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# Behavior Modification of Aggressive Children in Child Welfare

## Evaluation of a Combined Intervention Program

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Children and adolescents with aggressive disorders are prevalent in child welfare settings. Therefore, the assumption is that child welfare services would benefit from a cognitive-behavioral intervention. This study investigates whether implementation of the training with aggressive children (TAC) could improve the outcome of child welfare. Twelve children (average age 10 years), diagnosed with an oppositional defiant disorder or a conduct disorder, are treated either with a child welfare program or with a combined intervention of child welfare program and TAC. Before and immediately after completion of the combined treatment, parent and teacher ratings are collected. Parents report children participating in child welfare and TAC to show a stronger decline in social and conduct problems as well as a clearer increase in prosocial behavior. Teachers see a better improvement in social problems and tended to report a decrease in aggressive behavior. Results confirm that the TAC can enhance effects of a child welfare program.

**Keywords:** *cognitive-behavioral therapy; child welfare service; oppositional defiant disorder; conduct disorder; effectiveness study*

According to the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., American Psychiatric Association, 1994), severe forms of aggressive behavior in childhood and adolescence are categorized as

oppositional defiant disorder (ODD) or conduct disorder (CD). The diagnosis of ODD covers behavior patterns characterized by intense defiance, anger, irritability, and vindictiveness. ODD mostly affects younger children.

The *DSM-IV* describes CD as delinquent and violent manifestation of aggression. Diagnostic criteria of CD encompass a diversity of behaviors directed against people, animals, norms, and property. In detail, the CD diagnosis encompasses acts such as seriously harming others using weapons, bullying, tormenting animals, deliberately destroying others' property, theft, and deceitfulness. The *DSM-IV* differentiates two subtypes of CD, depending on when the disorder has developed (childhood or adolescence). Furthermore, CD is considered as a precursor of an antisocial personality disorder. For a corresponding diagnosis to be given, a CD has to have developed before the age of 15.

ODD and CD are prevalent among 5- to 15-year-olds: A study based on a large population sample in Great Britain revealed that 2.31% fulfill the *DSM-IV* criteria of an ODD and 1.47% those of a CD (Ford, Goodman, & Meltzer, 2003). Minors suffering from such disorders are not only found in ambulant psychotherapy settings or psychiatry but in child and youth welfare institutions as well (Schmid, Goldbeck, Nützel, & Fegert, 2008). Keil and Price (2006) inferred from several studies that the prevalence of aggressive, oppositional behavior in child welfare settings averages 42%. This fact demands a more psychotherapeutic orientation of child welfare when caring for aggressive children and adolescents. Because of the complexity of this behavior and its diverse causes, it was advised to treat aggression with multiple strategies derived from different theoretical frameworks (Jensen, 2008).

German child welfare services primarily rely on pedagogical methods. It can be assumed that aggressive children benefit from a child welfare program if the program is equipped with psychological approaches: Effectiveness of cognitive-behavioral therapy (CBT) programs for reducing aggressive-oppositional behavior in children and adolescents is increasingly supported by empirical data (Eyberg, Nelson, & Boggs, 2008; Sukhodolsky, Kassonov, & Gorman, 2004). These programs are mostly manualized and can be implemented by (trained and supervised) social workers and clinicians with a master's degree in mental health and related fields (Eyberg et al., 2008). Van Camp et al. (2008) recently demonstrated how foster parents and other caregivers in child welfare can benefit from participating in a behavioral parent training. These aspects support an implementation of CBT in child welfare.

In the present study, it was investigated, whether the combination of CBT for aggressive children (training with aggressive children) and a child welfare program could achieve better effects than the exclusive child welfare program. Therefore, children who participated in the child welfare program were additionally assigned to CBT. These children ought to show stronger improvements regarding aggressive and delinquent behavior, social problems, and prosocial behavior than those exclusively treated with the child welfare program.

Because aggressive symptoms are relatively persistent (Kokko & Pulkkinen, 2005; Offord et al., 1992), it was supposed that reducing aggressive behavior requires a long-term treatment. Accordingly, it was hypothesized that aggressive children benefit more from participating in a long-term treatment than a short-term one. Long-term treatment was defined as a two-stage intervention: First, children participated in the child welfare program for about 5 months. Then the CBT started in addition to the child welfare program, and children were treated with two interventions simultaneously.

## Method

### Participants

Twenty-four children (21 boys and 3 girls) in the age group of 7 to 11 years, and recruited from a German child and youth welfare institution, took part in this study (Table 1). Children were included if they were between 6 and 12 years of age and had been diagnosed with a conduct disorder (CD) or an oppositional defiant disorder (ODD) according to *DSM-IV*. Children with pervasive developmental disorders or mental retardation were excluded. Participants were divided into two groups of 12 children (intervention and wait-list control group): In both groups, at least 5 children (42%) fulfilled the diagnostic criteria of an ODD and 1 child (8%) those of a CD. Six children (50%) in each sample fulfilled the combined criteria of ODD and CD, with other comorbidities disregarded.

