

# โมเดลโครงสร้างเชิงสาเหตุของความผูกพันรักใคร่ระหว่างมารดาวัยรุ่นและแม่ของตนเอง A Structural Equation Model of Attachment between Adolescent Mothers and Their Own Mothers

นิพนธ์ต้นฉบับ

Original Article

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## บทคัดย่อ

**วัตถุประสงค์:** เพื่อทดสอบโมเดลความสัมพันธ์เชิงสาเหตุของความผูกพันรักใคร่ระหว่างมารดาวัยรุ่นและมารดาของตนเอง **วิธีการศึกษา:** การวิจัยแบบการทดสอบโมเดลนี้คัดเลือกกลุ่มตัวอย่างด้วยวิธีการสุ่มแบบหลายขั้นตอน คือ มารดาวัยรุ่นจำนวน 240 ราย ที่มีอายุ 19 ปี หรือต่ำกว่า อาศัยอยู่กับมารดาของตนเอง รวบรวมข้อมูลโดยใช้แบบสอบถามชนิดให้กลุ่มตัวอย่างตอบเองจำนวน 5 ชุด ประกอบด้วย แบบสอบถามข้อมูลทั่วไป แบบประเมินความผูกพันรักใคร่ของบิดามารดาและกลุ่มเพื่อน แบบวัดครอบครัวของจุฬาลงกรณ์ แบบวัดความเครียดของการเป็นบิดามารดา และแบบวัดการสนับสนุนหลังคลอด ใช้การวิเคราะห์โมเดลสมการโครงสร้างสำหรับการทดสอบความสอดคล้องของโมเดล **ผลการศึกษา:** พบว่ารูปแบบความสัมพันธ์เชิงสาเหตุที่ปรับปรุงมีความสอดคล้องกับข้อมูลเชิงประจักษ์ ( $\chi^2 = 76.89$ ,  $P$ -value = 0.07,  $df = 60$ , GFI = 0.96, CFI = 0.98, and RMSEA = 0.03) โดยทำนายความแปรปรวนของความผูกพันรักใคร่ได้ร้อยละ 40 การทำหน้าที่ของครอบครัว การสนับสนุนทางสังคม และความเครียดในการเป็นบิดามารดามีอิทธิพลทางตรงกับความผูกพันรักใคร่ และการทำหน้าที่ของครอบครัวมีอิทธิพลทางอ้อมผ่านการสนับสนุนทางสังคม **สรุป:** ความผูกพันรักใคร่ระหว่างมารดาวัยรุ่นและมารดาของตนเองจำเป็นต้องได้รับการส่งเสริม การจัดการหรือโปรแกรมที่มุ่งเพิ่มการทำหน้าที่ของครอบครัวและการสนับสนุนทางสังคม และลดความเครียดของการเป็นบิดามารดา จะส่งเสริมความผูกพันรักใคร่

**คำสำคัญ:** มารดาวัยรุ่น, ความผูกพันรักใคร่, การทำหน้าที่ของครอบครัว, การสนับสนุนทางสังคม, ความเครียดของการเป็นบิดามารดา, โมเดลสมการโครงสร้าง

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## Introduction

Attachment between adolescent mothers and their own mothers (grandmothers) is viewed as adult attachment. It is an emotional tie with an irreplaceable other who provides a secure base that is regulated by the same stages and motivational system as infant attachment.<sup>1,2</sup> This attachment is an important source of support for boosting an adolescent mother's feelings of security and comfort when faced with distress.<sup>3,4</sup> Adolescent mothers are characterized by a young age, lack of resources, low income and education with a tendency to continue living with parents to receive and share child rearing.<sup>5</sup> They are not ready to become a mother, and their motherhood and maternal role

becomes cumbersome and problematic for them.<sup>6,7</sup> In particular, adolescents who have their own babies early are more likely to perceive this situation as a critical period. They usually require seeking proximity and feelings of security with the response of an attachment figure from their mothers who are often the source to play a crucial role in providing support, care and shelter.<sup>6,8</sup>

According to the adult attachment theory<sup>9-11</sup>, attachment behavioral systems in adulthood are aimed at regulating distress and providing a secure base for continued psychological growth with increasing maturity and autonomy.

