


Assessing attribution in the criminal behavior of mentally disordered offenders: Developing a Japanese version of the Gudjonsson Blame Attribution Inventory-Revised

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Funding information

Mitsubishi Foundation, Grant/Award Number: 202130003

Abstract

Aim: Treating individuals with a mental disorder and a history of criminal behavior (mentally disordered offenders [MDOs]) aims to enable patients to maintain their health and facilitate social rehabilitation while preventing adverse outcomes, such as violent recidivism or suicide. Understanding and responding to their own insight on their criminal behavior is crucial to achieving this goal. This article aims to develop a Japanese version of the Gudjonsson Blame Attribution Inventory-Revised (GBAI-R) and investigate the reliability and validity of the scale for MDOs in Japan.

Methods: In addition to developing the Japanese version of GBAI-R (GBAI-RJ), psychological data relevant to the Japanese study were collected and analyzed. Factor analysis was employed.

Results: Seventy-seven Japanese native participants were recruited from forensic psychiatric inpatients, outpatients, and medical prison inmates between 2020 and 2022. The results demonstrated that the dimensions on the GBAI-RJ had a similar factor structure to those reported in previous studies. The GBAI-RJ has both test/retest reliability and internal consistency.

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Conclusion: The three dimensions Guilt Factor, External Factor, and Mental Element Factor from the original version in English are applicable to the Japanese version for assessing attribution and comparing the findings with those of the previous studies.

KEYWORDS

blame attribution inventory, criminal behavior, mentally disordered offenders, violent recidivism

INTRODUCTION

Background

Psychiatric care for individuals with a mental disorder and a history of criminal behavior intends not only to stabilize symptoms but also to prevent undesirable consequences, such as violent recidivism and suicide.

Forensic psychiatry originated mainly in Europe and has a varied historical, political, and ideological background. Although policies related to forensic psychiatry differ among nations, attempts are being made at correctional institutions and forensic psychiatric units to address patient-related issues using psychosocial therapy and social care in addition to medication.¹

In Japan, there are two approaches to psychiatric treatment for an individual who has committed a crime, depending on the presence or absence of criminal responsibility. The first category includes those found to be legally culpable and are to be sent to prison. Individuals found guilty of having committed a crime receive psychiatric treatment in the general prisons where they are housed. Only if intensive psychiatric treatment is deemed to be necessary is the inmate transferred to a medical prison. The second falls under the Medical Treatment and Supervision Act (MTSA), passed in 2003 and enacted in 2005, which implements patient care for individuals whose criminal charges have been dismissed due to their psychological incompetence, who have been found not guilty by reason of insanity, or who have been given a suspended sentence and not been imprisoned because of diminished responsibility for their offenses.^{2,3} The aims of psychiatric care in correctional institutions for guilty persons and forensic psychiatric units for those not guilty are the same, that is, to assist the individuals to preserve their health and stimulate their participation in society consequent with their abilities and preferences while preventing recidivism.

Purpose of the present study

The research sought to create a Japanese-language tool to assess mentally disordered offenders' (MDOs') awareness and understanding of their criminal behaviors and their perception of their own mental condition. Although the Japanese version of the Schedule for Assessment of Insight⁴ has been used to evaluate patients' insights into psychosis, so far, no method has been available in Japanese for the analysis of MDOs' awareness and understanding of their behavior. The current literature on the legal consequences of their

illness ("forensic insight")⁵ presents a scattering of reports on assessment tools for determining the attribution of criminal behavior. Attribution is understood based on how individuals construct explanations for their own or others' behavior.⁶ It is suggested that attribution expresses the offender at a social level, and plays a crucial role as a "social tool" in human relations.⁷ We believe that attribution coincides with our notion of the patients' insight into their mental states regarding the acts perpetrated. In clinical experience, it is believed that there are individual differences in attribution. Moreover, it is thought that the mental condition and its treatment can alter it. Attribution is typically comprehended in a narrative form, but it was considered necessary to find a method to measure it objectively. We then searched the literature of foreign countries and selected certain parameters, and translated them into Japanese to apply them.

The process of choosing an assessment tool

The currently available attribution assessment tools are the following. The Attributional Style Questionnaire (ASQ)^{8,9} asks respondents to think of positive and negative hypothetical events that are presented to them. The respondents are asked to assert whether the event was caused by them, caused by others, or came about due to circumstances. The Social Attributions Questionnaire (SAQ)^{9,10} examines social attribution based on a series of social vignettes that describe interactions between two persons. The Internal, Personal and Situational Attributions Questionnaire (IPSAQ)^{9,11} assesses self-blame and external attributions for positive and negative events. The Attribution of Blame Scale (ABS)¹² assesses respondents' general criminal attributions of blame for crime to the victim, offender, alcohol, or society.¹³ These scales do not target specific acts committed by respondents themselves.

The Criminal Attribution Inventory (CRAI)¹⁴ asks respondents to define "crime" in terms of the average type of crime they know about. The normative instructional set for the CRAI appears to contribute to a reduction in socially desirable responses.¹⁵ Although the responses are not specific to the offenders' own crimes, they can assess criminal attributions related to their own crimes and can be useful in assessing the criminal attribution of offenders who deny committing a crime.¹⁵ However, the scale is not targeted to individuals with a mental disorder.

