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A Validation of The Student Disengagement Scale among Undergraduates in India

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ABSTRACT

Disengagement from education means when a person feels excluded from college, does not participate in curricular and co-curricular activities, is not enrolled in higher education, or has poor attendance in class. Collins Dictionary states that disengagement is a process by which people gradually stop being involved in any conflict, activity, or organization. There are individual and institutional causes of disengagement among students. The problem of disengagement gives birth to various physical and mental issues which leaves an individual in isolation. To study disengagement among undergraduate students, The Student Disengagement Scale by Saito, Akihiro et. al. was revalidated. A 5-point Likert scale where 1 represents "never" and 5 represents "very often" was used for all items (never = 1, seldom = 2, sometimes = 3, often = 4, very often = 5). For the revalidation, 480 undergraduate college students from the science, commerce, and arts streams were chosen from Punjab state (Majha, Malwa, and Doaba region). After tool validation, this scale has 22 statements with four dimensions. There are 6 items in Behavioral Disengagement, 7 items in Emotional Disengagement, 5 items in Cognitive Disengagement, and 4 items in Social Disengagement. Ursin (2023)

KEYWORDS: Disengagement, Validation, Undergraduates.

INTRODUCTION

In India, higher educational institutions like colleges and universities are the formal agencies where students go to learn from their teachers. It provides a harmonious environment for teachers as well as students to enhance the effective teaching-learning process. It not only reflects the future of a child but the present standard of an individual's life. But due to certain reasons, youth become isolated or disconnected from colleges which leads to disengagement in different academic tasks. Disengagement acts as a hindrance to the progress of students' lives. Disengagement is a process of non-involvement or withdrawal from various activities or groups. It is a complex term to define as students can disengage at different levels or in different domains. Disengagement is associated with behavior problems, and behavior and learning problems may eventually lead to dropouts Fredricks, Blumenfeld, and Paris (2004).

UNESCO defined disengagement as a situation where a person does not feel included, does not participate in school activities, is not enrolled, or has poor classroom attendance. Disengagement from education is connected with individual values and can be affected by family, peer group, society, community, and media. It results in very nominal or no presence of students in the classroom. They do not want to attend their classes regularly. Connection with friends, peers, classmates, and teachers declines when a student is not present in their class. Disengagement from college activities creates several behavioral problems like aggression, violence, and social withdrawal among students. It affects the performance of the students as well. Changes in their attitude, not being engaged in college activities, give preference to isolation have negative impacts on students' academic results. Parents and society force students to go to schools and colleges but they are not ready to attend their classes in schools or colleges, due to this the risk related to disengagement increases. Physical and mental health plays a pivotal role in students' lives. Sometimes when a student undergoes mental illness and poor health status, the risk of disengagement commences. For students living in slums or backward areas, their primary priority is food, for them education is secondary. The problem of disengagement arises due to financial or transportation barriers.

Disengagement from educational institutions gives birth to various obstacles in the lives of students. These educational institutions are not only connected with their future but also associated with their physical and mental well-being. When an individual is disengaged from the educational institution, he becomes alone, isolated, and deprived. Disengaged students feel they are of the least importance to the family, society, community, and nation and are not able to serve and contribute to different domains of their lives.

Validation of Student Disengagement Scale by Saito, Akihiro & Smith, Michael (2017). There are 34 statements related to students' feelings on disengagement. Originally, this scale was administered to 145 engineering students in Japan. For each statement, A 5-point Likert scale where 1 represents "never" and 5 represents "very often" was used for all items (never = 1, seldom = 2, sometimes = 3, often = 4, very often = 5). For the revalidation, 480 undergraduate college students from the science, commerce, and arts streams were chosen from Punjab state (Majha,

Malwa, and Doaba region). After tool validation, this scale has 22 statements with four dimensions. There are 6 items in Behavioral Disengagement, 7 items in Emotional Disengagement, 5 items in Cognitive Disengagement, and 4 items in Social Disengagement. Ursin (2023)

Behavioral Disengagement - This refers to all disciplinary problems such as poor attendance, insincere attitude towards classroom tasks, and tardiness.
Emotional Disengagement - This means when an individual is not willing to be involved in understanding the feelings and emotions of other people. Moreover, he feels disconnected or detached from people, situations, and tasks.
Cognitive Disengagement - It reflects daydreaming, slow working speed, less concentration power, mental fogginess, and a confused mental state.
Social Disengagement - When an individual prefers to be alone than living in a social system, reflects social disengagement.
Construct validity of the tool was ensured using factor analysis. The reliability of the tool was confirmed using alpha and split half i.e. 0.836 and 0.644 respectively.

