., 2019). Considering recent studies, we predict that motivational disorders (especially avolition) are the main factors significantly impacting recreational outcomes.

Considering how schizophrenia affects men and women differently (Alvarez-Jimenez et al., 2016) and how few studies on past outcomes have examined them separately, we conducted an exploratory analysis of gender differences, which is in line with the fact that recreational research has a history of exploring gender differences (Klonsky, 1985). In this study, we defined recreational outcomes as actually performing recreational activities and participating in recreation in the community setting. We also examined positive and negative symptoms (motivation and emotional expression),

cognitive function, and psychological factors by gender.

Materials and Methods

This study was approved by the Institutional Review Board of the author's institution.

All the participants provided written informed consent after a complete description of the study was provided. The 231 people with schizophrenia who regularly visit Nasukougen clinics were included. Then, the outpatient staff recruited individual subjects for research, and the author explained the research. The sampling was non-probability sampling and performed by sequential sampling. They were selected based on having a diagnosis of schizophrenia or schizoaffective disorder according to the International Statistical Classification of Diseases and Related Health Problems - version 10 (ICD-10). Participants were excluded from the study if they: (1) had a history of neurological disorders such as seizure disorder, stroke, head injury, brain surgery, mental retardation, or severe recurrent headaches; (2) were under the age of 20 or over 65 years. After obtaining the consent of the study and setting the above exclusion criteria, 102 people were finally included in the analysis. All recruited patients had stable schizophrenia. Outpatient status was defined as living outside of any institutional setting, including nursing homes. To secure a sufficient sample size, considering that there are seven independent variables, we recruited a total of more than

100 people to ensure 35 participants or more in each group (Vittinghoff & McCulloch, 2007).

Measures

Positive symptom severity was assessed using a subset of the Brief Psychiatric Rating Scale (BPRS) based on recent factor analysis (Kopelowicz et al., 2008). It included the following scale items: grandiosity, suspiciousness, hallucinations, unusual thought content, bizarre behavior, disorientation, and conceptual disorganization.

The negative symptom severity was assessed using the Brief Negative Symptom Scale (BNSS). Neurocognitive function was measured using the Schizophrenia Cognition Rating Scale (SCoRS). Psychological factors were measured using the Evaluative Beliefs Scale (EBS). Recreational outcomes were measured using the SFS.

Brief Psychiatric Rating Scale

The BPRS was created by Overall and Gorham (1962) to evaluate a wide range of mental symptoms. It is a typical psychiatric symptomatology evaluation scale for schizophrenia and evaluates positive symptoms, negative symptoms, anxiety, and agitation (Kopelowicz et al., 2008). The Japanese version focuses on an accurate translation of English content and has proven highly reliable (Miyata et al., 1995). Since

the BPRS was used to identify positive symptoms in this study, only items like those mentioned above were used.

Brief Negative Symptom Scale

The BNSS is based on the National Institute of Mental Health consensus statement to precisely detect negative symptoms. Previously, negative symptoms were difficult to distinguish from depressive symptoms and cognitive function, but BNSS is a new scale that solves this problem. (Kirkpatrick et al., 2011) Negative symptoms were analyzed by dividing them into two factors based on recent studies. (Kirkpatrick et al., 2011) They were divided into an area to measure motivation (anhedonia, asociality, avolition: experience factor) and emotional expression (blunted affect, alogia: expression factor) (Kirkpatrick et al., 2011; Marder et al., 2017). The BNSS Japanese version total score and score of each subscale showed good convergent and discriminant validity (Hashimoto et al., 2019). We used the Japanese version of the BNSS translated by Hashimoto et al. (2019).

Schizophrenia Cognition Rating Scale

The SCoRS is a cognitive scale for schizophrenia based on the Measurement and Treatment Research to Improve Cognition in Schizophrenia (MATRICS) project

recommendations. It evaluates seven cognitive domains: vigilance, working memory, processing speed, language learning and memory, visual learning and memory, reasoning and problem solving, and social cognition. The SCoRS Japanese version showed excellent validity compared to other cognitive function scales (Kaneda et al, 2011). We used the Japanese version of the SCoRS translated by Kaneda et al. (2011).