The Eisner Scale¹⁶ examines understanding of the consequences of illness, self-control, and coping strategies for the preparation of community treatment for those found not guilty by reason of

insanity. The scale targets persons with a mental disorder. This scale is assessed by the treatment staff in the context of the patient's current situation, and it includes items on actual crimes committed by the patient, such as "11. Relationship of Illness to Crime" and "12. Acceptance of Responsibility for Crime." However no evaluation of the statistical properties of this scale has been conducted.

Gudjonsson Blame Attribution Inventory-Revised

Gudjonsson created the Blame Attribution Inventory (GBAI) to measure offenders' blame assignment for their criminal behaviors.¹⁷ In a study he co-authored with Singh, the GBAI was revised after its initial publication (GBAI-R)¹⁸ to an inventory of 42 items that analyzed the principal components in the offenders' perception of their conduct. Those components could be interpreted as "guilt feeling attribution" (18 items that included feelings of regret or remorse; e.g., "I constantly have the urge to punish myself for the crime(s) I committed"); "external attribution" (15 items, placing the blame for the crime on social circumstances, the victim, or society; e.g., "I would not have committed any crime(s) if I had not been seriously provoked by the victim(s)/society"); and "mental element attribution" (nine items, assigning the crime to mental illness or poor self-control; e.g., "I would certainly not have committed the crime(s) I did if I had been mentally well").¹⁹

The definition of the "guilt feeling attribution" and "external attribution" was based on Heider's theory,²⁰⁻²² which postulates that people use an internal or external type of attribution when explaining their behavior. These types of attribution seem remarkably pertinent to criminal behavior.^{18,22} When the cause is perceived to stem from an individual's personality, it is considered internal attribution.¹⁸ Meanwhile, when the cause or blame is credited to external factors, such as social or environmental pressures, it is assumed as external attribution.¹⁸ This definition overlaps with the idea of extrinsic justification.¹⁷ In contrast, the "mental element attribution," the third category above, is independent of the previous two types and is based on Snyder's concept²² of "self-determination,"²³ which relates to the awareness of freedom or lack thereof in the commission of a criminal behavior by someone in principle free to choose but who has lost self-control due to a mental disorder.¹⁸

The GBAI-R is a self-report questionnaire concerning specific criminal behavior. The respondents are asked to answer *true* or *false* to each statement, and the responses are scored both positive and negative to avoid the agreement bias. Each item is assigned a score of 0 or 1, and the total score for each category is calculated. The GBAI-R has been validated¹⁸ using the Eysenck Personality Questionnaire (EPQ),²⁴ locus of control,²⁵ and the Hostility and Direction of Hostility Questionnaire.²⁶ The data from British correctional institutions have corroborated its tripartite structure.¹⁵ Furthermore, Gudjonsson validated the scoring system using samples from Iceland and Northern Ireland.^{19,27} Subsequent studies have supported the cross-cultural validity of the three-factor model in Finland,²⁸ Germany,²⁹ and Sweden.⁷ To date, ~20 studies have used the

GBAI-R, comparing the scoring system with variables such as age,⁶ psychopathy,^{7,25,28} type of facility³⁰ (forensic patients or prisoners), type of offense,^{29,31} personality disorder³² diagnosed using DSM-III, the relationship between the offender and victim,³³ anger,³⁴ the severity of violent acts,³³ and the presence of psychosis or delusions of persecution.⁹

The present study aims to develop a Japanese version of the GBAI-R (GBAI-RJ) to assess causal attribution in MDOs. Therefore, the GBAI-R has been adopted as the basis of this study with the following two considerations: (1) the scoring system focuses on attribution in criminal behaviors, and (2) it is explicitly designed for persons with a mental disorder and a history of criminality.

METHODS

Participants

The inclusion criteria were forensic psychiatric inpatients (not guilty or diminished capacity) and outpatients under the MTSA and medical prison inmates (guilty), who use Japanese as their primary language and have a diagnosis of schizophrenia or another mental disorder with psychosis based on the *Diagnostic and Statistical Manual of Mental Disorders*, 5th ed. (DSM-5).³⁵ The exclusion criteria were diagnosis of inadequate expression of free will in a patient by a multidisciplinary team (formed by physicians, nurses, psychiatric social workers, and other specialists) and an intelligence quotient of 49 or less indicating moderate to severe intellectual disability. There was no exclusion based on sex or age. Written consent to participate was requested.