EFA - Exploratory Factor Analysis

Table 1 - KMO and Bartlett's Test of Sphericity

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.867
Bartlett's Test of Sphericity	Approx. Chi-Square	3663.512
	Df	276
	Sig.	.000

The Kaiser-Meyer-Olkin Measure of Sampling Adequacy is 0.867, which indicates that the dataset is suitable for factor analysis, as there is a substantial amount of common variance among the variables that can be explained by underlying factors. Additionally, Bartlett's Test of Sphericity yielded a highly significant p-value of less than 0.001, suggesting that there are significant correlations among the variables, further supporting the appropriateness of conducting factor analysis for the Disengagement scale dataset.

Factor Structure

The factor analysis was performed initially with 34 items. The first run yields 7-factor and split-factor loading of items. After the removal of six items, the factor analysis was done on the remaining 28 items. In this Second Run of factor analysis, 2 items were again removed due to split loading. the procedure of factor analysis using the principal component method and Varimax rotation was again followed. This third run of factor analysis yields 2 items that were removed. In the fourth run, five factors were obtained. The fifth factor was dropped due to less number of items.

Table 2 - Total Variance Explained

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	6.029	25.120	25.120	6.029	25.120	25.120	3.734	15.559	15.559
2	2.676	11.150	36.270	2.676	11.150	36.270	2.965	12.353	27.912
3	1.909	7.955	44.225	1.909	7.955	44.225	2.824	11.768	39.680
4	1.328	5.533	49.758	1.328	5.533	49.758	2.119	8.828	48.508
5	1.139	4.744	54.502	1.139	4.744	54.502	1.439	5.994	54.502
6	.888	3.699	58.201						
7	.865	3.603	61.805						
8	.826	3.440	65.245						
9	.784	3.266	68.511						
10	.768	3.198	71.709						
11	.676	2.817	74.526						
12	.655	2.731	77.258						
13	.628	2.616	79.873						
14	.613	2.555	82.428						
15	.574	2.391	84.820						
16	.512	2.133	86.953						
17	.475	1.981	88.934						
18	.466	1.940	90.874						
19	.454	1.891	92.765						
20	.425	1.770	94.535						
21	.390	1.625	96.161						
22	.350	1.457	97.617						
23	.331	1.381	98.998						
24	.240	1.002	100.000						

Starting with Component 1, The table exhibits an initial eigenvalue of 6.029, explaining 25.120% of the total variance and contributing to a cumulative variance of the same percentage. After extraction and rotation, it still captures a significant portion of variance at 15.559%.

Component 2 follows with an initial eigenvalue of 2.676, accounting for 11.150% of the variance individually and 27.912% cumulatively. Post-extraction and rotation, it retains a % of the variance at 12.353% and contributes to a cumulative % of 27.912%.

Component 3 and component 4 follow an initial eigenvalue of 1.909 and 1.328 respectively, explaining 7.955% and 5.533% of the total variance individually and 39.680% and 48.508% cumulatively.

Component 5 exhibits 1.139 as the initial eigenvalue accounting for 4.744% of the variance individually and 54.502 cumulatively.

When component 5 was removed, it was re-run again and the last four factors were retained. The factor loading for these 22 items is shown below.

