



## Macquarie University ResearchOnline

---

**This is the author version of an article published as:**

Hudson J, Doyle AM and Gar N (2009) Child and maternal influence on parenting behavior in clinically anxious children. *Journal of clinical child and adolescent psychology*. Volume 38, Issue 2, pp. 256-262.

**Access to the published version:** <http://dx.doi.org/10.1080/15374410802698438>

**Copyright:** Routledge

Child and Maternal Influence on Parenting Behavior in Clinically Anxious Children

Jennifer L. Hudson

Anthea M. Doyle

and

Natalie Gar

Centre for Emotional Health

Department of Psychology, Macquarie University

Corresponding author:

Jennifer L. Hudson,

Department of Psychology,

Macquarie University,

NSW, 2109. Australia.

Email: [jhudson@psy.mq.edu.au](mailto:jhudson@psy.mq.edu.au)

## Abstract

This study examined child and maternal influences on maternal overinvolvement and negativity. A sample of mothers of anxiety disordered children (n = 62) and mothers of non-clinical children (n = 60) were observed interacting during a speech preparation task with a child from the same diagnostic group as their child (i.e., anxious or non-anxious) and with a child from a different diagnostic group. During interactions involving children who were not their own, mothers were observed to be more involved with anxious children in comparison to non-clinical children. Mothers of clinically anxious children were observed to be less negative during the interactions with non-clinical children than clinically anxious children. These results are discussed in relation to the cyclical relationship between parenting behavior and anxiety.

Keywords: Parent-child interactions, child anxiety, parenting, anxiety disorders.

## Child and Maternal Influence on Parenting Behavior in Clinically Anxious Children

The role of parenting behavior in childhood anxiety disorders has received increasing attention in the recent empirical literature (See Bogels & Brechmann-Toussaint, 2006; McLeod, Wood, & Weisz, 2007 for a review). Questionnaire and observational studies have shown that parents of anxious children are more overinvolved, more controlling, more critical and less emotionally warm than parents of non-clinical children (e.g., Hudson and Rapee, 2001; Siqueland, Kendall, & Steinberg, 1996). Parenting behavior has also emerged as an important variable in several etiological models of anxiety (e.g. Chorpita & Barlow, 1998; Ginsburg & Schlossberg, 2002; Rubin & Mills, 1991). A number of these models stress the reciprocal or cyclical relationship between parent behavior and child anxiety rather than a direct causal effect from maternal behavior to child anxiety. For example, Hudson and Rapee (2004) suggested that parents of children with an anxious temperament are more likely to become overinvolved with their child in order to reduce and prevent their child's distress. This maladaptive pattern of parental overinvolvement is believed to reinforce the child's vulnerability to anxiety by increasing the child's perception of threat, reducing the child's perceived control over threat and ultimately increasing the child's avoidance of threat. The model maintains that child behavior partially elicits parent behavior and this contributes to and maintains the child's anxiety.

Bell (1968) and Sameroff (1993) have also drawn attention to the contributions children make in the interactions between themselves and their parent, and to the development of their own characteristics. Sameroff (1993) maintains that a child's initial behavior can influence his/her parents' responses at one point in time, and then a parent's modified behaviors will effectively contribute to the development of a child's pathology. Very few studies have empirically tested the theoretical notion that anxious children can elicit certain parent behavior.

Consequently, while research studies have provided a strong link between childhood anxiety disorders and the parenting behaviors of overinvolvement and negativity, the mechanisms by which these behaviors are elicited in the parent-child interaction is currently unclear.

Examining the impact of children's shyness on parent behavior, Rubin, Nelson, Hastings, and Asendorpf (1999) showed that parents' perceptions of child shyness (at age 2) significantly predicted subsequent maternal overprotection (at age 4), indicating that the child shyness influenced parental overprotection. Additional studies have also demonstrated that parents adapt their behaviors depending on child characteristics such as mood, physiological dysregulation, age, behavior and gender (e.g., Kennedy, Rubin, Hastings & Maisel, 2004; Lee & Bates, 1985; Russell, 1997).

In experimental settings where children's behaviors have been manipulated, researchers have also demonstrated that child behavior affects parental responses. For example, in a study by Osofsky and O'Connell (1972) children were asked to complete a number of cognitive puzzles. For some of these puzzles children were told they would need their parent's help (dependent behavior) and for other puzzles they were told that they would not need parental assistance (independent behavior). Mothers and fathers became more controlling when children's behavior was dependent. In another study, Brunk and Henggler (1984) trained two 10-year-old boys on the characteristics of an anxious-withdrawn child and a conduct disordered child. The children then engaged in a semi-structured play situation with mothers. The results showed again that children's behavior influenced the mothers' responses, with adults responding with higher rates of verbal assistance in the anxious-withdrawn condition and higher rates of ignoring and discipline attempts in the conduct disordered condition. Barkley and Cunningham (1979) have

also shown that when conduct disordered children's behavior was manipulated via drug treatment (Ritalin Vs Placebo) mothers' behaviors became less controlling.