The reason that we collected only patients with schizophrenia or another mental disorder with psychosis is due to the inclusion criteria of the Japanese forensic psychiatric system. In Japan, the treatment of MDOs is channeled at the start through filters into medical (hospital) or judicatory (correctional institutions), and once the site of the treatment has been decided, it is not changed.³⁶ It is not possible to transfer offenders with mental disorders who are presently in correctional facilities into the MTSA system.³⁷ Similarly, it is not possible to transfer MTSA patients to the correctional institutions. The MTSA corresponds to the forensic ward in Japan and is designed on the model of medium secure units in the United Kingdom. The MTSA applies only to persons deemed to have committed serious criminal behaviors of the following six types: homicide, arson, robbery, forcible sexual intercourse, indecent assault, and bodily injury.² It is very rare for a person diagnosed with a personality disorder to come to MTSA. The main reason that offenders with personality disorders are rarely included in the Japanese system is that these individuals are conventionally assessed to have full criminal responsibility, so they are rarely referred under the MTSA.²

Medical prison is specifically designed for incarcerated psychiatric patients, and inmates requiring specialized general or psychiatric services are transferred here from all over the country.³⁶ The institution accepts patients with schizophrenia, mood disorders,

drug-induced mental disorders, prison reaction, refractory epilepsy, or organic mental disorders, including dementia, eating disorders, various psychogenic disorders, and developmental disorders.³⁶ Those with personality disorders are usually incarcerated in general prisons. Because this study was conducted on patients diagnosed with psychosis, we did not collect a sample from general prisons.

Procedure

This study was approved by the Ethical Committee of Tokyo Medical and Dental University, by the Ethical Committee of Tokyo Metropolitan Matsuzawa Hospital, and by the Ethical Committee of National Center of Neurology and Psychiatry Hospital, and Medical Correction Center in East Japan.

After obtaining permission from Gudjonsson, the GBAI-R was translated into Japanese (GBAI-RJ) by two psychiatrists, one with relevant experience including work in a forensic psychiatric unit for over 30 years, and another psychiatrist with similar work experience for over 5 years.

Between 2020 and 2022, 77 patients were finally recruited from forensic psychiatric inpatients, outpatients, and medical prison inmates. Specifically, the study enrolled 45, 17, and 15 patients from the forensic psychiatric units of the Tokyo Metropolitan Matsuzawa Hospital, National Center of Neurology and Psychiatry Hospital, and Medical Correction Center in East Japan, respectively. The participants were informed that all personal data collected for the study would be protected, that the research and treatment were considered independent of one another, that no disadvantages would result from treatment, and that there would be no remuneration for participation.

The participants' demographic, clinical, and criminal behavior data were extracted from medical records.

Before examining validity and reliability, we performed descriptive statistics on the GBAI-RJ. We checked the distribution of results in the population of this study and evaluated ceiling and floor effects.

Validity was first examined by back translation and by having a native English speaker check the text to ensure that the same content was being measured when the language of the questionnaire was changed. In addition, to confirm the construct validity of the Japanese version of the GBAI-R, factor validity was examined. The English and German versions of the scale have already shown validity, and this study only changed the language. However, even if the translation was appropriate, it was necessary to take into account that the GBAI-R contains concepts closely related to culture, such as guilt. Therefore, we conducted a factor analysis to determine whether the Japanese version of the GBAI-R measures concepts similar to the original. Reliability was examined by retesting and checking for internal consistency.

Statistical analysis

We conducted confirmatory factor analysis for ordinal categorical data using Mplus to examine whether items in the Japanese version

of the GBAI can be divided into the three factors proposed by Gudjonsson.

If the model fit was not good, we took into account that the GBAI-RJ is the first such scale created in Japanese and conducted an exploratory factor analysis using the Japanese data followed by a confirmatory factor analysis.

To confirm reliability, a retest was conducted with 16 subjects 1.5–3 months after the initial test to calculate interclass correlation coefficients. To corroborate internal consistency, factor analysis using Cronbach's coefficient alpha was calculated for each factor extracted in 77 subjects.

Hypothesis

The GBAI-RJ was hypothesized to show good validity and reliability. The theoretically assumed subfactor structure of the Japanese version of the GBAI-RJ was expected to be generally similar to the three-factor structure seen in previous studies, due to the similarity with previous studies,^{18,29} in that all subjects had a mental illness and a history of criminal behavior. However, the population we assessed was limited to patients with a diagnosis of psychosis, and a large proportion of the subjects at MTSA were considered incapacitated or partially responsible. They are routinely informed that they need treatment for their mental disorders, not to be punished. Therefore, we hypothesized that the factor structure of the Guilt Factor items would be more scattered than in previous studies^{18,29} because they were thought to view their own guilt and the actual need to be punished separately.

RESULTS

Demographic data

Table 1 presents the patients' demographic data. The patients' average age was 44.9 years (SD = 11.18 years; range: 22–76 years). The male to female ratio was ~9:1. The diagnosis is based on the DSM-5.³⁵ The data about primary psychiatric disorder, personality disorders, substance use disorders and substance use history were similar between prisoners and forensic patients. Schizophrenia was the most common primary psychiatric disorder, followed by substance-induced psychotic disorder. Few patients had personality disorders. Most patients had no substance use disorders at that time of the criminal behavior even if there was substance use history. The data about type of offense, legal situation, and past criminal history were different between prisoners and forensic patients.

Descriptive statistics

Table 2 presents the results of the descriptive statistical analysis of the Guilt Factor, External Factor, and Mental Element Factor.

TABLE 1 Demographic data for 77 participants.