Table 3 - Rotated Component Matrix

Component	Behavioral Disengagement	Emotional Disengagement	Cognitive Disengagement	Social Disengagement
I1		.489		
I2				.469
I3				.745
I4				.764
I5				.656
I6		.624		
I8		.614		
I9		.701		
I10		.667		
I11		.666		
I12		.614		
I13	.751			
I14	.673			
I15				
I16	.699			
I17				
I18			.712	
I19			.720	
I20			.691	
I21			.706	
I22			.618	
I23	.770			

I28	.734			
I34	.720			

For Behavioral Disengagement, items like I13, I14, I16, I23, I28, and I34 seem to have relatively strong positive loadings on this component. This suggests that these variables share a common underlying factor (possibly related to disengagement) represented by Factor 1.

For Emotional Disengagement, items such as I1, I6, I8, I9, I10, I11, and I12 have moderate to strong positive loadings on Factor 2. This indicates that these variables are associated with another underlying factor, possibly different from the one represented by Factor 1.

For Cognitive Disengagement, items I18, I19, I20, I21, and I22 exhibit high positive loadings on Factor 3. This implies that these variables are strongly related to a third underlying factor.

For Social Disengagement, items like I2, I3, I4, and I5 seem to have moderate to strong positive loadings on factor 4. This reflects that these variables are associated with another underlying factor. Factor 5 was dropped due to less number of items.

The results of the rotated component matrix indicate that the disengagement scale items can be grouped into our distinct components, each representing different facets of disengagement. These components help in understanding the underlying structure of the scale and provide insights into the nature of disengagement tendencies among the individuals being assessed.