Frequency of single forms of aggressive behavior was explored as well (Table 1): In both groups, verbal aggression (Type 1) was identified 4 times (20% and 22%, respectively). Ten children (50% respectively 56%) showed a nonverbal aggression reaction pattern (Type 2, 3, and 4). "Verbal and nonverbal malicious actions in position of the side-taking observer" (Type 5) were found 3 times (15%) in the wait-list control group and 2 times (25%) in the intervention group. Five children's (3 children = 15%, 2 children = 11%), reactions could not be classified ("undifferentiated reaction pattern/socially desirable reaction").

**Table 1**  
**Description of the Wait-List Control and Intervention Group**

	Wait-List Control Group ( <i>N</i> = 12)	Intervention Group ( <i>N</i> = 12)
Sex		
male	9 (75%)	12 (100%)
female	3 (25%)	0
Age		
<i>M</i> (years; months)	10;0	10;2
<i>SD</i>	1,39	1,01
DSM-IV diagnoses		
ODD	2 (17%)	2 (17%)
with SP	1 (8%)	1 (8%)
with ADHD	2 (17%)	2 (17%)
CD	1 (8%)	0
with ADHD	0	1 (8%)
ODD and CD	3 (25%)	2 (17%)
with ADHD	2 (17%)	4 (33%)
with SP and ADHD	1 (8%)	0
Aggressive reaction pattern (EAS) <sup>a</sup>		
Type 1	4 (20%)	4 (22%)
Type 2	3 (15%)	3 (17%)
Type 3	4 (20%)	4 (22%)
Type 4	3 (15%)	3 (17%)
Type 5	3 (15%)	2 (11%)
URP/SDR	3 (15%)	2 (11%)
Child welfare subprogram		
Ambulant assistance	6 (50%)	2 (17%)
Day-care group	5 (42%)	9 (75%)
Residential care	1 (8%)	1 (8%)
School type		
Grundschule	8 (67%)	8 (67%)
Sonderschule	0	1 (8%)
Förderstufe/L-/E-Schule	3 (25%)	1 (8%)
Hauptschule	0	2 (17%)
Realschule	1 (8%)	0
Averaged grade of school	3	4

Note: ODD = oppositional defiant disorder; CD = conduct disorder; SP = social phobia; ADHD = attention-deficit/hyperactivity disorder; EAS = Record Form for Aggressive Behavior in Concrete Situations; Type 1 = verbal aggression, actively turned against other unfamiliar persons; Type 2 = nonverbal malicious aggression, actively turned against other unfamiliar persons; Type 3 = nonverbal direct aggression, actively turned against other unfamiliar persons; Type 4 = nonverbal aggression, damage of objects; Type 5 = verbal and nonverbal malicious actions in position of the side-taking observer; URP/SDR = undifferentiated reaction pattern/ socially desirable reaction

a. Percentages are calculated as the frequency of single types within each group. Given that a child can show more than one reaction pattern, the number of types found in the samples, can exceed *N* = 12.

Most children in the two groups were integrated in youth welfare sub-programs, called ambulant assistance and day-care group (together 92% in each group), only one child in each sample was in residential care (8%). All children with ADHD received medical treatment with either Ritalin<sup>®</sup>, Concerta<sup>®</sup>, Equasym<sup>®</sup>, Medikinet<sup>®</sup>, or Strattera<sup>®</sup>.

## Measures

*Psychiatric diagnoses.* Kinder-DIPS (Unnewehr, Schneider, & Margraf, 1998) is a structured clinical interview in German language, assessing psychiatric disorders in childhood and adolescence according to *DSM-IV* criteria. The interview is suitable for patients in the age group of 6 to 18 years and can be administrated to children or to parents.

*Psychopathological syndromes.* The Child Behavior Checklist (CBCL/4-18; Achenbach, 1991a) is a parent questionnaire, screening for various syndromes and competences of 4- to 18-year-olds. The Teacher's Report Form (TRF; Achenbach, 1991b) is the teacher-rated counterpart of the CBCL that measures similar behavior problems. Short versions of the CBCL and TRF with 45 and 46 items, respectively, (instead of 120 items) were used, consisting of the following five scales: social problems, attention problems, delinquent behavior, aggressive behavior, and the second-order scale externalizing symptoms. Informants rate each item on a scale from 0 (*not true as far you know*) to 2 (*very true or often true*). For the applied scales, German adaptations of both instruments showed sufficient to high reliability in a clinical sample: Cronbach's alpha ranges from .73 to .93 for the CBCL and .74 to .96 for the TRF (Arbeitsgruppe Deutsche Child Behavior Checklist, 1993; Döpfner, Schmeck, & Berner, 1994).

*Aggressive reaction pattern.* The Record Form for Aggressive Behavior in Concrete Situations (EAS; Petermann & Petermann, 2000) is a scenario-based questionnaire for the assessment of aggressive behavior. After reading an illustrated short story about a conflict situation, a child (9 to 12 years) has to choose one of three response options, each indicating either a socially accepted or a slightly or strongly aggressive reaction. A total score can be calculated. Depending on the reaction pattern for 22 items, 5 types of aggressive behaviors can be identified (Table 1). Results can be used for planning therapeutic role plays or perception exercises in the TAC (Petermann & Petermann, 2008). The EAS exists in two gender-specific versions and has a high internal consistency ( $\alpha = .87$  and  $\alpha = .86$  for boys and girls, respectively).

