

A Preliminary Study on the Effects of Attachment-based Intervention on Pediatric Obsessive-Compulsive Disorder

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ABSTRACT

Background: Research on attachment has shed new light on understanding one of the underlying mechanisms of psychopathology in children. The aim of this study was to investigate the therapeutic efficacy of attachment-based intervention in a pediatric sample with obsessive-compulsive disorder (OCD).

Methods: Twelve participants, 10-12 years of age, were treated across an eight-week period. They had not been treated with either pharmacotherapy or psychotherapy previously and remained medication-free during the attachment-based therapy. This study comprised two groups of children: The experimental group, who received attachment-based intervention, and the control group, who did not receive treatment. All participants were assessed in terms of severity of OCD symptoms by administering the Children's Yale-Brown Obsessive-Compulsive Scale before and after the experimental group had received the therapeutic sessions. The children were assessed again one month later. The level of children's depression, and attachment insecurity, as well as their mothers' depression, OCD symptoms, and attachment insecurity, were statistically controlled in this study.

Results: Multivariate analysis of covariance (MANCOVA) indicated that the OCD symptoms in children decreased significantly over the course of the therapy, and this gain was maintained at follow-up. The results of this study demonstrated that the attachment-based intervention was efficacious in alleviating the OCD symptoms.

Conclusion: It is suggested that parental instruction in attachment-based relationships may help prevent young children from developing OCD symptoms in middle-childhood and adulthood.

Keywords: Attachment-based intervention, child, obsessive-compulsive disorder, pediatrics

INTRODUCTION

Anxiety disorders are the most common psychiatric illnesses children and adolescence experience.^[1] Obsessive compulsive

disorder is one of the most disabling anxiety disorders affecting children's lives. It involves cognitive and behavioral symptoms that include obsessive thoughts and ritualistic or avoidant behavior. Obsessions, in this disorder, are persistent ideas, thoughts, impulses or images that are experienced as intrusive and inappropriate. Compulsions are repetitive behaviors or mental acts, the goal of which is to prevent or reduce anxiety or distress.^[2] Individuals suffering from OCD often suffer comorbid disorders, the most common of which is major depression.^[3]

In addition to intergenerational transmission of genetic vulnerability to heightened anxiety in children of parents with higher levels of anxiety,^[4] certain patterns of family interactions have been associated with anxiety in youth. Ginsburg and Schlossberg^[5] demonstrated that parental over-control and over-protection, less authoritative parenting, parental reinforcement or modeling of anxious or avoidant behavior, and negative parental expectations concerning their child, elevate the risk of anxiety disorders in children. Similarly, Johnson, *et al.*^[6] found that maladaptive early parenting contributes to psychopathology in children. This study indicated that family interactions contribute more than biological predisposition to the etiology of psychopathology. Other family interaction risk factors that predict the development of OCD include marital discord and family disorganization,^[7] family copying style, parent-child enmeshment, and involvement of rituals.^[8]

Given that childhood anxiety predicts adult morbidity, identifying effective interventions for dysfunctional anxiety in children is of major importance. Some interventions are biological in nature, such as, the use of serotonin reuptake inhibitors (e.g., fluoxetine), which are thought to reduce OCD symptoms through their impact on serotonin neurotransmission.^[9] A more popular approach has been cognitive-behavior therapy involving exposure prevention (EPR), which is one of the most effective interventions for OCD,^[10] and is regarded as the treatment of choice for children and adolescents.^[11] In recent times, it has been observed that family cognitive behavioral therapy (FCBT) appears superior to individual cognitive behavioral therapy.^[12] Grunes, *et al.*^[13] reported that FCBT results in a greater reduction

of OCD symptoms than does a treatment delivered without family participation. Furthermore, Ginsburg and Schlossberg^[5] found that 60 to 90% of the children who received FCBT did not relapse after treatment. An alternative to FCBT, proposed for treating OCD in children, is narrative family therapy, and the efficacy of this approach also has been experimentally supported.^[14]

Maid, Smokowski, and Bacallao^[15] advocated for experimental interventions that focus on maladaptive family roles, such as, communications approaches for families of children with anxiety disorders. Based on the assumed importance of attachment relationships, such approaches emphasize the role of parental acceptance, control, and modeling, in maintaining children's anxiety symptoms. Attachment refers to the emotional bond that arises early between infant and primary caregiver. This bond is marked by the child seeking out of this specific attachment figure in times of need (e.g. stress), and using this figure as a secure base in the exploration of the world. The attachment theory suggests that when parental behavior fails to make children feel safe, secure, and able to trust the parents in times of need, then children will be less able to regulate their emotions and fulfill their needs adaptively. Consequently, they tend to develop negative, insecure views of themselves and others, which puts them at a risk of developing psychological disorders.^[16] Bowlby^[17,18] articulated the potential for an attachment theory to contribute to an understanding of the pathways through which early caregiving experiences could influence mental health or psychopathology. He maintained that the attachment theory could also provide a useful framework for therapeutic interventions.