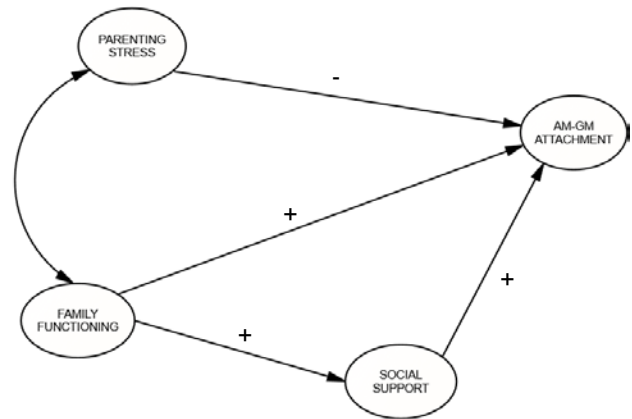
Attachment security of adolescents with parents, especially a mother, provides important functions long after infancy, extending into adolescence and adulthood<sup>12</sup> and is associated with interpersonal and psychological outcomes.<sup>13</sup> For the partners, secured attachments with their parents are associated with longer relationships with partners, therefore they are less likely to experience divorce and they feel comfortable with both intimacy and autonomy.<sup>9,14</sup> At present, there are a few existing studies contributing to the attachment between adolescent mothers and their own mothers (grandmothers), especially in Thailand. Moreover, evidence suggests that family functioning, parenting stress and social support are closely associated with the attachment. This has stimulated us to formulate a model based on statistical foundations such as structural equation modeling (SEM) to explain the causal relationship of attachment between adolescent mothers and grandmothers.

A family with appropriate functioning has been found to be associated with the secure attachment of the members within the family.<sup>15</sup> Cohesion, communication, adaptability, and support are among the dimensions of family functioning. Higher family cohesion, more positive communication and support tend to have greater secure attachment.<sup>16</sup> Adaptability and cohesion also influence positive attachment relationships.<sup>17</sup> Previous studies suggested that perceived high stress of being a parent can inhibit secure attachment and activate attachment insecurity.<sup>18</sup> Mothers with high levels of parenting stress are more likely to have low attachment security.<sup>19</sup> Moreover, social support is strongly associated with the attachment.<sup>19,20</sup> Adolescent mothers who receive more social support are more likely to have attachment security to their own attachment figure.<sup>19</sup>

In summary, research on attachment beyond infancy is important for enhancing developmental outcomes in adolescence and adulthood. To date, a considerable number of studies have mentioned factors influencing attachment, and mostly focused on mother and child relationships rather than adult attachment between an adolescent mother and her own mother. The clarifying of factors associated with the attachment among adolescent mothers and their grandmothers would lead to developing an intervention to promote positive outcomes of the attachment.

Drawing from the above theory and many studies we developed a hypothesized structural model to explain the causal linkage among three predictors and the attachment (Figure 1). This study aimed to test the causal relationships of

attachment among adolescent mother and her own mother. Therefore, we examined the following hypotheses: a) parenting stress could negatively, directly influence attachment (H1); b) family functioning could positively, directly influence attachment and could positively, indirectly affect attachment through social support (H2 and H3, respectively); c) social support could positively, directly influence attachment (H4).



**Figure 1** The hypothesized model of the study.

Note: AM = adolescent mother; GM = grandmother

## Methods

In this cross-sectional model-testing study, the participants were recruited using a multi-stage random sampling technique. A sample size of 200 to 250 subjects is generally adequate for statistical power of the structural equation modeling (SEM).<sup>21</sup> A sample size of at least 200 participants is recommended.<sup>22</sup> In our study, to compensate for a 20% attrition rate, a total of 240 adolescent mothers were recruited.