*Behavioral strengths and difficulties.* The Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997) is a brief behavioral screening questionnaire. The instrument contains five subscales measuring emotional symptoms, hyperactivity/inattention, peer relationship problems, conduct problems, and prosocial behavior. The first four scale scores can be summed up for a total difficulties score. Respondents have to rate each of the 25 items from 0 (*not true*) to 2 (*certainly true*). The SDQ can be completed by parents, teachers, and teenagers aged between 11 and 16 years. For the current publication, only the parent-rated version will be considered (SDQ-P). In a clinical sample, reliabilities of the German SDQ-P scales were *sufficient to satisfactory* ( $\alpha = .72$  to  $.83$ ; Becker, Woerner, Hasselhorn, Banaschewski, & Rothenberger, 2004).

## **Behavior Modification of Aggressive Children**

The 'Training mit aggressiven Kindern' [TAC; Training with Aggressive Children] by Petermann and Petermann (2006, 2008) is a manualized CBT program suitable for children aged 6 to 12 years with an ODD or a CD disorder (without pronounced delinquency). In the course of therapy, children learn to analyze conflicts in more detail and to correct their distorted perception of social processes, which often lead them to interpret others' actions as malicious attacks on them. By familiarizing children with self-control techniques and practicing prosocial behavior in social conflict situations, disruptive behaviors are increasingly substituted by socially competent behavior.

The training consists of individual and group therapy sessions, supported by a parent counseling program. A child starts with an individual training, consisting of 8 to 13 sessions lasting from 50 to 100 min; then it is treated in a group with two to three other children (6 to 12 sessions, each lasting from 50 to 100 min). A booster session follows about 8 weeks after group training ended.

Each individual therapy session is divided into four sections: At first, homework is evaluated, which usually consists of a self-monitoring and behavioral task the child had to perform between sessions. Then, relaxation training follows to facilitate learning by focusing their attention. In the third phase, role-play and perception exercises are completed, focusing on conflict situations and their solution with socially adequate behavior. At the end of a session, tokens collected for engaging in socially accepted behavior and inhibiting aggressive behavior can be exchanged for play time.

In group therapy, children can test and practice anger control, empathy, and other socially desirable behavior patterns, which they become acquainted with during individual training, in contact with others, and under supervision. In this context, transfer of new behavior to everyday life and stability of these behaviors can be promoted in particular. Accompanying child behavior therapy, parents receive four counseling sessions, one every 3 to 4 weeks, during which unfavorable family interactions are explored and positive change is induced. Also, parents receive information on disruptive disorders, causative, and sustaining conditions for aggressive behavior.

The therapy is designed to produce positive changes in child behavior and family structures within a relatively short space of time: Implementing the TAC takes about 5 to 8 months. Recent studies proved the TAC to be effective in the setting of a German child psychiatry (Petermann et al., 2008) as well as an advisory center for children, adolescents, and parents (Petermann et al., 2007).

## **Youth Welfare Program**

The German code of social law guarantees parents or caregivers support by a youth welfare agency if they are unable to meet the liability of caring and educating their children in a suitable manner. The Center of Child and Youth Welfare, Schlüchtern (Germany), comprehensively converted this claim into practical interventions (child welfare program: CW), based on primarily pedagogical methods. Depending on the extent to which help is needed, child welfare can intervene at three levels (Büttner, 2008): On the lowest level (ambulant setting), families, patchwork families, and single parents are offered advice and strategies to solve interpersonal conflicts or crises. The intervention aims at children and adolescents with conduct problems, anxiety, depression, addiction, suicide ideation, and so on. Resources are activated to change disadvantageous conditions and to favor an adaptive development of the children. Also, a program promoting school performance is provided. At the next stage, daycare groups are offered (partly in-patient setting), aiming primarily at children with deficits regarding cognitive, social, linguistic, and emotional competences. Children remain in their families during this stage. The group work offers opportunities to influence development in a positive way. Children can acquire socioemotional skills. The efforts centering on children are accompanied by a parent training program. If parents fail to care for their wards to such an extent that health and normative development are endangered or already impaired, children are admitted to a residential home

(stationary setting). Parents receive extensive support in the fields of problem solving, conflict management, and education, with the goal of reintegrating the child into its family of origin as soon as this seems reasonable. Administrative quality management is carried out every six months to assure that children in each of the three youth welfare subprograms (ambulant assistance, day-care group and residential care) receive the same extent of service (in Germany, evaluation of child and youth welfare services is regulated by law).

## Procedures

This study was conducted at the Center of Child and Youth Welfare Schlüchtern, Germany. The design is displayed in Table 2. At Time 1 (pretest), children passed through a comprehensive assessment phase: Parents were interviewed with a structured *DSM-IV*-based interview (Kinder-DIPS) to check whether at least one of the relevant diagnoses (CD or ODD) was present. They also had to complete questionnaires (CBCL, SDQ-P). Teachers' ratings were assessed using the TRF. Children themselves had to fill out a questionnaire to identify which type of aggressive behavior they usually engage in (EAS).<sup>1</sup> Intelligence was assessed using the German version of the Wechsler-Intelligence Scale for Children III (WISC-III) or Culture Fair Test 20 (CFT-20). After first diagnostic procedures were conducted, children were assigned to intervention and wait-list control group (Table 2).