There has been a growing consensus that attachment is an ongoing process, which becomes organized and reorganized at each stage of development, in keeping with new maturational and experiential opportunities.^[19] Research has demonstrated that insecure children and adults evidence higher rates of psychopathology than do secure children and adults, and has confirmed that the quality of the attachment relationship strongly predicts a variety of child outcomes.^[20] It has been shown that insecurely attached children are more likely to experience anxiety disorders and symptoms than securely attached children.^[21,22] There is also strong evidence that insecure attachment is

a precursor for child anxiety.^[23-25] Reviewing this evidence, Siegel^[26] concluded that attachment affects the child's developing mind.

Myhr, Sookman, and Pinar^[27] postulated that insecure attachment may predispose children to develop OCD. Consistent with this proposal, Sunderland^[28] has reported that attachment insecurity is a risk factor for pediatric OCD. Doron and Kyrios^[29] found that insecure attachment in adults is also associated with OCD. Using a cross-sectional design, Doron *et al.*^[30] demonstrated that this association between attachment insecurity and OCD symptoms in adults is mediated by OCD-related dysfunctional beliefs.

The profoundly adverse effects of OCD on many aspects of individual lives, together with the evidence that attachment problems can heighten vulnerability to OCD symptoms, highlights the potential value of a therapy for pediatric OCD, designed to enhance the attachment relationship between such children and their parents. The aim of the present study is to determine the effectiveness of attachment-based intervention in treating children's OCD. We hypothesized that attachment-based intervention would be effective in decreasing OCD symptoms in children.

METHOD

Participants

The study included 24 female children aged between 10 and 12 years. According to Geller *et al.*,^[31] (1998) the average age of onset for childhood OCD ranges from 7.5 to 12.5 years, with a mean of 10.3 years.

Measures

The Children's Yale-Brown Obsessive-Compulsive Scale (CY-BOCS) is a 10-item semi-structured inventory, assessing the severity of OCD symptomatology experienced during a one-week period.^[32,33] The 10-items are divided into two subscales, respectively, measuring obsessions and compulsions, using the five-point Likert scale rating that ranges from 0 (none) to 4 (extreme). The obsession and compulsion severity scores are derived by summing the five items in each subscale, and a total score is derived by summing all the ten items. This measure has good reliability and validity, and a high degree of internal consistency.^[34]

The Birlerson Depression Self-Rating Scale (DSRS) is an 18-item self-report inventory, developed by Birlerson,^[35] to assess depression in children between eight and fourteen years of age.^[36-38] The Depression Self-Rating Scale for children has been shown to differentiate non-clinical from depressed children.^[35] Children are required to indicate how much of each statement applied to themselves during the past week, using a three-point scale ranging from 0 (never) to 2 (most of the time). This measure has good validity and reliability.^[38,39]

The Inventory of Parent and Peer Attachment - Revised Version for Children (IPPA-R) is a child version of the original IPPA,^[40] developed to measure the positive and negative affective and cognitive dimensions of the adolescents' relationship with their parents and close friends. Gullone and Robinson^[41] revised the IPPA for use in children and younger adolescents, producing the IPPA-R. The IPPA-R is appropriate for use in youth aged between nine and fifteen years. It contains two scales: 28 items assessing parent attachment and 20 items assessing peer attachment. As the association between parenting and OCD symptoms is the focus of interest in this study, participants have been assessed using only the parent attachment scale. The items on this scale assess three dimensions of attachment: Trust, communication, and alienation. Respondents are required to rate how often each item is true for them, on a three point scale: Always true, sometimes true, or never true. Gullone and Robinson^[41] demonstrated that the IPPA-R has good internal consistency for each of the subscales, with Cronbach's alpha coefficients for parent attachment being 0.85 for the trust subscale, 0.79 for the communication subscale, and 0.76 for the alienation subscale. According to Gullone and Robinson,^[41] the IPPA-R also has good convergent validity, established by comparing it with the Self-Esteem Inventory-School Form (SEI) and the Parental Bonding Instrument (PBI).

