



THE UNIVERSITY *of* EDINBURGH

Edinburgh Research Explorer

Parental bonding and adolescents' depressive and anxious symptoms in Pakistan

Citation for published version:

Khalid, A, Qadir, F, Chan, W & Schwannauer, M 2018, 'Parental bonding and adolescents' depressive and anxious symptoms in Pakistan', *Journal of Affective Disorders (JAD)*, vol. 228, pp. 60-67.
<https://doi.org/10.1016/j.jad.2017.11.050>

Digital Object Identifier (DOI):

[10.1016/j.jad.2017.11.050](https://doi.org/10.1016/j.jad.2017.11.050)

Link:

[Link to publication record in Edinburgh Research Explorer](#)

Document Version:

Peer reviewed version

Published In:

Journal of Affective Disorders (JAD)

General rights

Copyright for the publications made accessible via the Edinburgh Research Explorer is retained by the author(s) and / or other copyright owners and it is a condition of accessing these publications that users recognise and abide by the legal requirements associated with these rights.

Take down policy

The University of Edinburgh has made every reasonable effort to ensure that Edinburgh Research Explorer content complies with UK legislation. If you believe that the public display of this file breaches copyright please contact openaccess@ed.ac.uk providing details, and we will remove access to the work immediately and investigate your claim.



Parental Bonding and Adolescents' Depressive and Anxious Symptoms in Pakistan

Amna Khalid

PhD Clinical Psychology, School of Health in Social Science, University of Edinburgh,
Edinburgh EH8 9AG, United Kingdom.

Department of Behavioral Sciences, Fatima Jinnah Women University, The Mall, Rawalpindi,
Pakistan. Ph: +92-51-9270050-57, Ext: 204. Email: khalid.a@fjwu.edu.pk

Farah Qadir

Clinical Psychologist, Quaid-e-Azam International Hospital, Rawalpindi, Pakistan. Ph: +92-51-
9270050-57, Ext: 229. Email: drfarahqadir@yahoo.co.uk

Stella W. Y. Chan

Chancellor's Fellow - Lecturer, Section of Clinical Psychology, School of Health in Social
Science, University of Edinburgh, Edinburgh EH8 9AG, United Kingdom. Ph: +44 (0) 131 651
3935. Email: stella.chan@ed.ac.uk

Matthias Schwannauer

Professor of Clinical Psychology - Head of Clinical & Health Psychology, School of Health in
Social Sciences, University of Edinburgh, Edinburgh, United Kingdom. Ph: +44 (0) 131 651
3954. Email: m.schwannauer@ed.ac.uk

Abstract

Introduction

A quantitative cross sectional study was carried out to investigate the role of parental bonding in relation to depressive and anxious symptoms among secondary school adolescents in Pakistan. The study also aimed to investigate the construct validity of the parental bonding inventory in the cultural context of Pakistan.

Methods

The sample consisted of 1124 adolescents recruited from eight secondary schools in Rawalpindi, Pakistan. Urdu translated versions of Parental Bonding Instrument (Qadir et al., 2005) and Hospital Anxiety and Depression Scales (Mumford et al., 1991) were administered in classroom settings. Confirmatory factor analysis (CFA) and Structural Equation Modeling (SEM) were used to analyze the data.

Results

Results from the CFA of the Urdu version of the Parental Bonding Instrument supported a modified version of the three factor model proposed by Kendler (1996) consisting of warmth, protectiveness and authoritarianism. Based on SEM, we found a significant relationship between low parental warmth and depression symptoms among adolescents, whereas maternal protectiveness was a significant predictor for anxiety. Parental authoritarianism was not a significant predictor for depression or anxiety.

Discussion

Findings of this study indicate that parental bonding is a central construct within a developmental framework in the cultural context of Pakistan, and is important when considering long-term

psychosocial functioning of individuals. It should be explored further in clinical populations of Pakistani adolescents to ascertain significance of these constructs for interventions.

Keywords Parental bonding, Pakistan, adolescents, depression, anxiety, well-being, Structural Equation Modeling

Introduction

Parent-child bonding is crucial in adolescents as they strive towards autonomy (Moretti & Peled, 2004). This bonding is an individual's interpretation of their relationship with their parents (Cassidy, 2008). There is robust evidence suggesting that parental bonding plays a significant role in predicting adolescents' psychosocial functioning (Doyle & Moretti, 2000; Doyle, Moretti, Brendgen, & Bukowski, 2002; Moretti & Holland, 2003).

The Parental Bonding Instrument (PBI) is a widely used self report measure of parental bonding developed by Parker, Tupling and Brown (1979) to capture the parenting behaviors in two dimensions consisting of *care* (warmth, emotional closeness, and empathy) and *overprotection* (control, intrusion and the level of independence and autonomy). However, the two factor structure of the instrument showed inconsistent findings across different studies demonstrating a superior fit of a three-factor structure (Cubis, Lewin, & Dawes, 1989; Gomez-Beneyto, Tomas, Aguilar, & Leal, 1993; Kendler, Sham, & MacLean, 1997; Murphy, Brewin, & Silka, 1997). Kendler (1996) also proposed a three factor solution for the 16 item version of PBI comprising of *warmth*, *protectiveness* and *authoritarianism* which has demonstrated a good fit in three subsequent confirmatory factor analytic studies (Sato et al., 1999; Terra et al., 2009; Uji, Tanaka, Shono, & Kitamura, 2006). In a Japanese sample, Uji et al. (2006) found support for a three factor model using exploratory factor analysis but preferred a four factor structure consisting of *care*, *indifference*, *overprotection* and *autonomy* based on the superior fit of the four factor model in confirmatory factor analysis. These factor analyses have shown inconclusive results in the factor structure of PBI across and within cultures, particularly for the control *dimension*. This suggests that perceptions of parenting behaviors differ in different populations and may have differential effect on mental health of adolescents. Assuming the factor structure

to be applicable across different cultures can significantly affect the authenticity of the study outcomes therefore, the empirical question on the applicability of a construct needs to be investigated rather than assumed (Cheung & Leung, 1998). Therefore in order to explore the effect of parental bonding on mental health it is pivotal to examine the validity of the construct in the culture.