The intervention group started with the TAC in addition to the youth welfare program (combined intervention: CW + TAC) in February 2006. During the training phase, the wait-list control group continued to participate in the CW intervention (Table 2). When training ended in July 2006, a further assessment (Time 2: Pre/posttest) followed, implying a posttest for the intervention group and a second pretest for the wait-list control group. CBCL, SDQ-P, and TRF were administered a second time. Afterwards, children in the wait-list control group started the TAC in addition to CW. When training ended, these participants were tested a third time (Time 3: posttest). This group received the TAC from September 2006 to January 2007. Afterwards, all three questionnaires (CBCL, SDQ-P, TRF) were presented a last time.

To assure treatment fidelity, three steps were undertaken: Firstly, the TAC was implemented by child psychologists and psychotherapists working in the child and youth welfare institution. These occupation groups are qualified to implement the training in prescribed manner. Secondly, trainers

**Table 2**  
**Study Design with Assessment Instruments**

	Pretest ( <i>t1</i> )		Pre/Posttest ( <i>t2</i> )		Posttest II ( <i>t3</i> )
Intervention group	CBCL	CW + TAC	CBCL	—	—
	SDQ-P		SDQ-P		
	TRF		TRF		
	K-DIPS				
	EAS				
Wait-List control group	CBCL	CW	CBCL	CW + TAC	CBCL
	SDQ-P		SDQ-P		SDQ-P
	TRF		TRF		TRF
	K-DIPS				
	EAS				

Note: TAC = Training with Aggressive Children; CW = Child welfare program; CBCL = Child Behavior Checklist; SDQ-P = parent Strengths and Difficulties Questionnaire; TRF = Teacher’s Report Form; K-DIPS = Diagnostic interview for mental disorders in childhood and adolescence; EAS = Record Form for Aggressive Behavior in Concrete Situations.

were prepared extensively in a curriculum for carrying out the TAC, and—thirdly—received regular supervision by experienced psychotherapists.

**Statistical Analysis**

Because some scale scores deviated from normal distribution, nonparametric tests (Wilcoxon and Mann–Whitney *U* test) were carried out. For the two-tailed tests, differences were considered significantly at  $p < .10$ . Group differences at Time 1 made it necessary to analyze pre-post course. Therefore, the parametric effect size *d* was used to compare intervention outcomes; *d'* quantifies changes over time and can be used to minimize impact of pretest group deviations on outcome. The effect size is calculated by subtracting the means of a variable at two different points of time and dividing the difference by the standard deviation of differences (Bortz & Döring, 2006: variant a). For an interpretation of *d'*, an expansion of Cohen’s concept (1988) was used. Instead of anchor points, intervals were defined and new effect size categories were introduced (Nitkowski, Petermann, Büttner, Krause-Leipoldt, & Petermann, 2009): Medium ( $.425 \leq d' < .575$ ), medium to large ( $.575 \leq d' < .725$ ), large ( $.725 \leq d' < .875$ ), and very large ( $.875 \leq d'$ ). Only effects equal to or greater than medium are considered as practically relevant. To point out differences in strength, differences between *d* scores were calculated ( $d'_{DIFF}$ ) and tested.

## Results

### Group Comparison at Pretest

At Time 1, sex distribution did not differ between intervention and wait-list control group ( $\chi^2 = 3.43$ ,  $df = 1$ ; n.s.), nor did *DSM-IV* diagnoses ( $\chi^2 = 3.87$ ,  $df = 7$ ; n.s.), EAS reaction patterns ( $\chi^2 = .64$ ,  $df = 5$ ; n.s.), youth welfare subprograms ( $\chi^2 = 3.14$ ,  $df = 7$ ; n.s.), school types ( $\chi^2 = 5.00$ ,  $df = 4$ ; n.s.) or age average ( $z = -.26$ , n.s.) and grades ( $z = -.15$ , n.s.). The same is true for the subsample ( $n = 10$ ) rated by teachers. Nevertheless, group differences were found on the CBCL scale social problems ( $z = -1.72$ ,  $p < .10$ ) and the SDQ-P scale peer relationship problems ( $z = -2.55$ ,  $p < .05$ ): Parents rated the wait-list control group as displaying more problems.

### Pretest vs. Pre/Posttest Comparison

*CBCL.* In the following, only results which have implications for the postulated hypotheses will be presented: In the wait-list control group, parents reported significant improvements on the CBCL scale delinquent behavior and the second order scale externalizing symptoms between Time 1 and Time 2 (Table 3). Significant differences could be registered on the scales externalizing symptoms, social problems and delinquent behavior in the intervention group. The extent of reductions ranges between middle (externalizing symptoms) and very large (social problems).

