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Parent-Child Interactions in Clinically Anxious Children
and their Siblings.

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Abstract

Observes fifty-seven children (37 anxiety-disordered and 20 non-clinical children) and their siblings interacting with their parents while completing a complex puzzle task. Consistent with previous findings, mothers were more involved and more intrusive during the task with their anxiety-disordered child than mothers of non-clinical children. Mothers in the clinical group were also significantly more involved and more intrusive during interactions with the anxious child's sibling than mothers of non-clinical children. Although fathers were more involved during the task than mothers overall, no significant differences in over-involvement were found between fathers of anxiety-disordered children and fathers of non-clinical children. Both mothers and fathers were equally involved with the anxious child and the sibling of the anxious child. Although this study provides support for the association between maternal over-involvement and the anxiety disorders, it suggests that over-involvement does not occur exclusively in the context of relationships with the anxiety-disordered child.

Parent-Child Interactions in Clinically Anxious Children and Their Siblings.

Numerous adult retrospective studies have suggested that certain parenting styles such as overprotection, control, criticism or rejection are associated with the anxiety disorders (e.g., Arrindell, Kwee, Methorst, van der Ende, Pol, & Moritz, 1989; Parker, 1981; Rapee & Melville, 1997; Silove, 1986; see Rapee, 1997 for a review). Until recently however, few observational studies have been used to adequately investigate this notion. In a recent observational study examining the parenting of anxiety-disordered children, Hudson and Rapee (2001) identified clear differences in the degree of observed involvement between mothers of anxious children and mothers of non-clinical children. The study showed that mothers of children with anxiety disorders gave more help and were more intrusive during a laboratory task than mothers of non-clinical children. These results support previous research in this area linking over-involved parenting or parenting that discourages approach and autonomy with child anxiety (Barrett, Rapee, Dadds & Ryan, 1996; Chorpita, Albano & Barlow, 1996; Hirshfeld, Biederman, Brody, Faraone, & Rosenbaum, 1997; Kearney & Silverman, 1995; Siqueland, Kendall & Steinberg, 1996). In addition, the study found that interactions between mothers and their anxious children were less warm and more critical than interactions between mothers and non-clinical children. Previous research has indicated that a lack of maternal warmth (rejection) may be of less importance in the development of anxiety and possibly more important in the development of depression (Rapee, 1997). Thus, although parental negativity is a factor that warrants further

investigation, the role of parental over-involvement is considered more central to the development of anxiety disorders.

Parental over-involvement has surfaced as an important variable in several etiological models of anxiety disorders (Chorpita & Barlow, 1998; Krohne, 1990; Manassis & Bradley, 1994; Rapee, 2001; Rubin & Mills, 1991). For example, Rapee (2001) suggested that a reciprocal relationship between child temperament and parenting is partially responsible for the development of anxiety disorders. He argued that parents of children with an anxious temperament may be more likely to become over-involved with their child in an effort to reduce and prevent the child's distress. This maladaptive pattern of parental over-involvement however is said 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 also predicts that a child who does not have an anxious temperament may not receive the same degree of over-involvement as a more anxious sibling. In addition to the child's vulnerability to anxiety, the parent's own anxiety is said to be an important factor in determining the degree of parental over-involvement. Due to the familial basis of anxiety (Last, Hersen, Kazdin, Orvaschel, & Perrin, 1991; Silverman, Cerny & Nelles, 1988), parents of anxious children are also likely to be anxious and will very likely exhibit a cognitive bias towards threat. The parent's own anxiety is likely to impact on the child's behavior (Silverman, Cerny, Nelles & Burke, 1988). An anxious parent may be more likely to over-protect his or her children due to an increased perception of

danger and an increased sensitivity to the child's distress. Conversely, a parent who is not anxious may be more likely to encourage behavioral approach rather than avoidance and hence reduce the child's likelihood of developing an anxiety disorder.

