

Validation of an Instrument for Evaluating Self-Esteem, Self-Efficacy, and Parent-Adolescent Communication among Risky Sexually Active Adolescents in Selangor, Malaysia

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ABSTRACT

The overall goal of this study is to investigate the validity and reliability of factors that contribute to adolescents' sexual risk-taking behaviour. Given the significant contribution of sexual risk-taking behaviour research targeting adolescence in Malaysia and the lack of clear conclusions regarding the impact, this study focuses on assisting and guiding parents at home, teachers in school, and government policymakers in developing competitive strategies in the current challenging years ahead. A total of 123 participants were chosen. Participants ranged in age from 20 to 24 years old and could be either male or female. The questionnaires were distributed to the participants using a random sampling method. The Rosenberg Self-Esteem Scale, General Self-Efficacy Scale, Family Communication Scale, and HIV Risk-Taking Behaviour Scale were administered to the participants. Exploratory factor analysis was used to analyse the quantitative data. The current study's findings indicated that all of the instruments used in this study had good internal consistency and could be used in future studies. Finally, the current scale can be used to identify high-risk adolescents in other states by providing education and conducting the necessary analyses and adaptations.



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1. Introduction

Adolescent development is critical and is marked by a number of psychological and physical changes. This process is frequently associated with various struggles, which may result in various psychosocial challenges [4]. Parent-child relationships change dramatically during adolescence and throughout their developmental period. Parents play an important role in the development of positive mental health and effective parent-child relationships by allowing children to try new things without fear of rejection [16]. From the outside, it may appear that adolescents and their parents are becoming less close during this period. The primary task

of separation-individuation occurs during adolescence, mirroring the differentiation of the individual self-concept during the first year of life, and its success is heavily dependent on the security of the attachment relationship up until the adolescent years [23], Branstetter, Furman, & Cottrell, 2009). This process has implications for adolescent self-esteem [16], [15], [14] successful transition into adulthood; and avoidance of negative outcomes, such as risky behaviour. Transactional sex, early sex debut, intergenerational sex, inconsistent condom use, and sexual violence are all examples of sexually risky behaviour [28]. Sexual risk-taking behaviour has been linked to poor health outcomes [12]. Furthermore, risk-taking behaviour is associated with negative and harmful outcomes, and it is found to be most prevalent in adolescents due to their immature ability to regulate themselves rationally [24].

According to research, self-esteem and self-efficacy are possible mediators that allow adolescents to resist engaging in risky behaviour [30], [10], [8]. Because self-esteem and self-efficacy are two of the most important factors in adolescents' lives, a low level of these two factors was discovered to be a critical contributing factor to adolescents' ability to engage in risk-taking behaviour [21]. Numerous studies have suggested a link between low self-esteem and self-efficacy and high sexual risk [1], [8], [29]. Understanding the intrapersonal aspects of the adolescents' nature and well-being is critical for comprehensive interventions to take place. According to [7], sex education may aid in preparing young adolescents to have responsible attitudes and behaviours toward sex in order to have a harmonious sexual life. Sex education is the development of a scientific attitude toward natural sexuality. It also dispels numerous myths and superstitions while clarifying various aspects of sexuality [7]. Parents and other family members are in a unique position to help socialise adolescents into healthy sexual adults by providing accurate sex information and encouraging responsible sexual decision-making skills [11]. Furthermore, adolescents and children frequently cite their parents as their preferred source of sexual education, and organised prevention and education efforts continue to advocate active parental involvement in children's sexual socialisation [27].

In Malaysia, there is a scarcity of empirical evidence on adolescents' sexual risk-taking behaviour. Existing research, however, found that 8.3 percent of 23,645 Malaysian adolescents engaged in sexual intercourse before the age of 18 [2]. In another study, [18] found that 5.4% of 4500 Malaysian adolescents had engaged in sexual intercourse and 17.8 of the adolescents had been pregnant. It is also stated that the average age of the first sexual encounter is between 14 and 15 years old, with males averaging 14.9 years and females averaging 14.4 years. Given the significant contribution of sexual risk-taking behaviour research targeting adolescence in Malaysia and the lack of clear conclusions regarding the impact, this study focuses on assisting and guiding parents at home, teachers in school, and government policymakers in developing competitive strategies in the current challenging years ahead. The primary goal of this study is to look into the validity and reliability of factors that influence sexual risk-taking behaviour in a group of Malaysian adolescents.

2. Methods

2.1 Sample

For the purpose of carrying out this validation study, a total of 123 participants have been recruited. One of the requirements for participation in this study is that participants must be between the ages of 20 and 24.