*SDQ-P.* For both groups, parents noted improvements on the SDQ-P scale peer relationship problems (Table 3). Children of the intervention group showed a decline on conduct problems and an increase on prosocial behavior. For these three scales, effect size estimates in the intervention group were equal or above  $d' = 1.00$ .

*TRF.* Data of 4 children were not available at Time 2 so only samples of  $n = 10$  could be analyzed. In the wait-list control group, no significant changes over the pretest-pre/posttest period were found on the TRF (Table 4). From Time 1 to Time 2, scores declined on the scales externalizing problems, social problems and aggressive behavior in the intervention group. On aggressive behavior and social problems, large effects were attained.

*Individual improvement.* To determine the extent of individual change in the intervention group, the effects for each child across the SDQ-P scales conduct problems, peer relationship problems and prosocial behavior were

**Table 3**  
**Pretest-Pre/Posttest Assessment on the Child Behavior Checklist (CBCL)**  
**and Parent Strengths and Difficulties Questionnaire (SDQ-P)**

	Wait-List Control Group				Intervention Group				
	Pretest (t1)		Pre/Posttest (t2)		Pretest (t1)		Pre/Posttest (t2)		$d'$ <sup>b</sup>
	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>z</i> <sup>a</sup>	
CBCL ( <i>N</i> = 12)									
Externalizing symptoms	29.58 (9.88)	22.83 (11.20)	-1.84*	.60	25.75 (10.20)	19.92 (12.35)	-1.65*	0.54	
Social problems	6.08 (2.43)	4.88 (2.80)	-1.54	.46	4.17 (2.89)	2.25 (1.96)	-2.61**	1.05	
Attention problems	7.25 (3.74)	6.42 (4.62)	-0.77	.23	7.92 (3.03)	5.92 (3.45)	-1.79*	0.57	
Delinquent behavior	6.92 (2.68)	5.00 (2.37)	-2.01*	.73	6.75 (5.05)	4.42 (4.66)	-2.20*	0.73	
Aggressive behavior	22.67 (7.95)	17.83 (9.10)	-1.56	.52	19.00 (5.83)	15.50 (8.21)	-1.43	0.45	
SDQ-P ( <i>N</i> = 12)									
Total difficulties	19.75 (4.92)	15.58 (8.20)	-1.57	.52	18.50 (5.64)	12.83 (7.61)	-2.66**	1.16	
Emotional symptoms	3.58 (2.15)	2.50 (1.68)	-1.90*	.56	3.83 (2.48)	2.92 (2.68)	-1.13	0.38	
Hyperactivity/inattention	5.83 (2.21)	4.58 (3.34)	-1.75*	.53	6.42 (2.19)	5.25 (2.26)	-1.91*	0.63	
Peer relationship problems	5.42 (2.43)	4.08 (1.98)	-1.97*	.62	3.42 (2.23)	1.50 (1.93)	-2.62**	1.11	
Conduct problems	4.92 (2.23)	4.42 (3.45)	-0.89	.13	4.83 (2.44)	3.17 (2.69)	-2.69**	1.22	
Prosocial behavior	7.00 (2.70)	7.17 (2.08)	-0.14	-.07	6.33 (2.02)	7.92 (1.51)	-2.70**	-1.01	

a. Wilcoxon matched-pairs test: One-tailed test: \* $p < .05$ ; \*\* $p < .01$ .

b.  $d'$  is a parametric effect size.

**Table 4**  
**Pretest-Pre/Posttest Assessment on the Teacher's Report Form (TRF)**

	Wait-List Control Group				Intervention group				
	Pretest ( <i>t</i> 1)		Pre/Posttest ( <i>t</i> 2)		Pretest ( <i>t</i> 1)		Pre/Posttest ( <i>t</i> 2)		
	<i>M</i> ( <i>SD</i> )	<i>z</i>	<i>M</i> ( <i>SD</i> )	<i>d'</i>	<i>M</i> ( <i>SD</i> )	<i>z</i>	<i>M</i> ( <i>SD</i> )	<i>d'</i>	
TRF ( <i>n</i> = 10)									
Externalizing symptoms	21.90 (12.52)	-20	21.05 (16.78)	.10	25.65 (11.67)	-2.00*	18.40 (13.19)	-2.00*	.67
Social problems	4.00 (2.62)	-14	4.00 (2.16)	.00	3.20 (1.93)	-1.99*	2.40 (1.58)	-1.99*	.78
Attention problems	7.50 (4.38)	-96	6.75 (5.02)	.26	8.90 (4.07)	-1.53	6.70 (3.23)	-1.53	.53
Delinquent behavior	4.40 (2.84)	-52	4.25 (3.16)	.13	5.40 (3.17)	-1.20	3.85 (2.93)	-1.20	.44
Aggressive behavior	17.50 (11.15)	-10	16.80 (14.01)	.08	20.25 (9.55)	-1.94*	14.55 (10.70)	-1.94*	.74

See note to Table 3.