Regarding child externalizing problems, a number of studies of have examined mothers' interactions with unrelated children to examine maternal and child effects (e.g., Bugental, Lewis, Lin, Lyon & Kopeikin, 1999). For example, Anderson, Lytton, and Romney (1986) observed children's behavior and parental responses in 32 mothers-child dyads. Half of the children in the dyads were diagnosed with conduct disorder and the other half did not experience any behavior problems at home or at school. Mothers were asked to interact in a task (free play or computation) with three separate children: the mother's own child, another child from the same diagnostic group (i.e. conduct disordered or control) and a child from a different diagnostic group (i.e. conduct disordered or control). Through including these later two groups, the study was able to experimentally examine children's influences on maternal behaviors through removing any possible confounding effects that may have occurred if mothers were only assessed with their own child. For mothers' interactions with children who were not their own, both the mothers of conduct disordered children and the mothers of non-conduct disordered children made more negative responses and addressed more requests from conduct disordered children than from non-conduct disordered children. The negative interactions observed between both groups of mothers and conduct disordered children indicate that it was the child and not the mother that "drove" these interactions.

Taken together these research studies have demonstrated that children can elicit certain parenting behaviors. The aim of the current study was to replicate the design implemented by Anderson et al. (1986) and to determine mother and child influence in the predominant parenting behaviors in anxiety disorders - overinvolvement and negativity. The study aimed to determine

whether mothers of clinically anxious children were overinvolved and negative with non-anxious children who were not their own (i.e., Mother effect) and/or whether mothers of non-anxious children were overinvolved and negative with anxious children who were not their own (i.e., Child effect). The study will compare mothers of anxious children and mothers of non-anxious children interacting with a child from the same diagnostic group as their child (e.g., if mother of an anxious child, then another anxious child) and with a child from the opposite group as their child (e.g., if mother of an anxious child, then a non-anxious child). If maternal behavior is purely a response to the child then only a child effect will be observed. On the other hand, if maternal behavior occurs not only in response to the child then a mother and child effect will be observed.

## Method

### *Participants*

The participants consisted of 91 children aged 7-14 years and their mothers (45 children with anxiety disorders and 46 non-clinical children). In the clinically anxious group there were 27 males and 18 females and the mean age of the group was 10.20 years old ( $SD = 2.06$ ). Forty-four children in the clinical group were from two parent-families, 3 from single-parent families and 1 from stepfamilies. The ethnicity of the clinical group consisted of 33 families identifying as Australian, 5 European, 2 English, 1 Asian 2 New Zealander and 1 North American (Note: 1 child had missing ethnicity data).

In the non-clinical group there were 25 males and 21 females with a mean age of 10.72 years old ( $SD = 2.16$ ). Thirty-nine children were from two-parent families, and 7 from single-parent families. The ethnicity of the non-clinical group consisted of 29 families identifying as Australian, 8 European, 4 English, and 5 Asian.

*Clinical Sample.* The clinical sample consisted of children presenting for an assessment and treatment at the Macquarie University Anxiety Research Unit, Sydney, Australia (MUARU). Postgraduate students and clinical psychologists assessed the children using the Anxiety Disorder Interview Schedule for DSM-IV Child and Parent version (ADIS-IV-C/P; Silverman & Albano, 1996) and received supervision. Previous research at our clinic has shown excellent inter-rater reliability using the ADIS- IV- C/P (Lyneham, Abbott & Rapee, 2007). After the assessment, children who met the *Diagnostic and Statistical Manual of Mental Disorders Fourth Edition* (DSM-IV; American Psychiatric Association, 1994) criteria for an anxiety disorder were asked to voluntarily participate in the research before undergoing their treatment at the clinic. The principal diagnoses for the children in the clinical group were as follows: Generalized Anxiety Disorder, 38.8%, Social Phobia, 20.4%, Separation Anxiety, 18.4%, Obsessive-Compulsive Disorder, 8.2%, Panic Disorder, 2%, Post-Traumatic Stress Disorder, 2%, Selective Mutism, 2%, and Specific Phobia 8.2%. Eighty-two percent of the children were diagnosed with more than one disorder. Eighty percent had an additional anxiety disorder, 4% depression and 16% behavior disorder.