Irrespective of the lack of consensus regarding the dimensions of parental bonding there is a general consensus in the literature that optimal parenting lowers the risk of developing psychopathology (Martínez, García, Musitu, & Yubero, 2012; Adam, Keller, West, Larose, & Goszer, 1994; Canetti, Bachar, Galili-Weisstub, De-Nour, & Shalev, 1997; Rey, 1995; Dale, Power, Kane, Stewart, & Murray, 2010; Rikhye et al., 2008). Warmth from parents as measured by PBI is associated with lower levels whereas parental control is associated with higher levels of depressive and anxious symptoms among adolescents in cross-sectional (Reitz, Dekovic, & Meijer, 2006) and longitudinal studies (Raudino, Fergusson, & Horwood, 2013). There are however, some limitations of the current literature. Firstly, previous studies mainly focused on maternal bonding. Secondly, most of the studies employed samples that were predominantly from Western cultures. Relatively fewer studies have examined the relationship between perceptions of parenting and adolescent psychopathology across different ethnic and cultural groups. Distinct differences have been observed between collectivist and individualist cultures (Papps, Walker, Trimboli, & Trimboli, 1995). Studies indicated the collectivist cultures to report non-optimal parental bonding as measured by Western instruments (Dinh, Sarason, & Sarason, 1994). In some of these cultures, parental control did not predict depression, whereas separateness from parents did (Aydin & Oztutuncu, 2001) in others strong parental control and warmth seemed to coexist (Dekovic, Wissink, & Meijer, 2004). Studies examining differences in

parenting across Caucasian Americans and Asian American culture show that Caucasian American parents emphasize on their child's ability to build a "sense of self" while Asian American parents stress the importance of developing a sense of connectedness with their families (Wang & Leichtman, 2000). Asian culture has been reported to support over-protection and strictness (Chung, 1997) which could have a positive function within the culture. These studies highlight the need to explore these aspects further to enhance our understanding of parenting and mental health.

Islamic Republic of Pakistan is an Eastern collectivist society (Routamaa & Hautala, 2008). Individual and socio-political lives of the people of Pakistan are heavily directed by the traditional Islamic values. Pakistani society values parental reverence, emphasis is placed on conforming to the rules and societal norms to sustain authority of the parents (Fuligni, Tseng, & Lam, 1999). Considering these socio-familial dynamics it is inevitable that many aspects of an adolescent's life in Pakistan would differ from their counterparts in the West. However, much of our understanding of psychosocial development in adolescents and their mental health outcomes are based on Western theorization of these concepts. It is unclear whether the literature developed through theory and research in the Western cultures would also be applicable for the Pakistani adolescent population.

To explore this line of research further the aims of the present study are two-fold: First, it aimed to examine the construct of parental bonding among Pakistani adolescents by carrying out Confirmatory Factor Analysis of the 16 item version of PBI; Second, it aimed to use Structural Equation Modeling (SEM) to test the hypothesis that warmth from mother and father will be negatively associated with symptoms of depression and anxiety in Pakistani adolescents whereas protectiveness and authoritarianism will be positively correlated with these symptoms.

Methods

Participants

Participants were recruited from 8 secondary schools in Rawalpindi, Pakistan. 1124 adolescents studying in grades 6th through 12th were recruited. The sample included 621 (55.25%) boys and 503 (44.75%) girls between the ages of 11 and 18 (mean = 14.2, SD = 1.75). Participation was voluntary and written permission was obtained from the local government educational representatives, school representatives and participants. Both University of Edinburgh, UK and Fatima Jinnah Women University, Pakistan granted ethical approval for this study.

Measures

Parental bonding instrument (PBI 16 item; Kendler, 1996) is a self-report measure of perceived parental behaviors adapted from the 25 item original version (Parker, Tupling & Brown, 1979). It has three proposed dimensions; warmth, protectiveness and authoritarianism. Items are rated on a four point likert scale ranging between 0 (very like) to 3 (very unlike) with higher score indicating the parenting attribute to be stronger. PBI is considered to be the most reliable measure of parent-child bond in both clinical and non-clinical settings (Enns, Cox, & Clara, 2002). The 25 item PBI has been translated and administered among adult Pakistani female sample (Qadir et al., 2005), the present study used the 16 items of the same translated version. Perceptions of bonding with mothers and fathers were measured separately. The Cronbach's alpha for Warmth was 0.57 for the father and 0.61 for the mother, for Protectiveness the alpha was 0.48 and 0.50 and for Authoritarianism alpha for the father was 0.67 while for the mother it was 0.75.

Hospital anxiety and depression scale (HADS; Zigmond & Snaith, 1983). It is a screening tool indicating likelihood of depression and anxiety comprising of 7 items for measuring each.

Although the scale was initially designed for use with adults but has also shown good psychometric properties with adolescents (White, Leach, Sims, Atkinson, & Cottrell, 1999). The scale is scored on a four point likert scale ranging between 0 to 3. White and his colleagues (1999) proposed a score of 7-9 for adolescents' possible depression and a score of 10 and above indicating probable depression. For anxiety sub-scale they proposed a score of 9 through 11 indicating the probable presence of anxiety whereas a score of 12 and above suggested the presence of anxiety. Since HADS is not a diagnostic tool therefore, the scores obtained on this measure only reflect depressive and anxious symptomatology. The present study used the Urdu translated version of HADS by Mumford et al. (1991). The Cronbach's alpha reliability estimate for depression subscale was 0.54 and for anxiety it was 0.67.

Procedure

Out of a list of secondary schools acquired from the Educational Directorate Islamabad, eight schools were selected using the Active Data Software. The questionnaires were administered in class during school times. Prior to administration information sheets and consent forms were distributed to the participants. Participants were informed that the information provided will be kept confidential and that they have the right to withdraw at any point.

Data Analysis

Preliminary analysis was carried out in the Statistical Package for Social Sciences version 19 (SPSS). Mplus Version 7 (Muthen, & Muthen, 1998-2012) was used for conducting the Confirmatory Factor Analysis CFA of the scale as well as building and testing the SEM model.

Some of the variables on PBI were non-normally distributed therefore non-parametric tests are reported. Robust maximum likelihood (MLM) estimator developed for non-normally distributed data for SEM was used. The following indices were selected to assess goodness-of-fit

of the models: The Root-Mean-Square-Error-of-Approximation (RMSEA; best if less than .06), the Comparative Fit Index (CFI: best if close to .95 or greater), Tucker-Lewis Fit Index (TLI; Tucker & Lewis, 1973) (best if 0.90 or above) and the Standardized-Root-Mean-Square-Residual (SRMR; best if less than .08). A non-significant value of χ^2 is required as an indicator of the goodness of fit of the model. The χ^2 is however highly affected by the sample size such that larger sample size would increase χ^2 leading to an erroneous rejection of the model (Kline, 2005). Therefore, the present study used additional fit indices and Satorra-Bentler's Maximum Likelihood Mean Adjusted Chi Square χ^2_{SB} (1988). Each indicator was fixed to load on the factor it was hypothesized to measure. In Mplus, residual terms for all indicators are not correlated by default, in this study they were not tampered with. The modifications to the models were made following the guidelines proposed by Byrne (1989). The modifications were made based on the modification indices only when they were theoretically justifiable.