**Table 5**  
**Individual Pre-posttest Effects on “Conduct problems,”**  
**“Peer relationship problems” and “Prosocial behavior”**  
**on the Parent Strengths and Difficulties Questionnaire**  
**(SDQ-P) in the Intervention Group**

Participants	Conduct problems	Peer relationship problems	Prosocial Behavior
No.	$d'^a$	$d'^a$	$d'^a$
1	1.46	-.58	.00
2	.00	.00	-1.28
3	2.19	2.31	-3.20
4	.73	2.31	-1.28
5	.00	1.73	-.64
6	2.19	1.73	-1.28
7	2.92	.58	-.64
8	.00	.58	.00
9	1.46	1.16	-2.56
10	.73	2.31	-.64
11	.73	.00	.00
12	2.19	1.16	-.64
Mean	1.22	1.11	-1.01

$d'$  is a parametric effect size.

explored, all indicating strong improvements. As can be seen in Table 5, for 3 children (No. 3, 6 and 9; 25%) effect size estimates were greater than one on all three scales and for 2 participants (No. 4 and 12; 16.7%) on two scales. Nevertheless, for three children (No. 2, 8 and 11) parents reported no changes on two scales. Furthermore, in one case (No. 1) a medium-to-large deterioration was noticed.

*Medication effects.* It could be suggested that stimulant medication had impact on the outcomes on the SDQ-P scales conduct problems, peer relationship problems, and prosocial behavior in the intervention group. Therefore, effect size estimates were tested between children treated with ( $n = 7$ ) and without psychostimulants ( $n = 5$ ). No confounding effects of medication could be detected: Although  $d'$  differed numerically, differences

did not reach significance (conduct problems:  $d'_{DIFF} = .49$ ;  $z = -.57$ ; peer relationship problems:  $d'_{DIFF} = .53$ ;  $z = -.65$ ; prosocial behavior:  $d'_{DIFF} = .24$ ;  $z = -.25$ ; all *n.s.*).

## Change between groups

*CBCL.* If the reported changes between the Time 1 and Time 2 interval between wait-list control group and intervention group are contrasted with each other, no significant differences could be detected on the CBCL scales.

*SDQ.* In line with our hypotheses, differences in favor of the intervention group were evident on the SDQ-P scales conduct problems ( $d'_{DIFF} = 1.09$ ;  $z = -2.18$ ;  $p < .05$ ) and prosocial behavior ( $d'_{DIFF} = -.94$ ;  $z = -2.70$ ;  $p < .01$ ). Ratings on peer relationship problems were comparable for both groups ( $d'_{DIFF} = -.51$ ;  $z = -1.11$ ; *n.s.*).

*TRF.* As predicted, the intervention group shows stronger decrease on the TRF scale social problems ( $d'_{DIFF} = .78$ ;  $z = -1.84$ ;  $p < .10$ ) but there was only a trend on aggressive behavior ( $d'_{DIFF} = .66$ ;  $z = -1.51$ ;  $p = .14$ ). Scores on delinquent behavior dropped to the same extent in both groups ( $d'_{DIFF} = .31$ ;  $z = -.30$ ; *n.s.*).

## Time section comparison

As a next step, groups were compared regarding two different time sections to explore dependency of outcome on length of intervention period. At first, effect size estimates between the Time 1 and Time 3 interval were calculated for the wait-list control group. Then, effect size scores of the Time 1 and Time 3 in the wait-list control group were contrasted with the ones of the Time 1 and Time 2 period in the intervention group.

Results show that children in the intervention group were rated to have improved more (between Time 1 and Time 2) than the wait-list control group (between Time 1 and Time 3) on the SDQ-P scale prosocial behavior ( $d'_{DIFF} = -1.26$ ;  $z = -2.59$ ;  $p < .01$ ). On the other hand, decreases in the wait-list control group were stronger on the CBCL scales: aggressive behavior ( $d'_{DIFF} = .96$ ;  $z = -2.08$ ;  $p < .05$ ), delinquent behavior ( $d'_{DIFF} = .50$ ;  $z = -1.74$ ;  $p < .10$ ), and externalizing behavior ( $d'_{DIFF} = .92$ ;  $z = -2.25$ ;  $p < .05$ ).

## Discussion

The current study supports the assumption that a CBT program, designed like the TAC, in combination with a child welfare program, leads to better

outcomes than an isolated child welfare program. Over the intervention period of 5 months (Time 1 to Time 2), parents of children who participated in TAC and child welfare noticed stronger decreases in social and conduct problems, compared to parents of children exclusively treated with the child welfare program. Furthermore, a clear increase in prosocial behavior was reported. Teachers confirmed the decline in social difficulties and noted a lesser extent of aggressive behavior, following the combined intervention. The additional effects reached remarkable sizes. Differences between parent and teacher ratings of effects on prosocial and aggressive behavior may result from the fact that children behave differently in school and at home; in addition, the two rater groups presumably use different criteria for their judgments (Veenstra et al., 2008).

To analyze whether a longer intervention phase leads to better outcomes than a shorter one, a sequenced intervention block of 10-month duration was compared with a combined intervention of 5-month duration. Using outcome of the combined intervention as baseline, results show how effective participating in a combination of a child welfare program and TAC can be, after children had first participated in an isolated child welfare program (Table 2).