To be eligible, adolescent mothers had to be 19 years or younger who had brought their infants to receive vaccination or routine care at sub-district health promoting hospitals in Chachoengsao and Chon Buri provinces, Thailand. They had to live with their biological mothers for at least 6 months. Their infants had to be 6 - 12 months old with no congenital anomaly or serious health conditions. The adolescent mothers had to be able to read, write and communicate in Thai. Data collection was carried out from January to July 2019.

### Research instruments

**Adolescent mother-her own mother (grandmother) attachment** was measured using the Inventory of Parent and Peer Attachment (IPPA-mother). The IPPA was developed by Arnsden and Greenberg<sup>23</sup> and has been used to assess an

adolescent's perceptions of the positive and negative affective/cognitive dimensions of relationships with their parents and close friends.<sup>23</sup> In particular, it is used for assessing how well these figures serve as sources of psychological security. The IPPA is divided into three parts of mother, father, and peer for assessing each attachment (i.e., adolescent vs. father, adolescent vs. mother, and adolescent vs. close friend). The IPPA-mother consists of 25 items with three subscales, namely trust (10 items), communication (9 items), and alienation (6 items). The participants were asked to rate their responses on a 5-point Likert-type scale ranging from 1 (almost never or never true) to 5 (almost always or always true). With possible scores of 25 - 125 points, higher scores indicated higher attachment security. The IPPA was originally in English and was later translated into Thai by a back-translation technique.<sup>24</sup> The internal consistency reliability of the IPPA-Thai version was high with a Cronbach's alpha coefficient of 0.85.

**Family functioning** was measured by the Chulalongkorn Family Inventory (CFI). The CFI was developed by Trangkasombat<sup>25</sup> in Thai language based on the McMaster Family Assessment Device.<sup>26</sup> It contains 36 items of seven dimensions, consisting of problem solving (6 items), communication (5 items), role function (3 items), affective response (5 items), affective involvement (5 items), behavior control (4 items), and overall function (8 items). It is completed by the participants and rated on a 4-point Likert-type rating scale ranging from 1 (strongly agree) to 4 (strongly disagree). The total score ranges from 36 to 144 points with higher scores indicating better family functioning. The internal consistency reliability of the CFI in this study was high with a Cronbach's alpha coefficient of 0.84.

**Adolescent parenting stress** was measured by the Parental Stress Scale (PSS), which was developed by Berry and Jones.<sup>27</sup> It is used to measure stress levels experienced by the adolescent mothers. This instrument contains 18 self-report items separated into two subscales consisting of parenting stress (10 items), and lack of parental satisfaction (8 items). The PSS is brief and easy to administer. The participants are asked to complete the instrument by rating each item on a 5-point Likert-type rating scale ranging from 1 (strongly disagree) to 5 (strongly agree). With possible scores of 18 to 90 points, higher scores indicated higher parenting stress. The PSS was originally in English and translated into Thai by Payjapoh, Kongsaktrakul, and Vallibhakara.<sup>28</sup> In this

present study, the internal consistency reliability of the PSS was high with a Cronbach's alpha coefficient of 0.80.

**Social support** was assessed by the Postpartum Support Questionnaire (PSQ). The PSQ was developed by Logsdon, McBride, and Birkimer<sup>29</sup> to measure perceived support specific to the postpartum period. It contains 34 items measuring mothers' needs and acquisition of social support during postpartum period in four dimensions, specifically material support (9 items), emotional support (10 items), informational support (10 items), and comparison supports (5 items). The original English version of PSQ was translated into Thai and modified from an 8- to a 5-point Likert-type rating scale by Wongvisetsirikul.<sup>30</sup> In the Thai version, the total score ranges from 34 to 170 points with higher scores indicating higher social support during postpartum period.<sup>29</sup> In this present study, the internal consistency reliability of the PSQ-Thai version was high with a Cronbach's alpha coefficient of 0.93.

#### **Ethical consideration and data collection procedure**

The IRB approval was obtained from the Faculty of Nursing, Burapha University, and the provincial public health offices of Chachoengsao and Chonburi provinces (IRB No. 02-10-2561) prior to data collection which was carried out from January to July 2019. The researchers invited and informed adolescent mothers who met the inclusion criteria and were interested in participating in the study about the research objectives, data collection process, benefits, potential risks, withdrawal and confidentiality. The informed consent form was signed by participant who agreed to participate. The participants were asked to complete the questionnaire in a private room. The questionnaire took about 30 - 35 minutes to complete.