The Yale-Brown Obsessive-Compulsive Scale Inventory^[32,33] is a 10-item semi-structural clinical interview that measures the following five parameters of obsessions (Items 1-5) and compulsive rituals (Items 6-10). (a) time occupied/frequency, (b) interference, (c) distress, and (d) perceived control. Each item is rated using a five point Likert scale that ranges from 0 (no symptoms) to 4 (severe symptoms), and the 10 items yield

a total score ranging from 0-40. The YBOCS has satisfactory reliability and validity.^[32,33]

The Beck Depression Inventory^[42] is a 21-item scale assessing the affective, behavioral, cognitive, motivational, and physical aspects of depression. Each item consists of four related statements, and the participants choose which best describes them, earning a score on a range from 0 to 3 for each item. The total scores range from 0-63 on the Beck Depression Inventory (BDI). The BDI has high internal consistency and its high convergent validity has been established by comparing its assessment outcome independent interviewer ratings.^[43]

The Inventory of Parent and Peer Attachment^[2] is a self-report measure that assesses trust, communication, and alienation in relationships with parents and peers. The instrument is not designed to classify attachment style, but rather to yield a measure of attachment security. It contains 28 parent items and 25 peer items, with responses to these items being recorded on a five-point Likert scale, ranging from 1 = almost or never true to 5 = almost always or always true. This measure has good psychometric properties.^[2]

Procedure

All parents of children referred to the psychiatric clinics in the third district of the city of Isfahan were given information concerning this study. Children of those parents who filled in the consent forms were administered the Children's Yale-Brown Obsessive-Compulsive Scale. Those children who met the criteria for OCD on this questionnaire were referred to a psychiatrist for clinical interview, and the 24 children who met the DSM-IV diagnostic criteria for OCD, on the basis of this clinical interview, were included in the study. These children had not been previously treated with either pharmacotherapy or psychotherapy and they remained medication-free for the entire duration of the study.

Children were assigned randomly to either the experimental or the control group (12 children in each group). Children in the experimental group each received eight 60-minute sessions of attachment-based intervention, together with their mothers. Children in the control group were told to register their names on a waiting-list, and were informed that they would receive the intervention

at a later point. There was neither any contact between the two groups, nor any experimental mortality among the participants over the therapeutic intervention.

To enable statistical control of variation in the attachment insecurity and depression in the children, they were initially administered the Inventory of Parent and Peer Attachment - Revised Version for Children, and the Birlson Depression Self-Rating Scale. To enable statistical control of maternal attachment insecurity, depression, and obsessive-compulsive disorder, the mothers were initially administered the Inventory of Parent and Peer Attachment, the Beck Depression Inventory, and the Yale-Brown Obsessive-Compulsive Scale. However, the main focus of interest was on the children's OCD symptoms, which were recorded at three different assessment points, using the Children's Yale-Brown Obsessive-Compulsive Scale (CY-BOCS). The first assessment was carried out before the experimental group commenced the intervention (Pre-test); the second was carried out after the experimental group had completed the intervention (Post-test); and the third was carried out four weeks later (Follow-up). This scheduling of assessment is summarized in Table 1.

The dependent variable in this study was the children's OCD symptoms, as measured by the CY-BOCS, and the independent variable was the group, reflecting participant assignment to either the attachment-based intervention or to the control condition. The level of children's

Table 1: Summary of assessment schedule

Group	Pre-test	Post-test	Follow-up
Experimental	T ₁ T ₂ , T ₃ T ₄ , T ₅ , T ₆	T ₁	T ₁
Control	T ₁ T ₂ , T ₃ T ₄ , T ₅ , T ₆	T ₁	T ₁

T1: Children's Yale-Brown Obsessive-Compulsive Scale (CY-BOCS), T2: The Inventory of Parent and Peer Attachment-Revised Version for Children (IPPA-R), T3: The Birlson Depression Self-Rating Scale (DSRS), T4: Yale-Brown Obsessive-Compulsive Scale Inventory (Y-BOCS), T5: Beck depression inventory (BDI), T6: The Inventory of Parent and Peer Attachment ((IPAA), *Attachment-based intervention, Note: T2, T3, T4, T5, T6 were employed as covariates in the statistical analysis of T1 scores

attachment, insecurity, and depression, as well as the mothers' OCD symptoms, depression, and attachment insecurity, were assessed, so they could be statistically controlled in the analysis of the CY-BOCS scores, by including them as covariates. All had significant relationships with the CY-BOCS scores. Table 2 summarizes the eight sessions of attachment-based intervention delivered to participants in the experimental group.

