

Translation and Validation of the Readiness to Change Questionnaire for Alcohol Drinkers into an Indigenous Language (Jakun Version) in Malaysia

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ABSTRACT

INTRODUCTION: Assessing readiness to change is crucial in managing alcohol-related conditions and can be achieved by using the Readiness to Change Questionnaire (RCQ), grounded in the Transtheoretical Model (TTM). This is especially important in Indigenous communities in Peninsular Malaysia, where alcohol use is intertwined with cultural practices. This study aimed to translate and validate the RCQ from English into the Jakun language spoken by an Indigenous tribe in Malaysia to ensure its linguistic and cultural relevance for assessing readiness to change among Jakun alcohol drinkers. **MATERIALS AND METHODS:** This cross-sectional study was conducted among current alcohol drinkers in three Indigenous Jakun settlements in Rompin, Pahang, Malaysia. The RCQ underwent translation into Jakun language, followed by validation (face and construct) and reliability assessment. Exploratory factor analysis (EFA), confirmatory factor analysis (CFA), and internal consistency were used to evaluate its construct validity and reliability. **RESULTS:** A total of 317 participants were recruited, most of whom were males, aged 18-29, married, had primary education, were self-employed, and had low household income. From the EFA, the original three factors were retained (pre-contemplation, contemplation, and action), but three items were removed, one from each construct. The final model demonstrated acceptable fit in CFA. Cronbach's alpha values ranged between 0.733 and 0.838, indicating good internal consistency. **CONCLUSION:** The RCQ (Jakun version) is a valid and reliable tool for assessing readiness to change among Indigenous Jakun alcohol drinkers. It can potentially assist healthcare professionals in tailoring interventions based on stages of change to address risky alcohol use in this population.

Keywords

Alcohol Drinking; Indigenous Peoples; Transtheoretical Model

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INTRODUCTION

Among the Indigenous communities in Peninsular Malaysia, alcohol consumption has traditionally been associated with cultural celebrations, such as festivals or post-harvest gatherings.¹ However, recent studies indicate that modernisation and outside influences have introduced unhealthy practices, including alcohol misuse.²⁻⁴ This raises concerns about risky alcohol consumption within these communities, as it may contribute to alcohol-related health issues and social disparities.⁵⁻⁸

The Jakun tribe is a subgroup of the Proto-Malay, one of

the three main Indigenous groups in Peninsular Malaysia, predominantly residing in rural areas. Their native language is Jakun, although most members are also able to understand and speak Malay - the national language - with varying levels of fluency depending on their educational background.⁹⁻¹¹ The use of English as a third language is minimal and generally uncommon.¹² Within this community, alcohol consumption has emerged as a growing concern due to its associated health risks.^{3,4} Notably, in 2019, a cluster of methanol poisoning occurred in a Jakun settlement, resulting in three fatalities.¹³

When managing alcohol-related conditions, it is always crucial to assess an individual's readiness to change their drinking behaviour. This assessment is grounded in the Transtheoretical Model (TTM), which describes the temporal and intentional aspect of change, from pre-contemplation, contemplation, preparation, action, and maintenance.^{14, 15} Tailoring interventions to align with an individual's level of readiness has been proven to improve the treatment outcome.¹⁶

The Readiness to Change Questionnaire (RCQ) was developed in 1992 to assess readiness to change among individuals who engage in excessive alcohol drinking but have not sought treatment.¹⁷ This was later followed by the development of the RCQ (Treatment Version) [RCQ (TV)] in 1999, specifically designed for individuals already undergoing treatment for alcohol-related problems.¹⁸ Subsequently, in 2008, a revised version of the RCQ (IV) was introduced, which refined the questionnaire by reducing the number of items from 15 to 12.¹⁹

This study focused on the original RCQ, specifically designed to complement brief and opportunistic interventions targeting excessive alcohol drinking,^{17,20,21} which is suitable for Indigenous individuals, considering the potential problems of accessibility associated with this population. To date, this tool has been translated into four languages, namely Dutch, Spanish, Swedish, and Lithuanian,²²⁻²⁵ and has been widely employed in various clinical studies across both inpatient²⁶⁻²⁸ and outpatient settings.²⁹⁻³¹ This study aimed to translate and validate the RCQ from English into the Jakun language, ensuring its linguistic and cultural relevance and to facilitate in assessing readiness to change among the Indigenous Jakun community.

