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Journal of Advanced Research in Social and Behavioural Sciences

Journal homepage:
https://karyailham.com.my/index.php/jarsbs/index
ISSN: 2462-1951



Preliminary Psychometric Evaluation of a Multidimensional Instrument for the Rehabilitation of Delinquent Students from Low-Income Families in East Coast Malaysia

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ARTICLE INFO

Article history:
Received 1 October 2026
Received in revised form 6 November 2026
Accepted 10 November 2026
Available online 20 November 2026

ABSTRACT

Delinquent behaviour among students from low-income families is a complex issue shaped by interacting psychological, educational, social, socioeconomic, intervention, and well-being factors. This study aimed to evaluate the preliminary psychometric properties and factor structure of a multidimensional instrument developed to support the assessment and rehabilitation of delinquent students from low-income families in East Coast Malaysia. A quantitative cross-sectional survey design was employed involving 122 university students from B40 households who completed 175 items covering 17 constructs derived from the study's theoretical framework. The questionnaire was distributed randomly among eligible students meeting the study's B40 criterion. Negatively worded items were reverse coded prior to analysis. Data were analysed using the Kaiser–Meyer–Olkin (KMO) measure, Bartlett's test of sphericity, Principal Axis Factoring (PAF) with Promax rotation, factor-loading and cross-loading assessment, corrected item-total correlations (CITC), and Cronbach's alpha. The overall KMO value was 0.782, while Bartlett's test of sphericity was statistically significant, $\chi^2(15,225) = 42,712.95$, $p < .001$, indicating that the item pool was suitable for factor analysis. The theory-informed 17-factor solution accounted for approximately 77.59% of the total variance in the measured item pool. Most constructs demonstrated good to excellent internal consistency, although Self-Esteem showed comparatively low reliability ($\alpha = .581$). Several items exhibited weak primary loadings and/or potential cross-loadings and were identified for further review based on statistical and theoretical considerations. Negative factor-loading signs were interpreted according to their absolute magnitude rather than treated as evidence of poor item quality. Overall, the findings provide preliminary evidence for the factorability, multidimensional structure, and internal

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Keywords:

Delinquent students; low-income families; psychometric evaluation

consistency of the instrument. However, the relatively small sample size compared with the number of items limits the conclusiveness of the findings. Further validation using a larger and independent sample, followed by confirmatory factor analysis, is recommended before the instrument is considered fully validated for rehabilitation assessment and intervention purposes

1. Introduction

Delinquency among youth is a multifaceted social issue that continues to challenge educational systems, families, and communities worldwide. It refers to behaviors that violate legal or social norms, often manifesting as truancy, substance abuse, theft, aggression, or other antisocial actions. The complexity of delinquency arises from its roots in an interplay of psychological, social, economic, and environmental factors that influence adolescent development [1]. In Malaysia, delinquency among students is a growing concern, particularly within the education sector, where its impact extends beyond individual students to affect school climate, academic outcomes, and community safety.

The Malaysian education system, while striving to provide equitable access and quality learning opportunities, faces persistent challenges related to student discipline and delinquent behavior. Recent statistics reveal a worrying trend of increasing disciplinary cases, including bullying, truancy, and violence within schools. For instance, the Penang State Education Department reported over 1,300 bullying and misconduct cases between 2023 and 2025, with a significant number escalating to police reports [2]. Nationally, school violence cases have surged from 3,883 in 2022 to 7,681 in 2024, underscoring the urgency of addressing behavioral issues in educational settings [3].

Delinquency in schools is not merely a disciplinary problem but a symptom of deeper socio-economic and psychological challenges faced by students. Many delinquent students come from low-income families, often categorized within the B40 group—the bottom 40% of Malaysia's income distribution—where poverty-related stressors such as family instability, limited parental involvement, and inadequate access to educational resources exacerbate vulnerability to negative behaviors [4]. These students may experience feelings of marginalization and low self-esteem, which can lead to disengagement from school and association with delinquent peers [5].