CFA - Confirmatory Factor Analysis

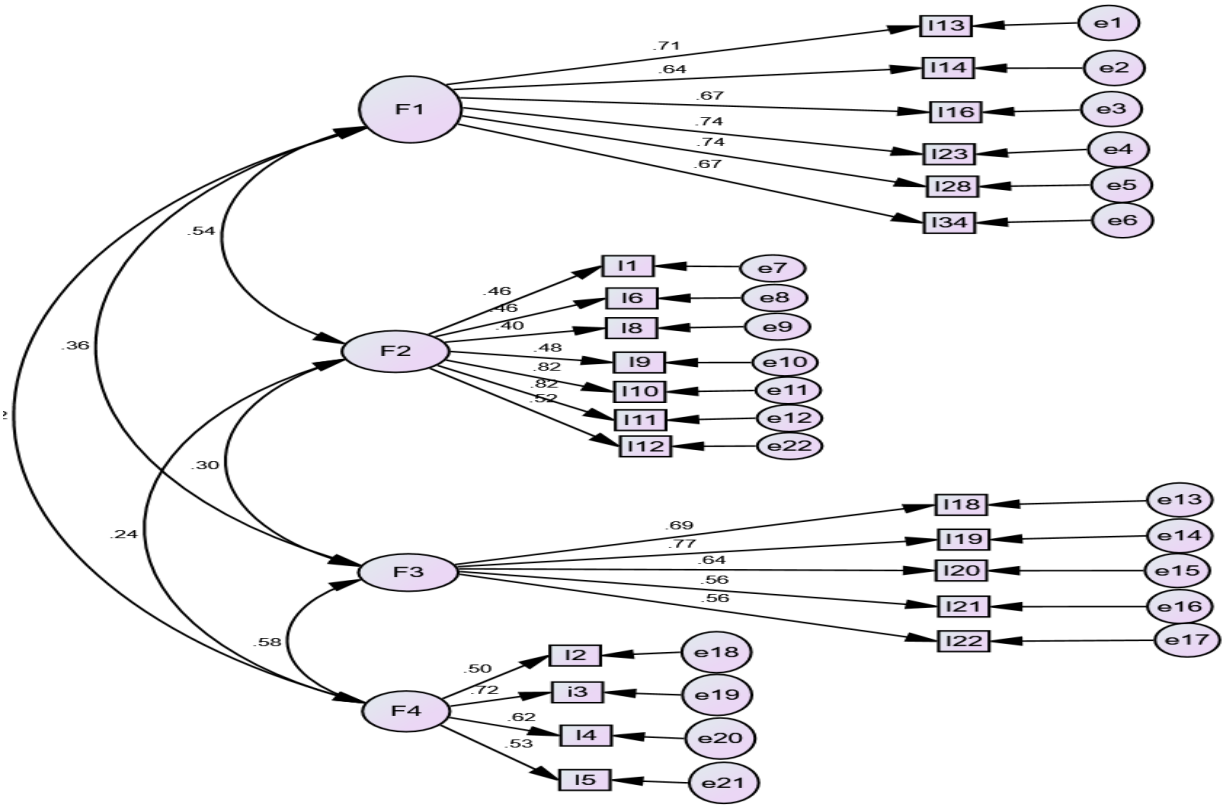

FIGURE 1- CONFIRMATORY FACTOR ANALYSIS MODEL OF STUDENT DISENGAGEMENT SCALE

Model Summary

The model fit indices provide information about how well the model fits the data. The Chi-square (CMIN) value is 515.967 with 203 degrees of freedom, indicating a significant difference between the model and the observed data. Various fit indices like CMIN/DF, RMR, GFI, NFI, RFI, IFI, TLI, CFI, RMSEA, AIC, BCC, BIC, CAIC, ECVI, HOELTER are reported, each assessing different aspects of model fit. CMIN/DF (Chi-Square Divided by Degrees of Freedom) - This index measures the ratio of the chi-square statistic to the degrees of freedom. Lower values indicate a better fit. In your case, CMIN/DF is 2.542, which suggests that the model's fit is reasonable, but there might be room for improvement.RMR (Root Mean Square Residual) - RMR measures the average discrepancy between the sample covariance matrix and the model-implied covariance matrix. Smaller values indicate a better fit. Your RMR is 0.056, which indicates a relatively good fit.

GFI (Goodness-of-Fit Index) - GFI measures the proportion of the variance in the observed variables that is accounted for by the model. Values range from 0 to 1, with higher values indicating better fit. Your GFI is 0.904, indicating a reasonably good fit.

NFI (Normed Fit Index) - NFI assesses the relative fit of the model compared to an independent model (assuming no relationships between variables). Values range from 0 to 1, with higher values indicating better fit. Your NFI is 0.849, which suggests that the model fits better than an independence model but may have room for improvement.

RFI (Relative Fit Index) - RFI is similar to NFI and also compares the model's fit to that of an independence model. Values range from 0 to 1, with higher values indicating better fit. RFI is 0.829, which aligns with the assessment from NFI.

IFI (Incremental Fit Index) - IFI compares the improvement in fit provided by the model against an independence model. IFI is 0.903, suggesting a reasonably good fit.

TLI (Tucker-Lewis Index) - Values range from 0 to 1, with higher values indicating better fit. Your TLI is 0.889, indicating a reasonable fit.

CFI (Comparative Fit Index) - Your CFI is 0.902, which aligns with the other incremental fit indices.

RMSEA (Root Mean Square Error of Approximation) - RMSEA estimates the discrepancy between the model and population covariance matrices per degree of freedom. Lower values indicate a better fit. RMSEA is 0.057, which suggests a reasonably good fit.

Table 4 - The Fitness Estimates of the Model

Measures	P-value	CMIN/ DF	RMR	RMSEA	GFI	AGFI	PCFI	IFI	CFI	Reliability
Result	**0.000**	**2.542**	**0.056**	**0.057**	**0.904**	**0.880**	**0.793**	**0.903**	**0.902**	**Alpha 0.836**

Bench Mark	**<0.05**	**<3**	**<0.08**	**<0.1**	**0-1**	**0-1**	**>0.8**	**>0.90**	**>0.95**	**Split half 0.644**

These fit indices collectively provide a comprehensive view of how well the model fits the observed data and how well it compares to baseline models and model selection criteria. It's important to interpret them in context, considering both their meanings and their interplay.

