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Stress Symptoms and Stress-Related Coping in Depressed Children

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Abstract

Background: It has been proposed that stress occurrence and stress coping strategies play an important role in the aetiology and maintenance of depression in children. The present study provides data on stress-related correlates of childhood depression.
Methods: A community sample of 99 children with a mean age of 11.4 years was studied. 20 of them were classified as depressed. Stress symptoms and stress coping were measured by a standardised and validated German questionnaire for children.
Results: The data show significantly higher values in depressed children for somatic symptoms of stress ($p<.02$) and for subjective feelings of being stressed ($p<.001$). Coping behaviours in the depressed children were maladaptive ($p<.01$), with a focus on destructive emotion regulation ($p<.02$), which particularly occurred in depressed boys ($p<.02$).
Conclusion: The results confirm and extend former empirical data and recommend the specific usefulness of stress-related elements in treatment and prevention programmes for depression in children (German J Psychiatry 2010; 13 (2): 74-78).

Keywords: depression, children, stress, coping

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Introduction

In the past three decades, depression research in children and adolescents has progressed from applying simple extensions of clinical descriptions and theories developed in adults to generating an increasingly sophisticated understanding of the disorder in the context of developmental psychopathology.

Lifetime prevalence of major depression goes up to 25% in the U.S. (Hankin et al., 1998). On the level of diagnoses in Germany a lifetime prevalence of 17,9% for a depressive disorder in children is reported (Essau et al., 2000). When using self rating scales for depression 42% of adolescents reported of depressed mood that has lasted at least for two weeks. Girls are affected twice as much than boys (Angold et al., 1998).

The relevance of specific factors for aetiology and maintenance of a depressive disorder in childhood has been suggested in a comprehensive review of Rao and Chen (2009).

Social factors. The risk to suffer from a psychological disorder is generally higher for children in families with a low social status. This was shown already 1996 by Costello et al. In particular they found that children from low income families have a threefold greater risk to develop an affective disorder than children from families with a higher social status. These data have been confirmed by a recent study of Goodman et al. (2003), using multilevel analyses.

Parental psychopathology: Depression in children is often associated with the absence of supportive and positive interactions with parents and is characterised by elevated levels of conflictual, critical and angry interactions (Sheeber & Sorensen, 1998). Such an interaction style occurs predominantly, if a high level of parental psychopathology is present. This is supported by a controlled clinical study of Seguin et al.

Table 1: Perception of stress in depressed and non-depressed children (percentiles, mean ± SD)

	Depressed Male n=8	Depressed Female n=12	Non-depressed Male n=42	Non-depressed Female n=37
Physical symtoms of stress	63.4±31.4	63.6±28.8	46.0±26.5	45.4±21.4
Feelings of being stressed	69.3±18.4	75.6±21.5	54.4±26.3	46.5±30.3

MANOVA: Main effect of depression group simultanously for physical symptoms of stress and feelings of being stressed ($p<.001$). Post hoc tests (depressed vs non-depressed). Physical symptoms of stress: $p<.02$; feelings of being stressed: $p<.001$.

(2003). Major depression in children was associated with the presence of a DSM IV disorder in any of the parents. A large scale study (n= 934) with a nonclinical sample revealed the same result (Fergusson et al., 1995).

Cognitive factors. As in depression theories for adults recent research in children also points to attribution style and negative cognitive distortions being responsible for the development and maintenance of depression (Jacobs et al., 2008). When confronted with stressful experiences, those who make global, stable, and internal attributions for negative events will appraise stressors and their consequences negatively and therefore are more likely to become depressed than those who do not have such cognitive styles. In the long-term this will generate hopelessness, which in turn increases the probability for the perception of negative events and leads to the typical motivational deficits and dysphoric mood in depressed children (Hankin & Abramson, 2001).

Negative cognitive distortions have been suggested by Beck (1967) to closely relate to depression. These include for example overgeneralization, overestimation of the significance of undesirable events, and dichotomous thinking or all or none reasoning. Empirical investigations have shown that the concept is also valid in children (McCreary et al., 2004). Furthermore it was confirmed that negative cognitive distortions are specific for the development and persistence of depression in adolescents (Weisz et al., 2001).