	Prisoners (n = 15) Mean ± SD	Forensic patients (n = 62) Mean ± SD	Total (n = 77) Mean ± SD
Age, years (range)	41.2 ± 7.29 (30–62)	45.8 ± 11.76 (22–76)	44.9 ± 11.18 (22–76)
Sex, male/female	15/0	54/8	69/8
Primary psychiatric disorder: Schizophrenia/Substance-induced psychotic disorder/Bipolar disorder with psychotic symptoms/Delusional disorder	12/2/0/1	56/3/2/1	68/5/2/2
Personality disorders, Yes/No	0/15	2/60	2/75
Substance use disorders: Alcohol/Other substances/Overlap alcohol and other substances/None/ Missing value	0/2/0/12/1	4/1/0/52/5	4/3/0/64/6
Substance use history: Alcohol/Other substances/Overlap alcohol and other substances/None/ Missing value	0/6/0/1/8	20/3/9/20/10	20/9/9/21/18
Type of offense: Homicide/Arson/Robbery/Forced sexual intercourse/ Indecent assault/Bodily injury/Other type of offence/Missing value	3/1/2/1/1/4/11/0	14/10/4/0/2/32/0/1	17/11/6/1/3/36/11/1
Legal situation: Non-indictment/Innocent after the prosecution/Stay of execution after the prosecution/Jail sentence after the prosecution/Missing value	0/0/0/15/0	46/1/5/0/10	46/1/5/15/10
Past criminal history: None/Once/ Twice/Thrice or more/Missing value	6/1/3/5/0	30/10/4/14/4	36/11/7/19/4

Note: For the category “Type of offense,” we include an attempt and duplication.

TABLE 2 Results of the descriptive statistical analysis of the Guilt Factor, External Factor, and Mental Element Factor.

Japanese version		Min	Max	Median	Mode	1st Quartile	3rd Quartile	Mean	Standard deviation
Prisoners	Guilt	6	17	12	15	9	15	11.60	3.52
	External	0	12	4	1	1	9	5.06	4.36
	Mental	1	9	7	8	5	8	6.13	2.5
Forensic patients	Guilt	3	17	12	15	9	15	11.52	3.3
	External	0	13	4	4	3	7	4.87	3.08
	Mental	0	9	6	8	5	8	6.00	2.14
German version ²⁷								Mean	Standard deviation
Prisoners	Guilt							8.31	3.89
	External							3.79	2.81
	Mental							3.4	2.22
Forensic patients	Guilt							10.8	3.75
	External							4.14	2.89
	Mental							5.73	2.38

Each element's average value and standard deviation were close to the values obtained in the German version²⁷ that evaluated forensic patients. As shown in Figure 1, the distribution pattern of the scores for the Guilt Factor was nearly bell-shaped. The External Factor showed a bimodal distribution. The Mental Element Factor showed some ceiling effects, but the mean ± SDs did not exceed the upper limit of nine points.

Validity

The results of the back translation and native check were confirmed to be linguistically valid. The results of the back translation were reported to and approved by Gudjonsson.

In the confirmatory factor analysis based on the three factors proposed by Gudjonsson, an attempt was made to improve the