Results only partially confirm the hypothesis: Starting with the child welfare intervention and adding TAC 5 months later seemed to produce to stronger effects regarding aggressive and delinquent behavior and social problems. On the other hand, the early implementation of TAC in child welfare seemed to be more successful in promoting prosocial behavior.

Nevertheless, results comparing extended and combined treatment have to be interpreted with caution, since the long-term intervention lacks a corresponding control group. It is possible that effects registered after long-term treatment could to a certain degree represent a natural deflation or inflation of the behavior observed (Waldmann & Petermann, 1998). Therefore, future studies have to investigate the issue of treatment-model dependency of effects in more detail.

A successful implementation of TAC in child welfare requires professionals like psychotherapists and psychologists qualified to carry out the cognitive-behavioral strategies according to the specifications of the manual. Although social workers and case managers - as main occupation groups working in American child welfare - do not have this competence, a careful and comprehensive curriculum of TAC and cognitive-behavioral methods can provide a fundamental knowledge and understanding. In the first trials, guidance and weekly supervision by an experienced psychotherapist is essential. Besides, several aspects have to be fulfilled for a successful implementation: One or two trainers with capacities for preparation and realization of

TAC, an available room, and materials (for example a cassette recorder or video equipment for recording and evaluating role plays) are needed. Furthermore, the program takes at least five months to complete. Constraints in funds can be a main problem to the implementation in child welfare. TAC can be adjusted to diverse framework requirements, also to constraints in provider time. But it should be kept in mind that a decrease in number of sessions or a shortening of the length of each session may lower the effectiveness of the program.

This study has several limitations: Despite course assessment analysis, group differences on two scales at pretest could reduce comparability between groups. TAC may be especially effective if children's behavior problems vary within certain borders. If children of the wait-list control group exceed (or fall below) a critical intensity value, effects could be diminished, leading to an overestimation of changes in the other group. Further, sample size is relatively small, limiting generalizability of results. One difficulty in this effectiveness study was to control the impact of disturbing factors.

Beyond this, it could be confirmed that children in child welfare benefit observably from participating in a well-conducted and supervised CBT. Even though treating aggressive children and adolescents is not a liability of German child welfare, these institutions have to take care of children exhibiting disruptive behavior. In the case of aggressive children, realization of a CBT can facilitate meeting the main aim of child welfare. Caring implies orientation on the needs of those in care: Children with aggressive behavior have low social competences and empathy (Mayberry & Espelage, 2007) and either is absolutely necessary for a well adjusted life in modern societies. In its essence, TAC is a social skills training because it aims at conveying adequate behavior patterns and at promoting competences instead of only trying exclusively to teach aggressive children to unlearn aggression. A recent study showed that participation in the TAC in child welfare especially fosters resources and competences (Petermann, Petermann, Büttner, Krause-Leipoldt, & Nitkowski, 2008). As a skill training, the TAC can assist child welfare interventions in promoting deficient social skills and contribute to quality management in child and youth welfare services.

## Note

1. Five children, who were aged 7 years, 2 to 8 years, and 9 years, completed the self-report questionnaire despite being under the age limit.

## References

- Achenbach, T. M. (1991a). *Manual for the child behavior checklist/4-18 and 1991 profile*. Burlington: University of Vermont.
- Achenbach, T. M. (1991b). *Manual for the Teacher's Report Form and 1991 Profile*. Burlington: University of Vermont.
- American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders - DSM-IV* (4th ed.). Washington, DC: Author.
- Arbeitsgruppe Deutsche Child Behavior Checklist. (1993b). *German version of the teacher's report form of the child behavior checklist (TRF) manual*. Köln: Arbeitsgruppe Kinder-, Jugend- und Familiendiagnostik.
- Becker, A., Woerner, W., Hasselhorn, M., Banaschewski, T., & Rothenberger, A. (2004). Validation of the parent and teacher SDQ in a clinical sample. *European Child and Adolescent Psychiatry*, 50, 11-16.
- Bortz, J., & Döring, N. (2006). *Forschungsmethoden und evaluation* [Research and evaluation methods] (4th ed.). Berlin: Springer-Verlag.
- Büttner, P. (2008). Kinder- und Jugendhilfe [Child and youth welfare service]. In F. Petermann (Ed.), *Lehrbuch der Klinischen Kinderpsychologie* [Textbook of clinical child psychology] (6th ed., pp. 693-709). Göttingen: Hogrefe.
- Cohen, J. (1988). *Statistical power analysis for the behavioural sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum.
- Döpfner, M., Schmeck, K., & Berner, W. (1994). *German version of the child behavior checklist (CBCL) manual*. Köln: Arbeitsgruppe Kinder-, Jugend- und Familiendiagnostik.
- Eyberg, S. M., Nelson, M. M., & Boggs, S. R. (2008). Evidence-based psychosocial treatment for children and adolescents with disruptive behavior. *Journal of Clinical Child and Adolescent Psychology*, 37, 215-237.
- Ford, T., Goodman, R., & Meltzer, H. (2003). The British Child and Mental Health Survey 1999: The prevalence of DSM-IV disorders. *Journal of the American Academy of Child and Adolescent Psychiatry*, 42, 1203-1211.
- Goodman, R. (1997). The Strengths and Difficulties Questionnaire: A research note. *Journal of Child Psychology and Psychiatry*, 38, 581-586.
- Jensen, P. S. (2008). The role of psychosocial therapies in managing aggression in children and adolescents. *Journal of Clinical Psychiatry*, 69, 37-42.
- Keil, V., & Price, J. M. (2006). Externalizing behavior disorders in child welfare settings: Definition, prevalence, and implications for assessment and treatment. *Children and Youth Services Review*, 28, 761-779.
- Kokko, K., & Pulkkinen, L. (2005). Stability of aggressive behavior from childhood to middle age in woman and men. *Aggressive Behavior*, 31, 485-497.
- Mayberry, M. L., & Espelage, D. L. (2007). Associations among empathy, social competence, & reactive/proactive aggression subtypes. *Journal of Youth and Adolescence*, 36, 787-798.
- Nitkowski, D., Petermann, F., Büttner, P., Krause-Leipoldt, C., & Petermann, U. (2009). Verhaltenstherapie und Jugendhilfe: Ergebnisse zur Optimierung der Versorgung aggressiver Kinder [Behaviour therapy and child welfare: Results of an approach to improve health care of aggressive children]. *Zeitschrift für Kinder- und Jugendpsychiatrie und Psychotherapie*, 37, issue 5.
- Offord, D. R., Bolye, M. H., Racine, Y. A., Fleming, J. E., Cadman, D. T., Blum, H. M., et al. (1992). Outcome, prognosis, and risk in a longitudinal follow-up study. *Journal of the American Academy of Child and Adolescent Psychiatry*, 31, 916-923.