RELIABILITY ANALYSIS

After calculating exploratory and confirmatory factor analysis, The Average Variance Extracted (AVE) of all the components of The Student Disengagement Scale is greater than 0.40 (Fornell & Larcker,1981: Farooq, 2016). The Composite Reliability (CR) of all the factors is greater than 0.7 (Fornell & Larcker,1981). For Behavioral Disengagement, AVE is 0.53 and CR is 0.87. Emotional Disengagement depicts AVE as 0.49 and CR as 0.82. Cognitive Disengagement reflects AVE as 0.48 where CR is 0.82. For Social Disengagement, AVE is 0.45 and CR is 0.76. To assess the internal consistency, the reliability was calculated by interpretation of the obtained value of "Cronbach's Alpha" i.e. 0.836 in this inventory. This resultant value of Cronbach Alpha illustrates internal consistency with a high degree as assessed (Gliem and Gliem, 2003). So, the analysis of the scale reliability suggests that The Student Disengagement Scale is consistent.

Table 5 - Reliability Statistics of the Scale

Components/ Constructs	N	Average Variance Extracted	Composite Reliability	Reliability
Behavioral Disengagement	**6**	**0.53**	**0.87**	**Cronbach's Alpha 0.836 Split half 0.644**
Emotional Disengagement	**7**	**0.49**	**0.82**	
Cognitive Disengagement	**5**	**0.48**	**0.82**	
Social Disengagement	**4**	**0.45**	**0.76**	
Student Disengagement Scale	**22**			

SCORING PROCEDURE

A five-point rating scale was used in the Student Disengagement Scale for scoring. Each item is rated on a five-point scale such as strongly agree, agree, neutral, disagree, and strongly disagree. There are 22 items comprising four components. Positive items are rated on five sequential points, 5-Strongly agree to 1-Strongly disagree and negative item is rated as 1-Strongly agree to 5-Strongly disagree.

SCORING AND NORMS OF THE STUDENT DISENGAGEMENT SCALE

The scale consists of 22 items related to the Student Disengagement scale. Based on descriptive statistics, the z-score norms have been prepared by using the formula:

z-score = (Raw score-Mean)/ Standard Deviation

The range of undergraduate students' scores calculated from the raw score on the Student Disengagement Scale based on descriptive statistics, and the z-score norms based on the responses have been prepared. The range of raw score for Student Disengagement is in the range of 45 to 110, Behavioral disengagement ranges between 7 to 30, emotional disengagement ranges between 9 to 35, cognitive disengagement ranges from 5 to 26, and social disengagement ranges between 8 to 21 as presented in Table 6. Norms for interpretation of the levels of Student Disengagement and its components have been displayed in table 7.

Table 6 - z-Score of The Student Disengagement Scale

Student Disengagement				**Behavioral Disengagement**		**Emotional Disengagement**		**Cognitive Disengagement**		**Social Disengagement**	
Raw score	**z-score**	**Raw score**	**z-score**	**Raw score**	**z-score**	**Raw score**	**z-score**	**Raw score**	**z-score**	**Raw score**	**z-score**
45	-3.0	**78**	0.0	**7**	-2.4	**9**	-3.0	**5**	-5.0	**8**	-2.3
46	-2.9	**79**	0.1	**8**	-2.2	**10**	-2.8	**6**	-4.7	**9**	-2.0
47	-2.8	**80**	0.2	**9**	-2.0	**11**	-2.6	**7**	-4.3	**10**	-1.7
48	-2.7	**81**	0.3	**10**	-1.8	**12**	-2.4	**8**	-4.0	**11**	-1.3
49	-2.6	**82**	0.4	**11**	-1.6	**13**	-2.2	**9**	-3.7	**12**	-1.0
50	-2.5	**83**	0.5	**12**	-1.4	**14**	-2.0	**10**	-3.3	**13**	-0.7
51	-2.4	**84**	0.54	**13**	-1.2	**15**	-1.8	**11**	-3.0	**14**	-0.3
52	-2.3	**85**	0.6	**14**	-1.0	**16**	-1.6	**12**	-2.7	**15**	0.0
53	-2.2	**86**	0.7	**15**	-0.8	**17**	-1.4	**13**	-2.3	**16**	0.3
54	-2.1	**87**	0.8	**16**	-0.6	**18**	-1.2	**14**	-2.0	**17**	0.7
55	-2.09	**88**	0.9	**17**	-0.4	**19**	-1.0	**15**	-1.7	**18**	1.0
56	-2.0	**89**	1.0	**18**	-0.2	**20**	-0.8	**16**	-1.3	**19**	1.3
57	-1.9	**90**	1.1	**19**	-0.0	**21**	-0.6	**17**	-1.0	**20**	1.7
58	-1.8	**91**	1.2	**20**	0.2	**22**	**-0.4**	**18**	-0.7	**21**	2.0
59	-1.7	**92**	1.3	**21**	0.4	**23**	**-0.2**	**19**	-0.3		
60	-1.6	**93**	1.4	**22**	0.6	**24**	**0.0**	**20**	0.0		
61	-1.5	**94**	1.5	**23**	0.8	**25**	**0.2**	**21**	0.3		
62	-1.4	**95**	1.54	**24**	1.0	**26**	**0.4**	**22**	0.7		
63	-1.36	**96**	1.6	**25**	1.2	**27**	**0.6**	**23**	1.0		
64	-1.3	**97**	1.7	**26**	1.4	**28**	**0.8**	**24**	1.3		
65	-1.2	**98**	1.8	**27**	1.6	**29**	**1.0**	**25**	1.7		
66	-1.1	**99**	1.9	**28**	1.8	**30**	**1.2**	**26**	2.0		
67	-1.0	**100**	2.0	**29**	2.0	**31**	**1.4**				
68	-0.9	**101**	2.1	**30**	2.2	**32**	**1.6**				
69	-0.8	**102**	2.2			**33**	**1.8**				
70	-0.7	**103**	2.3			**34**	**2.0**				