One method that may assist in further understanding the role of over-involvement in anxiety disorders involves comparing parent-child interactions between siblings. Few studies have attempted to examine parenting styles in families across siblings (Dunn, Stocker, & Plomin, 1990; McGuire, Dunn, & Plomin, 1995; McHale & Pawletko, 1992), let alone in families with anxiety disorders. From the research thus far, it is unclear whether parental over-involvement is a feature specific to the anxious child in the family or if it also occurs during interactions with other siblings. Rapee's (2001) model predicts that both parental anxiety and the child's anxious vulnerability determine the degree of parental over-involvement, that is, the more anxious the child and the more anxious the parent, the more parental over-involvement. Although parental anxiety is likely to be a factor affecting all children in the family, the child's vulnerability to anxiety is likely to vary between siblings. Thus, this model would predict that parental over-involvement would be greater in the case of a child with an anxiety disorder compared with his or her sibling. However, to the extent that parents of anxious children are higher in anxiety themselves, the interaction with the non-anxious sibling would still be more intrusive than that between a non-clinical child and his or her parent.

The current study compared parent-child interactions across two siblings in both clinically anxious and non-clinical families. Clinically anxious families were ones in which one child had presented for treatment for an anxiety disorder. As the research to date has focussed primarily on maternal factors in the development of anxiety with less focus on the potential role of fathers, this study observed both fathers and mothers interacting with their children. It was expected that the findings from our previous research would be replicated; mothers in the clinical group would demonstrate more intrusive involvement during the task with the clinically anxious child than mothers of non-clinical children. The primary focus of the study was to compare parent-child interactions across siblings in the clinical group. Although previous research has shown that siblings of anxiety-disordered children have higher rates of disorder than non-clinical children (Kelvin, Goodyer & Altham, 1996), we would expect that the clinically anxious children presenting for treatment would report more anxiety symptomatology than the child's sibling. It was expected that parents in the clinical group would demonstrate more intrusive involvement with the clinically anxious child than with the anxious child's sibling.

Method

Participants

The sample consisted of 228 participants: 114 children and 114 parents (57 mothers and 57 fathers) from 37 clinical families and 20 non-clinical families. Each

family was represented by two children aged 7 to 16 years and their biological parents. In all cases both biological parents were living at home. One-parent families were excluded from the study. Both clinical and non-clinical samples were unique to this study and not previously reported in Hudson and Rapee (2001).

Clinical Sample. The clinical sample consisted of thirty-seven families who had presented for treatment for one of their children at the Macquarie University Child and Adolescent Anxiety Clinic, Sydney, Australia. Post-graduate students in clinical psychology assessed the anxious children using a semi-structured clinical interview based on the Anxiety Disorders Interview Schedule for DSM-IV Child and Parent Version (ADIS-IV - C/P; Silverman and Albano, 1996). Diagnoses were based on DSM-IV criteria (APA, 1994). Children were accepted into the study if they met criteria for a principal anxiety diagnosis and no psychosis was present. The principal diagnoses of the anxious children were as follows:

Generalized Anxiety Disorder 38%, Social Phobia 32%, Separation Anxiety Disorder 19%, Panic Disorder 5%, Obsessive Compulsive Disorder 3 % and Specific Phobia 3%. Forty-three percent of the children were diagnosed with more than one anxiety disorder, the most common additional diagnosis being generalized anxiety disorder. Five percent of children also met criteria for an additional mood disorder, and a further 5% met criteria for an additional diagnosis of ADHD. The sibling included in the study was the child closest in age to the anxious child and was selected if their age was between 7 and 16 years. The siblings were assessed using a semi-structured clinical interview with the sibling's parents based on the

Anxiety Disorders Interview Schedule for DSM-IV Parent Version (ADIS-IV - P; Silverman and Albano, 1996). Eighty-seven percent of siblings did not meet criteria for any DSM-IV (APA, 1994) anxiety, mood or behavior disorder. However, thirty percent of the siblings were reported to experience sub-clinical levels of anxiety (i.e., parents reported some interference or child distress due to anxiety but full criteria for the diagnosis were not met). One sibling met criteria for a diagnosis of social phobia, two met criteria for Specific Phobia, while a further two siblings met criteria for Attention Deficit Hyperactivity Disorder¹.