If the mentioned factors are present in children, they directly should generate stress. The high degree of acute and chronic stressors is also reflected in hyperactivity of HPA axis. Children with a major depression had significantly elevated cortisol values during the day (Goodyer et al. 1991). The cortisol response to psychosocial stress is increased in children with major depressive disorder and they show nonsuppression in the Dexamethason suppression test (Rao et al. 2008, Luby et al., 2003, Lopez-Duran et al., 2009).

The psychological factors on the one hand enhance the stress level of the children, but on the other hand they seem to prevent effective stress coping strategies. This has been found in clinical as well as in nonclinical samples (Asarnow et al., 1987; Wei et al., 2003; Compas et al., 2006).

The present investigation was designed to describe stress symptoms and stress coping strategies in depressed children compared to a normal control group. We hypothesised a higher degree of stress symptoms and dysfunctional coping strategies in the depressed children.

Methods

The present study was part of a larger investigation, dealing with stress induced eating behaviour in children (Lindel & Laessle, 2002).

Informed consent of all participants was approved by the Ethical committee of the University of Trier.

Sample

99 children with a mean age of 11.4 years (± 1,9) and a mean body mass index of 21.7 (±4.9) were studied. All the children had been recruited by advertisement on the university campus or in local schools. Exclusion criteria were: physical illness, taking medication, and a psychiatric diagnosis other than depression. These criteria were checked during a clinical investigation by a paediatrician.

The degree of depression was measured by the "Depressionsinventar für Kinder und Jugendliche" (DIKJ; Stiensmeier-Pelster et al., 2002), which is originally based on the Children's Depression Inventory of Kovacs, (1985) and is of proven reliability and validity as a German depression scale for children (Menzel et al., 2003). A raw value of 18 on the DIKJ indicates clinically significant depression and the children were divided into the two comparison groups according to this cut-off point.

20 children with a mean body mass index of 23.4 (±6.0) and a mean age of 12.0 (±1.7) were classified as depressed. 79 children with a mean body mass index of 21.4 (±4.6) and a mean age of 11.2 (±1.9) were classified as non-depressed.For these variables t-tests revealed no significant differences between comparison groups.

The degree of stress and specific coping strategies was measured by using the "Fragebogen zur Erhebung von Stress und Stressbewältigung im Kindes- und Jugendalter" (Lohaus et al., 2006). Physical symptoms of stress include headache, musculo-sceletal pain, sleep difficulties, and poor appetite. Each of these symptoms had to be rated for its frequency of occurrence during the last week on a three-point scale (not at all, one time, at least 3 times). The coping strategies were rated in the same way also for occurrence during the last week. Studies on psychometric properties of the scales show internal consistencies between .67 and .80

Table 2 Coping strategies in depressed and non-depressed children (percentiles, mean ± SD)

	Depressed Male N=8	Depressed Female N=12	Non-depressed Male N=42	Non-depressed Female N=37
Seek for social support	79.5±18.9	50.4±27.9	60.6±28.5	51.1±29.5
Problem focused coping	45.8±12.0	55.6±26.9	46.4±23.2	52.3±29.1
Destructive emotion regulation	81.8±17.4	51.2±23.3	45.0±26.8	44.0±31.6

MANOVA: main effect of depression group simultaneously for the 3 scales seek for social support, problem focused coping, and destructive emotion regulation ($p<.01$) post hoc tests (depressed vs non-depressed) only significant for destructive emotion regulation: $p<.02$.

and retest reliabilities between .52 and .84. (Eschenbeck et al., 2006)

Statistical analyses

Multivariate analyses of variance (MANOVA) were carried out. First, an overall test for all dependent variables simultaneously was done. If significant, post hoc tests for single variables are provided. Significance levels are all two-tailed. For the analysis the statistical package for the social sciences (SPSS 17) was used.

Results

The data for stress symptoms are depicted in Table 1. There was a significant main effect of depression group for the two scales simultaneously: $F(2, 93) = 8.5$; $p<.001$. Depressed children perceived a higher degree of physical symptoms of stress: $F(1, 94) = 6.3$, $p<.02$. They also had more feelings of being stressed: $F(1, 94) = 13.0$, $p<.001$.