RESULTS

First, all children and mothers' scores in the pre-tests were compared using one-way ANOVAs, in order to determine whether there were any significant differences between the children assigned to each group, or their parents, prior to the commencement of the intervention. There were none. The children assigned to each of the two groups did not differ significantly in terms of their scores on the Children's Yale-Brown Obsessive-Compulsive Scale ($F(1,22) = 3.375$, $P = 0.541$), the Inventory of Parent and Peer Attachment - Revised Version

for Children ($F(1,22) = 0.171$, $P = 0.683$), or the Birlerson Depression Self-Rating Scale ($F(1,22) = 0.00$, $P = 1.00$). The mothers of the children assigned to each of the two groups did not differ significantly in terms of their scores on the Yale-Brown Obsessive-Compulsive Scale Inventory ($F(1,22) = 0.053$, $P = 0.820$), the Beck Depression Inventory ($F(1,22) = 1.145$, $P = 0.296$), or the Inventory of Parent and Peer Attachment ($F(1,22) = 0.517$, $P = 0.480$).

Thus reassured, we turned our attention to the dependent variables of central interest, which were the OCD symptoms experienced by the experimental and control groups, as assessed by the CY-BOCS delivered at pretest, post test, and follow-up. These data were examined, to ensure that there were no outliers, and the Kolmogorov-Smirnow test was used to verify the goodness of fit for normal distribution, while the Levene test was used to verify homoscedasticity. The Box's test of equality of covariance matrices proved non-significant. The CY-BOCS scores

Table 2: The focus of each session in the attachment-based intervention

<p>In session 1, through discussion with children and their mothers, the therapist identified (i) the manner in which attachment and attachment needs contributed to behaviors; and (ii) The manner in which mothers responded to their children's attachment needs.</p> <p>In session 2, the mothers were informed about the ways through which children express their attachment needs. Role playing exercises were given, in which children were encouraged to express their emotional needs through their body language, and their mothers were helped to recognize the subtle signs of children's emotional needs through verbal and non-verbal communication.</p> <p>In session 3, role playing exercises were employed to enable children to practice connecting with, and separating from, their caregivers. Mothers were trained to maintain closeness with their children, or to separate from them, based on their children's needs rather than their own needs.</p> <p>In session 4, the children were helped to express their fears and concerns. Also, they were encouraged to communicate their obsessive and worrisome thoughts. Mothers were taught to remain calm and relaxed, and to convey feelings of safety and security to their children.</p> <p>In session 5, role playing was employed to help mothers identify, and reduce, any tendency to unintentionally reinforce the compulsive rituals of their children. They were, also, trained to avoid blaming children for their compulsive rituals, and for other perceived shortcomings.</p> <p>In session 6, area of conflicts between mothers and children, as well as the meaning of these conflicts, were explored. Mothers were trained to accept their children unconditionally, as one of the most important areas of conflict between mothers and children was parental desire to make their children perfect.</p> <p>In session 7, role playing was employed to help mothers maintain emotional closeness with their children during conflicts. They were taught not to leave their children alone when severe conflict arose, and when this was unavoidable, to promise their children that they would come back as soon as they felt better. Therefore, rather than threatening children or telling them that they would not love them anymore, parents were taught to be emotionally available all the time.</p> <p>In session 8, discussion focused on analyzing mother-child interactions. The therapist sought to ensure that mothers took responsibility for their crucial role in shaping children's behavior. Mothers were also told to expect that change would take place gradually, but were assured that they could overcome difficulties provided that they treated their child harmoniously, and worked on improving the quality of their interactions with their children.</p>
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obtained by the children in each group, at each assessment point, are presented in Table 3.

As it can be observed from Table 3, the mean CY-BOCS score decreased in the experimental group from 29.91 (SD = 3.20) at pre-test to 24.08 (SD = 3.21) at post-test, and 22.83 (SD = 2.75) at follow-up. This reduction was not observed in the control group, where the mean CY-BOCS scores at pre-test, post-test, and follow-up were 29.16 (SD = 2.69), 28.83 (SD = 3.21), and 29.33 (SD = 2.74), respectively. Thus, visual inspection of the data suggest that participants in the experimental group evidenced a decline in their OCD symptoms, while this was not the case with participants in the control group.

The adjusted mean CY-BOCS scores for the two

Table 3: CY-BOCS* scores measuring OCD symptoms in the experimental and control groups at each assessment point

Assessment point	Group	N	Mean	SD
Pre-test	Experimental	12	29.91	3.20
	Control	12	29.16	2.69
Post-test	Experimental	12	24.08	3.50
	Control	12	28.83	3.21
Follow-up	Experimental	12	22.83	2.75
	Control	12	29.33	2.74

*Children’s Yale-Brown obsessive-compulsive scale

groups at post-test and follow-up are shown in the Table 4. As the effects of the covariates have been statistically removed, adjusted means (Estimated Marginal Means) instead of original means are shown in Table 4.