Non-Clinical Sample. The 20 non-clinical families were recruited from the community via notices in school newsletters, local newspapers and open days at the university. Non-clinical families were recruited from the same geographical area as the families in the clinical sample to ensure comparable socioeconomic status. Families were selected if: a) there were at least two children in the family aged between 7 and 16 years; and b) the parents had never sought treatment from a mental health professional for either of the two children. Structured diagnostic interviews were not conducted with the non-clinical sample, as we did not want to select a diagnosis-free group. Rather, we wanted to make comparisons with a more normally distributed non-clinical group. It is recognized therefore, that some of these children may have met criteria for some forms of psychopathology. The non-clinical children were given rewards for participating in the study.

Task

The tangram task consisted of a series of puzzles given to the child in the presence of one parent. The puzzles were designed to be slightly too difficult for the child to complete in a five-minute period. The parent and child were instructed that the puzzle was a test of the child's cognitive ability. The parents were given the answers to the puzzle and told: "You can help if you think the child really needs it". There were two types of tangrams, each one appropriate for a different age group. A set of three colored tangrams was given to children between the ages of 7 and 11 years and a set of five black tangrams for children between the ages of 12 and 16 years. There were two sets of colored tangrams and two sets of black tangrams. Each set was of an equivalent level of difficulty. In the current study, each child was asked to complete two sets of tangrams: one in the presence of the child's mother and the other in the presence of the father.

Measures

Observation. Each parent-child interaction was rated on five scales measuring the degree of parental involvement during the interaction³. The global scales consisted of a nine-point continuum ranging from zero to eight, where 4 represented a neutral point on the scale. In the original study (Hudson & Rapee, 2001), these scales were found to load clearly on one factor, Involvement. The Involvement factor consisted of the following global scales: (i) the general degree of parental involvement; (ii) the degree of unsolicited help (intrusiveness); (iii) the degree to which the parent physically touched the tangram pieces; (iv) the parent's

posture (e.g. degree to which the parent leant over the puzzle); (v) the parent's focus during the interaction (towards the child or towards the task). The involvement factor (a mean of the five scales) represented an overall measure of the degree of help the parent gave during the task. Given that the task was described to parents as 'a test of the child's cognitive ability' and they were told 'only help if you think the child really needs it', higher scores on the Involvement factor indicated overinvolvement and intrusiveness.

Following training in the global coding system, a psychology graduate rated each interaction. The coder was blind to the child's diagnosis. Interactions from the same family were not rated consecutively but were examined in random order. In order to determine inter-rater reliability, a second coder, a clinical psychology graduate, rated approximately 50% of the interactions. Intraclass correlations were calculated using Shrout and Fleiss' (1979) model 2 (Rater's random). The Involvement factor demonstrated good inter-rater reliability, $ICC(2,1) = 0.83, p < .001$.

Questionnaires. Several questionnaires measures were included in order to determine the degree of child and parent anxious and depressive symptomatology, and hence evaluate the utility of the non-clinical sample and the siblings in the clinical sample as adequate comparisons.

Children completed the Revised Children's Manifest Anxiety Scale (RCMAS; Reynolds & Richmond, 1978) and the Children's Depression Inventory (CDI; Kovacs, 1992). The RCMAS is a 37-item self-report scale measuring chronic

anxiety. The measure consists of three subscales: i) physiological anxiety; ii) worry/ oversensitivity; and iii) social concerns/concentration. The scale has demonstrated adequate test-retest reliability and validity (Reynolds, 1982; Reynolds & Richmond, 1985). The CDI is a 27-item self-report scale measuring cognitive, affective, and behavioral signs of depression.

Both parents completed two self-report measures: i) the Beck Anxiety Inventory (BAI; Beck, Epstein, Brown, & Steer, 1989) a 21-item measure of anxiety symptomatology; and ii) the Beck Depression Inventory (BDI; Beck, Ward, Mendelsohn, Mock, & Erbaugh, 1961) a 21-item measure of depressive symptomatology. The BAI and the BDI are widely used measures and have demonstrated good psychometric properties. Parents also completed the Child Behavior Checklist (CBCL; Achenbach & Edelbrock, 1979) for each child. The CBCL is a widely used measure of behavioral problems and competencies in children and adolescents. The CBCL consists of 118 items including anxiety, social withdrawal, depression, obsession-compulsions, non-communicative behavior, hyperactivity, aggression and somatic complaints.