The data for coping behaviours are depicted in Table 2. There was a significant main effect of depression group for all three scales simultaneously: $F(3, 91) = 4.3$, $p<.01$. Looking separately at the strategies, significant higher values for depressed children were obtained for "destructive emotion regulation": $F(1, 93) = 5.2$, $p<.02$. This difference was due in particular to higher scores for depressed boys: significant GROUP X SEX interaction: $F(1, 93) = 5.7$, $p<.02$.

Discussion

This study has limitations that warrant some caution when interpreting the data. First, we investigated a nonclinical sample of children. A generalisation to clinically ill patients with major depression therefore may not be straightforward. Second, the number of depressed boys was very small and their data should be replicated with a larger sample. Third, we exclusively used self rating scales for children. Parents' or teachers' ratings on stress and stress coping could not be evaluated. Therefore, the validity of these ratings could be questioned. Fourth, the children were not diagnosed according to criteria for major depression in DSM or ICD. A high degree of depression was concluded from a depression symptom scale, which does not directly check diagnostic criteria, but is based on symptoms, mentioned in the criteria.

Keeping these limitations in mind, our data elucidate important differences with respect to stress in depressed and non-depressed children. Physical symptoms of stress reflected in somatic complaints co-occured frequently with depression in our sample. The high stress load was also seen in the subjective feeling of being stressed in the depressed children. Furthermore, although not statistically significant, our results point to sex differences with girls being more affected than boys, particularly when subjective feelings are considered. Coping strategies in depressed children in our sample have been found to be less effective, with boys having the highest values on the scale "destructive emotion regulation".

The presented results on physical symptoms of stress in depressed children are strongly supported by other studies. Somatic complaints such as musculoskeletal pains were significantly associated with depression in both girls and boys (Egger et al., 1999) but more pronounced in boys. Also, somatic symptoms such as headache and abdominal pain have been found in significantly higher rates in children with depression than in children with other mental disorders. (Masi et al., 2000). A controlled study by Liakopoulo-Kairis, (2002) gives further support with respect to the stress symptoms headache and abdominal pain, which therefore seem to be the most frequent physical correlates of stress in depressed children.

Our results on the perception of a high stress level in depressed children are supported by several other studies. Mayer et al. (2009) reported a significantly higher stress load in children with a diagnosis of MDD in comparison to a normal control group. Further support comes from Williamson et al. (2005) , who also found significantly more stress events in depressed vs non-depressed children, in particular for girls. A large scale study (n=2465) in a representative sample of Norwegian adolescents (Sund et al., 2003) shows that subjective feelings of stress are significantly related to the degree of depression. Whereas we did not found significant sex differences in the perception of stress in depressed children, the above mentioned studies point to marked differences in stress feelings between depressed boys and girls.

Our results on coping strategies are well in line with the data from the clinical study of Asarnow et al. (1987), who found

maladaptive coping being specific for children with a diagnosis of major depression. Support also comes from two non-clinical investigations that found a significant relationship between destructive coping and the degree of depression in children and adolescents (Compas et al., 2006; Wei et al., 2003). Coping strategies in depressed children have also been studied by Burwell and Shirk (2007). They report a significant association of depression with destructive coping, particularly for girls, which is in some contrast to our results. A less effective regulation of negative emotions is further reported by Silk et al. (2003), who confirmed our finding that depressed boys are worst in effective emotion regulation.

Because of the correlational nature of this study, no causal relationship between stress and depression can be concluded. It is also possible that the association is the other way around. Namely, because the children are depressed, they perceive more bodily signs of stress and subjectively feel more stress. Only prospective longitudinal studies are able to clarify the causal relationship, although there are already data, supporting the hypothesis that stress generates depression in children (Cole et al., 2006; Rao et al., 2008; Goodyear et al., 2000), all the studies using time intervals of at least 12 months.

Implications for treatment

The presented data support an integration of specific stress-related elements in treatment and prevention programmes for depressed children. There are recent examples of the success of such programmes, when they contain specific interventions to cope with stress and negative emotions. Two randomized clinical trials evaluated the effects of treatment in depressed children. Both used specific cognitive behavioural interventions to cope with stress situations. (Biegel et al., 2009; Clarke et al., 2001). A third study showed the effect for a prevention programme (Poessel et al., 2004).

Future research on the psychobiology of stress in depressed children and adolescents is needed to provide adequate aetiological models that should enable the optimising of treatment packages.

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