Evaluative Beliefs Scale

The EBS contains 18 items that measure global and stable negative evaluative beliefs (Chadwick et al., 1999). It comprises three subscales and the possible score for each ranges from 0 to 18. The first subscale measures negative beliefs about the participant's self-image ("I think I am terrible"; self-evaluation). The second subscale measures the participant's negative beliefs about the other people's judgment of them ("Other people think I am terrible"; other-evaluation). The third subscale measures negative beliefs the participant may have about others ("Other people are terrible"; self-other evaluations).

The EBS is a self-administered scale that measures negative psychological aspects, such as feeling "weak and incompetent" and "worthless." In the Japanese version, as in the original work, the validity of the three items "self-evaluation," "other-evaluations," and "self-other evaluations" were confirmed. In addition, it has been shown that each of the three items has an independent effect on depression and anxiety (Furumura et al., 2014).

We used the Japanese version of the EBS, translated by Furumura et al. (2014).

Social Functioning Scale

The SFS is a real-world outcome rating scale recognized by the VALERO study. It evaluates various fields of outcomes in patients with schizophrenia. It has seven subitems: (1) social engagement or withdrawal, (2) interpersonal behavior, (3) pro-social activities, (4) recreation, (5) independence-competence, (6) independence-performance, and (7) employment or occupation (Birchwood et al., 1990).

In this study, recreation was evaluated. Since most recreation is a combination of physical, creative, and communication-based activities and social participation, the total score of pro-social activities and recreation was used as the outcome (Fenton et al., 2017; Iwasaki et al., 2010; Canadian Parks and Recreation Association, Interprovincial Sport and Recreation Council, 2015). Pro-social activity items included “going to see a movie,” “playing or watching sports,” and “participating in school and community events.” The 15 recreation items included “handicraft and artistic activities,” “playing games,” and “cooking and making sweets.” For the question items belonging to each subscale, the respondents self-assessed how often they performed the actions during the past three months: “I didn't do it at all,” “I did it once or twice in 3 months,” “I did it more than once a month,” and “I did it more than once a week.” For each question, the

subjects were instructed to select the answer box that best fits them.

The translation was performed considering the cultural background of Japan, and we also asked a Japanese translation expert to do the back translation. The validity of the questionnaire was also confirmed by the original author. The translation of the questionnaire by Nemoto et al. (2008) was used in this study.

Analysis

After calculating basic statistics for men and women, we performed a correlation analysis of the relationship between SFS recreation and BPRS, BNSS, SCoRS, and EBS for both genders. Following that, the variables that were significant in the correlation analysis were used as independent variables. Their relative influence was examined by multiple regression analysis using the stepwise method. In addition, structural equation modeling (SEM) analyzed the relationships between variables that contributed to SFS recreation.

In some correlations, the same characteristic can be considered both the dependent and independent variable, which may cloud the association. Therefore, in this study, the symptom evaluators were not involved in the evaluation of recreational outcomes. Each domain was addressed using variance inflation factor (VIF) values.

Domains with a VIF value ≥ 10 were considered to have multicollinearity.

Results

All subjects were Japanese. Table 1 lists basic statistics, and Table 2 shows the correlation coefficients between each variable and the SFS. Men showed significant correlations with BNSS experience factors for motivation, and SCoRS for cognitive function and self-evaluation. Women had similar experience factors. However, cognitive function and self-evaluations were not significant, and expression factors and other-evaluations (imagined evaluations from others) were significant. The results of the multiple regression analysis are presented in Table 3. In both cases, experience factors were cited as the most influential factors. In addition, women had other-evaluations in their models.