2.2 Instruments

For the purpose of measuring the specific variables, four established questionnaires were used: (1) the Rosenberg Self-Esteem Scale (Rosenberg, 1965), (2) the General Self-Efficacy Scale [26], (3) the Family

Communication Scale [6], and (4) the HIV Risk-Taking Behaviour Scale [31].

2.3 Rosenberg Self-Esteem Scale

Rosenberg (1965) created the Rosenberg Self-Esteem Scale, which consists of ten items. The goal is to assess sexually active adolescents' self-esteem. All ten items are expected to receive a response on a 4-point scale ranging from 1 to 4, with 1 being "Strongly Agree" and 4 being "Strongly Disagree." Items 2, 5, 6, 8, and 9 are scored in reverse. Higher scores indicate greater self-esteem.

2.4 General Self-Efficacy Scale

The General Self-Efficacy Scale was created by [26]. It consists of ten items in total and was designed to assess general perceived self-efficacy among adolescents and adults. The response format is a 4-point scale, with 1 being "Not At All True" and 4 being "Exactly True". The sum of all the items is used to calculate the total score. The total score ranges from 10 to 40, with higher scores indicating greater self-efficacy.

2.5 Family Communication Scale

[6] created the Family Communication Scale (FCS). The primary goal of the scale is to collect relevant data in order to assess the communication that occurs among family members. For example, the level of openness with which different generations can exchange thoughts, inputs, and concerns; the level of confidence and genuineness experienced; and the emotional phase that occurs between interactions. This instrument can be used on both individuals and groups. It consists of ten items on a one-dimensional scale that emphasises positive communication skills. For instance, concise and consistent messages, empathy, encouraging phrases, and effective problem-solving abilities. It takes 10 minutes to complete. The format of the responses includes five response options: (1) does not describe my family; (2) briefly describes it; (3) occasionally describes it; (4) generally describes my family; and (5) very briefly describes my family. The total outcome of the score could be determined by adding the scores together. The minimum and maximum scores would be 10 and 50 points, respectively. The higher the score, the better a family's communication.

2.6 HIV Risk-Taking Behaviour Scale

The HIV Risk-Taking Behaviour Scale developed by [31] is a revised questionnaire with ten items, each chosen to address sexual risk-taking behaviour in general and some specific items focusing on HIV risk-taking behaviour. All are graded on a scale of 0 to 6, with a higher score indicating a higher level of risk-taking. These scores are added together to produce measures of sexual risk-taking behaviour as well as a global HIV risk-taking behaviour score. Higher scores indicate a higher level of risk-taking.

2.7 Data Collection

The questionnaires were distributed via online platforms such as Facebook, Whatsapp, and e-mail. The researcher explains the objectives and nature of the research through an online medium and includes a consent form. The questionnaires were then distributed to the participants.

2.8 Data Analysis

The Exploratory Factor Analysis (EFA) was performed using the Statistical Package for the Social Sciences (SPSS) version 26.0 statistical software programme. SPSS is a multivariate statistical method that is widely recognised as a crucial instrument for developing and validating psychological measurements and theories.

2.9 Ethical Issues

The sensitive nature of the study topic may raise ethical concerns in this study. A sensitive topic is one that could be threatening to participants, making data collection and dissemination difficult for both the

participants and the researcher [19]. Research on sensitive topics, such as sexual risk-taking behaviour in relation to parental communication, raises questions about an individual's sexual behaviour, which may cause distress to the participant. As a result, it has a significant impact on the entire process because it requires participants to reveal personal information or share previous experiences, which may be painful [17]. As a result, before participating in the research, participants must voluntarily make an informed decision based on the informed consent provided by the researchers.

3. Results

3.1 Results for Data Reduction Exploratory Factor Analysis (EFA)

3.1.1 Self -Esteem

According to the results, the KMO value is .837 higher than the rule of thumb for KMO and Bartlett's test, which is greater than .60. The Chi-Square value at 45 df was 488.506, with a significance value of 0.000. This demonstrates that the sample size meets the factorization requirements and that the Bartlett's test is significant ($p < .05$). These findings support further statistical analysis because the sample is adequate. Factor loading displays the variance explained by the item on that specific variable. A factor loading of 0.6 or higher, as a general rule, indicates that the factor removes enough variance from the variable. Based on Table 1, the whole amount of variation is redistributed across the three retrieved elements. Total variance explained (AVE) cumulative was 67.59% of respondent answered the questionnaires accordingly. This means that the three factors together account for 67.59% of the total variance.