Results

Preliminary findings

The mean anxiety and depression scores of the participants was 7.91 (S.D = 4.0) and 6.05 (S.D = 3.31) respectively. Participants' mean scores on warmth were higher than protective or authoritarian. Warmth was negatively associated with protectiveness and authoritarianism for both parents (see Table 1). There was a strong correlation between perceptions of warmth, protectiveness and authoritarianism from father and mother. Adolescents scoring high on warmth were less anxious and depressed. Participants with high authoritarianism scores reported more anxious and depressive symptoms. Whereas, participants' scores on protectiveness were positively associated with anxiety (see Table 1).

Table 1 also reports results of differences in perceptions of parenting behaviors between boys and girls. Mann Whitney U test was carried out. The results show that the perceptions of parenting behaviors do not differ across gender except for protectiveness from mother and father where girls scored higher than boys, however, the effect size for this association was very small.

INSERT TABLE 1

Confirmatory Factor Analysis of Parental Bonding Instrument

Three models were tested for mother and father forms separately: two factors Parker's model (Parker et al., 1979), three factors Kendler's model (Kendler, 1996) and four factors Uji's model (Uji et al., 2006). Fit indices of these models are presented in Table 2

INSERT TABLE 2

The three factor Kendler's model was modified based on the modification indices to generate an optimal fit. During model modification item 23 (*Is overprotective of me*) was loaded on warmth instead of protectiveness and item 18 (*Does not talk with me very much*) was cross-loaded on both warmth and protectiveness. Item 4 (*Seemed emotionally cold to me*) was dropped from the model due to insignificant R^2 . The final model for *mother* with significant standardized coefficients is provided in Figure 1. Same process was repeated for the father form (See Figure 2). Chi square for model comparison using χ^2_{SB} shows that the modified model has a significantly better fit to the data as compared to the previously proposed models (See Table 2). Items retained in the final models are provided in Table 3 in the appendix.

INSERT FIGURE 1, & 2

Structure equation model of parental bonding, depression and anxiety

The SEM Model (Figure 3) tested direct effects of maternal and paternal bonding on depressive and anxious symptoms. Depression and anxiety scores were added as measured variables. Based on the CFA models, the modified three factor models for both *mother and father* were analyzed as predictors of depression and anxiety. The SEM Model had 6 latent variables and 32 dependent variables. PBI was used to assess parenting perceptions for both mother and father therefore, it was hypothesized that the residuals will correlate across the indicators of mother and father bonding. Depression and anxiety were also modeled to correlate with each other.

The SEM Model had 139 free parameters. The hypothesized model demonstrated a good fit of the data, MLM χ^2 (421, N= 1124) = 876.75*, $p < .001$; CFI = 0.95; RMSEA (90% CI) = 0.031 (0.028 – 0.034), SRMR= 0.049. Parameter estimates of the measurement model were all significant; $p < .001$.

Beta coefficients show that paternal and maternal warmth predict a decrease in depressive symptomatology. No effect was observed for parental authoritarianism and protectiveness on depression. Maternal protectiveness predicted increase in the participant's anxiety scores. Whereas warmth, authoritarianism and paternal protectiveness were not significantly associated with the participants anxiety scores. For standardized beta coefficients see Figure 3.

Discussion

To our knowledge this is the first study exploring the factor structure of the 16 item Urdu version of PBI in Pakistani adolescents. The results from our confirmatory factor analysis corroborate a modified version of Kendler's (1996) three-factor model. Whereas Parker's two factor model (1979) did not adequately capture the Pakistani adolescent's perceptions of parenting. This supports previous literature proposing that overprotection dimension should be further divided

into two factors (Cubis et al., 1989; Gomez-Beneyto et al., 1993; Kendler, 1996; Kendler et al., 1997; Murphy et al., 1997; Sato et al., 1999). It is not surprising that none of the *a priori* models fitted the data without modification as parenting is a culturally loaded phenomenon. PBI was originally developed to capture the parenting practices of Western cultures and therefore reflects characteristics and values of those cultures. The differences in Western and Eastern cultures prevail, this perhaps is a strong reason why variation in factor structures across studies and cultures has been reported. Uji et al. (2006) proposed a four factor model which came out to be superior in an Eastern culture. The four factor model therefore, should be explored further in the Pakistani adolescent sample using the full version of PBI. In this study, the four factor model was rejected on the basis that there were only two items in *indifference* factor out of which factor loading of one item was insignificant. Therefore, it is possible that when the full version of PBI is used the four factor model could be a better fit.

In the present study, reliability estimates of PBI for both mother and father were lower than the ones reported in the previous literature (Martin, Bergen, Roeger, & Allison, 2004). A plausible explanation for this could be the variation in loadings of some of the items or the fact that there were fewer number of items in each subscale (Tavakol & Dennick, 2011). We therefore, recommend generalizing the results of the study with caution. The reason for low alpha could also be the cultural sensitivity of the items and the construct itself. The linguistic and translation glitches due to cultural uniqueness has been highlighted in previous studies which used the same instrument (Qadir et al., 2005; Chao, 1994). The results of this study highlight the significance of conceptualizing Pakistani adolescents' experience of their bond with their parents and identify discreet parenting attributes. Future research needs to explore the culture specific interpretation of this construct particularly with reference to children and adolescents.

With the exception of protectiveness from mother and father by the female participants no gender differential was found in the present study. Previous research has indicated similar findings where perceptions of protectiveness have varied across gender with females reporting more protectiveness from both mother and father (Seganfredo et al., 2009). The results reflect the cultural milieu of Pakistan where females are to be sheltered and guarded to the extent of overprotection. The effects of protectiveness on anxiety and depression could be confounded by the fact that girls perceive their parents to be more protective as compared to boys. This can affect the association between protectiveness and mental health in boys. Therefore, in future the effects of gender and other potential demographic factors should be ideally controlled for when examining the relationship between parenting and mental health.

In this study, depressive symptoms were only significantly predicted by parental warmth but not by parental authoritarianism and protectiveness. In previous research depression has been associated more strongly with parental warmth than parental control (Greenberger & Chen, 1996; Rapee, 1997; Rohner & Britner, 2000; McLeod, Weisz & Wood, 2007). This vulnerability to depression may develop through the child's dysfunctional cognitions which they develop when they do not receive optimal parental care (Zafiropoulou & Avagianou, 2014).

A robust association has been established in Western (Cunha, Soares & Pinto-Gouveia, 2008; Raudino, Fergusson, & Horwood, 2013) as well as in Asian (Peng, Lam, & Jin, 2011) samples between adolescents' high perception of protectiveness, authoritarianism and lower perceptions of parental warmth predicting anxiety. The SEM model in the present study indicates that protectiveness from mother was a significant predictor of anxiety among Pakistani adolescents. A meta-analysis by McLeod, Wood, and Weisz (2007) found that parental control dimension has a stronger association with anxiety as compared to the warmth dimension.