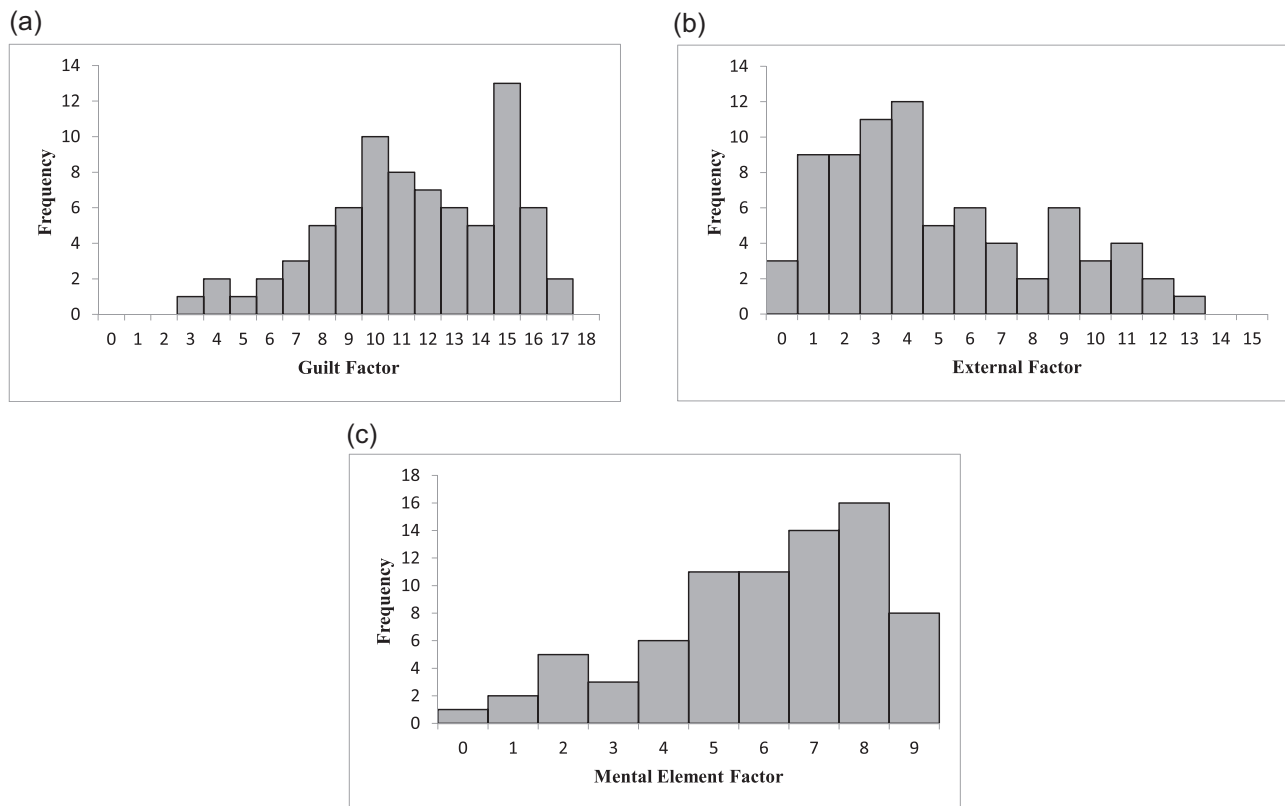


FIGURE 1 Distribution patterns of the scores for the (A) Guilt Factor, (B) External Factor, and (C) Mental Element Factor.

goodness of fit of the model by modifying it, but the resulting goodness of fit index was root-mean-square error of approximation (RMSEA) = 0.057 (95% confidence interval [CI]: 0.040–0.072), comparative fit index (CFI) = 0.882, Tucker–Lewis index (TLI) = 0.872.

Therefore, it was considered necessary to conduct exploratory factor analysis and confirmatory factor analysis based on the Japanese data. The exploratory factor analysis assumed one to five factors. It was found that factors 5, 4, and 3 had explanatory power; factor 3 was the easiest to interpret, with goodness-of-fit indices of RMSEA 0.034 (95% CI: 0.005–0.049), CFI = 0.925, TLI = 0.912, and standardized root mean squared residual (SRMR) = 0.143. Items Q25, Q26, Q30, Q32, and Q40, which contributed less than 0.4 to any of the three factors in the exploratory factor analysis, were excluded. Items Q9, Q27, and Q37, which had high loadings on all three factors, were also excluded. Confirmatory factor analysis was performed to examine the contribution from each variable to only one factor with the highest loadings. All paths from each variable were significant, with the Factor 1 to Factor 3 association tending to be significant. However, the resulting goodness of fit index was CFI = 0.823. Next, we allowed the results of the exploratory factor analysis that contributed to multiple factors if they had a contribution ratio of 0.4 or greater. After confirmatory factor analysis, we removed Q35, whose path was not significant for the first factor, and Q10, whose path was not significant for the third factor. The paths to all factors were

significant. The resulting goodness of fit index was CFI = 0.904. Table 3 shows the final confirmatory factor analysis results.

Table 4 shows the factor loadings for the exploratory factor analysis of the GBAI-RJ. Factor 1 of the GBAI-RJ, which included 11/18 of the Guilt Factor and 1/15 of the External Factor, was focused on items that suggest guilt. The External Factor item included in Factor 1 was item 7 (“*I am responsible for my criminal act(s)”). Factor 2 of the GBAI-RJ included 10/15 of the External Factor items and 6/18 of the Guilt Factor items. The Guilt Factor items included in Factor 2 were item 35 (“I deserve to be severely punished for the crime(s) I committed”), item 34 (“*I should not punish myself for what I did”), item 22 (“*I would have been better off if I had not been caught”), item 8 (“It is definitely not in my nature to commit crimes”), item 28 (“*I feel annoyed that I was caught”), and item 13 (“The crime(s) I committed was very much out of character”). From all of the included questions, Factor 2 of the GBAI-RJ represented external attribution. However, there were varying ideas regarding being arrested or punished. Factor 3 of the GBAI-RJ included 9/9 of the Mental Element Factor and 1/18 of the Guilt Factor. Of all of the included questions, Factor 3 of the GBAI-RJ represented the attribution to the mental element. The Guilt Factor item included in Factor 3 was item 6 (“*I feel no remorse or guilt for the crime(s) I committed”).

From the above, generally, Factor 1 of the GBAI-RJ corresponded to the Guilt Factor, Factor 2 to the External Factor, and Factor 3 to the Mental Element Factor.

TABLE 3 Results of the confirmatory factor analysis.