[Table 1 near here]

[Table 2 near here]

We performed an additional analysis to examine the difference between the correlation analysis and multiple regression analysis results. Structural Equation Modeling (SEM) was performed using the significant variables in the multiple regression analysis as direct variables and although it was not significant in multiple regression analysis, the significant variables in the correlation analysis was as indirect

variables. The results are shown in Figures 1 and 2, respectively. In men, the pathway by which SCoRS and negative self-evaluations affect experience factors showed significant values. In women, the pathway by which expression factors affect experience factors showed significant values. Both models showed good model fit. There were no numbers with a VIF of more than 10.

[Figure 1 near here]

[Figure 2 near here]

Discussion

In this study, we focused on recreation outcomes that significantly impact the recovery and quality of life of patients with schizophrenia. We mainly focused on gender differences and conducted an exploratory analysis to capture the relative influence of each factor on recreation outcome. We found that men and women had different factors that influenced their recreation outcomes.

First, the experience factor that represents motivation disorder had a significant influence on both men and women. Recent studies have shown that motivation has the greatest impact on social outcomes (Harvey et al., 2017; Strassnig et al., 2018). In addition, it is said that one of the obstacles to motivation for schizophrenia is “a disorder of reward prediction that makes it impossible to imagine a pleasant experience

by referring to past experiences” (Barch & Dowd, 2010). For people with schizophrenia, participation in recreation may be related to predictable rewards for their activities.

The multiple regression and SEM analyses in this study yielded interesting results. It is not surprising that motivation, with a direct impact, was a vital determinant of recreational outcomes. However, men found that cognitive function and negative self-assessment influenced factors that significantly influenced their motivation. That is, the levels of cognitive function and negative self-assessment were indirect factors influencing recreational outcomes. This is a new finding. Decreased cognitive function (that is, ability) is more likely to cause failure in the real world. As a result, it is elementary to imagine that a negative evaluation of oneself (such as “no matter what you do, it is useless”) reduces motivation (Grant & Beck, 2009). Previous studies have shown that stable people with schizophrenia have strong negative beliefs (Grant & Beck, 2009). It showed that negative self-assessment and cognitive decline significantly impact motivation for recreational participation and could apply more to men.

Thus, cognitive function and motivation may be considered from the perspective of gender differences (Gneezy et al., 2003). Men have traditionally lived in a competitive society. Many exhibit competency (Gneezy et al., 2003); the better one’s

abilities, the more likely one's chances of winning the competition. Therefore, better abilities may motivate men to engage in recreational activities and enhance their self-assessment to succeed in recreational activities.

Conversely, women seem to care more about the evaluations made by others than their evaluations. Women may participate in recreation differently depending on the evaluation by others and the degree of motivation for recreational activities. This gender gap is a recent discovery in research on schizophrenia outcomes. According to the original gender-based studies, many show that women rather than men have an interdependent and relational self-concept of "self with others" (Cross & Madson, 1997; Kashima et al., 1995). This tendency may also apply to people with schizophrenia. As evidence suggests, women's motivation for recreation was greatly influenced by communication problems such as emotional expression and linguistic nonverbal communication. Motivation seems to be influenced by how well one can communicate in their relationship with others. Interpersonal factors influence motivation and, as a result, greatly influence recreational participation. This may be a significant indication of the effects of gender differences.

However, our study has some limitations. Recreation outcomes can be influenced by factors beyond personal control, such as social support, financial

situation, and personal resources (such as having a car). These factors were not controlled. In addition, only stable participants were included in the study. This could explain why the positive symptoms were unaffected.

However, this study definitely showed that the factors that influence recreational outcomes differ for men and women despite these restrictions. Therefore, we suggest that encouraging participation in recreation should be gender-appropriate. Men may be more motivated to participate in recreation by improving their self-assessment. In addition, when encouraging recreational participation, intervention in abilities (such as ensuring participants do not fail the activity) may increase motivation and encourage further participation. Similarly, cognitive-therapeutic interventions may help make women feel less self-conscious about others' reactions since one of the determinants of women's recreational participation is the evaluation by others. In addition, since the degree of communication output determines motivation, support for increasing expression, including manifestation of intention and emotional expression, may encourage participation. We suggest that different considerations are applied for men and women when using recreation therapeutically.