*Non-clinical Sample.* The non-clinical children were recruited via an advertisement in a local newspaper. The advertisement requested mothers with confident children who had never sought treatment from a mental health professional. The researcher assessed the child's mental health status over the phone using the Anxiety Disorders Interview Schedule for DSM-IV Parent version (ADIS-P-IV Silverman & Albano, 1996). Children were only included in the non-clinical sample if they did not meet DSM-IV criteria for any anxiety disorders, mood or behavior disorders. The non-clinical families received a payment of \$50 for participating in the study, which was to assist with expense associated with their time and travel costs.

### *Task*

To observe mothers and children interacting, a speech preparation and presentation task was utilized. This task was adapted from a study conducted by Hudson and Rapee (2001). The speech task involved children preparing and presenting a speech while a mother sat in the room with them. All children were given three minutes to prepare their speech and the length of the speech was varied to accommodate for differences in the children's ages. Children aged between 7-12 years were asked to speak for two minutes and children aged between 13-14 years were asked to present for three minutes. At the beginning of the task, the researcher read out the instructions listed below to both the mother and child. Once the instructions were read, the researcher left the room for three minutes and after the time had elapsed re-entered the room and asked the child to stand up and present their speech. The entire task was videotaped.

*Children's instructions:* "I'm going to ask you to prepare a (two or three) minute speech about anything you like. [On the second and third speech: *It has to be a different topic to the previous speech*] This is to see how good you are at talking in front of others. You can talk about anything- your favorite hobby, favorite film, something you did recently, a day out with the family, a holiday, or something to do with school. You can change the topic during the speech if you want. So that you have lots of things to talk about, I'm going to give you 3 minutes to prepare before I ask you to give the speech. When I come back I'm going to ask you to stand up and give the speech."

*Mothers' instructions:* "This is a test of (child's name)'s presentation skills and social ability. I want to see how effective she/he is at preparing a talk and presenting it to an audience. (mother's name) I'd like you to sit here for support. Most kids find it a bit hard to get going on

deciding what to talk about. You can help (child's name), but only if you think she/he really needs it.”

*Measures.*

*Observation.* The 3 minute speech preparation interactions between the mother-child dyads were rated on an eight scale speech coding system based on the coding system reported in Hudson & Rapee (2001). In previous studies these scales have been shown to load onto two factors of negativity and involvement (e.g., Hudson & Rapee, 2001). The negativity scales consisted of the initial four scales and assessed the degree of parental warmth during the interaction. The negativity scales were (1) General mood-atmosphere of the interaction, (2) Mother's degree of positive affect, (3) Mother's tension, and (4) Mother's degree of verbal and non-verbal encouragement and criticism. The involvement scale comprised the remaining four scales and represented an overall measure of the degree of help the mother gave to the child during the task. The scales included (5) General degree of mother's involvement, (6) Degree of unsolicited help, (7) Degree to which the mother directs the child's speech and (8) Mother's focus during the interaction. Each of the eight scales had a rating of zero-eight, with zero-three being used to code more positive/ less involved interactions, while five-eight were used to code negative/ over involved interactions. A rating of four was given if the interaction was neutral.

The speech preparation interactions were coded twice by postgraduate students. The coders were unaware of the child's diagnosis and the experimental conditions. They were instructed to watch each speech preparation interaction before coding the interaction and were initially trained on the coding system. Intraclass correlations were calculated using Shrout and Fleiss (1979) model 2 (Rater's random) to determine the inter-rater reliability of the two coders. (Negativity:  $\alpha = .80, p < .05$  and Involvement  $\alpha = .88, p < .05$ ).

*Questionnaires.* Mothers and children completed a battery of self-report measures to further determine the clinical nature of the sample and to confirm the distinction between clinical and non-clinical groups. The measures completed by the mothers and children included the Strength and Difficulties Questionnaire (parent and child version, Goodman, 1997) which is a 25 item scale assessing children's emotional symptoms, conduct problems, hyperactivity /inattention, peer relationship problems and prosocial behavior. The questionnaire has been demonstrated to have good psychometric properties (Goodman, Meltzer, & Bailey, 1998; Hawes & Dadds, 2004). Mothers and children also completed the Spence Children's Anxiety Scale (SCAS-Child and Parent Report, Spence, 1998; Nauta et al., 2004). The SCAS consists of 38 items evaluating symptoms relating to panic, separation anxiety, social phobia, obsessive-compulsive, generalized anxiety and physical injury fears. The SCAS has been demonstrated to have good reliability and validity (e.g., Muris, Merckelbach, Ollendick, King, & Bogie, 2002; Nauta et al., 2004; Spence, 1998).