MATERIALS AND METHODS

Study Design, Settings, and Participants

This cross-sectional study was conducted among the Indigenous Jakun community in the state of Pahang, one of the states in Peninsular Malaysia. Participants were recruited from three Indigenous settlements in Rompin district – district with the largest Indigenous population in Pahang, at approximately 15,099 individuals.³² One of

these settlements had a history of cluster of methanol poisoning in 2019, resulting in three deaths.¹³ The other two settlements were selected due to their proximity to the first, as well as their significant population size, being the second largest in the district, and their shared Jakun subdialect. Data collection was performed between October 2024 and February 2025.

The inclusion criteria were individuals in the selected settlement aged ≥ 18 years old who are current alcohol drinkers, irrespective of volume, have never sought treatment for alcohol-related issues, and voluntarily agreed to participate after receiving an explanation of the study. Current drinker is defined as individual who has consumed any alcoholic beverage in the past 12 months.³³ The exclusion criteria are those with history of serious mental illness or cognitive impairment and those who are unable to speak proficient Jakun language.

Readiness to Change Questionnaire (RCQ)

The RCQ was developed from a questionnaire based on Prochaska and DiClemente's stages of change model, specifically designed for drinkers who have not sought help for alcohol problems.^{17,21} It consists of 12 items, categorised into three constructs: pre-contemplation, contemplation, and action stages, with four items for each construct and factor loadings ranging from 0.35 to 0.88. The maintenance stage was excluded due to unreliable responses to its items. The tool demonstrates good internal reliability, with Cronbach's alpha coefficients of 0.73, 0.80, and 0.85 for the pre-contemplation, contemplation, and action stages, respectively.²⁰

For scoring the RCQ, each item is rated on a five-point scale: -2 (strongly disagree), -1 (disagree), 0 (unsure), +1 (agree), and +2 (strongly agree), reflecting the respondent's level of agreement with each statement. To calculate the score for each construct, the scores of the items within each construct are summed, resulting in a possible range of -8 to +8. The construct with the highest total score indicates the individual's stage of change, classifying them as being in pre-contemplation, contemplation, or action.²⁰

Study Conduct

This study consisted of two parts: (1) the translation and face validation, and (2) the psychometric evaluation.

Part 1: Translation and Face Validation

Written permission was first obtained from the author of the original questionnaire, who recommended the use of the original 12-item RCQ for this study (N. Heather, personal communication, 17 January 2024). This version was deemed more appropriate than the originally intended RCQ (IV), as the target population have never received treatment for their alcohol-related condition.

The translation process followed the established guidelines,^{34, 35} using forward translation conducted simultaneously by two bilingual individuals. One translator is a medical worker (a medical assistant at a government health clinic serving the target population), while the other is a non-medical individual (a community leader). This was followed by backward translation, also performed in parallel by two bilingual individuals – one a medical professional (a medical officer at a government clinic serving the Indigenous communities) and the other a non-medical professional (a primary school teacher at the study site). All translators are of Jakun descent and are fluent in the Jakun language. The back translators were not informed of the original English version of the questionnaire. The translated versions were then reviewed and discussed by the research team which included a medical officer with considerable experience serving the Jakun community and two public health medicine specialists. Through this process, a harmonised preliminary version of the RCQ (Jakun version) was produced.

This harmonised version was then subjected to a face validation process with 10 respondents at the study site.³⁶ These participants were asked to assess the clarity and comprehension of the questionnaire, rating each item on a scale from 1 (not clear and understandable) to 4 (very clear and understandable).³⁷ Additionally, they were invited to provide feedback on the structure and wording of each item. The feedback gathered was used to revise and polish the questionnaire, leading to the development

of the refined RCQ (Jakun version).

Part 2: Psychometric Evaluation

For construct validity assessment, a sample size of at least seven times the number of items, with a minimum of 100 participants was recommended.³⁸ Given that this questionnaire contains 12 items, the ideal sample size would be 84. However, since 100 is the minimum requirement, this larger sample size was used for the exploratory factor analysis (EFA).