Furthermore, Wood et al. (2003) in their meta-analysis also found inconsistent support for association between parenting characterized by warmth and adolescents' anxiety. Research suggests that when parents exert excessive control over children, children may not develop the essential sense of self sufficiency which induces feelings of vulnerability to threat and anxiety (Chorpita & Barlow, 1998; Wood, 2006). The results that paternal parenting had no effects on anxiety sheds light upon the much debated similarities and differences between maternal and paternal parenting roles in Eastern samples. Childrearing experience may appear to be the same across cultures, but it may have different impact on children's development because of the distinct meanings associated with these behaviors in different cultures (Bornstein, 1995). Generally, the father is considered to be more stern and controlling as compared to the mother who are expected to be kind and loving. This distinction is more stark in the Pakistani culture. This could be a possible reason for participants feeling more anxious if they perceived their mother to be controlling since it is not considered a cultural parenting norm. Fathers are also not expected to take the lead in parenting, instead the mother is responsible to look after the children. Studies from Western cultures exploring paternal parenting in relation to adolescents' mental health outcomes are rare. Few studies show paternal control as a significant predictor of child anxiety (Van der Bruggen et al., 2008) but the effect sizes are small; others did not find a significant effect of paternal control (Hudson & Rapee, 2002). Thus, there is evidence that maternal parenting is a stronger predictor of child anxiety, but this evidence is scarce and inconclusive. Although we found significant association between parental warmth and depression and maternal protectiveness and anxiety, the effect sizes of these associations were small. This was in line with a meta-analysis, which found that parenting accounts for only 4% variance in anxiety and care accounts for only 8% of variance in depression among children and

adolescents (McLeod, Wood, & Weisz, 2007). This seems to contest the assumption that parenting is critical for psychological well-being of children, however, it should be taken into consideration that there are a number of factors which could have moderated the effect of parenting on the adolescents' mental health such as the use of self-report measures and single informant design. It should also be noted that these effect sizes reflect the direct effects parenting has on mental health it does not take into account the indirect effects parenting would have through other significant factors such as perceived social support, emotion regulation etc (Caspi et al., 2003; Wilhelm et al., 2006). This implies that mental health problems in children and adolescents can be a result of a complex set of interactions between different factors. Furthermore, the effects of parenting may seem small but it could potentially play a catalytic role among a subgroup of children who are vulnerable to depression and anxiety.

One can debate that low warmth and high protectiveness could be a manifestation of parental depression or anxiety rather than their parenting style. Research proves that PBI has been established as a measure of parenting style rather than a measure of anxiety or depressive symptoms of the parents which is established by the fact that parental protectiveness is seen in both anxious and healthy parents (Parker, 1979). It is however seen that parents with mental disorder show less care to their children (e.g. Arrindell et al., 1983; Arrindell et al., 1989; Parker, 1979). In case of overprotection, results are inconsistent where some studies report that parents with anxiety disorders are more over protective of their children as compared to healthy controls (Wiborg & Dahl, 1997) while other studies do not provide support to this argument (Arrindell et al., 1983; Arrindell et al., 1989; Parker, 1979). Since there was no control group in this study and parents of the adolescents were not screened for mental illnesses; it cannot be ruled out that the maternal over protection reported by the participants is not because of the mother's anxiety. This

aspect needs to be further examined in Pakistani sample.

Overall the results from this Pakistani adolescent sample provides support to the proposal that parental warmth is a key factor in designing prevention and intervention programs for adolescents' depression and the control dimension is more relevant to anxiety disorders.

Limitations

The present study has used a screening tool for measuring depressive and anxious symptomatology and does not claim to diagnose clinical depression and anxiety among Pakistani adolescents therefore; the generalizability to clinical samples is limited. Furthermore, parenting behaviors have been measured using a self-report measure completed by the adolescents. PBI is recognized as a robust tool for measuring unbiased parental behaviors reported retrospectively by the offspring and has shown stability in results across multiple informants (Murphy, Wickramaratne, & Weissman, 2010). However, using parental reports to cross-validate the information received could have increased the reliability and validity of the findings. Finally, the cross-sectional design of this study does not establish causality.

Conclusion

The overall findings of the present study provide support to the proposal that parenting perceptions should be an integral part of assessment and intervention for adolescents' health and well-being in Pakistan. This study provides support for the three factor model of PBI. It provides a baseline data for future research in the field of adolescent's mental health and the significance of the parent child dyad. A better understanding of parental bonding in different cultures can help understand, address and prevent potential psychopathology not just in this relationship but also in other interpersonal contacts. Educating parents about culturally appropriate optimal parenting practices will help enhance children's future wellbeing.

References

- Adam, K. S., Keller, A., West, M., Larose, S., & Goszer, L. B. (1994). Parental representation in suicidal adolescents: A controlled study. *Australian and New Zealand Journal of Psychiatry*, 28, 418–425.
- Arrindell, W. A., Emmelkamp, P. M., Monsma, A., & Brilman, E. (1983). The role of perceived parental rearing practices in the aetiology of phobic disorders: a controlled study. *The British Journal of Psychiatry*, 143(2), 183-187.
- Arrindell, W. A., Kwee, M. G., Methorst, G. J., Van der Ende, J., Pol, E., & Moritz, B. J. (1989). Perceived parental rearing styles of agoraphobic and socially phobic in-patients. *The British Journal of Psychiatry*, 155(4), 526-535.
- Aydin, B., & Oztutuncu, F. (2001). Examination of adolescents' negative thoughts, depressive mood, and family environment. *Adolescence*, 36(141), 77-83.
- Bornstein, M. H. (1995). Form and function: Implications for studies of culture and human development. *Culture & Psychology*, 1(1), 123-137.
- Byrne, B. M. (2012). *A primer of LISREL: Basic applications and programming for confirmatory factor analytic models*. Springer Science & Business Media.
- Canetti, L., Bachar, E., Galili-Weisstub, E., De-Nour, A. K., & Shalev, A. Y. (1997). Parental bonding and mental health in adolescence. *Adolescence*, 32, 381–394.
- Caspi, A., Sugden, K., & Moffitt, T. E. (2003). Influence of life stress on depression: Moderation by a polymorphism in the 5-HTT gene. *Science*, 301, 386–389.
- Cassidy, J. (2008). The nature of the child's ties. In J. Cassidy & P.R. Shaver (Eds.). *Handbook of Attachment: Theory, Research, and Clinical Applications* (pp. 3-22). New York: Guilford Press.