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Disclosure of Interest

No potential competing interest was reported by the author.

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Table 1. Demographic information of the sample.

	Men; n=39 (<i>SD</i>)	Women; n=63 (<i>SD</i>)	<i>p</i>
Age (years)	48.6(14.1)	45.3(11.2)	0.271
Years of education	12.3(2.1)	12.3(2.1)	0.644
Duration of illness	20.7(14)	17.8(9.5)	0.24
Antipsychotic medication dose ^{a)} , mg	509.6(377.9)	492.1(471.3)	0.79
BPRS	7.1(5.5)	5.6(4.9)	0.217
BNSS experience	17.2(9.2)	11.2(8.2)	0.002
BNSS expression	10.5(7.5)	6.4(7)	0.014
SCoRS	40(12.1)	37.1(9.9)	0.23
EBS self-evaluations	15.9(6.7)	17(6.3)	0.433
EBS other-evaluations	14.9(6.5)	15.7(5.8)	0.527
EBS self-other evaluations	10.9(4.4)	11.5(4.6)	0.554
SFS	13.6(13.6)	19.8(14.6)	0.015

Note. a) Chlorpromazine conversion, BPRS, Brief Psychiatric Rating Scale; BNSS,

Brief Negative Symptom Scale; EBS, Evaluative Beliefs Scale; SCoRS, Schizophrenia

Cognition Rating Scale; SFS, social functioning scale (recreation, co-social) EBS,

Evaluative Beliefs Scale

Table 2. Correlations between SFS sub-items and symptoms (R).

	BPRS	BNSS Experience	BNSS Expression	SCoRS	self- evaluations ^{a)}	other- evaluations ^{a)}	self-other evaluations ^{a)}
men (<i>n</i> = 39)	-.156	-.473 **	-.203	-.464 **	-.378*	-.117	.059
women (<i>n</i> = 63)	.049	-.615 **	-.443 **	-.205	-.109	-.324*	-.025

Note. R = Pearson's product moment correlation coefficient (* $p < 0.05$, ** $p < 0.01$).

BPRS, Brief Psychiatric Rating Scale; SCoRS, Schizophrenia Cognition Rating Scale; SFS, Social Functioning Scale

a) EBS, Evaluative Beliefs Scale

Table 3. Multiple regression analysis with SFS as the dependent variable (stepwise).

Model	Variable added	β	t	p	95% CI	R^2_{Adj}
Men ^{a)}	BNSS experience	-.564	-3.484	.002	-1.446 ~ -.374	.292
Women ^{b)}	BNSS experience	-.653	-4.618	.000	-1.738 ~ .681	.310
	other-evaluations ^{c)}	-.292	-2.065	.044	-1.361 ~ .016	

Note. a) Final $F = 12.1, p = 0.002$

Variables removed ($p =$ during multiple regression analysis) SCoRS $p = .6774$; negative self-evaluations $p = .593$