To further assess construct validity through confirmatory factor analysis (CFA), another sample size of 200 was employed. This was based on a recommendation suggesting a sample size between 100 and 200 when communalities are around 0.5.³⁹ For the assessment of reliability (internal consistency) a minimum sample size of 100 was proposed.³⁸ Since 200 participants were already included in the CFA, the same sample size was applied for reliability evaluation.

Initially, recruitment was planned to be random, based on house numbers from a spot map of the settlement. However, due to a potentially limited respondent pool and logistical challenges, recruitment was ultimately conducted universally through house-to-house visits. The timing of the house visits was adjusted to occur between 3 p.m. and sunset, considering that most potential respondents were typically at work in the morning and early afternoon.

During the informed consent process, individuals were provided with explanation in simple Malay language, using a patient information sheet available in Jakun language to ensure clarity and understanding. For individuals who were unable to read, a family member or friend who can read may assist. Once the individuals agreed to participate, they underwent screening to assess their eligibility based on the inclusion and exclusion criteria. Those who did not meet the criteria were thanked and not be enrolled in the study.

Tentatively, socio-demographic information and the refined RCQ (Jakun version) were administered to the respondents. The questionnaires were primarily self-

administered. However, for respondents who had reading problems, the content of the questionnaires was read aloud to them, word by word, and in the order indicated.

Statistical Analyses

Part 1: Face Validation

Data from the face validity assessment of the refined RCQ (Jakun version) were entered into Microsoft Excel, where the item-level face validity index (I-FVI) for each question was calculated. A cut-off score of 0.83 was considered acceptable for inclusion.³⁷

Part 2: Psychometric Evaluation

The data from the psychometric evaluation were entered into SPSS version 28. For descriptive analysis, continuous data were presented as mean or median, while categorical data were presented in numbers and percentages.

Construct validity was first assessed using EFA. The suitability of the data for factor analysis was determined by a Kaiser-Meyer-Olkin (KMO) value > 0.6 and a significant Bartlett's Test of Sphericity (p -value < 0.05). Any pair of items with bivariate correlation scores exceeding 0.80 required the removal of one item.^{40, 41} For the EFA, principal component analysis (PCA) was employed as the extraction method. The number of factors to be retained was determined by Kaiser's eigenvalues > 1 .^{40, 41} The Varimax rotation method was applied, with a maximum of 25 iterations for convergence. A minimum factor loading of 0.60,^{39, 42, 43} no or minimal item cross-loadings, and no factors containing fewer than three items were considered acceptable for an item to be retained and proceed to CFA.⁴⁴

CFA was conducted using SPSS AMOS version 29. Model specification involved defining the latent variables (pre-contemplation, contemplation, and action) and their corresponding observed variables (items retained in EFA). Model estimation was performed using Maximum Likelihood estimation. Model fit was assessed based on Chi-Square statistics, Root Mean Square Error of Approximation (RMSEA), Standardised Root Mean

Square Residual (SRMR), Bentler's Comparative Fit Index (CFI), and Parsimonious Normed Fit Index (PNFI).⁴⁵

A good fit is defined by a Chi-square/df < 5.0 , SRMR < 0.08 , CFI > 0.90 , and PNFI > 0.5 .⁴⁵ For RMSEA, ideally a value of ≤ 0.08 is desirable, although ≤ 0.10 can still be acceptable, with > 0.10 being considered poor fit.⁴⁶

The internal consistency was analysed by employing Cronbach's alpha coefficient and corrected-total correlations. A Cronbach's alpha coefficient > 0.70 indicated good reliability. At the same time, the corrected item-total correlations of $r > 0.30$ were considered good.⁴¹

RESULTS

Part 1: Translation and Face Validation

After undergoing harmonisation following the forward and backward translation, face validation was conducted with 10 respondents at the study site, aged between 18 and 74 years. The I-FVI ratings for both clarity and comprehension were 1 for each of the 12 items.

Part 2: Psychometric Evaluation

Participants' Sociodemographic Characteristics

Overall, 317 respondents met the inclusion criteria. Of these, 108 took part in the EFA during the first round of data collection in the first settlement. The remaining 209 participants were included in the CFA, which incorporated data from the second and third settlements, as well as the second round of data collection across all three settlements.