Procedure

Before completing the questionnaires and tasks, consent from both parents and children was obtained. The siblings were seated in separate rooms at a table with either their mother or father. The children were given one set of tangrams to complete in a five-minute period. The task was videotaped and a clock was

positioned near the dyad so that they could monitor the remaining time. Following completion of the task with one parent, the child changed rooms and was given another set of puzzles to complete in the presence of the other parent. Order of task set, room allocation and order of parent were random. Following completion of the two administrations, non-clinical families were debriefed regarding the purpose of the study. The dyad were told that the study was not aimed at determining "how good the child was at thinking" but rather aimed at examining the way in which they interacted during the task. Families in the clinical sample were asked to complete the tasks again at post-treatment, hence debriefing occurred once the post-treatment assessment had taken place.

Results

Preliminary analyses

Demographics. There were no significant differences in age between the clinically anxious children, siblings of anxious children and non-clinical children and no significant differences in family income between the clinical and non-clinical groups (see Table 1). The gender of the sibling pairs did not differ between the clinical and non-clinical groups $\chi^2(2, N = 57) = 1.44, p > .05$ (Clinical, 35% female sibs, 27% male sibs, 38% female-male sibs; Non-clinical, 20% female sibs, 35% male sibs, 45% female-male sibs).

Age was not related to maternal or paternal Involvement for children in the clinical group however, age was significantly related to maternal Involvement for

interactions involving non-clinical children: The older the non-clinical child, the less help the mother gave (Involvement $r = -.54, p < .05$). Maternal and paternal involvement did not differ according to the sex of the child for interactions involving the anxious child, the sibling of the anxious child, or the non-clinical child.

Descriptive measures. The mean scores for both the parent and child questionnaires for the clinical and non-clinical groups appear in Table 2. As expected, the results indicate that the clinically anxious children reported more anxiety symptomatology than their siblings and non-clinical children. There were no significant differences in self-reported anxiety and depressive symptoms between parents in the clinical and non-clinical group, however mothers reported significantly more anxiety than fathers, regardless of group.

Mother's self-reported anxiety was significantly correlated with maternal involvement ($r = .306, p < .05$). Mother's self-reported depression, and father's self-reported anxiety and depression were not significantly correlated with involvement.

Parent-Child Interactions

Although it was important for the non-clinical siblings to complete the tangram task in the same manner as the siblings from the clinical group, examination of the differences between the interactions involving the non-clinical siblings would be meaningless. Hence, the non-clinical interactions were averaged across the two siblings. A series of t-tests was carried out to compare the non-

clinical interactions with i) interactions involving the anxious child, and ii) interactions involving the sibling of the anxious child. The remaining analysis focused on the clinical sample only, comparing the interactions between anxious children and their siblings. These comparisons were treated as within-subjects analyses since comparisons were made within the same parent.

Comparisons Between Clinical and Non-Clinical Families

Table 3 shows the means and standard deviations for maternal and paternal involvement. Mothers in the clinical group were significantly more involved during the task with the clinically anxious child than mothers in the non-clinical group, $t(55) = 2.78, p < .05$, Cohen's $d = 0.74$. Mothers in the clinical group were also significantly more involved during the task with the sibling of the anxious child in comparison to mothers in the non-clinical group, $t(55) = 2.38, p < .05, d = 0.63$. These differences between mothers in the clinical group remained significant even after controlling for mother's anxiety. Fathers in the clinical group were no more involved during the task with the clinically anxious child than fathers in the non-clinical group, $t(55) = 1.27, p > .05, d = 0.34$. Fathers in the clinical group were also no more involved during the task with the sibling of the anxious child than fathers in the non-clinical group, $t(55) = 0.73, p > .05, d = 0.19$.

Clinical Sample

Having established the differences between clinical and non-clinical groups, two 2x2 ANOVAs were used to analyze the effect of two within-subject factors (Parent: mother and father; Child: anxious child and sibling) on Involvement.