- Chang, L., Schwartz, D., Dodge, K. A., & McBride-Chang, C. (2003). Harsh parenting in relation to child emotion regulation and aggression. *Journal of Family Psychology, 17*(4), 598.
- Chao, R. K. (1994). Beyond parental control and authoritarian parenting style: Understanding Chinese parenting through the cultural notion of training. *Child Development, 65*(4), 1111-1119.
- Cheung, F. M., & Leung, K. (1998). Indigenous Personality Measures Chinese Examples. *Journal of Cross-Cultural Psychology, 29*(1), 233-248.
- Chorpita, B. F., & Barlow, D. H. (1998). The development of anxiety: the role of control in the early environment. *Psychological bulletin, 124*(1), 3.
- Chung, W. (1997). Asian American children. In E. Lee (Ed.), *Working with Asian Americans: A guide for clinicians* (pp. 165-174). New York: Guilford.
- Cubis J, Lewin T, & Dawes F (1989), Australian adolescents' perceptions of their parents. *Australian and New Zealand Journal of Psychiatry, 23*, 35-47.
- Cunha, M., Soares, I., & Pinto-Gouveia, J. (2008). The role of individual temperament, family and peers in social anxiety disorder: A controlled study. *International Journal of Clinical Health & Psychology, 8*(3), 631-655.
- Dale, R., Power, K., Kane, S., Stewart, A. M., & Murray, L. (2010). The role of parental bonding and early maladaptive schemas in the risk of suicidal behavior repetition. *Archives of Suicide Research, 14*(4), 311-328.
- Dekovic, M., Wissink, I., & Meijer, A. M. (2004). The role of family and peer relations in adolescent antisocial behaviour: comparison of four ethnic groups. *Journal of Adolescence, 27*(5), 497 - 514.

- Dinh, K. T., Sarason, B. R., & Sarason, I. G. (1994). Parent-child relationships in Vietnamese immigrant families. *Journal of Family Psychology*, 8(4), 471-488.
- Doyle, A. B., Moretti, M. M., & Canada. Health Promotion and Programs Branch. Childhood and Youth Division. (2000). *Attachment to parents and adjustment in adolescence: Literature review and policy implications*. Childhood and Youth Division, Health Canada.
- Doyle, A. B., Moretti, M. M., Brendgen, M., & Bukowski, W. (2002). Parent child relationships and adjustment in adolescence: Findings from the HSBC and NLSCY Cycle 2 Studies. CAT number 032ss. H5219-00CYHS. Ottawa: Health Canada. *Child and Family Division*.
- Gomez-Beneyto, M., Pedros, A., Tomas, A., Aguilar, K., & Leal, C. (1993). Psychometric properties of the parental bonding instrument in a Spanish sample. *Social Psychiatry and Psychiatric Epidemiology*, 28(5), 252-255.
- Enns, M. W., Cox, B. J., & Clara, I. (2002). Parental bonding and adult psychopathology: results from the US National Comorbidity Survey. *Psychological Medicine*, 32(6), 997-1008.
- Fulgini, A. J., Tseng, V., & Lam, M. (1999). Attitudes toward family obligations among American adolescents with Asian, Latin American, and European backgrounds. *Child Development*, 70(4), 1030-1044.
- Greenberger, E., & Chen, C. (1996). Perceived family relationships and depressed mood in early and late adolescence: A comparison of European and Asian Americans. *Developmental Psychology*, 32(4), 707-716.
- Hudson, J. L., & Rapee, R. M. (2002). Parent-child interactions in clinically anxious children and their siblings. *Journal of Clinical Child and Adolescent Psychology*, 31(4), 548-555.
- Kendler, K. S. (1996). Parenting: A genetic-epidemiologic perspective. *American Journal of Psychiatry*, 153(1), 11-20.

- Kendler, K. S., Sham, P. C., & MacLean, C. J. (1997). The determinants of parenting: an epidemiological, multi-informant, retrospective study. *Psychological medicine*, 27(03), 549-563.
- Martin, G., Bergen, H. A., Roeger, L., & Allison, S. (2004). Depression in young adolescents: Investigations using 2 and 3 factor versions of the Parental Bonding Instrument. *The Journal of Nervous and Mental disease*, 192(10), 650-657.
- McLeod, B. D., Wood, J. J., & Weisz, J. R. (2007). Examining the association between parenting and childhood anxiety: A meta-analysis. *Clinical Psychology Review*, 27(2), 155-172.
- Moretti, M. M., & Holland, R. (2003). Navigating the journey of adolescence: Parental attachment and the self from a systemic perspective. *Clinical Applications of Attachment Theory* (pp. 41-56). New York: Guildford
- Moretti, M. M., & Peled, M. (2004). Adolescent-parent attachment: Bonds that support healthy development. *Paediatrics & Child Health*, 9(8), 551-555.
- Mumford, D. B., Tareen, I. A. K., Bajwa, M. A. Z., Bhatti, M. R., & Karim, R. (1991). The translation and evaluation of an Urdu version of the Hospital Anxiety and Depression Scale. *Acta Psychiatrica Scandinavica*, 83(2), 81-85.
- Murphy, E., Brewin, C. R., & Silka, L. (1997). The assessment of parenting using the Parental Bonding Instrument: two or three factors?. *Psychological medicine*, 27(02), 333-342.
- Muthen, L. K., & Muthen, B. O. (1998-2012). *Mplus User's Guide*. Seventh Edition. Los Angeles, CA: Muthen & Muthen.
- Murphy, E., Brewin, C. R., & Silka, L. (1997). The assessment of parenting using the Parental Bonding Instrument: two or three factors?. *Psychological medicine*, 27(02), 333-342.

- Papps, F., Walker, M., Trimboli, A., & Trimboli, C. (1995). Parental discipline in Anglo, Greek, Lebanese, and Vietnamese cultures. *Journal of Cross-Cultural Psychology*, 26(1), 49-64.
- Parker, G. (1979). Reported parental characteristics of agoraphobics and social phobics. *The British Journal of Psychiatry*, 135(6), 555-560.
- Parker, G. (1983). *Parental overprotection: A risk factor in psychosocial development*. New York: Grune & Stratton.
- Parker, G., Tupling, H., & Brown, L. B. (1979). A parental bonding instrument. *British Journal of Medical Psychology*, 52(1), 1-10.
- Peng, Z. W., Lam, L. T., & Jin, J. (2011). Factors associated with social interaction anxiety among Chinese adolescents. *East Asian archives of psychiatry: Official Journal of the Hong Kong College of Psychiatrists*, 21(4), 135.
- Qadir, F., Stewart, R., Khan, M., & Prince, M. (2005). The validity of the Parental Bonding Instrument as a measure of maternal bonding among young Pakistani women. *Social Psychiatry and Psychiatric Epidemiology*, 40, 276-282.
- Rapee, R. M. (1997). Potential role of childrearing practices in the development of anxiety and depression. *Clinical Psychology Review*, 17(1), 47-67.
- Raudino, A., Fergusson, D. M., & Horwood, L. J. (2013). The quality of parent/child relationships in adolescence is associated with poor adult psychosocial adjustment. *Journal of Adolescence*. 36, 331–340.
- Reitz, E., Dekovic, M., & Meijer, A. M. (2006). Relations between parenting and externalizing and internalizing problem behaviour in early adolescence: Child behaviour as moderator and predictor. *Journal of Adolescence*, 29(3), 419-436.