The education sector's role in mitigating delinquency is critical, as schools serve as primary socialization agents and platforms for early intervention. However, challenges such as insufficient teacher training in behavior management, inconsistent disciplinary enforcement, and limited counseling resources hinder effective responses [6,7]. Moreover, traditional punitive approaches, including corporal punishment, have been criticized for their limited efficacy and potential to exacerbate behavioral problems [8]. Consequently, there is a growing consensus on the need for holistic, evidence-based strategies that address the psychological, social, and educational needs of delinquent students.

Despite the increasing prevalence of delinquent behavior within Malaysian schools, there remains a lack of culturally sensitive, multidimensional assessment tools tailored to the unique socio-economic and cultural context of Malaysian students from low-income families. Existing instruments often fail to capture the complex interrelations among psychological well-being, family dynamics, peer influence, educational engagement, and socio-economic status that contribute to delinquency [9]. This gap limits educators' and practitioners' ability to accurately identify at-risk students and design targeted rehabilitation programs.

Furthermore, the current disciplinary frameworks and intervention programs in Malaysian schools tend to focus on surface-level behavioral management rather than addressing underlying causes. The absence of validated, comprehensive instruments constrains the development of

effective, individualized rehabilitation plans that integrate psychological support, academic assistance, family involvement, and community resources [2]. Without such tools, efforts to reduce recidivism and promote positive youth development remain fragmented and less impactful.

Addressing the multifaceted nature of delinquency requires an instrument that encompasses the diverse domains influencing student behavior. This study is justified by the pressing need for a psychometrically sound, multidimensional tool that can assess psychological, educational, social, and socio-economic factors among delinquent students from low-income families in Malaysia. Such an instrument would provide a robust foundation for early identification, comprehensive assessment, and tailored rehabilitation planning.

Moreover, the development of this instrument aligns with national educational priorities emphasizing student well-being, inclusive education, and social equity. The Ministry of Education Malaysia has underscored the importance of creating safe and supportive school environments that foster positive behavior and academic success [11]. By integrating constructs such as self-esteem, emotion regulation, family and peer support, and spiritual well-being, the instrument proposed in this study reflects a holistic approach consistent with contemporary rehabilitation frameworks [12].

Speculatively, the availability of such a tool could transform disciplinary practices by shifting the focus from punitive measures to rehabilitative and preventive strategies. It may enable educators and counselors to identify latent risk factors early, monitor progress, and evaluate intervention effectiveness systematically. Additionally, the instrument could facilitate research that deepens understanding of delinquency's etiology in the Malaysian context, informing policy and practice.

This study aims to develop and conduct a preliminary psychometric evaluation of a multidimensional instrument designed to assess delinquent students from low-income families in East Coast Malaysia. The specific objectives are:

1. To evaluate the factor structure of the instrument encompassing psychological, educational, social, socioeconomic, intervention, and well-being domains.
2. To assess the internal consistency and reliability of the instrument's constructs.
3. To identify problematic items and suggest revisions for future validation.

By achieving these objectives, the study seeks to contribute a validated measurement tool that supports comprehensive assessment and effective rehabilitation of delinquent students, ultimately promoting their academic success and social reintegration.

2. Literature Review

The theoretical underpinning of this study is grounded in the Social-Ecological Model (SEM), Resilience Theory, and Self-Determination Theory (SDT), each selected for their complementary strengths in explaining the multifaceted nature of delinquency among students from low-income families in Malaysia. The Social-Ecological Model, originally formulated by Bronfenbrenner and elaborated in recent scholarship Özdoğru [13], provides a comprehensive framework that situates individual behavior within nested layers of influence—from personal psychological factors to family, peer groups, educational institutions, community, and broader societal contexts. This model is particularly relevant for understanding delinquency because it acknowledges that such behavior does not arise in isolation but is the outcome of complex interactions across multiple systems. Recent empirical studies in Malaysia have validated the applicability of SEM in youth delinquency research; for example, Gagan [14], demonstrated that interventions addressing family dynamics, peer relationships, and school environment simultaneously were more effective in reducing delinquent behaviors than single-focus approaches. This evidence justifies the choice of SEM as the primary framework, as it enables a multidimensional assessment of delinquency, capturing the psychological,

social, educational, and socioeconomic factors that this study aims to measure. Within this study, SEM guides the development of a multidimensional instrument that assesses constructs at various ecological levels, such as individual self-esteem and emotion regulation, microsystem factors like family and peer support, and macrosystem influences including perceived socioeconomic status and spiritual well-being. By doing so, the model ensures that the instrument reflects the complexity of delinquency and rehabilitation in the Malaysian context.

