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Structural Equation Model (SEM) on Causative Factors of Deviancy in Relation with Self Esteem and Academic Achievement of Deviant Students

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Abstract: ***This study was aimed to analyse the causative factors of deviancy in relation self esteem and academic achievement of deviant students. Purposive random sampling method was used to study the deviant student's behavioural factor. The sample was drawn from the population of 7546 students. Data were collected from 13 schools located in different parts of kanchipuram, tamilnadu. In order to evaluate the association between the variables used in the model, structural equation modeling (SEM) was used for data analysis. The findings of the research showed that, absolute fit indices fits the sample data and reveals that the proposed model has the acceptable fit, by way of satisfying the recommended values.***

Keywords: SEM, Causative factors, Self Esteem, academic achievement and deviant students

1. Introduction

Any behavior, belief or condition that violates social norms of a society or group is defined as a deviation. The theory of control and the theory of social connection are often used to explain delinquency in adolescents. This theory explains the increasing gaps due to social ties in the family, school and peers. These include attachment to one another, commitment to compliance, participation in customary activities, and belief in legitimate values and norms. Lack of emotional proximity, participation, support, discipline and supervision in the home environment, as well as lack of educational commitment, ambition, time spent on homework, and school attendance are factors predictive of deviancy.

2. Literature Review

The beginning of adolescence marks a difficult transition in which the adolescent may be particularly vulnerable to environmental influences promoting participation in deviant behavior. For the purpose of this study substance use and risky driving behaviors will be examined. The tendency of delinquency to increase rapidly in early adolescence is clearly established (Arnett, 1999; Hirschi, 2002). Adolescents engage in risky behavior more frequently than adults (Jessor & Jessor, 1977). Furthermore, adolescents experience the negative consequences of the delinquent behavior at a higher degree than adults (Harris, Duncan, & Boisjoly, 2002). Adolescence delinquency increases from early to mid adolescence and declines sharply by late adolescence (Harris, Duncan, & Boisjoly, 2002). Adolescence is a time in which an individual experiences physical and cognitive change and begins to make important decisions (Harris, Duncan, & Boisjoly, 2002). These growing demands on decision-making have important implications for the engagement in risky behaviors. Clearly, adolescence is a time of choices. With these choices adolescents gain autonomy, assume responsibility, and face serious consequences regarding the decisions they make. For example, choices regarding the use of illegal substances and participation in risky driving behavior can have significant implications.

Adolescents interact at the same time in several social systems - such as family, peer, and neighborhood systems - that can serve to either restrain or promote individual behaviors.

Structural equation modeling (SEM): Model fit assessment

Structural equation modeling was used to analyze the suitability of the model based upon the collected samples. As recommended by Anderson and Gerbing (1988), measurement model to test the reliability and validity of the survey instrument was analyzed first, and by using AMOS version 16 the structural model was analyzed. The structural equation model (SEM) is most useful when assessing the causal relationship between variables as well as verifying the compatibility of the model used (Peter, 2011).

Structural equation modeling evaluates whether the data fit a theoretical model. In order to evaluate the model, emphasis was given to Chi-square/degrees of freedom (x^2/df), CFI, GFI, AGFI, TLI, IFI, RMSEA and PGFI (Table 6). As per the result, Chi square statistics with p = 0.000 does not show a good fit of the model. Nevertheless according to Schumaker and Lomax (1996), a sample size of over 200 (145 in this research), could affect Chi-Square statistics to indicate a significant probability level (p=0.00). Consequently, this model is considered for further interpretation in the goodness of fit measures. Common model-fit measures like chi- square/degree of freedom (x^2/df), the comparative fit index (CFI), root mean square error of approximation (RMSEA), the normed fit index (NFI), incremental fit index (IFI), and the Tucker Lewis index (TLI) were used to estimate the measurement model fit. Table 1 shows the estimates of the model fit indices from AMOS structural modeling.