### *Procedure*

The procedures in this study were approved by the Macquarie University Ethics Review Committee (Human Subjects). The research sessions required mother-child dyads from both the clinically anxious and non-clinical groups to be present. Before completing the task, informed written consent was obtained from the mothers and the children. Mothers were observed interacting in three separate speech preparation tasks with their own child, a child from the same diagnostic group as their child (i.e. clinically anxious or non-clinical) and a child from a different diagnostic group as their child (i.e. clinically anxious or non-clinical). Of interest to the study were the interactions between mothers and children who were not their own. Given the stressful nature of preparing a speech with a stranger and to minimize practice effects on subsequent

speeches, all children completed the task first with their own mother before completing the two speech preparations of interest to the study (as was the design in Anderson et al., 1986). The order of the latter two sessions was counterbalanced and the mothers were not aware from which group the children came. Mothers interacted with children of the same gender and with children who were within the same age group (either 7-12 years old or 13-14 years old).

## Results

### Preliminary Analysis

*Demographics.* There were no significant differences found between the ages of the children in the clinically anxious and non-clinical groups,  $t(89) = 1.17, p > .05$ . Chi squared analyses also showed no significant differences between the two groups on the children's gender,  $\chi^2(1, N = 91) = 0.35, p > .05$ , family composition,  $\chi^2(2, N = 91) = 3.88, p > .05$  or ethnicity,  $\chi^2(5, N = 90) = 7.24, p > .05$ .

Maternal negativity and involvement was not significantly related to the children's age in the clinically anxious group,  $r = .04, p > .05$ ,  $r = .10, p > .05$ , or in the non-clinical group,  $r = .15, p > .05$ ,  $r = -.11, p > .05$ . Maternal involvement did not significantly differ according to the gender of the clinically anxious children,  $t(89) = -.76, p > .05$  or non-clinical children,  $t(89) = -.87, p > .05$ . Maternal negativity significantly differed between male and female children in the non-clinical group,  $t(89) = -2.77, p < .05$  with mothers being more negative with male children than female children (Male  $M = 2.20, SD = 1.11$ ; Female  $M = 1.64, SD = .74$ ). There was no significant difference in maternal negativity between male and female clinical children (Male  $M = 2.27, SD = .97$ ; Female  $M = 1.97, SD = .79$ ). Gender was treated as a covariate for analyses involving maternal negativity.

*Descriptive measures.* The mean scores for the mother and child questionnaire measures for both the clinical and non-clinical groups are presented in Table 1. Significant differences were found between the two groups on both the child and mother reports for the SDQ,  $t(89) = 6.79, p < .05$ ,  $t(89) = 3.21, p < .05$  and the SCAS,  $t(89) = 3.06, p < .05$ ,  $t(89) = 16.59, p < .05$ . These findings provide further support for the distinction between the clinical and non-clinical groups.

---

Insert Table 1 here

---

### *Mother-Child Interactions*

Mothers' observed behaviors during the speech preparation interactions were analyzed using 2x2 repeated-measures multivariate analyses of variance (MANOVA). The between-subject factor was the type of mother (i.e. mothers of clinically anxious children and mothers of non-clinical children). The within-subject factor for the first analysis was the type of child (i.e. clinically anxious and non-clinical children). Gender was included as a covariate in analyses involving maternal negativity (MANCOVA). Analyses were restricted to mothers' interactions with children who were not their own. The analyses were completed individually for maternal negativity and involvement, see Table 2.

After controlling for child gender, maternal negativity was found to have no significant main effect for the type of child,  $F(1, 88) = 0.19, p > .05$  and the type of mother,  $F(1, 88) = 1.88, p > .05$ , however, a significant interaction was found between the two variables,  $F(1,94) = 9.30, p < .05$  (see Figure 1). The results demonstrated that mothers of clinically anxious children displayed less negativity during their interactions with non-clinical children in comparison to

their interactions with clinically anxious children and non-clinical mothers interacting with anxious and non-anxious children.

Regarding maternal involvement, a significant main effect was found for the type of child,  $F(1,89) = 7.77, p < .05$ , with higher rates of involvement being observed in mothers' interactions with clinically anxious children when compared to interactions with non-clinical children (Clinical children  $M = 2.56, SD = 1.50$ ; Non-clinical children  $M = 2.11, SD = 1.38$ ). A trend was observed for type of mother,  $F(1, 89) = 3.64, p = .06$  (Clinical mother  $M = 2.09, SE = .18$ ; Non-clinical mother  $M = 2.57, SE = .18$ ). No significant interaction was found between the two variables,  $F(1, 89) = 1.11, p > .05$  (see Figure 2).