Complementing SEM, Resilience Theory is incorporated to emphasize the protective factors that enable at-risk youth to adapt positively despite adverse circumstances. Resilience Theory, as articulated by Cronin *et al*., [15] and supported by recent Malaysian research Boyd *et al*., [16], highlights the importance of internal strengths and external supports in mitigating the risks associated with low socioeconomic status and delinquent tendencies. The inclusion of resilience is justified because it shifts the focus from a deficit-based view of delinquent youth to one that recognizes their capacity for recovery and growth. Sood *et al*., [12] found that spiritual well-being and community support significantly enhance resilience among Malaysian youth, which correlates with lower rates of recidivism and better rehabilitation outcomes. This theoretical perspective informs the study by incorporating resilience as a core construct within the instrument, allowing for the identification of students' adaptive capacities and the design of interventions that build on these strengths. Such an approach aligns with contemporary rehabilitation paradigms that prioritize holistic and strength-based strategies over punitive measures, which have been shown to be less effective [18].

Self-Determination Theory (SDT), developed by Deci and Ryan, [19] and further elaborated in recent literature [20], is also integral to this study's theoretical framework. SDT posits that human motivation and well-being are contingent upon the satisfaction of three basic psychological needs: autonomy, competence, and relatedness. When these needs are unmet, individuals are more likely to exhibit maladaptive behaviors, including delinquency. The theory's relevance to educational settings is well-documented, with recent Malaysian studies Li *et al*., [21], Dempsey *et al*., [22] that autonomy-supportive environments and fulfillment of psychological needs reduce disruptive behaviors and enhance academic engagement. The justification for integrating SDT lies in its focus on internal motivational processes that influence behavior, complementing the external and systemic factors emphasized by SEM and Resilience Theory. In this study, SDT informs the measurement of constructs such as university involvement, academic performance, and psychological support, providing insight into how motivational deficits may contribute to delinquent behavior. This integration enriches the instrument's capacity to capture both environmental and intrapersonal determinants of delinquency, facilitating more nuanced assessment and intervention planning.

Building on these frameworks, the 17 constructs included in the instrument were selected through a comprehensive review of the literature and theoretical considerations that highlight multidimensional influences on delinquency. Psychological constructs such as self-esteem and emotion regulation reflect intrapersonal factors, while family support and peer relationships capture microsystem influences consistent with SEM [13]. Constructs like perceived socioeconomic status and spiritual well-being address broader contextual and protective factors aligned with Resilience Theory [15,16]. Academic performance and university involvement relate to motivational aspects grounded in SDT [19,20]. This integrative approach ensures that the instrument comprehensively assesses domains critical to understanding and rehabilitating delinquent students, reflecting the complex interplay of psychological, social, educational, and socioeconomic factors.

The combined use of SEM, Resilience Theory, and SDT is supported by a growing body of empirical research advocating for multidimensional frameworks in understanding and addressing youth

delinquency. For instance, Lajahidi *et al*., [23] demonstrated that multi-level interventions based on SEM significantly reduced youth misconduct in Malaysian schools, while Boyd *et al*., [16] emphasized the efficacy of resilience-building programs in rehabilitation. Simultaneously, SDT-based interventions have been shown to improve student motivation and reduce behavioral issues [10]. These studies collectively validate the theoretical choices in this research and underscore the necessity of an integrative approach that captures the complexity of delinquency. By grounding the instrument development in these theories, the study ensures content validity and practical relevance, enabling the identification of risk and protective factors across psychological, social, educational, and socioeconomic domains.