- Rey, J. M. (1995). Perceptions of poor maternal-care are associated with adolescent depression. *Journal of Affective Disorders, 34*, 95–100.
- Rikhye, K., Tyrka, A. R., Kelly, M. M., Gagne, G. G., Mello, A. F., Mello, M. F., ... & Carpenter, L. L. (2008). Interplay between childhood maltreatment, parental bonding, and gender effects: Impact on quality of life. *Child abuse & neglect, 32*(1), 19-34.
- Rohner, R. P., & Britner, P. A. (2002). Worldwide mental health correlates of parental acceptance-rejection: Review of cross-cultural and intracultural evidence. *Cross-Cultural Research, 36*, 16-47.
- Routamaa, V., & Hautala, T. M. (2008). Understanding Cultural Differences-The Values in a Cross-Cultural Context. *International Review of Business Research Papers, 4*(5), 129-137.
- Sagan, A., & Pawełek, B. (2014). Single-Indicator SEM with Measurement Error: Case of Klein I Model. In *Advances in Latent Variables* (pp. 171-183). Springer International Publishing.
- Sato, T., Narita, T., Hirano, S., Kusunoki, K., Sakado, K., & Uehara, T. (1999). Confirmatory factor analysis of the Parental Bonding Instrument in a Japanese population. *Psychological Medicine, 29*(1), 127-133.
- Seganfredo, A. C. G., Torres, M., Salum, G. A., Blaya, C., Acosta, J., Eizirik, C., & Manfro, G. G. (2009). Gender differences in the associations between childhood trauma and parental bonding in panic disorder. *Revista Brasileira de Psiquiatria, 31*(4), 314-321.
- Terra, L., Hauck, S., Fillipon, A. P., Sanchez, P., Hirakata, V., Schestatsky, S., & Ceitlin, L. H. (2009). Confirmatory factor analysis of the Parental Bonding Instrument in a Brazilian female population. *Australasian Psychiatry, 43*(4), 348-354.
- Tucker, L. R., & Lewis, C. (1973). A reliability coefficient for maximum likelihood factor analysis. *Psychometrika, 38*, 1–10.

- Uji, M., Tanaka, N., Shono, M., & Kitamura, T. (2006). Factorial structure of the parental bonding instrument (PBI) in Japan: A study of cultural, developmental, and gender influences. *Child Psychiatry & Human Development, 37*(2), 115-132.
- van der Bruggen, C. O., Stams, G. J. J. M., & Bögels, S. M. (2008). Research review: The relation between child and parent anxiety and parental control: a meta-analytic review. *Journal of Child Psychology and Psychiatry, 49*, 1257-1269
- Wang, Q., & Leichtman, M.D. (2000). Same beginnings, different stories: A comparison of American and Chinese children's narratives. *Child Development, 71*(5), 1329–1346.
- White, D., Leach, C., Sims, R., Atkinson, M., & Cottrell, D. (1999). Validation of the Hospital Anxiety and Depression Scale for use with adolescents. *The British Journal of Psychiatry, 175*(5), 452-454.
- Wiborg, I. M., & Dahl, A. A. (1997). The recollection of parental rearing styles in patients with panic disorder. *Acta Psychiatrica Scandinavica, 96*(1), 58-63.
- Wilhelm, K., Mitchell, P. B., & Niven, H. (2006). Life events, first depression onset and the serotonin transporter gene. *British Journal of Psychiatry, 188*, 210–215.
- Wood, J. J. (2006). Parental intrusiveness and children's separation anxiety in a clinical sample. *Child Psychiatry & Human Development, 37*, 73-87.
- Wood, J. J., McLeod, B. D., Sigman, M., Hwang, W. C., & Chu, B. C. (2003). Parenting and childhood anxiety: Theory, empirical findings, and future directions. *Journal of Child Psychology and Psychiatry, 44*(1), 134-151.
- Zigmond, A. S., & Snaith, R. P. (1983). The hospital anxiety and depression scale. *Acta Psychiatrica Scandinavica, 67*(6), 361-370.

Table 1

Intercorrelations between PBI mother/father, depression and anxiety scores and comparison of PBI across gender (n = 1124)

	1	2	3	4	5	6	7	8
1. Father warmth	1.00	-0.27**	-0.08**	0.47**	-0.17**	-0.08**	-0.16**	-0.25**
2. Father authoritarianism		1.00	-0.09**	-0.13**	0.73**	-0.14**	0.11**	0.10**
3. Father protectiveness			1.00	-0.12**	-0.08**	0.64**	0.10**	0.01
4. Mother warmth				1.00	-0.15**	-0.14**	-0.23**	-0.29**
5. Mother authoritarianism					1.00	-0.12**	0.10**	0.08**
6. Mother protectiveness						1.00	0.15**	0.02
7. Anxiety							1.00	0.33**
8. Depression								1.00
Mean Rank								
boys	547.68	551.16	540.49	557.48	561.20	530.85	-	-
girls	580.80	576.50	589.68	568.69	564.10	601.57	-	-
<i>U</i>	146975.5	149140.5	142511.5**	153066	155375.5	136529**		
<i>r</i>	-0.05	-0.04	-0.07	-0.01	-0.004	0.11		

** Correlation significant at 0.01

* Correlation significant at 0.05

Table 2

Fit indices from CFA of PBI mother and father scale

	Parker model		Kendler model		Uji model*		Modified model	
	Mother	Father	Mother	Father	Mother	Father	Mother	Father
χ^2	839.411	782.497	627.164	586.408	408.337	517.898	260.446	330.958
df	103	103	101	101	98	98	86	86
p	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CFI	0.83	0.80	0.83	0.80	0.93	0.89	0.94	0.90
TLI	0.80	0.77	0.80	0.77	0.92	0.85	0.93	0.88
SRMR	0.083	0.073	0.083	0.073	0.052	0.049	0.049	0.050
RMSEA	0.068	0.065	0.068	0.065	0.043	0.053	0.042	0.050
90% CI	0.063-0.073	0.060-0.071	0.063-0.073	0.060-0.071	0.038- 0.049	0.048- 0.058	0.037-0.048	0.045-0.056
χ^2_{SB} (df, p)	670.087(17, <0.001)	485.026 (17, <0.001)	411.558(15, <0.001)	269.204(15, <0.001)	160.266(3, <0.001)	192.393(12, <0.001)	-	-