The variables used in the structural equation model are

I. Observed, endogenous variables

1. Parental Factor

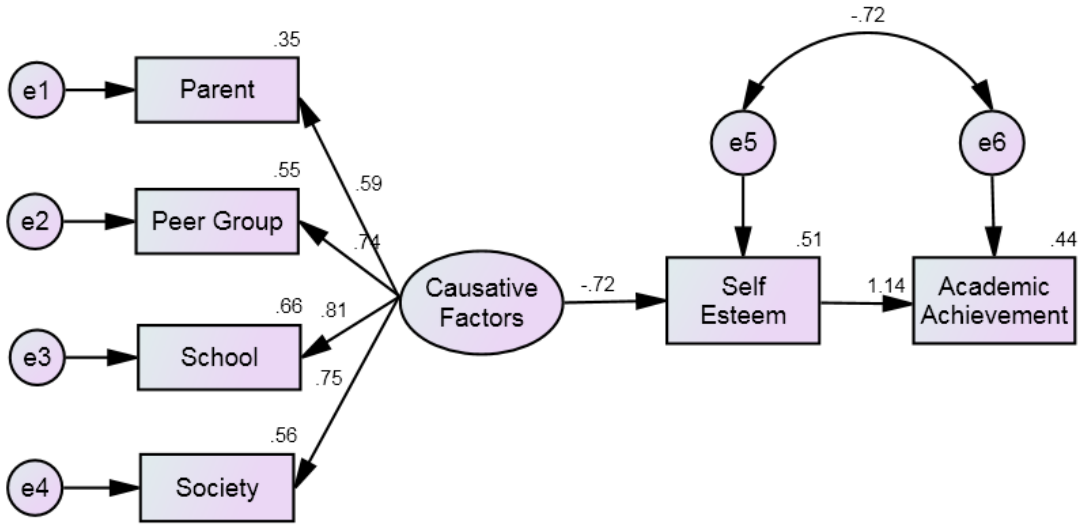
2. Peer Factor
3. Environmental Factor (Society)
4. School Factor
5. academic achievement
6. Self esteem

II. Unobserved, exogenous variables

1. e1: Error term for parent
2. e2: Error term for peer
3. e3: Error term for School
4. e4: Error term for Society (Environmental)
5. e5: Error term for Self Esteem
6. e6: Error term for Academic achievement

Variable counts (Group number 1)

Number of variables in your model: 13
Number of observed variables: 6
Number of unobserved variables: 7
Number of exogenous variables: 7
Number of endogenous variables: 6



Variables			Unstandardised co-efficient (B)	S.E of B	Standardised co-efficient (Beta)	t value	P value
Parental factor	<---	Causative Factor	1.859	.254	.589	7.329	<0.001**
Peer factor	<---	Causative Factor	1.150	.116	.742	9.884	<0.001**
School factor	<---	Causative Factor	2.086	.187	.809	11.167	<0.001**
Society factor (Environmental)	<---	Causative Factor	1.322	.132	.749	10.017	<0.001**
Self Esteem	<---	Causative Factor	-5.649	.610	-.715	-9.267	<0.001**
Academic Achievement	<---	Self Esteem	2.523	.212	1.140	11.906	<0.001**

From the above table, Unstandardised coefficient of causative factor on parental factor is 1.859 represents the partial effect of causative factor on parental factor, holding the other path variables as constant. The estimated positive sign implies that such effect is positive that parental factor would increase by 1.859 for every unit increase in

causative factor and this coefficient value is significant at 1% level.

Unstandardised coefficient of causative factor on peer factor is 1.150 represents the partial effect of causative factor on peer factor, holding the other path variables as constant. The estimated positive sign implies that such effect is positive that peer factor would increase by 1.150 for every unit increase in causative factor and this coefficient value is significant at 1% level.

Unstandardised coefficient of Causative factor on School is 2.086 represents the partial effect of Causative factor on School, holding the other path variables as constant. The estimated positive sign implies that such effect is positive that School would increase by 2.086 for every unit increase in Causative factor and this coefficient value is significant at 1% level.