Table 7 - Norms for interpretation of the levels of student disengagement and its components

Student Disengagement			**Behavioral Disengagement**		
Sr. No.	**Range of z-score**	**Level**	**Sr. No.**	**Range of z-score**	**Level**
1	**Above 2.0**	**High**	**1**	**Above 2.0**	**High**
2	**1.1 to 2.0**	**Above Average**	**2**	**1.2 to 2.0**	**Above Average**
3	**-1.0 to 1.0**	**Average**	**3**	**-1.0 to 1.0**	**Average**
4	**-2.0 to -1.1**	**Below Average**	**4**	**-2.0 to -1.2**	**Below Average**
5	**Below -2.0**	**Low**	**5**	**Below -2.0**	**Low**
Emotional Disengagement			**Cognitive Disengagement**		
Sr. No.	**Range of z-score**	**Level**	**Sr. No.**	**Range of z-score**	**Level**
1	**Above 2.0**	**High**	**1**	**Above 2.0**	**High**
2	**1.2 to 2.0**	**Above Average**	**2**	**1.3 to 2.0**	**Above Average**
3	**-1.0 to 1.0**	**Average**	**3**	**-1.0 to 1.0**	**Average**
4	**-2.0 to -1.2**	**Below Average**	**4**	**-2.0 to -1.3**	**Below Average**
5	**Below -2.0**	**Low**	**5**	**Below -2.0**	**Low**
Social Disengagement					
Sr. No.	**Range of z-score**	**Level**			
1	**Above 2.0**	**High**			
2	**1.3 to 2.0**	**Above Average**			
3	**-1.0 to 1.0**	**Average**			
4	**-2.0 to -1.3**	**Below Average**			
5	**Below -2.0**	**Low**			

71	-0.6	**104**	2.4			**35**	**2.2**				
72	-0.5	**105**	2.45								
73	-0.4	**106**	2.5								
74	-0.36	**107**	2.6								
75	-0.3	**108**	2.7								
76	-0.2	**109**	2.8								
77	-0.1	**110**	2.9								

INTERPRETATION

Student Disengagement is interpreted as average ranging between -1.0 to 1.0, above average between 1.1 to 2.0, and below average ranges from -2.0 to -1.1. Student Disengagement is extremely high above 2.0 and extremely low below -2.0. A high level of Student Disengagement means undergraduates are not engaged in their academic tasks whereas the low range of z-score depicts respondents are well engaged in their academic tasks.

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