#### **Data analysis**

Descriptive statistics including frequency with percentage and mean with standard deviation were used to summarize demographic characteristics of the participants and all study variables. The magnitudes of both direct and indirect effects on the adolescent mothers and their mothers' attachment were analyzed with Structural Equation Modeling (SEM) to test the hypothesized model. The Maximum Likelihood (ML) was a method to estimate parameters. The acceptance values of goodness-of-fit (GOF) indices suggest that a minimum chi-square value [CMIN] should be non-significant ( $P$ -value > 0.05) with CMIN/ degrees of freedom (df) of less than 2.0. The criteria of a goodness of fit model followed by the GFI

(goodness of fit index) should be between 0.90 to 1.00, and the AGFI (adjusted GFI) between 0.90 to 1.00.<sup>31</sup> For the CFI (comparative fit index), two values indicate the fit, specifically a value of 0.90 to less than 0.95 indicating acceptable fit while a values of 0.95 or higher indicating a good fit model. Finally, the RMSEA (root-mean-square error of approximation) should be less than 0.05 to indicate that the model is close to the fit; while 0.05 to 0.08, > 0.08 to 0.10, and > 0.10 indicate perfect, moderate and poor fit, respectively.<sup>32</sup> Data analyses were conducted using the IBM® SPSS® version 26.0 bundled with the Amos structural equation modeling (SEM) program. Statistical significance was set at a type I error of 5% or *P*-value < 0.05.

## Results

Of the 240 adolescent mothers, their mean age was 17.80 years (SD = 1.29). About 70% of them had their spouse (without marriage certificate) living together in the same household. About half of them had an unplanned pregnancy (55.80 %), completed educational level at the lower secondary school (50.80 %), and unemployed (45.40 %). Descriptive statistics of study variables and correlations among the exogenous and endogenous variables are presented in Tables 1 and 2.

**Table 1** Descriptive statistics of the study variables (N = 240).

Variable	Possible range	Actual range	Mean	SD
Attachment	22 - 110	55 - 109	89.78	12.54
Family functioning	30 - 120	54 - 119	95.02	12.63
Parenting stress	16 - 80	16 - 60	33.35	10.03
Social support	33 - 165	90 - 165	126.51	15.50

**Table 2** Correlation matrix† among the exogenous and endogenous variables (N = 240).

	ATT	FF	PS	SS
ATT	1	0.528*	-0.266*	0.304*
FF		1	-0.402*	0.427*
PS			1	-0.262*
SS				1

Note: ATT = attachment, FF = family functioning, PS = parenting stress, SS = social support

† Presented as Pearson's product moment correlation coefficients.

\* *P*-value < 0.01.

Prior to subsequent analysis, data management and assumption testing were performed. There were no missing data or multivariate outliers. Three variables, namely, consisting of attachment, family functioning, and social

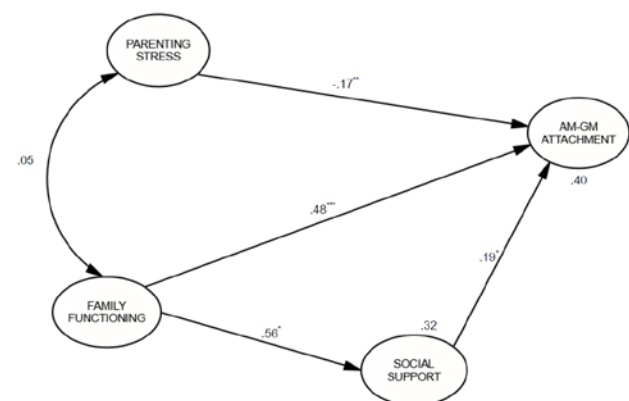
support, met the criteria of multivariate normality. For adolescent parenting stress, the bootstrap method was used to reduce the variable's skewness.