As can be seen from Table 4, the adjusted mean OCD scores suggest that attachment-based intervention lowered OCD symptoms in the experimental group participants, relative to the control group participants, both at the post-test assessment (23.921 vs. 28.996) and at the follow-up assessment (22.920 vs. 29.247). The mean CY-BOCS scores obtained at each assessment point by each group of participants are plotted in Figure 1.

A Mancova was carried out on the CY-BOCS scores, both at the post-test and the follow-up assessment points. When combining the data across the assessment points, there was a significant main effect on a group, reflecting lower CY-BOCS scores in the participants who had received the attachment-based intervention compared to those in the control condition ($F(2, 15) = 36.163, P < 0.0005; Wilks' Lambda = 0.172, partial \eta^2 = 0.828$). Table 5 shows the outcome of the analysis at each of the two assessment points, carried out using Bonferroni adjusted alpha level of 0.025. As shown in Table 5, there was a significant

Table 4: Adjusted CY-BOCS* scores measuring OCD symptoms in the experimental and control groups at each of the two post-intervention assessment points

Assessment point group	Mean	Std. Error	95% confidence interval	
			Lower bound	Upper bound
Post-test experimental	23.921	0.705	22.425	25.416
Control	28.996	0.705	27.500	30.491
Follow-up experimental	22.920	0.456	21.953	23.887
Control	29.247	0.456	28.279	30.214

*Children’s Yale-Brown obsessive-compulsive scale

Table 5: The outcome of MANCOVA, assessing the significance of the experimental versus control group differences in CY-BOCS* scores following the intervention

Resource	Dependent variable	Sum of square	df	Mean square	F	Sig.	Partial eta squared	Observed power
Group	Post-test CY-BOCS*	92.708	1	92.708	20.704	0.00	0.564	0.989
	Follow-up CY-BOCS	144.070	1	144.070	76.893	0.00	0.828	1.00

*Children’s Yale-Brown obsessive-compulsive scale

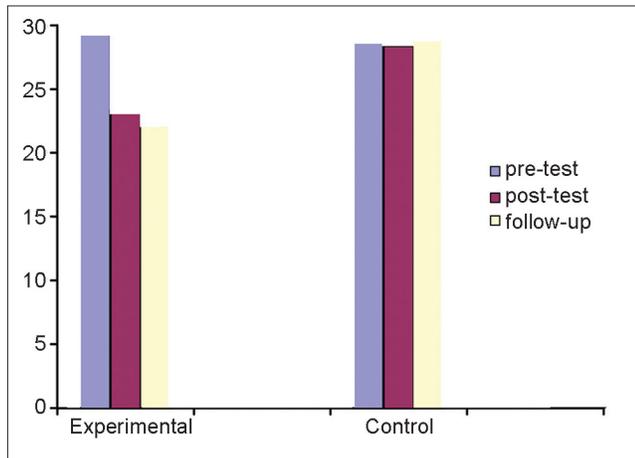


Figure 1: Children's CY-BOCS scores, indicating OCD symptoms at each assessment point in the experimental and control groups

impact of intervention on the decreasing OCD symptoms in children, indicated by lower CY-BOCS scores in the experimental group at the post-test assessment ($F(1, 16) = 20.724, P < 0.0005$, partial $\eta^2 = 0.564$). This significant effect was maintained at (F (1, 16) = 76.893, $P < 0.0005$, partial $\eta^2 = 0.828$). The observed power in the post-test (0.989) and follow-up (1.00) analysis provides confidence in these outcomes.

DISCUSSION

The aim of this study was to determine the effectiveness of attachment-based intervention on the ameliorating OCD symptoms in children. Consistent with our hypothesis, the findings demonstrated that attachment-based intervention was effective in decreasing OCD symptoms in children. To our knowledge, this is the first study to investigate the effect of attachment-based intervention on pediatric OCD. Our findings are compatible with the previously observed efficacy of pediatric OCD treatments that have targeted family members as well as children over the course of the therapy. For example, Grunes^[13] reported that compared to interventions that did not involve family participation, family treatment for pediatric OCD produced greater reduction in OCD symptoms.

The impact of attachment-based intervention on children's OCD symptoms plausibly may be explained by the effects of the intervention on parental sensitivity and responsiveness to

their children's attachment needs, which in turn beneficially attenuated their children's sense of personal vulnerability, as well as their negative world perception, across the course of the therapy. Guidano and Liotti^[44] have argued that perception of the world as being threatening, but controllable, translates into active attempts to control the environment, which can the symptomatology observed in individuals suffering from OCD. As we reviewed earlier, research has demonstrated that a subjective sense of security, and hence, the degree to which the world is perceived as threatening, is related to early attachment experiences.^[45,46] It has been reported that individuals with OCD often experience thoughts that contradict valued aspects of self.^[47] Children with OCD are vulnerable to intrusive thoughts that trigger insecurity concerning their competence in those fields they consider as highly valuable. Sookman *et al.*^[48] have shown that greater perception of personal vulnerability, difficulty with unpredictability and a greater need for control, distinguishes OCD from other anxiety disorders.