In conclusion, the selection of the Social-Ecological Model, Resilience Theory, and Self-Determination Theory provides a robust, multidimensional theoretical foundation for this study. SEM offers a structural lens to examine the layered environmental influences on delinquency, Resilience Theory highlights the protective mechanisms that foster positive adaptation, and SDT elucidates the motivational dynamics critical for behavioral change. Together, these theories inform the design of a comprehensive assessment instrument tailored to the Malaysian context, enhancing its capacity to support effective rehabilitation planning for delinquent students from low-income families. This theoretically informed approach not only advances academic understanding but also holds practical implications for educators, counselors, and policymakers aiming to reduce delinquency and promote youth well-being.

3. Methodology

3.1 Research Design

This study adopted a quantitative, cross-sectional survey design to examine the measurement structure of a multidimensional instrument developed to assess psychological, educational, social, socioeconomic, intervention and well-being domains. A structured self-administered questionnaire was used, with all measurement items assessed on a five-point Likert scale (1 = strongly disagree to 5 = strongly agree) [17].

3.2 Participants and Sampling

Data were collected from 122 university students who met the study's B40 household-income criterion and constituted the valid analytical sample. A purposive sampling technique [24] was employed, where participants were deliberately selected based on their eligibility criteria (B40 household income status). This non-probability sampling method allowed the researchers to intentionally target and recruit students who possessed the specific characteristics relevant to the study objectives. Questionnaires with usable responses were retained for statistical analysis.

3.3 Measurement Instrument

The instrument consisted of 175 measurement items covering 17 constructs derived from the study's theoretical framework: self-esteem, emotion regulation, academic performance, university involvement, family support, peer relationships, perceived socioeconomic status, psychological support, educational support, familial support, community and peer support, social support and guidance programmes, holistic intervention design, spiritual well-being, resilience, behavioural outcomes, and well-being indicators [25-31].

3.4 Data Preparation

Prior to factor analysis, negatively worded items were reverse coded to align all items in a common interpretive direction [32]. The reverse-coded items were H3, H5, PE1, PE2, SK5, SK9, SK10, RS5, RS9, RS10, SS10, SKK9, SKK10 and SKK11.

3.5 Data Analysis

Data analysis was conducted using SPSS-based procedures. First, descriptive statistics were used to profile the respondents. Second, the overall Kaiser–Meyer–Olkin (KMO) measure and Bartlett's test of sphericity were examined to establish factorability of the complete item pool [33]. Third, exploratory factor analysis (EFA) was conducted using Principal Axis Factoring (PAF) with Promax rotation because the theoretical constructs were expected to be correlated and PAF is suitable for identifying latent constructs when data may not be normally distributed [34]. Promax rotation was applied to allow for correlated factors, consistent with the theoretical expectation that psychological, social, and educational domains are interrelated. The 17-factor solution was determined based on the theoretical framework and supported by extraction statistics and scree plot inspection. Although parallel analysis was not conducted in this preliminary study, it is recommended for future research to strengthen factor retention decisions. Factor loadings were interpreted primarily using their absolute magnitude, with values around |.50| or above treated as practically meaningful [35]. Items with weak primary loadings, substantial cross-loadings, low communalities, or poor item-total relationships were flagged for substantive review. Internal consistency was assessed using Cronbach's alpha and corrected item-total correlations (CITC).

4. Respondent Characteristics

The final sample comprised 122 university students from B40 households. Female respondents represented 66.4% (n = 81), whereas males represented 33.6% (n = 41). Most respondents were below 25 years of age (98.4%, n = 120). Malay respondents accounted for 99.2% (n = 121), and 99.2% (n = 121) identified as Muslim. All respondents were single (100.0%, n = 122), while 99.2% (n = 121) were full-time students. Year 2 students constituted the largest study-year group (38.5%, n = 47), followed by Year 1 (37.7%, n = 46). With respect to current CGPA, 40.2% (n = 49) reported a CGPA between 3.50 and 4.00, while 27.9% (n = 34) reported 3.00–3.49. Importantly, 61.5% (n = 75) of respondents were categorised within the B40 household-income group, reflecting the study's intended low-income population.