Note: Corresponding items in short form for: Parker model: Care 1, 4, 5, 11, 12, 17, 18; Overprotection factor 7, 8, 9, 13, 15, 19, 21, 23, 25. Uji model: Care 1, 5, 11, 12, 17; Indifference 4, 18, 24; Overprotection 8, 9, 13, 19, 23; Autonomy 7, 15, 21, 25

*Uji's model was the best fitting model. However, for the *indifference* dimension item 18 (Does not talk with me very much) showed a negative residual variance and was deleted from the model. That left only item 4 (Seemed emotionally cold to me) in the indifference factor. Building a model using a single indicator to measure latent variable of indifference would require to fulfill assumptions of 1). no measurement error and 2). an assumption that item 4 alone can explain the latent construct of indifference (Sagan & Pawelek, 2014). Therefore, four factor model was not an appropriate choice for the short version of PBI in the current sample.

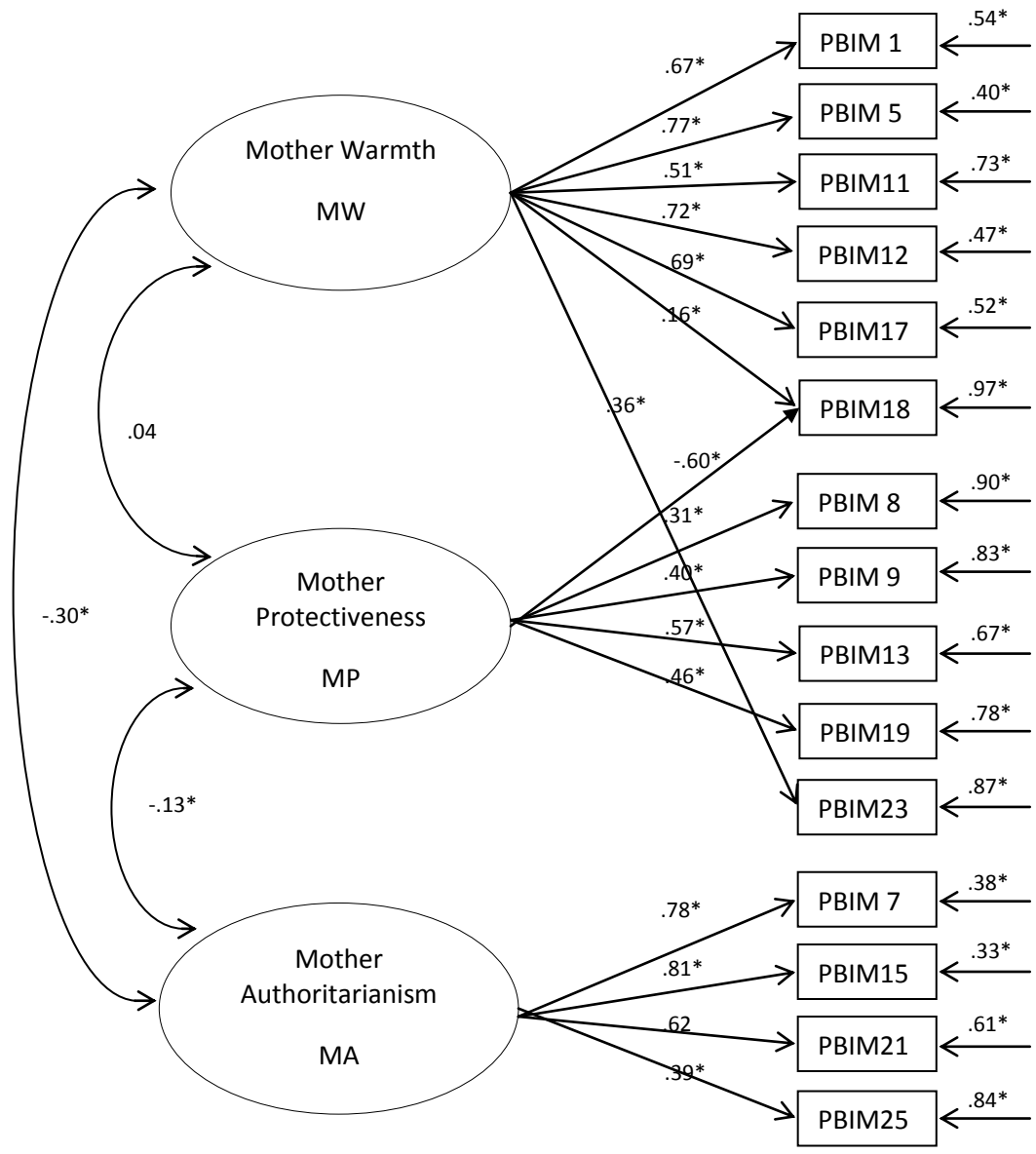


Figure 1. Confirmatory factor model modified for PBI (mother) with standardised robust maximum likelihood parameter estimates N = 1124. All coefficients are statistically significant, $*p < .001$.