- Petermann, F., & Petermann, U. (2000). *Erfassungsbogen für aggressives Verhalten in konkreten Situationen (EAS)* [Record Form for Aggressive Behavior in Concrete Situations] (4th ed.). Göttingen: Hogrefe.
- Petermann, F., & Petermann, U. (2006). *Behavior therapy with aggressive children and adolescents*. Frankfurt/New York: Peter Lang.
- Petermann, F., & Petermann, U. (2008). *Training mit aggressiven Kindern* [Training with Aggressive Children] (12th ed.). Weinheim: BeltzPVU.
- Petermann, F., Petermann, U., Besier, T., Goldbeck, L., Büttner, P., Krause-Leipoldt, C., et al. (2008). Zur Effektivität des Trainings mit aggressiven Kindern in Psychiatrie und Jugendhilfe [Effectiveness of the training program for aggressive children in psychiatry and youth welfare setting]. *Kindheit und Entwicklung, 17*, 182-189.
- Petermann, U., Petermann, F., Büttner, P., Krause-Leipoldt, C., & Nitkowski, D. (2008). Effektivität kinderverhaltenstherapeutischer Maßnahmen in der Jugendhilfe: Das Training mit aggressiven Kindern [Effectiveness of cognitive-behavioral interventions in youth welfare services: Training with Aggressive Children]. *Verhaltenstherapie, 18*, 101-108.
- Petermann, U., Nitkowski, D., Polchow, D., Pätel, J., Roos, S., Kanz, F. J., et al. (2007). Langfristige Effekte des Trainings mit aggressiven Kindern [Long-term effects of a cognitive-behavioral therapy program with aggressive children]. *Kindheit und Entwicklung, 16*, 143-151.
- Schmid, M., Goldbeck, L., Nützel, J., & Fegert, J. M. (2008). Prevalence of mental disorders among adolescents in German youth welfare institutions. *BMC. Child and Adolescent Psychiatry and Mental Health, 2*, 1-8.
- Sukhodolsky, D. G., Kassirer, H., & Gorman, B. S. (2004). Cognitive-behavioral therapy for anger in children and adolescents: A meta-analysis. *Aggression and Violent Behavior, 9*, 247-269.
- Unnewehr, S., Schneider, S., & Margraf, J. (1998). *Diagnostisches interview bei psychischen störungen im kindes- und jugendalter (Kinder-DIPS)* [Diagnostic interview for mental disorders in childhood and adolescence]. Berlin: Springer-Verlag.
- Van Camp, C. M., Vollmer, T. R., Goh, H. -L., Whitehouse, C. M., Reyes, J., Montgomery, J. L., & Borrero, J. C. (2008). Behavioral parent training in child welfare: Evaluations of skills acquisition. *Research on Social Work Practice, 18*, 377-391.
- Veenstra, R., Lindenberg, S., Oldewinkel, A. J., De Winter, A. F., Verhulst, F. C., & Ormel, J. (2008). Prosocial and antisocial behavior in preadolescence: Teachers' and parents' perception of the behavior of girls and boys. *International Journal of Behavioral Development, 32*, 243-251.
- Waldmann, H. -C., & Petermann, F. (1998). Multiple group comparisons: Quasi-experimental designs. In A. S. Bellack, & M. Hersen (Eds.) *Comprehensive clinical psychology. Vol. 3: Research methods* (pp. 63-89). Oxford: Elsevier.

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