A. Model fit					
χ^2	df	p	CFI	TLI	RMSEA
665.9	577	0.006	0.904	0.895	0.045
B. Standardized model results					
	Item no. factor	Estimate	S.E.	Est./S.E.	Two-tailed p-value
F1 BY					
	1	0.825	0.113	7.280	<0.001
	4	0.760	0.097	7.817	<0.001
	5	0.641	0.101	6.320	<0.001
	7	-0.432	0.118	-3.656	<0.001
	9	-0.344	0.100	-3.427	0.001
	12	-0.685	0.136	-5.045	<0.001
	14	0.806	0.084	9.559	<0.001
	23	0.828	0.090	9.218	<0.001
	24	0.639	0.126	5.091	<0.001
	27	0.452	0.147	3.076	0.002
	33	-0.339	0.143	-2.373	0.018
	37	0.522	0.160	3.257	0.001
	39	0.408	0.147	2.785	0.005
	42	-0.583	0.117	-4.975	<0.001
F2 BY					
	2	0.634	0.116	5.484	<0.001
	3	0.707	0.105	6.734	<0.001
	5	-0.299	0.119	-2.519	0.012
	7	0.616	0.107	5.733	<0.001
	8	0.510	0.119	4.271	<0.001
	9	0.550	0.105	5.236	<0.001
	13	0.337	0.170	1.989	0.047
	15	0.640	0.149	4.307	<0.001
	16	0.579	0.124	4.675	<0.001
	17	-0.285	0.156	-1.821	0.069
	18	0.756	0.085	8.917	<0.001
	19	0.598	0.127	4.722	<0.001
	21	0.856	0.073	11.695	<0.001
	22	-0.558	0.114	-4.877	<0.001
	27	-0.439	0.093	-4.710	<0.001
	28	-0.616	0.111	-5.537	<0.001
	31	0.845	0.096	8.839	<0.001
	33	0.661	0.105	6.286	<0.001
	34	-0.804	0.096	-8.385	<0.001
	35	-0.843	0.083	-10.115	<0.001

(Continues)

TABLE 3 (Continued)

B. Standardized model results					
	Item no. factor	Estimate	S.E.	Est./S.E.	Two-tailed <i>p</i> -value
	37	-0.407	0.138	-2.951	0.003
	39	-0.418	0.124	-3.387	0.001
	42	0.398	0.115	3.475	0.001
F3 BY					
	6	0.913	0.123	7.426	<0.001
	9	-0.407	0.119	-3.430	0.001
	11	0.717	0.150	4.773	<0.001
	16	-0.361	0.145	-2.488	0.013
	17	0.581	0.141	4.121	<0.001
	18	-0.394	0.097	-4.068	<0.001
	20	0.831	0.135	6.144	<0.001
	27	0.422	0.134	3.159	0.002
	29	0.429	0.154	2.785	0.005
	36	0.660	0.155	4.264	<0.001
	37	0.361	0.156	2.309	0.021
	38	0.505	0.149	3.392	0.001
	41	0.875	0.111	7.900	<0.001
F2 WITH					
	F1	-0.237	0.134	-1.773	0.076
F3 WITH					
	F1	0.257	0.172	1.493	0.136
	F2	-0.219	0.149	-1.475	0.140

Abbreviations: CFI, comparative fit index; RMSEA, root-mean-square error of approximation; TLI, Tucker–Lewis index.

Reliability

Test/retest reliability was assessed in 16 of the subjects. The results revealed an intraclass coefficient correlation of 0.90, 0.86, and 0.65 for the Guilt Factor, External Factor, and Mental Element Factor, respectively.

Cronbach's coefficient alpha was 0.703, 0.793, and 0.729 for the Guilt Factor, External Factor, and Mental Element Factor, respectively.

DISCUSSION

Descriptive statistical analysis revealed characteristic distribution patterns for the Guilt Factor, the External Factor, and the Mental Element Factor. The data for the Guilt Factor were well scattered. The External Factor was almost bimodal, suggesting that some groups scored higher on this dimension and others scored lower. The Mental Element Factor showed some ceiling effects, but not a

significant ceiling effect when referring to the mean \pm SD. Thus, the distribution of all three factors was moderately scattered, and the validity and reliability of the data were verified.

The distribution pattern of the external factors was particularly noteworthy. It can be clinically understood because there is a difference between patients who insist that their behavior was caused by the victim or society and a paranoid subject. Previous studies reported that attribution might help preserve self-respect and personal values while alleviating feelings of guilt and anxiety.^{29,38} Thus, external attribution may help protect self-respect and prevent suicide. On the contrary, clinically speaking, patients with a strong external attribution may indicate possible recidivism in similar criminal behavior, making rehabilitation more difficult. Therefore, in terms of preventing negative outcomes of harm to others and suicide, a high or low external attribution score alone cannot be considered a favorable prediction. Instead, it would be recommendable to try to bring the needs of patients into sharper relief by appraising external attribution to build an appropriate treatment and care regimen.

TABLE 4 Factor loadings for the exploratory factor analysis of the GBAI-RJ.