The results of the initial structural equation modeling (SEM) analysis on the hypothesized model were as follows (Table 3). It was found that the hypothesized model did not fit with the data ( $\chi^2 = 218.294$ , *df* = 96, *P*-value < 0.001, CFI = 0.908, and RMSEA = 0.073). Three paths in the hypothesized model were statistically significant. These included the paths from family functioning to social support ( $\beta = 0.66$ , *P*-value < 0.01), family functioning to the attachment ( $\beta = 0.39$ , *P*-value < 0.001), and parenting stress to the attachment ( $\beta = -0.17$ , *P*-value < 0.01).

**Table 3** Model fitness index for the hypothesized and the final modification models (N = 240).

Model	$\chi^2$	<i>df</i>	CMIN/ <i>df</i>	<i>P</i> -value	GFI	CFI	RMSEA
Hypothesized model	183.95	72		< 0.001	0.90	0.91	0.08
Final modified model	76.89	60		0.07	0.96	0.98	0.03
Recommended value	-	-	< 2.0	> 0.05	0.90 - 1.00	> 0.95	< 0.05

To improve the model fit, the hypothesized model was then modified by modification indices until achieving the criteria for model goodness of fit.<sup>21</sup> Finally, the results indicated that the final modified model fitted the data well ( $\chi^2 = 76.895$ , *df* = 60, *P*-value = 0.07, GFI = 0.96, CFI = 0.98, and RMSEA = 0.03), and had a validation index of model adequacy at acceptable levels of  $\chi^2$  with *P*-value > 0.05, GFI between 0.90 to 1.00, CFI > 0.90 and RMSEA < 0.05. Therefore, all hypotheses of this study were supported. The standardized parameter estimates of the final modified model were are shown in Figure 2 and Table 4.



**Figure 2** The final modified model.

\* *P*-value < 0.05; \*\* *P*-value < 0.01; \*\*\* *P*-value < 0.001.

**Table 4** Regression weights, direct (DE), indirect (IE), and total effects (TE) of the final modified model (N = 240).

Exogenous variable	Endogenous variable	Unstandardized estimate	SE	CR	Standardized estimate		
					DE	IE	TE
Parenting Stress	→ Attachment	-0.21	0.07	-2.88	-0.17*		-0.17*
Family functioning	→ Attachment	0.90	0.18	5.18	0.48†	0.11*	0.48†
Family functioning	→ Social support	0.20	0.08	2.29	0.56*		0.56*
Social support	→ Attachment	0.19	0.49	2.06	0.19*		0.19*

Note: SE = standard error, CR = composite reliability.  
\* P-value < 0.05, † P-value < 0.01, ‡ P-value < 0.001.

All specified paths in the final model were statistically significant and indicated that parenting stress, family functioning, and social support had a direct effect on the attachment ( $\beta = -0.17$ ,  $P$ -value < 0.01;  $\beta = 0.48$ ,  $P$ -value < 0.001;  $\beta = 0.19$ ,  $P$ -value < 0.05, respectively). Moreover, family functioning had a direct effect on social support ( $\beta = 0.56$ ,  $P$ -value < 0.05), and social support had a direct effect on attachment ( $\beta = 0.19$ ,  $P$ -value < 0.05). This could imply that family functioning had an indirect effect on attachment through social support ( $\beta = 0.11$ ,  $P$ -value < 0.05). The estimates of the direct, indirect, and total effects of all variables are displayed in Table 4. Finally, the final modified model indicated that family functioning, parenting stress, and social support explained 40 % of variance in the attachment ( $R^2 = 0.40$ ).

## Discussions and Conclusion

The present study examined causal relationships among family functioning, parenting stress, social support, and attachment between adolescent mothers and their own mothers. The adult attachment theory<sup>1</sup> guided the conceptual framework of this study.

The pathway of the final model indicated that family functioning was found to be strongly and positively associated with the attachment, followed by social support and parenting stress. Yet, parenting stress was negatively associated with the attachment. In addition, the indirect effect of family functioning on attachment through social support was significant.

