

# Development of a Causal Relationship Model of Undergraduates' Sense of Coherence in Thailand: An Application of the Multiple Group Structural Equation Model

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## Abstract

The objectives of this research were to study causal relationship, develop and validate consistency with empirical data the causal relationship model of sense of coherence of undergraduate and to test the model invariance between 2 samples: an application of the multiple group structural equation model. The model consisted of 7 latent variables; sense of coherence, social support, democratic child rearing, laissez-faire child rearing, goal setting of life, anxiety, and self-esteem; and 24 observed variables measuring those 7 latent variables. The samples consisted of 540 first year undergraduate students; 270 from state university in Thailand and 270 from private university in Thailand. The research instrument was a five rating scale questionnaire. Data were analyzed by linear structural equation model analysis, and multiple group structural equation model analysis.

The result indicated that the adjusted model was consistent with empirical data. Model validation of a good fitted model provided  $\chi^2 = 25.869$ ,  $df = 81$ ,  $p = 1.000$ ,  $\chi^2/df = 0.319$ ,  $GFI = 0.996$ ,  $AGFI = 0.986$ ,  $RMR = 0.006$ ,  $LSR = 1.635$ . The variables in the model accounted for 89.70 percent of the total variance of sense of coherence. The variable that had most significant effect on sense of coherence was self-esteem, democratic child rearing and anxiety, respectively. The causal relationship model of sense of coherence of

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undergraduate students indicated invariance of model form but the parameters were variance.

**Key Word:** Sense of Coherence, Multiple Group, Structural Equation Model

## Introduction

Human resource development is essential for the betterment of any country. Countries should support the mental and physical well-being of its citizens. This research focuses on understanding which factors affect the development of physically and mentally healthy individuals who lead successful and productive lives. The study of adolescents, between the ages of 18-21, is targeted because individuals of this group experience the most number of significant changes in mind, particularly, emotions and thought processes (Erikson, 1968). Because adolescents sometimes exhibit problematic behavior, e.g. public fighting, quarreling with authority figures, or other forms of rebellion, this group also represents individuals actively confronting problems with developing self-confidence and self-identity. Furthermore, it is hypothesized that if adolescents cannot confront and manage these problems, they are more likely to suffer, e.g. underachieve in school, develop addictive behaviors, drop out of school, contemplate or commit suicide to escape their problems. Conversely, if adolescents can efficiently confront and manage their problems, they will more likely achieve and be successful.

The researcher believes that individuals that possess the essential characteristic of a high sense of coherence will be more likely to lead successful and productive lives. Sense of coherence is composed of the ability to comprehend, endure hardship, adapt, confront, manage, and find meaning in one's life. Antonovsky (1991) found that individuals who have a high sense of coherence could manage problems efficiently. If adolescents possess a high sense of coherence, it is

surmised that they will be able to efficiently confront and manage their problems, and be more likely to be successful and productive citizens.

This research is interested in which factors or variables have significant direct and indirect effects on an individual's sense of coherence. Study of first year undergraduate students are the basis of this research because individuals from this population experience many changes and confront problems associated with those changes, e.g. the selection of their study major, transition from high school to university, etc. Further, a comparative study of the different changes between public university and private university first year undergraduates experience is undertaken, e.g. differences in entrance requirements, instruction methodology, extra-curricular activities, and environment. This comparison is done to ascertain if these differences affect the level of sense of coherence. Subyng (2001) found public university undergraduates manage problems differently than private university undergraduates. Two sets of undergraduate manage and confront their problems differently, based on different values, experiences, and beliefs.

The majority of past theoretical study and empirical research literature concerning sense of coherence and correlation of its variables has been conducted studying the nursing field. This research attempts to ascertain the causal relationship of sense of coherence variables by developing a causal relationship model of university undergraduates. This research's predetermined factors that are significant to sense of coherence are as follows; social support (Chaiobhas, 2003; Jamjang, 2003; Brown, 1986), democratic child rearing (Siriattakul, 2007; Surarum, 2003; Roger, 2004), laissez-faire child rearing (Siriattakul, 2007), life goal setting (Surarum, 2003), anxiety (Wongyai, 2002; Nintachan & Sompongse, 2000) and self-esteem (Surarum, 2003; Punlee, 2002; Maslow, 1970).