As shown in Table I, majority of the participants were males (82.0%), aged 18 to 29 years (37.9%), married (71.0%), had primary education (51.4%), and were self-employed (64.7%). In terms of household income, 99.7% of participants fell into the Below 40 (low-income) category, based on the classification by the Department of Statistics Malaysia.⁴⁷ Beer was the most commonly consumed alcoholic beverage (93.1%).

Table I: Sociodemographic characteristics and types of alcohol consumed (N=317)

Participants	n (%)	Mean ± SD / median (IQR)
Sex		
Male	260 (82.0)	
Female	57 (18.0)	
Mean age (years)		36.69 ± 13.54
Age group (years)		
18-29	120 (37.9)	
30-39	79 (24.9)	
40-49	57 (18.0)	
50-59	40 (12.6)	
≥ 60	21 (6.6)	
Marital status		
Single	57 (18.0)	
Married	225 (71.0)	
Divorced	24 (7.6)	
Widowed	11 (3.5)	
Highest educational level		
No formal education	62 (19.6)	
Primary education	163 (51.4)	
Secondary education	85 (26.8)	
Tertiary education	7 (2.2)	
Occupation		
Self-employed	205 (64.7)	
Private employee	59 (18.6)	
Housewife	38 (12.0)	
Not working (unemployed, retired, or unable to work due to illness)	13 (4.1)	
Government employee	2 (0.6)	
Monthly household income (RM)		1,000 (700) ^a
Monthly household income group (RM)		
< 1,000	117 (36.9)	
1,000 – 1,999	161 (50.8)	
2,000 – 2,999	24 (7.6)	
3,000 – 3,999	11 (3.5)	
≥ 4,000	4 (1.2)	
Type of alcohol		
Beer	295 (93.1)	
Liquor	8 (2.5)	
Others (wine, whisky, rice wine, samsu)	14 (4.4)	

Note: ^aMedian income

Exploratory Factor Analysis (EFA)

In the 12-item factor solution, the KMO value was 0.741, indicating that the sample size was adequate. Additionally, Bartlett’s test of sphericity was significant (<0.001), suggesting that the item correlation matrix was not an identity matrix.⁴⁰ These results confirmed that the data were suitable for factor analysis. No pair of items had bivariate correlation scores exceeding 0.80, hence no item was removed at this stage. Three factors, with initial eigenvalues ≥1.0, were retained, explaining 62.13% of the variance. Most of the communality values were ≥0.40, except for item number 7 at 0.354.

Following an initial rotated component matrix, three items, one from each factor (item 4, 5, and 7) did not meet the requirement of having the factor loading ≥0.6, and therefore were removed. Subsequently, the resulting 9-item factor solution had a KMO value of 0.687 and significant Bartlett’s test of sphericity (<0.001). The three factors with total initial eigenvalues > 1 explained 68.59% of the variance. All the communality values were ≥ 0.40. There was no cross-loading, and the rest of the items were retained within their priori factors. Individual factor loadings following rotated component matrix on the initial and final three-factor solution are shown in Table II.

Table II: Rotated component matrix on the initial (12 items) and final (9 items) three-factor solution (N = 108)