Our hypothesis that family functioning had direct and indirect effects on the attachment was significant and confirmed. Family functioning had direct and indirect effects on attachment between adolescent mothers and their own mothers. This could be interpreted as that adolescent mothers who had greater family functioning would have higher attachment between themselves and their mothers. The family

has an important role in the cognitive and emotional development of each individual. The family also plays a basic role to determine the functions of family members in regards to roles, responsibilities, agreements, support in critical situations, creating accurate relationships, and maintaining trust and responsibility.<sup>33</sup> Adolescent mothers undertake these functions with other family members. Our finding on the association between the attachment and family functioning are congruent with several existing studies.<sup>15,33</sup> Better family functioning such as better problem solving, family cohesion, communication and expressiveness within a family could provide stronger feelings of togetherness, responsiveness, good interpersonal communication, and an increasing interest in relationships with others in the family which is associated with higher levels of attachment.<sup>15,33,34</sup> Conversely, poor family functioning, defined as less cohesion, support and communication, leads to low attachment.<sup>16</sup>

Social support had a direct effect on the attachment. Social support consists of emotional, instrumental, informational, and appraisal support.<sup>35</sup> It influences attachment by increasing feelings of security, the capacity of problem solving, life satisfaction, and caring from attached figures.<sup>19,20</sup> Especially, emotional and instrumental support from attachment figure or family members provides assistance to adolescent mothers and reduces negative consequences outcomes<sup>4</sup> that can improve health outcomes both for adolescent mothers and their infant.<sup>36</sup> Moreover, appraisal and informational support including advice, guidance, suggestions, direction, and information relevant to the situation<sup>35</sup> could help adolescent mothers to manage stressful situation. In fact, mothers of adolescent mothers are the primary resource of social support.<sup>37,38</sup> They are usually the closest and most consistent supporting figure. They also provide emotional, tangible, instrumental, financial, and childcare support to her daughter, the adolescent mother.<sup>39</sup> As support from the mother and family members increase, then positive and secured attachment between the daughter and the mother increases.<sup>40</sup> Our findings were also consistent with the study of Green and colleagues where they suggested that increasing social support tended to increase attachment.<sup>19</sup>

The result showed that parenting stress had a direct negative effect on attachment between adolescent mothers and their own mothers. This could be interpreted that higher parenting stress in adolescent mothers could lead to lower attachment. Perceived parenting stress can inhibit secure

attachments and activate negative or insecure attachments.<sup>18</sup> In other words, a higher degree of parenting stress in mothers may lead to decreased levels of attachment.<sup>19</sup> This was because the majority of adolescent mothers were young, single, and vulnerable. They might have some problems about inadequate funding, and minimal social support.<sup>40,41</sup> The present study was consistent with several studies reporting that high parenting stress was associated with low attachment.<sup>18,41-43</sup>

The present study provides beneficial information for developing an intervention to promote adolescent mothers and their own mothers' attachment by focusing on increasing family functioning and social support, and decreasing parenting stress. Our study is the first investigation to determine the attachment of adolescent mothers and their mothers that is relevant to a transitional phase of the life cycle. Moreover, findings of this study were derived from the attachment in Thai context. Specifically, Thai adolescent mothers live with their mothers in the same household and they also live with their spouse. Generalizability may be limited to other settings or cultures. In addition, most tools used in this study were developed from western samples. However, the back-translation technique was carried out to ensure their content validity and cultural acceptability.

For future research, replication of this study in other populations and contexts could broaden generalization such as adolescent mothers with repeated pregnancy, and the attachment between adolescent mothers and their mothers and fathers separately. A longitudinal study should be further conducted to clarify the development and sustainability of the attachment between adolescent mothers and her own mother.

In conclusion, attachment between adolescent mothers and their own mothers was directly and indirectly influenced by family functioning, social support, and parenting stress. Family functioning was the most influential factor. The findings of this study should be utilized in developing a nursing intervention aiming at promoting positive predictors of family functioning and social support, and decreasing negative predictors of parenting stress. Consequently, attachment between adolescent mothers and their own mothers would be enhanced.

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