Unstandardised coefficient of Causative factor on Environmental is 1.322 represents the partial effect of Causative factor on Environmental, holding the other path variables as constant. The estimated positive sign implies that such effect is positive that Environmental would increase by 1.322 for every unit increase in Causative factor and this coefficient value is significant at 1% level.

Based on Standardised coefficient, Causative factor on School is (2.086) is most influencing path in this SEM model, followed by causative factor on parental factor is (1.859), Causative factor on Environmental is (1.322) and causative factor on peer factor is (1.150).

Unstandardised coefficient of Causative factor on self esteem is -5.649 represents the partial effect of Causative factor on self esteem, holding the other path variables as constant. The estimated negative sign implies that such effect is negative that Self esteem would decrease by 5.649 for every unit increase in causative factor and this coefficient value is significant at 1% level.

Unstandardised coefficient of Self Esteem on Academic achievement is 2.523 represents the partial effect of Causative factor on Environmental, holding the other path variables as constant. The estimated positive sign implies that such effect is positive that Academic achievement would increase by 2.523 for every unit increase in Self Esteem and this coefficient value is significant at 1% level.

Hypothesis X

Null hypothesis: The hypothesized model has a good fit.

Alternate hypothesis: The hypothesized model does not have a good fit.

Table 1: Model fit summary of Structural Equation Model

Indices	Value	Suggested value
Chi-square value	12.294	-
DF	8	-
P value	0.139	> 0.05 (Hair et al., 1998)
Chi-square value/DF	1.537	< 5.00 (Hair et al., 1998)
GFI	0.973	> 0.90 (Hu and Bentler, 1999)
AGFI	0.930	> 0.90 (Hair et al. 2006)
NFI	0.973	> 0.90 (Hu and Bentler, 1999)
CFI	0.990	> 0.90 (Daire et al., 2008)
RMR	0.031	< 0.08 (Hair et al. 2006)
RMSEA	0.061	< 0.08 (Hair et al. 2006)

For the purpose of testing the model fit, null hypothesis and alternative hypothesis are framed.

According to Gerbing and Anderson (1992), the criteria for an acceptable model are as follows: RMSEA of 0.08 or lower; CFI of 0.90 or higher; and NFI of 0.90 or higher. The fit between the data and the proposed measurement model can be tested with a chi-square goodness-to-fit (GFI) test where the probability is greater than or equal to 0.9 indicates a good fit (Hu and Bentler, 1999). The GFI of this study was 0.973 more than the recommended value of 0.90 the other measures fitted satisfactorily; AGFI=0.930, CFI=0.990, and NFI=0.973 with $x^2/df < 8$ at 12.294 and RMSEA=0.061 model fit and these emphasized indices indicate the acceptability of this structural model. For the purpose of testing the model fit null hypothesis and alternative hypothesis are framed.

From the above table it is found that the calculated P value is 0.139 which is greater than 0.05 which indicates perfectly fit. Here Goodness of Fit Index (GFI) value (0.973) and Adjusted Goodness of Fit Index (AGFI) value (0.930) is greater than 0.9 which represent it is a good fit. The calculated Normed Fit Index (NFI) value (0.973) and Comparative Fit Index (CFI) value (0.990) indicates that it is a perfectly fit and also it is found that Root Mean square Residuals (RMR) and Root Mean Square Error of Approximation (RMSEA) value is 0.061which is less than 0.08 which indicated it is perfectly fit.

3. Conclusion

It could be very well concluded that the hypothesized four-factor model fits the sample data. Based on the viability and statistical significance of important parameter estimates; the considerably good fit of the model (CFI, GFI, AGFI, NFI, IFI, TLI, RMSEA), it can be concluded that the four-factor model shown in Figure 1 represents an adequate description of causative factors structure for the school goodness of fit indices support the model fit and these emphasized indices indicate the acceptability of this structural model. Definitely, this study will be useful for the school to ascertain the as to identify the deviancy and to reduce the deviancy, and it helps which factors influence more deviancy. survey at least once in three months with students so we can track the child deviancy and counsel them and reduce the child deviancy

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