Guidano and Liotti^[44] suggested that insecure parent-child interactions, which make children uncertain of the degree to which they are loved, wanted or worthy, can lead them to develop opposing self-perceptions, such as lovable or unlovable. This insecure or ambivalent self-worth may result in chronic self-monitoring and in rumination about one's relation to others. Perfectionism and compulsive behaviors emerge as a means of securing approval and stabilizing one's self-perception as lovable and worthy. Ehiobuche^[49] showed that students with high scores on obsessionality reported their parents to be more rejecting, more over-protective, and less emotionally warm, than did students with low obsessionality scores. Turgeon, O'Connor, Marchand, and Freeston^[50] showed parental protectiveness to be more common in families of children with OCD than in the control families. Such styles of parental interaction may make children worry about experiencing strong feelings. Some parents who seek to avoid intense feelings may do so by becoming over-controlling. This can include controlling their children's time, space, beliefs, feelings, and wants. Essentially, they may communicate to their children, "No you don't feel this, you feel that. No you don't need this; you need

that.”^[28] It has been argued that this undermines the child’s capacity to deal independently with emotional experience, and so when the child has no one to help him/her with his/her emotions, obsessive rituals or similar controlling behavior becomes his/her only way of making the world safe. Some theorists contend that checking rituals engaged in by children may represent an attempt to make at least part of the environment predictable and dependable, in order to make it feel safe.^[28]

During the course of our intervention, a range of overprotective behaviors were reported by parents, including providing reassurance, engaging in rituals for children, doing home work for children, making decisions for children, and promoting their avoidance of situations that might provoke their OCD symptoms. Therefore, early in therapy the possible relationships between children’s symptoms and perceived threats to parental emotional and physical availability were addressed as potential factors that could block a safety relationship between child and mother. Also, parents were taught to increase their emotional openness and to show a more accepting behavior toward their children in order to help their children to see themselves as more lovable and the world as a safer place.

Given the beneficial effect that enhancing parent–child relationship has on children’s obsessive-compulsive disorder, it seems likely that if applied during the early years of childhood, attachment-based instructions may contribute to the prevention of OCD in children. This hypothesis could be profitably evaluated in future research studies. It would be appropriate for subsequent research, to not only seek to maximize the clinical efficacy of attachment-based intervention, but also to illuminate the mechanisms through which it exerts its therapeutic effect. The former objective can be pursued by investigating whether the attachment-based intervention approaches can be effectively combined with other established forms of treatment. For example, combining cognitive-behavior therapy with attachment-based intervention may produce especially powerful therapeutic benefits. Future studies designed to illuminate the mechanism through which attachment-based intervention ameliorates OCD symptoms should evaluate whether changes in the children’s sense of security, or changes in their patterns of selective information processing,

mediate the relationship between enhanced attachment and reduced pediatric OCD symptoms.

Of course, the present study has a number of limitations. Because this is the first study to show that attachment-based intervention may be effective in the treatment of pediatric OCD, we must be cautious about the reliability and generalizability of the findings. Another reason to treat the results as preliminary is the small sample size. Although the follow-up data are encouraging, we assessed the maintenance of clinical improvement only one month after completion of treatment, and more extended follow-ups should be included in the future studies to evaluate the long-term effectiveness of attachment-based intervention. As participants in this study were comprised of only female children, it would be necessary to replicate the work with male children, before concluding that attachment-based intervention was effective for both sexes. Finally, it would be useful to examine whether the inclusion of both parents in the therapeutic sessions, rather than mothers alone, would further enhance the positive impact of attachment-based intervention on the recovery from OCD in children.

CONCLUSION

In summation, the results of the present study are promising and encouraging. They suggest that attachment-based intervention is effective in reducing obsessions and compulsions in pediatric samples. Therefore, attachment-based intervention can be considered as a useful component of therapy for pediatric OCD, and its inclusion may ensure that the treatment is effectively continued by parents after formal therapy has been completed. Given the important influence that parents’ behaviors have on children’s OCD symptoms, it seems likely that attachment-based relationship instructions delivered to families with young children may also contribute to prevention of later OCD symptoms both in middle-childhood and adulthood.