---

Insert Figure 1 here

---

## Discussion

In this study both mothers of clinically anxious children and mothers of non-clinical children were paired with a child from the same classification as their child (anxious or non-anxious) and with a child from a different classification as their child. Through employing this unique research design the current study examined both maternal and child influences on the predominant maternal behaviors associated with childhood anxiety disorders.

Regarding maternal overinvolvement, child effects were demonstrated, that is, mothers were more involved with clinically anxious children in comparison to when they were with the non-clinical children. This finding is consistent with previous research by Brunk and Henggl (1984) that showed adults responded with higher rates of verbal assistance and involvement when paired with two normal children trained to behave in an anxious manner.

The results suggest that maternal overinvolvement is influenced by a child's anxious behavior. As mothers were significantly more involved with clinically anxious unrelated children compared to non-clinical unrelated children, it suggests that it was the children's anxious behaviors that influenced maternal overinvolvement. This finding is consistent with reciprocal models of anxiety development that propose children's anxious behavior partially influences maternal overinvolvement (e.g., Hudson & Rapee, 2004; Rubin & Mills, 1991). That is, an anxious child may elicit increased involvement and help from their environment. This increased help may serve to decrease autonomy, decrease coping or mastery experiences and increase avoidance of novel, anxiety provoking situations and ultimately maintain the child's vulnerability to anxiety. The finding also provides support for the suggestions made by developmental theorists (e.g. Bell, 1968, Sameroff, 1993) that child behaviors can modify parental responses. Furthermore, this research finding is consistent with prior experimental research that has demonstrated children's behavior effectively impacts subsequent maternal behaviors (e.g., Barkley & Cunningham, 1979; Osofsky & O'Connell, 1972).

No significant direct maternal effects for over-involvement were shown. That is, mothers of clinically anxious children were not more involved during interactions with non-anxious children. In fact, mothers of clinically anxious children showed a trend in the opposite direction, displaying less involvement with both children compared to mothers of non-anxious children. These results indicate that maternal behavior with one's own child is more likely a response to the child's anxious behavior or anxious temperament. In an earlier study, maternal overinvolvement was not significantly different between clinically anxious children and their siblings- indicating perhaps a maternal effect (Hudson & Rapee, 2002). Given the results of the

current study, the comparable involvement between siblings is likely due to the increased anxiety symptoms observed in the siblings of anxious children.

Occurrence of maternal negativity was dependent on the interaction between the type of mother and the type of child. More specifically, it was found that mothers of clinically anxious children (clinical mothers) were less negative in their interactions with non-clinical children in comparison to their interactions with clinically anxious children and mothers of non-clinical children (non-clinical mothers) interacting with anxious and non-anxious children. This was unexpected. It should be noted that the mothers' observed negative behaviors in these interactions were relatively low (i.e., more positive) in comparison to the negativity scores obtained using the same coding scale in Hudson and Rapee's (2001) study. The lower negativity scores in this study may have been because mothers were interacting with children who were not their own. Mothers may have been less likely to be critical during interactions with children they did not know, particularly when they were being videotaped. The strong social desirability bias regarding discouraging and critical comments towards children may have prevented some parents from responding in their usual manner and may have created a floor effect.

Increased maternal negativity may only occur when a mother has a prior history with a child. In support for this proposal, Anderson et al. (1986) found that for conduct disordered children, mothers were more negative towards their own children in comparison to children of the same classification. Maternal negativity is therefore likely to be most influential in the context of an existing mother-child relationship (Halverson & Waldrop, 1970). It is possible that it is a history of interpersonal experiences with an anxious child that leads a mother to become more critical and negative in her behavior.

Nevertheless, in this study clinical mothers displayed more encouraging behaviors during interactions with non-anxious compared to anxious children. This suggests that something about the non-anxious child elicits more encouragement and warmth from mothers of clinically anxious children but not from mothers of non-anxious children. Perhaps clinical mothers are accustomed to responding to anxious child behaviors and the absence of these anxious behaviors significantly contributed to more positive interactions with non-clinical children. This effect requires further research.

Although the findings from the current study have further contributed to the understanding of child and maternal influences on maternal behaviors, it is important to highlight some of the limitations within the current study. Specifically, the study was limited to mothers' interactions and hence paternal effects were not assessed. It is possible that children's influences are different for the paternal behaviors of overinvolvement and negativity and consequently it would be beneficial for future research to address the role that fathers play in the parenting behaviors associated with the development and maintenance of childhood anxiety disorders (Bogels & Phares, in press). As empirical research on child and maternal influences is limited, it is important for future research to replicate the current findings. Finally it should be noted that the study was cross-sectional in nature and the employment of longitudinal studies would provide further information about influences on the parenting behaviors associated with anxiety disorders.