Item	Factor 1	Factor 2	Factor 3
Pre-contemplation			
Item 1: I don't think I drink too much "Nyop lah, kap nyop malar banyak pon"	0.063 (0.092)	-0.299 (-0.308)	0.619 (0.624)
Item 5: It's a waste of time thinking about my drinking "Buang masa ja mikir tabiat bermalar kap"	0.494 (dropped)	-0.573 (dropped)	0.243 (dropped)
Item 10: There is no need for me to think about changing my drinking "Ghaip keperluan kap untuk berhenti bermalar"	0.046 (0.037)	0.055 (0.060)	0.892 (0.903)
Item 12: Drinking less alcohol would be pointless for me "Nyop guna kap kurok bermalar"	-0.151 (-0.183)	-0.105 (-0.115)	0.738 (0.766)
Contemplation			
Item 3: I enjoy my drinking, but sometimes I think I drink too much "Kap berkenan malar, tapi kadang-kadang kalau kap malar, mesti malar banyak"	0.035 (-0.020)	0.803 (0.854)	0.017 (-0.014)
Item 4: Sometimes I think I should cut down on my drinking "Kadang-kadang kap rasa kap patut kurokkan bermalar"	0.379 (dropped)	0.544 (dropped)	-0.455 (dropped)
Item 8: I am at the stage where I should think about drinking less alcohol "Kap berada de tahap memang kap kenak kurokkan tabiat bermalar"	0.426 (0.395)	0.630 (0.600)	-0.337 (-0.319)
Item 9: My drinking is a problem sometimes "Tabiat bermalar kap, kadang-kadang bagi masalah pada kap lah"	0.220 (0.219)	0.754 (0.797)	-0.117 (-0.157)
Action			
Item 2: I am trying to drink less than I used too "Kap cubak malar sikit nyop macam dulu"	0.601 (0.678)	0.308 (0.321)	0.150 (0.110)
Item 6: I have just recently changed my drinking habits "Kap baru ja mengubah tabiat minum kap"	0.845 (0.881)	-0.049 (-0.044)	-0.106 (-0.111)
Item 7: Anyone can talk about wanting to do something about drinking, but I am actually doing something about it "Orang lain boleh cakap menapa pun pasal tabiat malar kap, tapi sebenarnya kap memang tengah buat sesuatu untuk kurokkan bermalar"	0.575 (dropped)	0.117 (dropped)	-0.099 (dropped)
Item 11: I am actually changing my drinking habits right now "Kap sebenarnya, tengah mengubah tabiat minum kap"	0.882 (0.886)	0.125 (0.132)	-0.035 (-0.030)

^aFactor loading for the initial 12-item solution are shown outside parentheses. Values in parentheses indicate the final 9-item solution following item reduction.

Confirmatory factor analysis (CFA)

CFA was conducted to validate the factor structure of the RCQ (Jakun version).⁴¹ Three latent factors were proposed: pre-contemplation, contemplation, and action. The model fit was evaluated using several fit indices: Chi-square/df=2.961, SRMR=0.073, CFI=0.942, and PNFI=0.585, all of which suggested a good model fit. The RMSEA value of 0.097, although not ideal, was still within the marginally acceptable range.⁴⁶ Modification indices indicated that correlating the error terms of items 2 and 6 slightly improved the model fit. Overall, these results supported the validity of the three-factor structure, with no significant concerns regarding model specification.

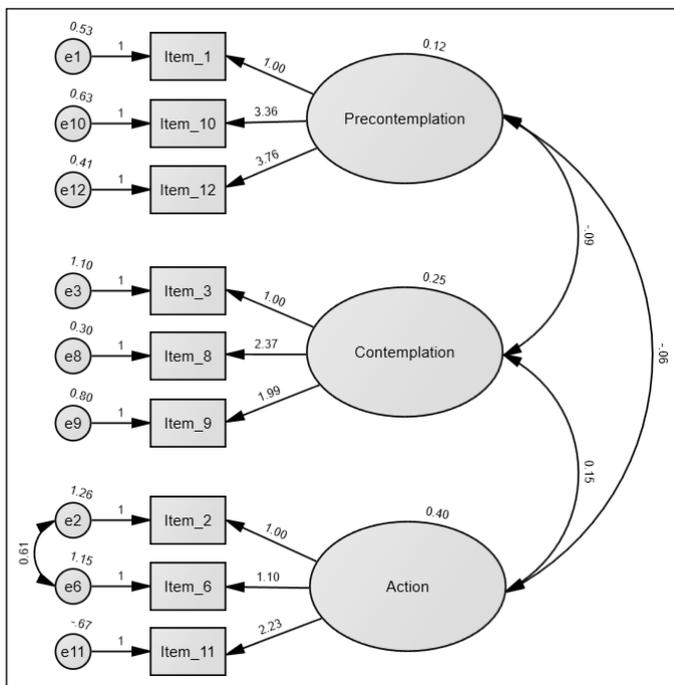


Figure 1: CFA of the RCQ (Jakun Version): three-factor model (N=209)

Reliability (Internal Consistency)

The Cronbach’s alpha values for factor 1 (pre-contemplation), factor 2 (contemplation), and factor 3 (action) were 0.742, 0.733, and 0.838 respectively, indicating a high level of internal reliability. The corrected item-total correlation coefficients ranged from 0.378 to 0.740, which showed that all items correlate well with the overall scale.⁴¹

Table III: Cronbach’s alpha value for each subscale in the finalised RCQ Jakun version) (N= 209)