5. Results

5.1 Overall Factorability of the Item Pool

In the table 1 the overall Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy was 0.782, indicating adequate sampling adequacy for factor analysis. Bartlett's test of sphericity was statistically significant, $\chi^2(15,225) = 42,712.95$, $p < .001$, demonstrating that the correlation matrix was significantly different from an identity matrix. These findings supported the factorability of the 175-item pool.

Table 1
KMO and Bartlett's test of sphericity for the 175-item pool

Test	Statistic	Interpretation
KMO	0.782	Adequate sampling adequacy

Test	Statistic	Interpretation
Bartlett's test	$\chi^2(15,225) = 42,712.95, p < .001$	Correlation matrix suitable for factor analysis

5.2 Factor Extraction and Variance Explained

In the table 2 exploratory factor analysis was conducted using Principal Axis Factoring (PAF) with Promax rotation because the theoretical constructs were expected to be correlated. The 17-factor solution was evaluated using the extracted factor statistics, the scree plot, and the predefined theoretical structure. Given the relatively small sample (N = 122) compared with the 175-item pool, the solution is interpreted as a theory-informed preliminary factor structure rather than definitive evidence of the final measurement model.

Table 2
Factor extraction and variance explained for the 17-factor PAF solution

Factor	Extraction SS Loading	Variance Explained (%)	Cumulative (%)
1	75.896	43.37	43.37
2	11.438	6.54	49.91
3	8.390	4.79	54.70
4	6.278	3.59	58.29
5	4.896	2.80	61.08
6	4.233	2.42	63.50
7	3.553	2.03	65.53
8	3.173	1.81	67.35
9	2.789	1.59	68.94
10	2.522	1.44	70.38
11	2.210	1.26	71.65
12	2.134	1.22	72.86
13	2.002	1.14	74.01
14	1.743	1.00	75.00
15	1.646	0.94	75.95
16	1.572	0.90	76.84
17	1.300	0.74	77.59

Note. Extraction SS loadings and percentages are based on the unrotated PAF solution and the total number of measured items (175)

5.3 Scree Plot

In figure 1 the scree plot was inspected as an additional dimensionality diagnostic. The plot shows a pronounced decline in the initial eigenvalues followed by a flatter pattern. In this study, the scree plot was considered together with the theoretical 17-construct framework rather than used as a standalone criterion for factor retention.

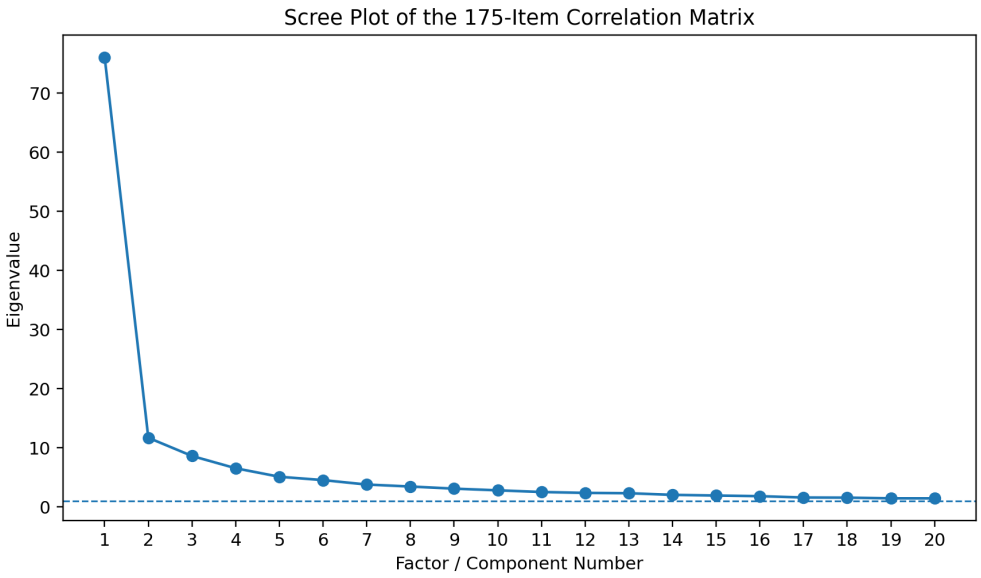

Fig. 1. Scree plot of the 175-item correlation matrix (initial eigenvalue inspection)