In summary, the current study enabled a unique analysis of child and maternal influences on the maternal behaviors of overinvolvement and negativity. Regarding the cyclic relationship between parenting behaviors and anxiety disorders, the study's findings demonstrated that maternal overinvolvement can be elicited by an anxious child's behaviors. For maternal

negativity, the results showed that a combination of maternal and child behaviors play a determining role in the expression of a mothers' negative behaviors.

## References

- American Psychiatric Association. (1994). *Diagnostic and Statistical Manual of Mental Disorders* (4<sup>th</sup> ed). Washington, D.C. American Psychiatric Association.
- Anderson, K.E., Lytton, H., & Romney, D.M. (1986). Mothers' interactions with normal and conduct disordered boys: Who affects whom? *Developmental Psychology*, 22, 604-609.
- Barkley, R., & Cunningham, E. (1979). The effects of methylphenidate on mother-child interactions of hyperactive children. *Archives of General Psychiatry*, 36, 201-208.
- Bell, R. (1968). A reinterpretation of the direction of effects in socialization. *Psychological Review*, 75, 81-95.
- Bogels, S.M., Brechman-Toussaint, M.L. (2006). Family issues in child anxiety: Attachment, family functioning, parental rearing and beliefs. *Clinical Psychology Review*, 26, 834-856.
- Bogels, S. & Phares, V. (in press). Fathers' role in the etiology, prevention and treatment of child anxiety: A review and new model. *Clinical Psychology Review*.
- Brunk, M.A., & Henggeler, S.W. (1984). Child influences on adult controls: An experimental investigation. *Developmental Psychology*, 20, 1074-1081.
- Bugental, D. B., Lewis, J. C., Lin, E., Lyon, J., & Kopeikin, H. (1999). In charge but not in control: The management of authority-based relationships by those with low perceived power. *Developmental Psychology*, 35, 1367-1378.
- Chorpita, B.F., Barlow, D.H. (1998). The development of anxiety: The role of control in the early environment. *Psychological Bulletin*, 124, 3-21.
- Ginsburg, G.S., & Schlossberg, M.C. (2002). Family-based treatment of childhood anxiety disorders. *International Journal of Psychiatry*, 14, 142-153.

- Goodman, R. (1997). The Strengths and Difficulties Questionnaire: A Research Note. *Journal of Child Psychology and Psychiatry*, 38, 581-586.
- Goodman, R., Meltzer, H., Bailey, V. (1998). The Strengths and Difficulties Questionnaire: A pilot study on the validity of the self-report version. *European Child and Adolescent Psychiatry*, 7, 125-130.
- Halverson, C., & Waldrop, M. (1970). Maternal behaviors towards own and other preschool children: The problem of oneness. *Child Development*, 41, 839-845.
- Hudson, J. L. & Rapee, R. M. (2001) Parent-Child Interaction and Anxiety Disorders: An Observational Study. *Behavior Research and Therapy*, 39, 1411-1427.
- Hudson, J. L., & Rapee, R. M. (2004). From anxious temperament to disorder: An etiological model. In R. G. Heimberg, C. L. Turk & D. S. Mennin (Eds.), *Generalized anxiety disorder: Advances in research and practice* (pp. 51-76). New York: The Guildford Press.
- Kennedy, A.E., Rubin, K.H., Hastings, P.D., & Maisel, B (2004). Longitudinal relations between child vagal tone and parenting behaviour: 2 to 4 years. *Developmental Psychobiology*, 45, 10-21.
- Lee, C.L., & Bates, J.E. (1985). Mother-child interactions at age two years and perceived difficult temperament. *Child Development*, 56,1314-1325.
- Lyneham, H.J., Abbott, M. J., & Rapee, R.M. (2007). Interrater reliability of the Anxiety Disorders Interview Schedule for DSM-IV Child and Parent Version. *Journal of the American Academy of Child & Adolescent Psychiatry*, 46, 731-736.
- 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, 155-172.