Table 1. Total Variance Explained for self –esteem

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.451	44.507	44.507	4.451	44.507	44.507	2.723	27.234	27.234
2	1.250	12.497	57.004	1.250	12.497	57.004	2.290	22.900	50.134
3	1.059	10.589	67.593	1.059	10.589	67.593	1.746	17.458	67.593
4	.734	7.337	74.930						
5	.609	6.087	81.017						
6	.557	5.566	86.582						
7	.473	4.727	91.310						
8	.371	3.715	95.024						
9	.266	2.663	97.688						
10	.231	2.312	100.000						
Extraction Method: Principal Component Analysis									

While the results of the analysis revealed that this variable was divided into three sub constructs (refer to Table 2), sub-construct 1 (Item B1, B2, B4, B6, and B7). All of the factor loadings were greater than 0.50. Sub-construct 2 (Items B8, B9, and, B10). All of the factor loadings were greater than 0.50. In sub-construct 3, two items (B1 and B5) were also greater than 0.50. The findings indicate that the specific items deviate sufficiently from the assessed factor.

Table 2. Rotated component matrix for self-esteem

	Component
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	1	2	3
B1	.788		
B2	.754		
B3			.878
B4	.681		
B5			.786
B6	.683		
B7	.656		
B8		.702	
B9		.838	
B10		.786	
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.			
a. Rotation converged in 5 iterations.			

3.1.2 Self-Efficacy

Based on the results, the KMO value is .860, which is greater than the rule of thumb for KMO and Bartlett's test, which is greater than .60. At 45 df, the Chi-Square value was 443.553, with a significance value of 0.000. This demonstrates that the sample size meets the factorization requirements and that the Bartlett's test is significant ($p < 0.05$). These findings support further statistical analysis because the sample is adequate. Factor loading displays the variance explained by the item on that specific variable. A factor loading of 0.6 or higher, as a general rule, indicates that the factor removes enough variance from the variable. Based on Table 3, the total variance explained (AVE) also stated that 45.89% of respondent answered the questionnaires accordingly.

Table 3. Total variance explained for self-efficacy

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.589	45.895	45.895	4.589	45.895	45.895
2	.998	9.979	55.873			
3	.867	8.674	64.548			
4	.735	7.354	71.901			
5	.627	6.266	78.167			
6	.578	5.782	83.949			
7	.529	5.288	89.237			
8	.431	4.306	93.543			
9	.412	4.124	97.667			
10	.233	2.333	100.000			
Extraction Method: Principal Component Analysis.						

While the results of the analysis in Table 4 revealed that this variable was divided into one construct (Item C1, C4, C5, C6, C7, C8, C9, and C10). All of the factor loadings were greater than 0.50. Two of the items (C2 and C3) were 0.50 each. By default, the item should be deleted or edited. The findings indicate that the specific items deviate sufficiently from the assessed factor.

Table 4. Rotated component matrix for self-efficacy

	Component
	1
C1	.714
C2	
C3	
C4	.632
C5	.655
C6	.757
C7	.662
C8	.669
C9	.760
C10	.766
Extraction Method: Principal Component Analysis.	
a. 1 components extracted.	

3.1.3 Parent Adolescent Communication

According to the results, the KMO value is 0.919 higher than the rule of thumb for KMO and Bartlett's test, which is greater than .60. At 45 df, the Chi-Square value was 915.007, with a significance value of 0.00. This demonstrates that the sample size meets the factorization requirements and that the Bartlett's test is significant ($p < 0.05$). These findings support further statistical analysis because the sample is adequate. Factor loading displays the variance explained by the item on that specific variable. A factor loading of 0.60 or higher, as a general rule, indicates that the factor removes enough variance from the variable. According to Table 5, the total variance explained (AVE) also stated that 69.96% of respondents responded appropriately to the questionnaires.

Table 5. Total variance explained for parent adolescent communication

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.596	65.964	65.964	6.596	65.964	65.964
2	.659	6.594	72.559			
3	.592	5.920	78.478			
4	.519	5.187	83.665			
5	.367	3.673	87.338			
6	.347	3.472	90.809			
7	.293	2.925	93.735			
8	.262	2.620	96.355			
9	.209	2.090	98.445			
10	.155	1.555	100.000			
Extraction Method: Principal Component Analysis.						

Based on Table 6, all of the items were distributed in a single construct, which means that all of the items were reliable to test using this construct. All of the factor loadings were greater than 0.50. The results show that the specific items deviate sufficiently from the evaluated factor.

Table 6. Rotated component matrix for parent adolescent communication

	Component
	1
D1	.735
D2	.848
D3	.773
D4	.785
D5	.745
D6	.813
D7	.813
D8	.871
D9	.860
D10	.866
Extraction Method: Principal Component Analysis.	
a. 1 components extracted.	