Parental involvement did not differ between anxious children and their siblings $F(1, 36) = 0.98, p > .05, d = 0.13$. However, there was a significant difference between paternal and maternal involvement, indicating that fathers in the clinical group were more involved during the task than mothers $F(1, 36) = 5.44, p < .05, d = 0.44$. The interaction between parent and child was not significant.

Discussion

Preliminary results from an earlier report based on a smaller sample showed that mothers were more involved during the task with clinically anxious children than with siblings of anxious children (Hudson & Rapee, 1998). However, in the larger sample reported here, these differences were no longer evident. Contrary to predictions, the results of the current study showed that mothers and fathers were equally involved during the task with anxious children as they were with siblings of anxious children. In addition, mother-child interactions with both anxious children and their siblings differed significantly from interactions between mothers and non-clinical children. Possible explanations of these results can be offered.

First, it is likely that siblings of anxiety-disordered children share a vulnerability to anxiety (Kelvin, Goodyer & Altham, 1996). Thus, it is possible that parents in the clinical group responded with similar levels of over-involvement to both children due to their common vulnerability. However in the current study, only three siblings met criteria for an anxiety disorder suggesting that shared psychopathology is not the reason for the similar levels of parental involvement between siblings. Nevertheless etiological models of anxiety have suggested that a

child's anxious temperament rather than anxiety disorder evokes an overprotective response from parents (Rapee, 2001). In support of this argument, our previous research showed that self-reported anxiety symptoms were positively related to the degree of maternal overinvolvement during the tangram task (Hudson & Rapee, 2001). With this in mind, the siblings in the current study exhibited some elevation of anxious symptomatology, with approximately one third of the siblings experiencing subclinical levels of anxiety. In addition, the average anxiety score for siblings on the questionnaire measures fell between the mean scores of anxious children and non-clinical children, although the differences between siblings and non-clinical children did not reach significance. Thus, the possibility remains that parents may have responded with over-involvement during interactions with both children because of similarities in temperament.

Alternately, the current results may suggest that over-involvement is not a response to the child's temperament but is a more stable parenting style. This explanation is consistent with the results of recent twin studies of anxiety in children that have indicated that the child's shared environment, that is, the environment common to siblings in a family, plays a more prominent role in the development of anxiety than indicated by the results of earlier adult twin studies (Edelbrock et al., 1995; Eley, 1997; Thapar & McGuffin, 1995). If over-involvement is a more stable parenting trait, then it is possible that other variables such as the parent's own anxiety plays a more central role in determining the degree of over-involvement than does the child's temperament. An anxious mother, due to

her own cognitive bias towards threat and avoidance of threat, may overprotect her children regardless of the child's temperament and become more involved than other less anxious mothers. Contrary to this hypothesis, the differences in maternal over-involvement between clinical and non-clinical families remained significant after accounting for maternal anxiety. This result suggests that maternal over-involvement provides a unique contribution over and above maternal anxiety. However, as previous research has suggested high rates of disorder in parents of anxious children (Last, Hersen, Kazdin, Francis & Grubb, 1987), the lack of difference in parental self-reported anxiety and depression between the clinical and non-clinical groups in the current sample suggests that parents may in fact be underreporting psychopathology. Hence, this may have impacted the relationship between parental anxiety and over-involvement.

Regardless of the origin of over-involvement, its relationship with the anxiety disorders is further supported by this current research. The current results replicate the findings of our previous research and are consistent with other observational and questionnaire research that has demonstrated an association between over-involved parenting and the anxiety disorders (Chorpita, Brown, & Barlow, 1998; Grüner, Muris & Merckelbach, 1999; Hirshfeld, Biederman, Brody, Faraone, & Rosenbaum, 1997; Hudson & Rapee, 2001; Muris, Meesters, Merckelbach & Hülsenbeck, 2000; Siqueland, Kendall & Steinberg, 1996). Although fathers were more involved and intrusive during the task than mothers overall, differences in over-involvement between fathers of anxious children and

fathers of non-clinical children did not reach significance. It is possible that with a larger sample size this difference may become significant. Regardless, paternal over-involvement may have less influence on a child than maternal over-involvement, since, in western society, fathers are generally less responsible for parenting than mothers. Over-involvement may be more influential developmentally when it occurs in the context of a mother-child relationship. Alternately, the fathers in the current study may have given more help because of the visuo-spatial nature of the task. This may have masked potential differences in paternal over-involvement between anxious and non-clinical interactions.