- Moore, P. S., Whaley, S. E., & Sigman, M. (2004). Interactions between mothers and children: Impacts of maternal and child anxiety. *Journal of Abnormal Psychology, 113*, 471-476.
- Muris, P., Merckelbach, H., Ollendick, T., King, N., & Bogie, N. (2002). Three traditional and three new childhood anxiety questionnaires: Their reliability and validity in a normal adolescent sample. *Behavior Research and Therapy, 40*, 753-772.
- Muris, P., Mesters, C., Merckelbach, H., & Hulskenbeck, P. (2000). Worry in children is related to perceived parental rearing and attachment. *Behavior Research and Therapy, 38*, 487-497.
- Nauta, M, Scholing, A., Rapee, R., Abbott, M., Spence, S., Waters, A. (2004). A parent-report measure of children's anxiety. Psychometric properties and comparison with child-report in a clinic and normal sample. *Behavior Research and Therapy, 42*, 813-839.
- Osofsky, J.D., & O'Connell, E.J. (1972). Parent-child interactions: Daughters effects upon mothers and fathers behaviors. *Developmental Psychology, 7*, 157-168.
- Rubin, K.H., & Mills, R.S.L. (1991). Conceptualizing developmental pathways to internalizing disorders in childhood. *Canadian Journal of Behavioral Science, 23*, 300-317.
- Rubin, K. H., Nelson, L. J., Hastings, P., & Asendorpf, J. (1999). The transaction between parents' perceptions of their children's shyness and their parenting styles. *International Journal of Behavioral Development, 23*(4), 937-958.
- Russell, A. (1997). Individual and family factors contributing to mothers' and fathers' positive parenting. *International Journal Of Behavioral Development, 21*, 111-132.
- Sameroff, A.J. (1993). Models of development and developmental risk. In C.H. Zeanah, Jr. (Ed). *Handbook of Infant Mental Health* (pp. 3-13). New York: Guild Press.

- Shrout, P.E., & Fleiss, J.L. (1979). Intraclass correlations: Uses in assessing reliability. *Psychological Bulletin*, 86, 420-428.
- Silverman, W.K., & Albano, A.M. (1996). *Anxiety Disorders Interview Schedule for DSM-IV: Child and parent version*. San Antonio: The Psychological Corporation.
- Siqueland, L., Kendall, P.C., & Steinberg, L. (1996). Anxiety in children: Perceived family environments and observed family interaction. *Journal of Clinical Child Psychology*, 25, 225-237.
- Spence, S.H. (1998). A measure of anxiety symptoms among children. *Behavioral Research and Therapy*, 36, 545-566.
- Whaley, S., Pinto, A., & Sigman, M. (1999). Characterizing interactions between anxious mother and their children. *Journal of Consulting and Clinical Psychology*, 67, 826-836.

Table 1.

*Means and standard deviations on questionnaire measures across groups*

<b>Questionnaire</b>	<b>Clinical</b>		<b>Non-Clinical</b>	
	<b>M</b>	<b>SD</b>	<b>M</b>	<b>SD</b>
	<b>Child</b>			
SDQ	14.69 <sup>a</sup>	5.21	7.72 <sup>b</sup>	4.56
SCAS	36.16 <sup>a</sup>	14.95	15.74 <sup>b</sup>	12.18
	<b>Mother</b>			
SDQ	14.48 <sup>a</sup>	6.26	6.26 <sup>b</sup>	4.56
SCAS	34.57 <sup>a</sup>	14.69	8.35 <sup>b</sup>	6.51

Note: SDQ = Strength and Difficulties Questionnaire; SCAS = Spence Children's Anxiety Scale. Means with different subscripts are significantly different from each other at the critical alpha ( $p < 0.05$ ).