This research sets the causal relationship variables; social support, democratic child rearing, laissez-faire child rearing, life goal setting, anxiety, and self-esteem, to study direct effects and indirect effects on sense of coherence. This research also compares the causal relationship model between the state university model and the private university

model by application of the multiple group structural equation model, to study factors that support undergraduates' sense of coherence.

## Method

The research population is comprised of first year undergraduates attending both the state university in Thailand and the private university in Thailand.

The samples consist of 540 first year undergraduates; 270 from state university in Thailand and 270 from private university in Thailand. This research using the maximum likelihood estimator. Hair, Anderson, & Tatham (2005) suggest sample sizes of maximum likelihood should be between 100-200 persons. Tabachnick and Fidell (2001) suggest sample data which normal distribution for the analysis of the structural equation model, with the parameter that 10 persons equal the value of 1. This research parameters consist of 24 values; the samples are 240 persons per group.

A causal relationship model of undergraduates' sense of coherence consists of 7 latent variables; sense of coherence, social support, democratic child rearing, laissez-faire child rearing, life goal setting, anxiety, and self-esteem; and 24 observed variables measure those 7 latent variables.

## Instruments

The research instruments are composed of 6 issues; sense of coherence scale ( $\alpha = 0.92$ ) 45 items, social support scale ( $\alpha = 0.89$ ) 32 items, child rearing scale ( $\alpha = 0.93$ ) 24 items, life goal setting scale ( $\alpha = 0.84$ ) 15 items, anxiety scale ( $\alpha = 0.93$ ) 17 items, and self-esteem scale ( $\alpha = 0.85$ ) 20 items. All instruments were five scale.

## Results

1. Analyzed results from the parsimonious causal relationship model for undergraduates' sense of coherence are consistent with empirical data, considering  $\chi^2 = 25.869$ ,  $df = 81$ ,  $p = 1.000$ ,  $\chi^2/df = 0.319$ ,  $GFI = 0.996$ ,  $AGFI = 0.986$ ,  $RMR = 0.006$ ,  $LSR = 1.635$ . The variables in the model account for 89.70 percent of the total variance of sense of coherence. The variable that most significantly effects undergraduates' sense of coherence is self-esteem, with a statistical significance level of .01 ( $\beta = 0.734$ ). The next two variables in order of decreasing significance are: democratic child rearing statistical significance level at .01 ( $\beta = 0.073$ ), and anxiety statistical significance level at .05 ( $\beta = -0.065$ ).

These results show that undergraduates' sense of coherence increase when individuals possess increased self-esteem, have received democratic child rearing, and have decreased anxieties.

2. The causal relationship model of undergraduates' sense of coherence indicates model form invariance, considering  $\chi^2 = 93.791$ ,  $df = 162$ ,  $p = 1.000$ ,  $\chi^2/df = 0.579$ ,  $GFI = 0.981$ ,  $RMR = 0.009$ ,  $RMR$  and  $RMSEA$  close to 0, and  $\chi^2/df$  less than 2.00, with all indexes in accordance. The empirical data results are consistent with the hypothesis that a causal relationship model exists for undergraduates' sense of coherence or a causal relationship model for undergraduates' sense of coherence from different universities indicates model form invariance, but with variance in parameters.

Considering the  $\chi^2/df$  of the model form, the first hypothesis is lowest at ( $\chi^2/df = 0.579$ ), shows this model is the best model and consistent with empirical data, is in Table 1. The variables that have the most significant effect on undergraduates' sense of coherence in both universities are self-esteem, democratic child rearing, and anxiety, respectively. These results are consistent with the parsimonious causal relationship model of undergraduates' sense of coherence.