Note. The scree plot is presented as a dimensionality diagnostic. Factor retention was not based solely on the Kaiser eigenvalue-greater-than-one rule

5.4 Pattern Matrix, Communalities and Cross-loadings

Table 4 show the Promax-rotated pattern matrix was examined to assess item contributions to the theory-informed factor solution. Loadings were interpreted using their absolute magnitude because the sign reflects factor polarity. Values around |.50| or above were treated as practically meaningful, while close secondary loadings were flagged as potential cross-loadings. Communalities were also inspected as an item-level indication of common variance explained.

Table 4
Selected pattern-matrix results for candidate items

Item	Original construct	Primary factor	Loading	|Loading|	Second factor	Loading	|Loading|	Communality
RS2	Peer Relationships	12	0.467	0.467	3	0.359	0.359	0.512
RS5	Peer Relationships	4	-0.690	0.690	6	-0.227	0.227	0.692
RS9	Peer Relationships	6	-0.345	0.345	8	-0.301	0.301	0.430
RS10	Peer Relationships	4	-0.581	0.581	6	-0.415	0.415	0.787
SS10	Perceived Socioeconomic Status	1	-0.371	0.371	8	-0.326	0.326	0.497
SKK9	Familial Support	6	-0.550	0.550	1	-0.203	0.203	0.523
SKK11	Familial Support	6	-0.629	0.629	4	-0.306	0.306	0.642

Note. PAF = Principal Axis Factoring; Promax rotation. The table focuses on candidate/problematic items; the complete item-level pattern matrix may be provided as supplementary material because the instrument contains 175 items

5.5 Reliability: Cronbach's Alpha and CITC

In table 5 show internal consistency was evaluated using Cronbach's alpha and corrected item-total correlations (CITC). An item was considered a statistical candidate for deletion when CITC was below .30 and deletion improved Cronbach's alpha. Final decisions were made by integrating statistical evidence with content validity and factor-loading evidence.

Table 5
Internal consistency of the theoretically specified constructs

Construct	No. of Items	Cronbach's α	Minimum CITC
Self-Esteem	6	0.581	0.235
Emotion Regulation	7	0.838	0.452
Academic Performance	7	0.877	0.553
University Involvement	12	0.909	0.560
Family Support	10	0.924	0.563
Peer Relationships	10	0.766	-0.047
Perceived Socioeconomic Status	12	0.874	-0.116
Psychological Support	15	0.985	0.748
Educational Support	8	0.959	0.791
Familial Support	12	0.887	-0.116
Community and Peer Support	10	0.948	0.598
Social Support and Guidance Programmes	7	0.966	0.651
Holistic Intervention Design	8	0.944	0.559
Spiritual Well-Being	15	0.983	0.810
Resilience	10	0.976	0.739
Behavioural Outcomes	12	0.974	0.777
Well-Being Indicators	14	0.984	0.819

5.6 Final Retained and Revised Items

Candidate items were not automatically deleted because of a negative loading sign. Factor polarity can reverse without changing the substantive solution; therefore, decision-making focused on loading magnitude, cross-loadings, corrected item-total correlation (CITC), reliability impact and theoretical relevance. Items were evaluated based on primary factor loadings (threshold around |.50|), secondary loadings indicating potential cross-loadings, and communalities. Items with CITC below .30 and those that improved Cronbach's alpha upon deletion were flagged as candidates for removal. However, final decisions incorporated theoretical relevance and content validity to avoid removing items solely based on statistics.