b) Final $F = 10.7, p < 0.001$

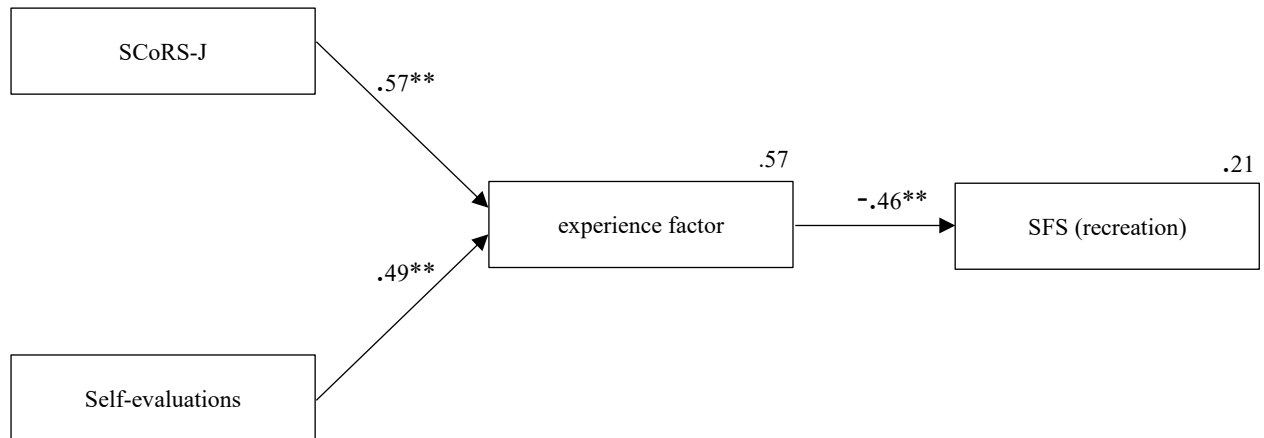
Variables removed ($p =$ during multiple regression analysis) BNSS expression $p = .378$

c) EBS, Evaluative Beliefs Scale

Figure Legends

Figure 1. Men in the Path model to recreational outcomes.

Figure 2. Women in the Path model to recreational outcomes.



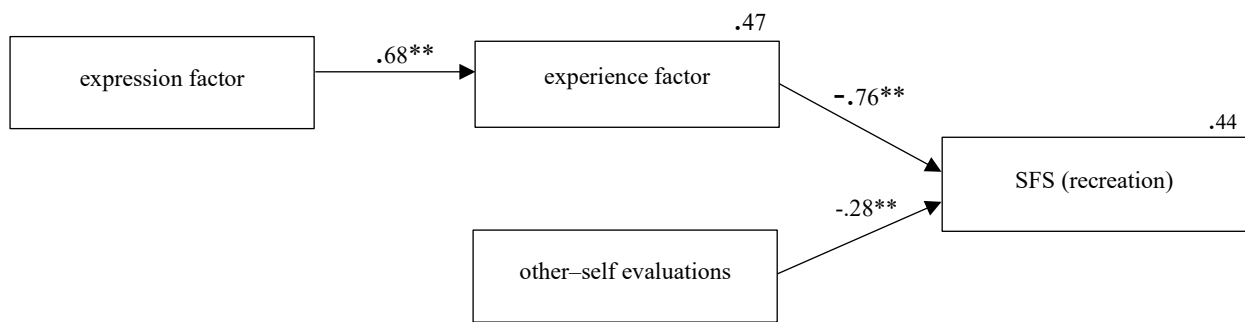
The fitness of the model was $\chi^2 p = 0.399$, CFI = 1.000, NFI = 0.917, RMSEA = 0.000, and AIC = 24.951. The value above each arrow represents a standardized coefficient. The value in the upper-right part of each factor is the coefficient of determination (R^2).

(a) SCoRS-J; cognitive function ;(b) experience factor BNSS; Motivation ; (c) self-evaluations; EBS ; (d) SFS (recreation) ; recreation and pro-social activities.

* $p < 0.01$

*Exogenous variables assume correlation

Figure 1. Man in the Path model to recreational outcomes.



The fitness of the model was $\chi^2 p = 0.616$, CFI = 1.000, NFI = 0.989, RMSEA = 0.000, and AIC = 24.974. The value above each arrow represents a standardized coefficient. The value in the upper-right part of each factor is the coefficient of determination (R^2).

(a) expression factor BNSS; Emotional expression (b) experience factor BNSS; Motivation; (c) Other-self evaluations; EBS ; (d) SFS (recreation) ; recreation and pro-social activities.

*Exogenous variables assume correlations.

** $p < 0.01$

Figure 2. Woman in the Path model to recreational outcomes.