**Table 1** Test the model invariance

Hypothesis Model	$\chi^2$	df	$\chi^2/df$	P	GFI	NFI	RFI	RM R
1. Model form	93.79 1	16 2	0.57 9	1.00 0	0.98 1	0.99 5	0.98 4	0.00 9
2. GA	112.2 99	16 9	0.66 4	1.00 0	0.97 9	0.99 4	0.98 2	0.01 2
3. GA, BE	128.1 49	17 4	0.73 6	0.99 6	0.97 7	0.99 4	0.98 0	0.01 6
Hypothesis Model	Different of the $\chi^2$			Difference of the df	Different of the $\chi^2/df$			Difference of the df
2 vs. 1	18.508			7	2.664			
3 vs. 2	15.850			5	3.170			

## Discussion

1. This research finds the variable with the most significant effect on sense of coherence is self-esteem. Surarum (2003) found self-esteem affects sense of coherence, because persons with high self-esteem consider themselves capable, initiative, adaptive, confrontational, and able to cope. Punlee (2002) found that, self-esteem is positively correlated with accomplishment for professional nurses. Furthermore, successful nurses show the ability to cope, a factor in sense of coherence. Coward (1996) found persons possessing sense of coherence, feel worthy, have hope, set goals in life, and possess emotional equilibrium. Therefore, if persons are encouraged and supported to increase self-esteem, it follows that sense of coherence will increase as well.

This research finds the variable with the next most significant effect on sense of coherence is democratic child rearing. Surarum (2003) found when guardians allow the child to actively participate in considering and making decisions that affect the child, the child

becomes more confident. Furthermore, when the child confronts a problem, the child will be able to apply problem solving skills of their own. This finding is consistent with Rogers (2004). Rogers found that democratic child rearing empowers the child to form opinions and make decisions. When supportive parents are neither too strict nor too lenient, while giving a consistent message of fairness, they facilitate the child's own ability to solve and confront problems. The ability to confront problems is another factor in the sense of coherence. Therefore, persons that receive democratic child rearing will display a higher sense of coherence than those that do not.

The final variable that this research finds to have a significant effect on the sense of coherence is anxiety. Yermal (2005) found the level of anxiety of post-operative patients is negatively correlated with a sense of coherence. When low levels of anxiety are displayed, patients have a high sense of coherence, consistent with Nilsson, Axelsson, Gustafson, Lundman, & Norberg (2001) found that patients who have a high sense of coherence while suffering from severe injuries are able to decrease their strain and anxiety. Harri (1998) found that happiness and sense of coherence of nursing undergraduate students are related. Students with a high sense of coherence maintain positive work relationships; are happy at work; positively manage stress, anxiety, and illness; and do not display self-destructive qualities. Wongyai (2002) found anxiety and sense of coherence are correlated. Adolescents with high sense of coherence display low levels of anxiety, and individuals with low sense of coherence display high levels of anxiety. Conversely, individuals with low levels of anxiety display high sense of coherence, while adults with high levels of anxiety display low sense of coherence.

Thusly, undergraduates whose self-esteem is encouraged and supported, have received democratic child rearing, and have low levels of anxiety, will display high sense of coherence and social efficiency.

2. The model form invariance of the causal relationship model of undergraduates' sense of coherence is found to be consistent with Nak-ay (2006), Klahan (2005), Chanthamueang (2005), Poonruksa

(2004), Sapsathiarn (2003), Tikul (2002), Treeroj-a-nan (2002), Sintana (2002), Pulroth (2000), Phonprasert (1999), Kamkate (1997). The results of the above research found model form invariance as well as variance of tested parameters.

Model form invariance indicates that the variable, attending a state or private university in Thailand, does not influence the factors, self-esteem, democratic child rearing, and low anxiety for sense of coherence in first year undergraduates. These factors cannot be significantly differentiated between the two samples because both samples are comprised of first year undergraduate students, studying the same major. This research finds the causal relationship model of sense of coherence of undergraduates in Thailand indicates model form invariance.

The variance in parameters tested for both samples can be attributed to the difference in entrance requirements, difference in instruction methodology, difference in extra-curricular activities, and difference in environment.

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