The design of this study enabled a unique analysis of parent-child interactions in families of anxiety-disordered children. The strength of the study lies in the utilization of siblings of clinically anxious children and also in the examination of the father-child interaction. Although the results of the current study provide further support for the link between anxiety and maternal over-involvement, the results demonstrate that over-involvement is not specific to anxiety-disordered children but occurs during interactions with other children in the family. Explanations have been offered for these data however the question whether the observed over-involvement is a result of stable parental variables or elicited by an anxious child, is a crucial theoretical issue requiring further investigation. The results also suggest that paternal over-involvement has a less important relationship with childhood anxiety. However, replication of these findings is necessary before the influence of paternal over-involvement can be

completely ruled out. In addition, the task employed in this study enabled a close examination of parent-child interactions in a specific situation, future research would also benefit from examining parent-child interactions across a variety of settings and situations that may mirror the parent's usual style of responding in non-laboratory tasks. Future research would also benefit from examining differences both within and between families of varying ethnic and racial groups. Finally, it should be noted that this study is cross-sectional in nature. Thus, statements about causality can only be inferential. A twin study observing parental involvement across siblings would assist in teasing apart the role played by shared genetics, while a longitudinal study would provide further information about potential causal influences on anxiety development and maintenance.

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Table 1

Demographic Variables across Groups.

	Anxious Child		Sibling		Non-clinical	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Child's Age (in months)	135	28	129	23	129	34
Family Income (in AUD)	62,273	26,460	62,273	26,460	71,111	32,1887
Age range	<i>N</i>		<i>N</i>		<i>N</i>	
7-9 years	12		13		8	
10-12 years	15		14		8	
13-16 years	10		10		4	

Note. *M* = mean; *SD* = standard deviation *N* = sample size

Table 2

Means and Standard Deviations for Questionnaire Measures across Groups.

Questionnaire	Anxious Child		Sibling		Non-clinical	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
RCMAS	16.0 ^a	5.1	10.9 ^b	7.5	7.9 ^b	5.3
CDI	51.2 ^a	9.8	42.4 ^b	4.7	44.9 ^b	5.9
CBCL						
Internalizing	71.1 ^a	11.1	51.1 ^b	10.1	48.5 ^b	8.1
Externalizing	52.9 ^a	10.6	49.0 ^a	7.7	46.4 ^a	7.5
Questionnaire	Clinical		Non-clinical			
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Mothers						
BAI	16.0 ^a	9.7	12.6 ^a	8.8		
BDI	7.9 ^a	6.9	7.6 ^a	5.6		
Fathers						
BAI	11.6 ^a	7.5	8.8 ^a	9.4		
BDI	5.3 ^a	6.4	6.6 ^a	6.3		

Note. *M* = mean; *SD* = standard deviation. Means sharing superscripts are not significantly different at the critical alpha ($0.05 / 3 = 0.017$; Bonferroni corrected). Scores for the CBCL internalizing and externalizing scales were averaged across maternal and paternal report.

Table 3
Involvement scores: Means and Standard Deviations

Factor	Anxious Child		Sibling		Non-clinical	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Involvement						
Mother	4.80 ^a	1.28	4.66 ^a	1.36	3.66 ^b	1.77
Father	5.41 ^a	1.29	5.20 ^a	1.32	4.92 ^a	1.57

Note: *M* = mean, *SD* = standard deviation. Means sharing superscripts are not significantly different at the critical alpha ($p < .025$)

Footnotes

¹ Exclusion of the siblings with anxiety disorders did not alter the results of the main analyses thus these children remained in the sample.

² In our previous research, two tasks were administered: a tangram task and a scrabble task (Hudson & Rapee, 2001). Due to the strong correlations between the two tasks and the slightly better reliability of the tangram task, the decision was made to include only the tangram task in the current study. A more detailed description of the tangram task used in this study can be found in Hudson and Rapee (2001).

³ Four scales measuring parental negativity (See Hudson & Rapee, 2001) were also included in the original coding but eliminated due to low reliability.