European Child & Adolescent Psychiatry (2019) 28:543–556
https://doi.org/10.1007/s00787-018-1220-2

ORIGINAL CONTRIBUTION

Treatment satisfaction following routine outpatient cognitive-behavioral therapy of adolescents with mental disorders: a triple perspective of patients, parents and therapists

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Received: 18 May 2018 / Accepted: 30 August 2018 / Published online: 6 September 2018

Abstract

The present study investigates treatment satisfaction (TS) rated by multiple informants (patient, parent, therapist) following routine outpatient cognitive-behavioral therapy (CBT) within a large sample ($n = 965$) of clinically referred adolescents aged 11–20 years. Moreover, potential predictors of TS were analyzed (patient-related variables, mental disorder characteristics, socio-demographic factors and treatment variables). Overall, our results show a high treatment satisfaction in patient, parent and therapist ratings, with the therapists being the most critical raters (completely/predominantly satisfied: 87.8% in patient, 92.0% in parent, and 64.0% in therapist ratings). Correlations between the three raters were only small to moderate, but statistically significant. Regression analysis examining differential effects found that mental disorder characteristics (parent- and patient-reported symptoms at post) and treatment variables (especially cooperation of patients and parents as rated by therapists) explained most of the variance in TS, whereas patient-related or socio-demographic variables did not emerge as relevant predictors of TS. The amounts of explained variance were $R^2_{adj.} = 0.594$ in therapist rating, $R^2_{adj.} = 0.322$ in patient rating and $R^2_{adj.} = 0.203$ in parent rating.

Keywords Treatment satisfaction · Routine treatment · Cognitive-behavioral therapy · Adolescents

Introduction

Mental disorders are highly common among children and adolescents [1, 2] and endanger their further development [3, 4]. Only a minority of these young people are referred to mental health care, and of those who do receive treatment, between a quarter and three-quarters drop out prematurely [5]. The treatment of adolescents represents a special challenge, as although adolescents are likely to suffer from mental disorders, they often show a limited treatment motivation at therapy intake, meaning that the risk of treatment dropouts is notably high [6–8]. To optimize individualized treatments and to prevent treatment dropouts in the long term, it appears to be crucial to examine the perceived quality of health care [9].

Besides therapy effects, a key indicator for the quality of health care is the examination of treatment satisfaction (TS) [10]. It has a strong face validity, serves as direct feedback for the therapist, and can, therefore, help to enhance the quality of mental health care [11]. Based on a critical

Electronic supplementary material The online version of this article (https://doi.org/10.1007/s00787-018-1220-2) contains supplementary material, which is available to authorized users.

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review of the existing literature, Biering [12] suggested that three different components should be embedded within TS: satisfaction (1) with the environment and organization of service, (2) with the adolescent–therapist relationship, and (3) with the treatment outcome itself.

When investigating TS in children and adolescents, three core perspectives have to be taken into account: the patient, the parents and the therapist. As ratings differ considerably between these perspectives, more and more researchers are calling for the inclusion of multiple informants to maximize the objectivity of the assessment [13–15].

Several studies have investigated TS in different samples of children and adolescents with mental disorders. These studies mostly examined all forms of community-based outpatient care, often performed within child and adolescent mental health services. Some focused on patient- and/or parent-reported TS, and found high rates of TS (e.g., [11, 16–19]). A small number of studies included both the patient and the parent perspective within the same sample. These limited findings indicated that TS was lower in patient rating compared to parent rating [15, 16, 19–23], with only small to medium interrater correlations (e.g., [11, 15, 16, 19–21, 24–26]). Accordingly, it appears to be highly important to include both patient and parent ratings, as it is not possible to draw conclusions from one rater to the other [12].

Studies including an additional therapist perspective are rarer still. The few studies to include this perspective reported that the lowest level of TS was found in therapist rating, with low to moderate correlations between patients, parents and therapists (e.g., [18, 21, 27–29]). Therefore, besides a combination of patient and parent ratings, the inclusion of a therapist rating seems to be of great importance to appropriately assess treatment satisfaction.

In summary, TS following outpatient treatment is usually high, and parent-rated TS tends to be higher than patient-rated TS, followed by therapist-rated TS. However, the treatment components (e.g., behavior therapy, eclectic treatment, pharmacotherapy) in studies examining TS are usually not further specified, and treatments include all forms of counseling and therapy. Moreover, while previous studies examining parent and therapist ratings have evaluated child and adolescent treatments together, specific data on TS following adolescent treatments and including multiple perspectives are strongly needed.

In addition to assessing TS, it seems crucial to examine factors that influence TS to optimize TS and thus reduce treatment dropouts [9]. The existing literature provides several findings targeting this research area. Findings on patient-related and socio-demographic factors, mental disorder characteristics, and treatment variables are briefly summarized below.