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REFERENCES

1. Cartwright-Hatton S, McNicol K, Doubleday E. Anxiety in a neglected population: Prevalence of anxiety disorders in pre-adolescent children. *Clin Psychol Rev* 2006;26:817-33.
2. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*. 4th ed. Washington, DC: 1987.
3. Eisen JL, Goodman WK, Keller MB, Warshaw MG, DeMarco LM, Luce DD, *et al.* Patterns of remission and relapse in obsessive-compulsive disorder: A 2-year prospective study. *J Clin Psychiatry* 1999;60:346-51.
4. Hettema JM, Neals MC, Kendler KS. A review and meta-analysis of the genetic epidemiology of anxiety disorders. *Am J Psychiatry* 2001;158:1568-78.
5. Ginsburg GS, Schlossberg MC. Family-based treatment of childhood anxiety disorder. *Int Rev Psychiatry* 2002;14:143-54.
6. Jounson J, Cohen P, Kasen S, Smailes E, Brook J. Association of maladaptive parental behavior with psychiatric disorder among parents and their offspring. *Arch Gen Psychiatry* 2001;58:453-60.
7. Black DW, Gaffney GR, Schlosser S, Gabel J. Children of parents with obsessive-compulsive disorder: A 2-year follow-up study. *Acta Psychiatr Scand* 2003;107:305-13.
8. Freeman JB, Garcia AM, Fucci C, Karitani M, Miller L, Leonard HL. Family-based treatment of early-onset obsessive-compulsive disorder. *J Child Adolesc Psychopharmacol* 2003;13:71-80.
9. Leonard H, Swedo S, Rapoport J, Koby E, Lenane M, Cheslow D, *et al.* Treatment of obsessive-compulsive disorder with clomipramine and desipramine in children and adolescents: A double-blind comparison. *Arch Gen Psychiatry* 1989;46:1088-92.
10. March J, Leonard H. Obsessive compulsive in children and adolescents: A review of the past 10 years. *J Am Acad Child Adolesc Psychiatry* 1996;35:1265-73.
11. March J, Frances A, Carpenter D, Kahn D. Expert consensus guidelines on obsessive-compulsive disorder. *J Clin Psychiatry* 1979;58:1-27.
12. Northey WF, Wells KC, Silverman WK, Bailey CE. Childhood behavioral and emotional disorders. *J Marital Fam Ther* 2003;29:523-45.
13. Grunes MS, Neziroglu F, McKay D. Family involvement in the behavioral treatment of obsessive-compulsive disorder: a preliminary investigation. *Behav Ther* 2001;32:803-20.
14. McCluckie A. Narrative family therapy for pediatric obsessive-compulsive disorder. *J Fam Psychother* 2005;16:83-106.
15. Maid R, Smokowski P, Bacallao M. Family treatment of childhood anxiety. *Child Fam Soc Work* 2008;13:433-42.
16. Bowlby J. *Attachment and loss*: Vol. 1. Attachment. New York: Basic Books; 1982.
17. Bowlby J. The making and breaking of affectional bonds: I. Aetiology and psychopathology in the light of attachment theory. *Br J Psychiatry* 1977a;130:201-210.
18. Bowlby J. The making and breaking of affectional bonds: II. Some principles of psychotherapy. *Br J Psychiatry* 1977b;130:421-31.
19. Greenspan SL, Lieberman AF. A clinical approach to attachment. In: Belsky J, Nezworski T, editors. *Clinical implications of attachment*. Hillsdale, NJ: Erlbaum; 1988. p. 387-424.
20. Greenberg MT. Attachment and psychopathology in childhood. In: Cassidy J, Shaver PR, editors. *Handbook of attachment: Theory, research, and clinical implications*. New York: Guilford; 1999. p. 469-96.
21. Lyons-Ruth K, Alpern L, Repacholi B. Disorganized infant attachment classification and maternal psychological problems as predictors of hostile-aggressive behavior in the pre school classroom. *Child Dev* 1993;64:572-85.
22. Speltz ML, Greenberg MT, Deklyen M. Attachment in preschoolers with disruptive behavior: A comparison of clinic-referred and nonproblem children. *Dev Psychopathol* 1990;11:1-13.
23. Muris P, Mayer B, Meesters C. Self-reported attachment style, anxiety and depression in children. *Soc Behav Pers* 2000;28:157-62.
24. Warren SL, Huston L, Egeland B, Sroufe LA. Child and adolescent anxiety disorders and early attachment. *J Am Acad Child Adolesc Psychiatry* 1997;36:637-44.
25. Lewis M, Feiring C, McGuffog C, Jaskir J. Predicting psychopathology in six-year-olds from early social relations. *Child Dev* 1984;55:123-36.
26. Siegel DJ. *The developing mind: Toward a neurobiology of interpersonal experience*. New York: Guilford; 1999.
27. Myhr G, Sookman D, Pinard G. Attachment security and parental bonding in adults with obsessive-compulsive disorder: A comparison with depressed out-patients and healthy controls. *Acta Psychiatr Scand* 2004;109:447-56.
28. Sunderland M, Armstrong N. *Helping children who are anxious or obsessional*. UK: Speechmark; 2005.
29. Doron G, Kyrios M. Obsessive-compulsive disorder: A review of possible specific internal representations within a broader cognitive theory. *Clin Psychol Rev* 2005;25:415-32.
30. Doron G, Moulding R, Kyrios M, Mikulincer MN. Adult attachment insecurities are related to Obs Compulsive phenomena. *J Soc Clin Psychol* 2009;28:1022-49.
31. Geller D, Biederman J, Jones J, Park K, Schwartz S, Shapiro S, *et al.* Is juvenile obsessive-compulsive disorder a developmental subtype of the disorder? A