Subscale	Number of items	Cronbach’s alpha	Corrected item-total correlation	Cronbach’s alpha if item deleted
Pre-contemplation	3	0.742		
Item 1			0.378	0.849
Item 10			0.697	0.489
Item 12			0.732	0.438
Contemplation	3	0.733		
Item 3			0.410	0.800
Item 8			0.648	0.530
Item 9			0.630	0.553
Action	3	0.838		
Item 2			0.668	0.810
Item 6			0.740	0.736
Item 11			0.701	0.779

DISCUSSION

I-FVI for each translated item was calculated to evaluate the face validity of the translated versions in terms of clarity and comprehensibility. Clarity refers to the absence of ambiguities in interpreting the items, while comprehensibility refers to whether the wording and structure of the items are easily understood. The I-FVI values of 1 for each translated item indicate universal agreement, ensuring that the items are clear and easily understood by prospective participants.³⁷

EFA was conducted to assess whether the psychometric constructs of the translated questionnaires align with their original English versions. In this study, the three constructs (pre-contemplation, contemplation, and action) were retained, consistent with the original questionnaire. However, the number of items was reduced to three per domain. This reduction likely reflects cultural differences in the interpretation of certain statements in the dropped items.

For example, item number 5: “*Buang masa ja mikir tabiat bermaler kap*” (It’s a waste of time thinking about my drinking), which was intended to assess the pre-contemplation construct, may suggest a lack of insight into one’s drinking habits when agreed upon. However,

many respondents in this study expressed agreement with the statement, despite having a clear understanding of the negative effects of alcohol consumption. Some even remarked, “Yes, it’s a waste of time thinking about drinking.” This response highlighted a cultural difference in the interpretation of the item, where respondents viewed thinking about their drinking habit as something undesirable, rather than an indicator of self-awareness.

Another example is item number 7: “Orang lain boleh cakap menapa pun pasal tabiat maler kap, tapi sebenarnya kap memang tengah buat sesuatu untuk kurokkan bermaler” (Anyone can talk about wanting to do something about drinking, but I am actually doing something about it), which was designed to assess the action construct. This item is relatively long and linguistically dense. A notable number of respondents either paused for clarification or asked, “What?” after hearing or reading the statement. According to one of the forward translators, while long sentences are not necessarily grammatically incorrect in the Jakun language, they are not preferred in everyday conversation. The Jakun community generally favours shorter, more direct expressions in daily speech. As a result, the message of this item may become diluted or lost due to its length and complexity, hence affecting comprehension and consistency in responses.

Subsequently, the CFA results confirmed the three-factor structure of the RCQ (Jakun version), in line with the TTM. However, given the slightly elevated RMSEA value, a larger sample size might be needed to further improve model fit.⁴⁸ Alternatively, RMSEA could be omitted from the analysis, as it often misleadingly suggests poor fit in studies with smaller sample sizes.⁴⁹

The final RCQ (Jakun version) demonstrated a good internal consistency with Cronbach’s alpha values ranging from 0.733 to 0.838. This finding is consistent with the original study, which reported Cronbach’s alpha values between 0.73 to 0.85,²⁰ as well as other cross-cultural studies showing values ranging from 0.58 to 0.83.^{22, 23, 50} These indicate that this translated RCQ is reliable.

CONCLUSION

The RCQ (Jakun version) is a valid and reliable tool for assessing readiness to change among Indigenous Jakun alcohol drinkers. It can potentially serve as a brief and practical screening instrument, making it useful for identifying individuals at different stages of change. This tool can potentially assist healthcare professionals in tailoring interventions and developing targeted treatment strategies based on stages of change to address risky alcohol drinking behaviour within this population.

CONFLICT OF INTEREST

The authors declare no known competing financial interests or personal relationships that could have influenced the work reported in this study.

ETHICS APPROVAL

This study is part of a broader interventional research aimed at addressing risky drinking among the Indigenous community in Pahang, which has been approved by the Universiti Teknologi MARA (UiTM) Research Ethics Committee (REC/09/2024 (PG/MR/456)) and registered with the National Medical Research Register, Ministry of Health Malaysia (NMRR ID-24-02462-AQ6). Additionally, permission was obtained from the Department of Indigenous People Development (JAKOA) Malaysia (JAKOA.PP.R.004 JLD 8 (39)).

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