Table 6
Final retained/revised item decisions for the preliminary measurement stage

Item	Decision status	Rationale	Potential construct	Next-step recommendation
RS2	Review / possible reclassification	Borderline primary |λ|=.467; secondary |λ|=.359	Community and Peer Support	Confirm with theory/CFA
RS5	Retain provisionally	Strong primary |λ|=.690; secondary |λ|=.227	Peer Relationships	Retain; confirm in CFA
RS9	Candidate for removal/re-specification	Weak primary |λ|=.345; secondary |λ|=.301	Peer influence dimension	Review wording and CFA
RS10	Retain provisionally	Primary |λ|=.581; secondary |λ|=.415	Peer acceptance/influence	Confirm construct specification
SS10	Candidate for reclassification	Weak primary |λ|=.371; secondary |λ|=.326	Resilience	Test alternative specification in CFA
SKK9	Retain provisionally	Primary |λ|=.550; secondary |λ|=.203	Family Relationships / Social Factors	Confirm conceptual fit
SKK11	Retain provisionally	Primary |λ|=.629; secondary |λ|=.306	Family Relationships / Social Factors	Confirm conceptual fit

5.7 Overall EFA Interpretation

Overall, the KMO and Bartlett diagnostics supported factorability of the item pool. The theory-informed PAF solution with Promax rotation provided a preliminary assessment of the multidimensional measurement structure. Several items showed borderline or weak primary loadings and/or potential cross-loadings and therefore require careful theoretical review. Negative loading signs were not treated as evidence of poor item quality. The relatively low internal consistency of the self-esteem construct (α = .581) also warrants caution. Because N = 122 is modest relative to the 175-item pool, the EFA findings should be regarded as preliminary and should be confirmed through CFA using a larger or independent sample.

6. Discussion

The present study provides preliminary psychometric evidence for a multidimensional instrument developed within a rehabilitation framework for delinquent students from low-income families in East Coast Malaysia. The overall KMO value of 0.782 and the significant Bartlett's test indicate that the 175-item correlation matrix contained sufficient shared variance to justify factor analysis. The use of Principal Axis Factoring with Promax rotation was theoretically appropriate because the psychological, educational, social, socioeconomic, intervention, and well-being domains represented in the instrument are expected to be related within a rehabilitation context.

The factor extraction results also indicate that the instrument contains substantial common variance across the retained factors. The 17-factor solution accounted for approximately 77.59% of the observed variance in the item pool. However, this result should not be interpreted as definitive confirmation of 17 independent latent dimensions. The sample size of 122 respondents is modest relative to the 175-item pool, and the EFA was therefore interpreted as a theory-informed preliminary measurement assessment. This distinction is important because an unrestricted EFA with a very large item pool can produce unstable factor solutions when the sample is limited.

At the construct level, most domains demonstrated relatively strong dominant-factor evidence and high internal consistency. The particularly high alpha coefficients observed for Psychological Support, Spiritual Well-Being, Resilience, Behavioural Outcomes, and Well-Being Indicators suggest that their items are highly coherent. At the same time, coefficients approaching or exceeding .95 may indicate that some items are highly similar in content, suggesting an opportunity for future scale shortening without substantially reducing construct coverage.

Self-Esteem represents the most important reliability concern. The construct recorded Cronbach's alpha of 0.581 and a lowest absolute factor loading of 0.148. This finding suggests that the self-esteem item set may require conceptual and psychometric refinement, including examination of item wording, dimensional breadth, and the possibility that items capture related but distinct aspects of self-evaluation. Rather than deleting items solely to improve alpha, future validation studies should consider revising or expanding items to better capture the construct's complexity and improve reliability.

The candidate-item analysis provides additional insight into construct boundaries. RS9 demonstrated a weak primary loading ($|\lambda| = .345$) and a relatively close secondary loading ($|\lambda| = .301$), making it a stronger candidate for removal or re-specification. SS10 also showed a weak primary loading ($|\lambda| = .371$), and its content appears conceptually compatible with resilience because it refers to confidence in achieving success despite economic adversity. However, this does not establish that SS10 belongs to the Resilience construct; such a reclassification requires confirmation through CFA and theoretical justification. Conversely, RS5, RS10, SKK9, and SKK11 showed meaningful primary loadings despite negative signs. Their negative signs therefore reflect factor polarity rather than automatic evidence of poor item quality.