3.1.4 HIV Risk Taking Behaviour

According to the results, the KMO value is .673 higher than the rule of thumb for KMO and Bartlett's test, which is greater than 0.60. At 45 df, the Chi-Square value was 526.720, with a significance value of 0.00. This demonstrates that the sample size meets the factorization requirements and that the Bartlett's test is significant ($p < 0.05$). These findings support further statistical analysis because the sample is adequate. Factor loading displays the variance explained by the item on that specific variable. A factor loading of 0.60 or higher, as a general rule, indicates that the factor removes enough variance from the variable. Based on Table 7, the total amount of variation is divided among the three retrieved sub-constructs. Total variance explained (AVE) also stated that 66.21% of respondents responded appropriately to the questionnaires. This means that the three sub-constructs account for 66.21% of the total variation.

Table 7. Total variance explained for HIV risk taking behaviour

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.936	29.357	29.357	2.936	29.357	29.357	2.575	25.747	25.747
2	2.388	23.882	53.239	2.388	23.882	53.239	2.085	20.849	46.596
3	1.297	12.971	66.210	1.297	12.971	66.210	1.961	19.614	66.210
4	.924	9.239	75.449						
5	.712	7.116	82.564						
6	.617	6.165	88.729						
7	.532	5.324	94.053						
8	.301	3.014	97.067						
9	.193	1.931	98.997						
10	.100	1.003	100.000						
Extraction Method: Principal Component Analysis.									

While the results of the analysis in Table 8 revealed that this variable was divided into three sub-constructs,

sub-construct 1 (Item E2, E3, and E4). The second sub-construct are E6, E8, and E10. Third sub-construct included E1, E7, and E9. All of the factor loadings were greater than 0.50 except E5. By default, the item should be deleted or edited.

Table 8. Rotated component matrix for HIV risk taking behaviour

	Component		
	1	2	3
E1			.629
E2	.898		
E3	.956		
E4	.897		
E5			
E6		.768	
E7			.751
E8		.869	
E9			.787
E10		.799	
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.			
a. Rotation converged in 5 iterations.			

3.2 Test of Reliability

The research used Cronbach's Alpha with a threshold of 0.70, which demonstrates that the data collected on the factor/variable of tangibles is reliable and sufficient for the analysis and conclusion of the findings. According to Table 9, the Cronbach's Alpha for all variables ranges between 0.724 and 0.942. As a result, the research variables were determined to be reliable and consistent.

Table 9. Results of reliability test

Research Variables	Reliability Statistics	
	Cronbach's Alpha	N of Items
Self-esteem	0.853	10
Self-efficacy	0.865	10
Parent-adolescent communication	0.942	10
HIV risk taking behavior	0.724	10

4. Discussion and Conclusion

The primary purpose of the research is to determine the validity and reliability of the factors that have been the contributing factors to the sexual risk-taking behaviour of adolescents. This is done with the intention of contributing to the development of both national and international literature, along with the academic staff who will be the primary beneficiaries of the research.

Because of the immature prefrontal cortex, risk-taking behaviour is common during adolescence. The prefrontal cortex performs a variety of complex brain functions known as executive functions. The executive function is defined as a set of processes for managing an individual and the resources associated

with them in order to achieve a goal. It is closely linked to a set of cognition-related skills that may be coordinated with the frontal lobe of the brain. The frontal lobe is known to influence behaviour, personality, and learning. The previously mentioned cognition skills, such as working memory (the ability to capture something in one's mind and carry it out), response inhibition (to prohibit expressions or activities that interfere with the goals), and self-monitoring (to check on one's own thinking and actions in order to connect with one's intentions) [9]. The current study's findings indicated that all of the instruments used in this study had good internal consistency and could be used in future studies. This study is treated critically because it investigates the role of psychological effects in adolescent sexual risk-taking behaviour, which is especially important in the Malaysian context, where adolescent health output remains inadequate due to limited data availability.

This study has shown good internal consistency of the instruments used and can now move forward with the actual study. The current study, however, has several limitations. For starters, it is limited in some ways by the smaller group of adolescents; thus, generalisation to different regions would be invalid. Furthermore, because participation in this survey was entirely voluntary, the low response rate may have contributed to sample bias. To critically understand this phenomenon, more research with a larger, diverse sample is required. Despite its limitations, the findings of this study contribute to our understanding of adolescents' risk-taking behaviour. The workings of the scale development are thought to benefit scholars from other university faculties in future studies concerning adolescents' risk-taking behaviour. The existing scale would also be very useful in determining high-risk adolescents in other states by providing knowledge to produce the necessary analyses and adaptations. This study reflects the procedures for developing a scale to analyse the factors that contribute to adolescents' sexual risk-taking behaviour. More research is strongly advised in order to confirm and strengthen the instrument's findings in a variety of other contexts.

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