Areas of the GBAI-R	Item no.	Factor 1	Factor 2	Factor 3	Question
Guilt	1	0.889	0.073	0.308	I feel very ashamed of the crime(s) I committed.
Guilt	14	0.846	-0.069	0.057	I hate myself for the crime(s) I committed.
Guilt	4	0.777	-0.123	0.023	I am constantly troubled by my conscience for the crime(s) I committed.
Guilt	23	0.762	-0.218	0.148	I constantly have the urge to punish myself for the crime(s) I committed.
Guilt	37	0.734	-0.627	0.426	*I have no serious regrets about what I did.
Guilt	5	0.733	-0.428	0.102	I will never forgive myself for the crime(s) I committed.
External	42	-0.733	0.412	-0.297	*I have no excuse for the crime(s) I committed.
Guilt	27	0.676	-0.654	0.495	*I have no need to feel ashamed of what I did.
External	7	-0.658	0.643	-0.173	*I am responsible for my criminal act(s).
External	12	-0.582	0.333	-0.136	*I should not blame other people for my crime(s).
Guilt	39	0.559	-0.460	0.145	I would very much like to make amends for what I did.
Guilt	24	0.552	-0.258	0.062	I fear that people will never accept me because of the crime(s) I committed.
External	18	-0.178	0.914	-0.442	In my case the victim(s) was largely to blame for my crime(s).
External	21	-0.369	0.817	-0.051	*I deserved to be caught for what I did.
External	31	-0.341	0.769	-0.214	Other people are to blame for my crime(s).
Guilt	35	0.408	-0.752	0.192	I deserve to be severely punished for the crime(s) I committed.
External	33	-0.437	0.745	-0.258	I had very good reasons for committing the crime(s) I did.
External	9	-0.574	0.729	-0.513	I should not blame myself for the crime(s) I committed.
Guilt	34	0.231	-0.724	0.365	*I should not punish myself for what I did.
External	19	-0.121	0.695	0.257	I would not have committed any crime(s) if I had not been seriously provoked by the victim(s)/society.
External	3	-0.184	0.676	-0.177	I did not deserve to get caught for the crime(s) I committed.
Guilt	22	-0.143	-0.671	0.040	*I would have been better off if I had not been caught.
Guilt	8	0.174	0.661	0.178	It is definitely not in my nature to commit crimes.
Guilt	28	0.087	-0.638	0.120	*I feel annoyed that I was caught.
External	15	-0.395	0.628	0.338	Society is to blame for the crime(s) I committed.
External	16	-0.327	0.605	-0.465	I should not be punished for what I did.
Guilt	13	0.354	0.566	0.368	The crime(s) I committed was very much out of character.
External	2	-0.389	0.499	-0.174	*I am entirely to blame for my crime(s).
Guilt	6	0.129	-0.350	0.845	*I feel no remorse or guilt for the crime(s) I committed.
Mental	41	0.095	-0.364	0.815	*I was in full control of my actions.
Mental	11	0.353	-0.003	0.737	I would not have committed the crime(s) I did if I had not lost control of myself.
Mental	36	0.316	-0.056	0.730	I would certainly not have committed the crime(s) I did if I had been mentally well.
Mental	38	0.124	0.145	0.720	I was under a great deal of stress/pressure when I committed the crime(s).
Mental	20	0.352	-0.321	0.654	What I did was beyond my control.
Mental	17	0.165	-0.444	0.614	*I was feeling no different to usual at the time of the crime(s).
Mental	29	0.122	0.149	0.600	I must have been crazy to commit the crime(s) I did.
Mental	10	0.045	0.190	0.508	*At the time of the crime(s), I was fully aware of what I was doing.
Mental	25	-0.117	0.267	0.380	I was very depressed when I committed the crime(s).

(Continues)

TABLE 4 (Continued)

Areas of the GBAI-R	Item no.	Factor 1	Factor 2	Factor 3	Question
External	26	-0.031	0.237	0.181	*I was in no way provoked into committing a crime.
Guilt	30	0.019	-0.350	-0.169	*There is no such thing as an innocent victim in my case.
Guilt	40	-0.076	0.012	-0.138	I sometimes have nightmares about the crime(s) I committed.
External	32	0.161	0.142	-0.012	I could have avoided getting into trouble.

Notes: Bold letters indicate a factor load of 0.30 or more.

Items with an asterisk are on an inverted scale. To avoid agreement bias, the questions were reversed as positive and negative.

Abbreviation: GBAI-RJ, Japanese version of the Gudjonsson Blame Attribution Inventory-Revised.

The linguistic validity was adequate. Next, as for factor validity, we conducted confirmatory factor analysis after exploratory factor analysis. A good fit index was obtained, with the model designed to allow a variable to contribute to multiple factors.

As assumed, drawing on previous studies, the subfactor structure of the Japanese version was a three-factor structure that could be interpreted as external attribution, guilt, and mental elements. In other words, the meaning of the factors was the same, but as hypothesized, the Guilt Factor items were scattered and were included in different factors. The reasons for this may be the differences in the sample attributes from earlier research. The subjects of the GBAI-R's English version were all convicted of a crime,⁹ while those in the German version comprised an equal number of convicted criminals and forensic psychiatric patients.²⁹ Neither of these studies indicated specific pathologies as part of the selection criteria. In the present study, the patients of the forensic psychiatric patients accounted for 80% of the participants. The inclusion criteria were a diagnosis of schizophrenia or other mental disorder, while very few had a personality disorder or comorbidity with substance abuse. This is because forensic psychiatry in Japan assumes a treatment model for schizophrenia. Medical prison patients are also limited to cases requiring intensive psychiatric treatment, and those with personality disorders are usually incarcerated in general prisons. In addition, we targeted psychotic patients in the inclusion criteria of this study. These differences in the patient characteristics might well have given rise to the discrepancies noted above.

Factor 1 in the GBAI-RJ mainly included items under the Guilt Factor, but it also contained item 7 ("*I am responsible for my criminal act(s)") from the External Factor. The factor loading for item 7 is comparable for Factor 1 and Factor 2, but the positive and negative values are reversed; as Factor 1 corresponds to the Guilt Factor and Factor 2 to the External Factor, the contributions of item 7 to both in opposite directions is consistent with the clinical sense.