- review of pediatric literature. *J Am Acad Child Adolesc Psychiatry* 1998;37:420-7.
32. Goodman WK, Price LH, Rasmussen SA, Mazure C, Delgado P, Heninger GR, *et al.* The Yale-Brown Obsessive-Compulsive Scale: II. Validity. *Arch Gen Psychiatry* 1989;46:1012-6.
 33. Goodman WK, Price LH, Rasmussen SA, Mazure C, Fleischmann RL, Hill CL, *et al.* The Yale-Brown Obsessive-Compulsive Scale: I. Development, use, and reliability. *Arch Gen Psychiatry* 1989;46:1006-11.
 34. Schahill L, Riddle MA, McSwiggin-Hardin M, Ort SI, King RA, Goodman WK, *et al.* Children's Yale-Brown Obsessive Compulsive Scale: Reliability and validity. *J Am Acad Child Adolesc Psychiatry* 1997;36:844-52.
 35. Birlleson P. The validity of depressive disorder in childhood and development of a self-rating scale: A research project. *J Child Psychol Psychiatry* 1981;22:73-88.
 36. Charman T. The stability of depressed mood in young adolescents: A school based survey. *J Affect Disord* 1994;30:109-16.
 37. Ivarsson T, Lidberg A, Gillberg C. The Birlleson Depression Self-Rating Scale (DSRS). Clinical evaluation in an adolescent inpatient population. *J Affect Disord* 1994;32:115-25.
 38. Birlleson P, Hudson I, Buchanan DG, Wolff S. Clinical evaluation of a self-rating scales for depressed disorder in childhood. *J Child Psychol Psychiatry* 1987;28:43-60.
 39. Firth MA, Chaplin L. The use of Birlleson depression scale with a non clinical sample of boys. *J Child Psychol Psychiatry* 1987;28:79-85.
 40. Armsden GC, Greenberg MT. The inventory of parent and peer attachment: Individual differences and their relationship to psychological well-being in adolescents. *J Youth Adolesc* 1994;16:427-54.
 41. Gullone E, Robinson K. The Inventory of Parent and Peer Attachment –Revised (IPPA-R) for children: A psychometric evaluation investigation. *Clin Psychol Psychother* 2005;12:67-79.
 42. Beck AT, Rush AJ, Shaw BF, Emery G. *Cognitive therapy of depression*. New York: Guilford Press; 1979.
 43. Beck AT, Steer RA, Garbin MC. Psychometric properties of the Beck Depression Inventory: Twenty-five years of evaluation. *Clin Psychol Rev* 1988;5:307-24.
 44. Guidano VF, Liotti G. *Cognitive processes and emotional disorders*. New York: The Guilford Press; 1983.
 45. Ainsworth M, Blehar M, Waters E, Hall S. *Patterns of attachment. Assessment in the strange situation and at home*. Hillsdale, NJ: Erlbaum; 1978.
 46. Bowlby J. *Attachment and loss. Separation: Anxiety and Anger*, Vol. 2. New York: Basic Books; 1973.
 47. Rowa K, Purdon C. Why are certain intrusive thoughts more upsetting than others? *Behav Cognit Psychother* 2003;31:1-11.
 48. Sookman D, Pinard G, Beck AT. Vulnerability schemas in obsessive-compulsive disorder. *J Cognit Psychother* 2001;15:109-30.
 49. Ehiobuche I. Obsessive-compulsive neurosis in relation to parental child-rearing patterns among the Greek, Italian, and Anglo-Australian subjects. *Acta Psychiatr Scand* 1988;78:115-20.
 50. Turgeon L, O'Connor KP, Marchand A, Freeston MH. Recollections of parent-child relationships in patients with obsessive-compulsive disorder and panic disorder with agoraphobia. *Acta Psychiatr Scand* 2002;105:310-6.

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