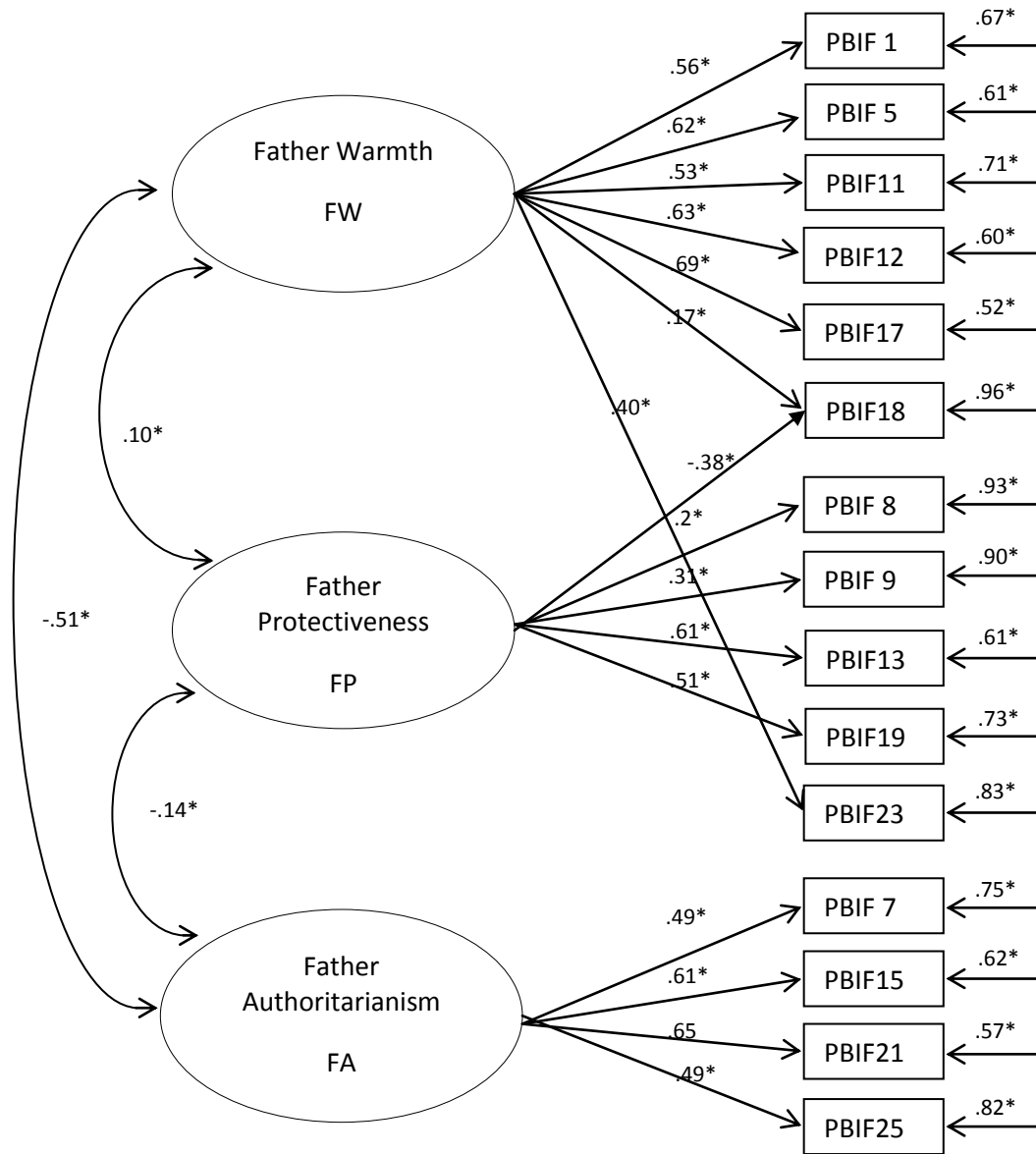


Figure 2. Confirmatory factor model modified for PBI (father) with standardised robust maximum likelihood parameter estimates $N = 1124$. * $p < .001$.

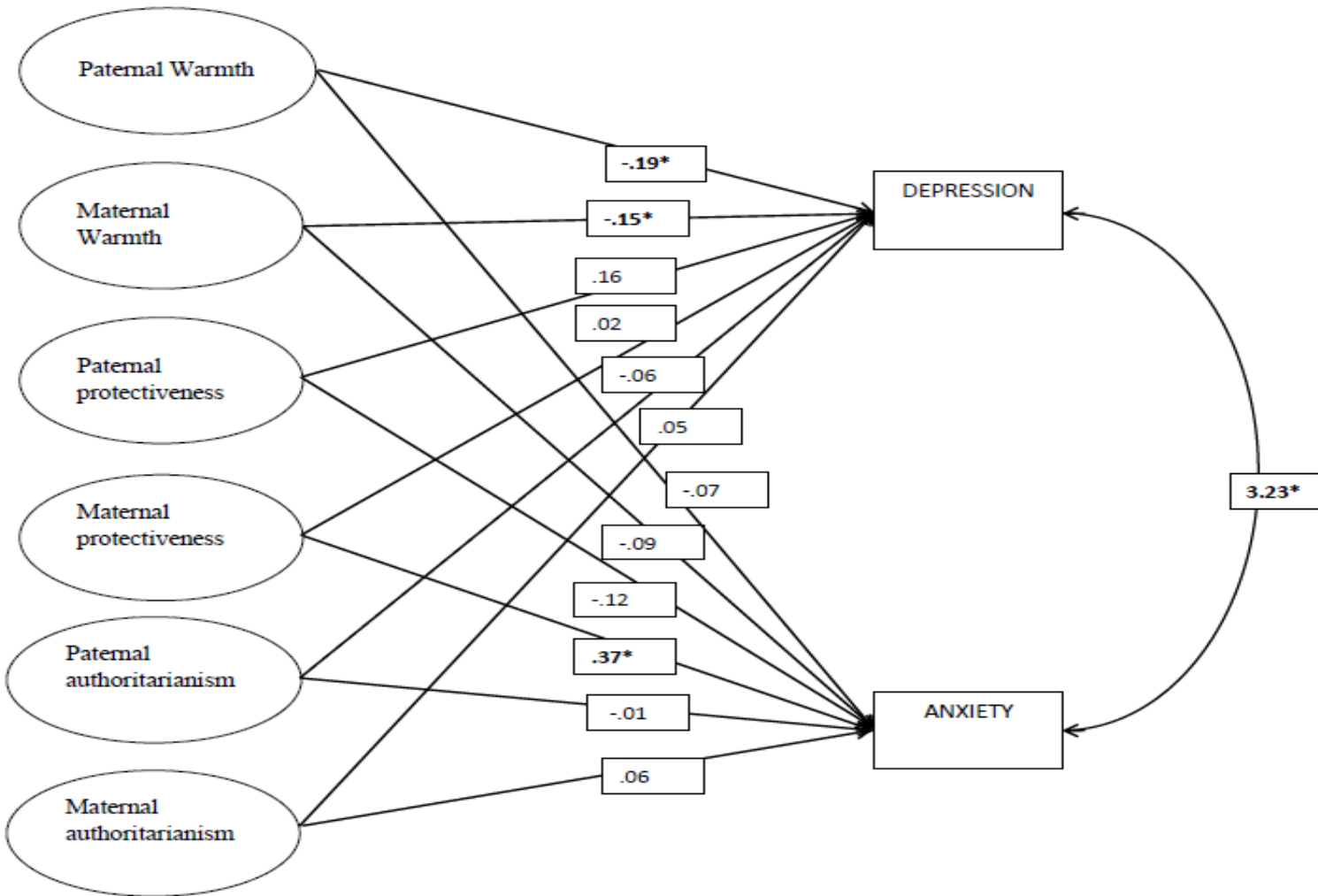


Figure 3. SEM for testing direct effect of parental bonding on depression and anxiety with standardised robust maximum likelihood parameter estimates N = 1124. Coefficients which were statistically significant are shown as $*p < .01$.