Factor 2 of the GBAI-RJ consists primarily of external factor items, as shown in Table 4, but this includes several guilt factor items.

Item 34 asks whether the respondent should punish him- or herself, and item 35 asks whether the respondent should actually be severely punished. The Japanese sample included a particularly large number of forensic psychiatry patients. These patients have been

judged noncustodial or not guilty due to their mental status or have been judged by the court to be only partially responsible. Therefore, it is possible that they responded with the belief that they should not be punished by society, even if they felt partially responsible for punishing themselves as well as for external attribution. The results also showed a negative tendency for item 22 ("*I would have been better off if I had not been caught") and item 28 ("*I feel annoyed that I was caught"). This could be due to the fact that the respondents were certain that they had been arrested but were therefore able to initiate treatment. Items 13 and 8 indicate a tendency to respond that the offense is not homogeneous with one's own characteristics, which can be viewed as an external attribution in a broad sense.

Factor 3 of the GBAI-RJ consists mainly of the Mental Element Factor but also includes item 6 ("*I feel no remorse or guilt for the crime(s) I committed") of the Guilt Factor. Although it is somewhat difficult to interpret these data, it is possible that a certain number of offenders avoid remorse or guilt as a result of attributing the offense to their mental state.

Reliability was also confirmed to be adequate, as hypothesized. The data indicate sufficient test/retest reliability when we considered that we had the interval to perform the test twice. Only the Mental Element Factor showed a moderately low intraclass coefficient correlation. It is assumed that pharmacotherapy and disease learning affect the Mental Element Factor. The attribution of the criminal behavior may gradually change in a treatment process. Moreover, Cronbach's coefficient alpha indicated good internal consistency. Thus, the three dimensions Guilt Factor, External Factor, and Mental Element Factor from the original version in English are applicable to the Japanese version for assessing attribution and comparing the findings with those of the previous studies.

Guilt is associated with culture. However, at least in this study, there were no clear differences between countries. This may be because the attribution of criminal behavior, as measured by the GBAI-R, is unlikely to be influenced by cultural differences among countries. In particular, when the GBAI-R is used for patients with mental disorders, the effect of mental disorders on attribution may be large, and cultural differences may be difficult to detect.

This study featured several limitations: the first is the difference in sample attributes from previous studies. In addition to differences in diagnosis and legal situation, previous studies have often included

male samples, while this study includes a small number of women. In contrast, one previous study included violent female offenders.²⁸ Women tend to have lower Guilt Factor scores, which is attributed to the fact that women are less likely to commit offenses with serious consequences.²⁸ The generalizability of this study must take into account the possibility that the presence of women affected the Guilt Factor. The second is the small sample size. The sample size was not particularly small compared with the German version study (107 subjects)²⁹ and a Finnish version study (58 subjects).²⁸ Nonetheless, a larger sample size would enable more accurate findings, an issue that will hopefully be addressed in the future. This research is the first examination carried out with Japanese MDOs and is clinically significant. A longitudinal study using the GBAI-RJ to verify the changes in each dimension would be highly desirable.

AUTHOR CONTRIBUTIONS

All the authors contributed to the data collection and analysis. Ikuko Arakawa drafted the manuscript, and all the authors approved the final version for submission.

ACKNOWLEDGMENTS

We thank Gisli Gudjonsson (King's College London's Institute of Psychiatry, Psychology, and Neuroscience), Taeko Wachi (National Research Institute of Police Science, Japan), Naotsugu Hirabayashi, Fumi Imamura, Mayu Omori, Yoshie Omachi, Hiroko Kashiwagi (National Center of Neurology and Psychiatry Hospital), Yusuke Okumura (Medical Correction Center in East Japan, Tokyo, Japan), Kumiko Ando (St. Marianna University Hospital), Masafumi Mizuno, Hirohiko Harima, and Osamu Kuroda (Tokyo Metropolitan Matsuzawa Hospital) for their cooperation and advice in conducting this study.

CONFLICT OF INTEREST STATEMENT

All the authors have reported the funding source and any other conflicts of interest to the Conflicts of Interest Committee at Tokyo Medical and Dental University and all the other participating institutions as per requirement.

DATA AVAILABILITY STATEMENT

Only data that can be ethically disclosed will be made available upon request.

ETHICS APPROVAL STATEMENT

The study protocol was approved by the Ethical Committee of Tokyo Medical and Dental University, by the Ethical Committee of Tokyo Metropolitan Matsuzawa Hospital, and by the Ethical Committee of National Center of Neurology and Psychiatry Hospital, and Medical Correction Center in East Japan.

PATIENT CONSENT STATEMENT

All the study participants gave their written informed consent to participate.

CLINICAL TRIAL REGISTRATION

Not applicable.

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How to cite this article: Arakawa I, Sekiguchi Y, Takeda K, Watanabe K, Kuroki N, Kono T, et al. Assessing attribution in the criminal behavior of mentally disordered offenders: developing a Japanese version of the Gudjonsson Blame Attribution Inventory-Revised. *Psychiatry Clin Neurosci Rep*. 2023;2:e134. <https://doi.org/10.1002/pcn5.134>