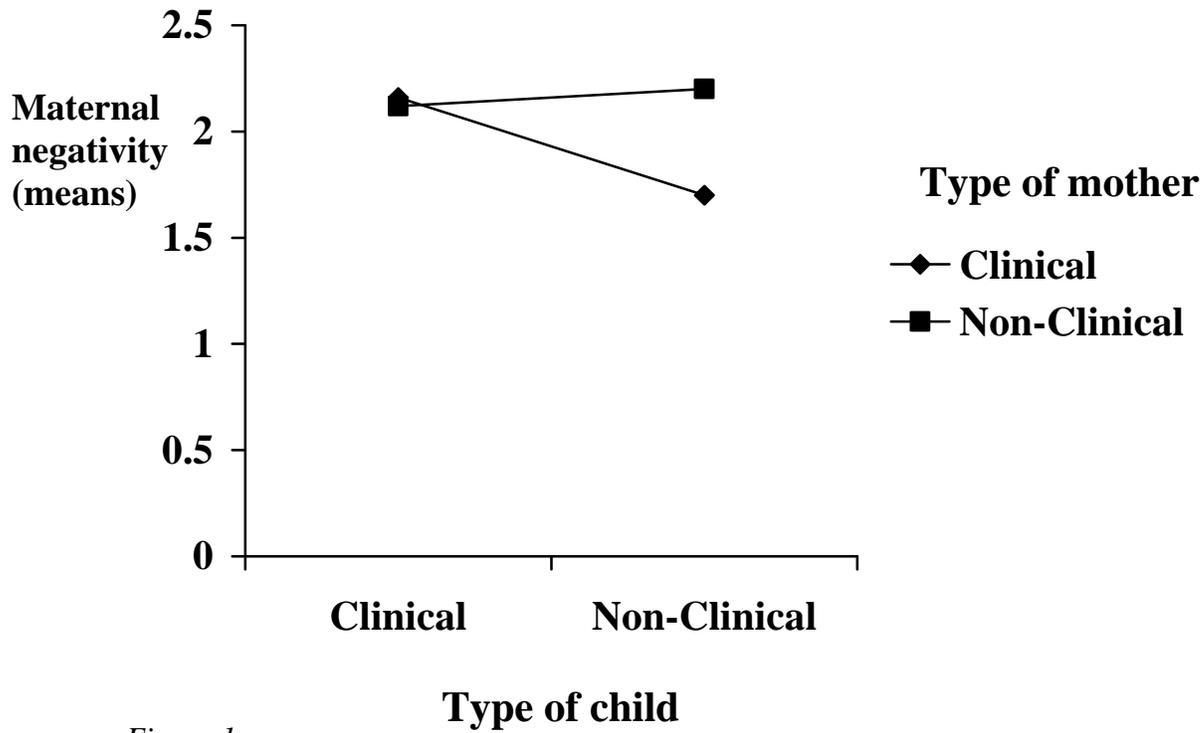


Figure 1.

Estimated marginal means for maternal negativity during interactions with clinical and non-clinical children who were not their own children.

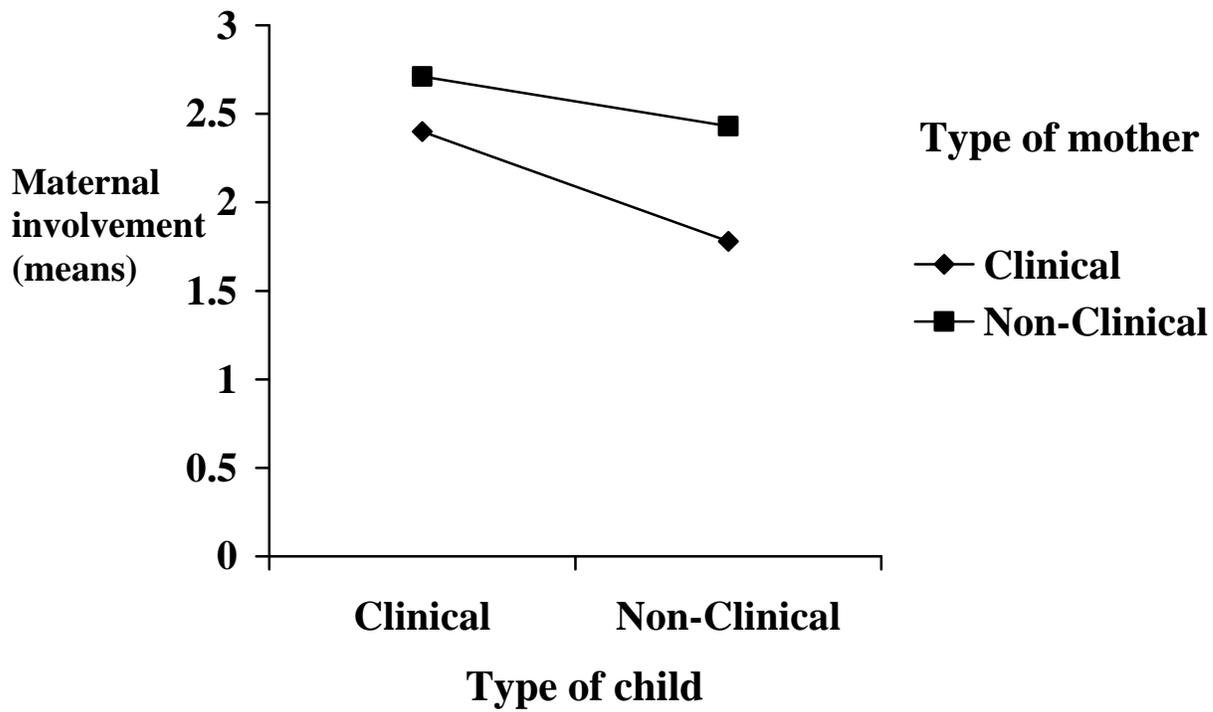


Figure 2.

Estimated marginal means for maternal involvement during interactions with clinical and non-clinical children who were not their own children.

## Acknowledgements

This research was funded by the Australian Research Council Discovery Project Grant Project ID DP0342793 (Chief Investigator- Hudson).