The findings further suggest that some item sets may contain closely related but conceptually distinguishable forms of social and family experience. For example, peer relationship items may simultaneously reflect general peer relationships, peer influence, peer acceptance, and peer support. Similarly, items within the Familial Support domain may capture family support as well as family disruption or family conflict. These observations are theoretically useful because they point to areas where a future instrument revision can sharpen construct definitions and improve discriminant clarity.

7. Theoretical and Practical Implications

7.1 Theoretical Implications

The findings support a multidimensional framework for understanding and addressing delinquent behaviour among students from low-income families. Rather than conceptualising delinquency solely as a behavioural problem, the preliminary factor structure supports consideration of interacting psychological, educational, social, socioeconomic, intervention, and well-being domains. This framing is theoretically relevant to rehabilitation because it allows intervention planning to address contributing conditions alongside behavioural outcomes [36].

7.2 Practical Implications

For practitioners and university support providers, the instrument offers a broad framework for identifying multiple domains that may require attention when supporting delinquent students from low-income backgrounds. The inclusion of psychological support, educational support, family-related domains, resilience, spiritual well-being, and intervention design may facilitate a more comprehensive assessment of student needs and help inform targeted rehabilitation planning.

However, the current EFA results should be used as a preliminary screening foundation rather than as a definitive diagnostic instrument until the refined measurement model has been confirmed.

8. Limitations and Future Research

Several limitations should be considered when interpreting the findings. First, the sample size of 122 respondents for a 175-item instrument is modest and limits the stability and generalizability of the exploratory factor analysis results. Consequently, the findings should be interpreted as preliminary psychometric evidence. Second, although the questionnaire was distributed randomly among eligible students, the procedure should not be interpreted as probability-based random sampling; therefore, generalizability beyond the eligible study population is limited. Third, the present analysis provides preliminary EFA evidence and does not establish convergent validity, discriminant validity, or overall model fit.

Future research should replicate the analysis with a substantially larger and independent sample of students meeting the study's target population criteria. A subsequent confirmatory factor analysis (CFA) should test the refined 17-construct measurement model and report standard fit indices such as χ^2/df, CFI, TLI, RMSEA, and SRMR, together with standardised loadings, composite reliability, and average variance extracted. Additionally, measurement invariance across relevant student subgroups should be examined. Future studies should also document the eligibility and delinquency criteria more explicitly to enhance transparency and replicability.

9. Conclusion

This study provides preliminary psychometric evidence for a multidimensional 175-item instrument developed to support the rehabilitation of delinquent students from low-income families in East Coast Malaysia. The overall KMO of 0.782 and significant Bartlett's test supported factorability, while the PAF with Promax rotation provided an exploratory assessment of the proposed 17-domain structure. Most constructs demonstrated good to excellent internal consistency, although Self-Esteem requires further refinement and several individual items warrant closer review because of weak loadings or potential cross-loadings.

Overall, the findings support continued development of the instrument rather than claiming final validation. The principal contribution of the study is the identification of a theoretically coherent preliminary measurement structure that can inform future assessment and rehabilitation planning for delinquent students from low-income families. Formal CFA using a larger or independent sample is the essential next step before the instrument is presented as a fully validated measurement model.

Acknowledgement

The authors would like to express their sincere gratitude to Universiti Teknologi MARA (UiTM) Cawangan Pahang for the support provided through the DDN Grant, UiTM.800-3/1 DDN.06 (010/2026), and to the Ministry of Higher Education Malaysia (Kementerian Pengajian Tinggi, KPT) for the financial support provided through the Fundamental Research Grant Scheme for Early Career Researchers (FRGS-EC), under Grant No. FRGS-EC/1/2024/SS09/UITM/02/6.

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