Several studies investigated the relationship of TS with socio-demographic variables such as age, gender or ethnicity, and found inconsistent results within community-based outpatient care units. Earlier studies analyzing a potential association between TS and age reported a reduction of patients' TS with increasing age [25, 30], with parents of younger children showing a higher TS [19, 31]. However, Turchik et al. [19] investigated a sample of 12–18-year-old youths and found that older age of the patients was positively related to patient satisfaction. Some studies investigating gender as a potential predictor found that adolescent males were more satisfied than females [25, 30, 32], whereas other researchers [15] found girls and their parents to be more satisfied compared to boys. Most studies did not find any relation at all between demographic variables and youth- or parent-reported TS [11, 16, 17, 22, 33]. In sum, these limited findings draw a rather inconsistent picture, suggesting that TS and socio-demographic variables are at best only weakly related (e.g., [15, 16, 34]).

Only a small number of studies have investigated the association between TS and type of mental disorder. Two studies found that youths with internalizing disorders reported higher TS following outpatient treatment compared to youths with externalizing disorders [16, 31], while Keller et al. [32] found contrary results within a sample following inpatient treatment (higher TS was associated with externalizing disorders). Other researchers reported no relation at all [11, 35]. Thus, again, no consistent evidence has been found in this regard.

Several researchers examined the relationship between TS and parent- and patient-reported mental health problems at the beginning or end of the treatment (mostly assessed using the CBCL or YSR) [36, 37]. The findings revealed a relation between low parent-reported symptom severity at treatment onset and high parental TS at the end of the treatment [28, 30]. However, patient-rated TS did not correlate with patient-rated or parent-reported symptom severity. Results on perceived mental health problems at treatment end are less consistent, with some studies finding a negative correlation between patient-reported TS and patient- or parent-rated symptom severity [11, 20] and others failing to find this relation [28]. Similar analyses of parental TS indicate a negative correlation between parent-reported symptom severity at the end of the treatment and parent-reported TS [20, 28], while Brestan et al. [38] found no such correlation. Altogether, the results on parent-reported and patient-reported mental health problems indicate a negative association between parental TS and parent-reported mental health problems at treatment start or end, while findings on patient-reported TS remain unclear.

While it seems obvious that TS should be positively related to symptom reduction during treatment, the results addressing this relation are inconsistent. Some studies found a positive correlation between patient-reported TS and parent-reported or patient-reported symptom change

[19, 24, 39], while others reported no such relations [11, 21, 28, 30, 40]. Examinations of parental TS have yielded similarly diverse results [19, 21, 24, 28, 38, 40]. Most studies investigating adolescent TS found a positive relation with patient-, parent- [19], and clinician-rated improvement in psychosocial functioning [24, 30, 39]. By contrast, Garland et al. [11] found no relation between youth-reported TS and youth-reported mental health improvements. The authors revealed that parental TS was related to youth-reported but not parent-reported change in youth clinical functioning. When controlling for age and gender, Turchik et al. [19] found that changes in functioning and problem severity accounted for only 1–3% of the variance in parent- and youth-reported TS. In sum, these limited findings examining the relationship between mental health improvement and TS in samples receiving various forms of community-based outpatient care remain conflicting.

Treatment characteristics have also been investigated as a further factor related to TS. Earlier studies investigating the relation of treatment duration or number of therapy sessions with TS showed divergent results, with some reporting a positive relation [11, 17, 31] and others finding no relation [21, 33, 35].

Three studies examined larger samples of children and adolescents using multivariate analysis strategies in terms of regression analyses. Turchik et al. [19] found in their regression that only a very limited portion of the variance (2–3%) in TS was explained by age or the perceived change in symptom severity and functioning. In their multiple regression analyses, Holmboe et al. [34] were only able to explain a small percentage of the variance in parental TS by demographic, clinical and socio-demographic predictor variables. In contrast, hierarchical linear regression analyses conducted by Kapp et al. [15] revealed that a large proportion of the variance in TS ($R^2 = 0.587$ patient TS; $R^2 = 0.382$ parental TS) was explained by the following predictors: gender (higher TS in girls), feeling reassured at the first appointment, satisfaction with the frequency of sessions, and time to formulate questions. In patient rating, agreeing with the consultation and accessibility by telephone additionally emerged as significant predictors.

Overall, several limitations must be taken into account when interpreting these findings. First, many studies included only one or two rating perspectives and examined only small sample sizes (e.g., [11, 16, 17, 27, 30]). Second, the modality and the intensity of the treatments were often reported very poorly or not at all, and in parent and therapist ratings, treatments of children and adolescents were not analyzed separately (e.g., [15, 19, 34]). Therefore, the assessment of TS presumably followed diverse, heterogeneous forms of counseling and treatment modalities in different age groups, which might at least partially explain the sometimes inconsistent results. Lastly, the studies employed different analytical strategies and instruments.

To date, no study has systematically examined TS and potentially associated factors within a large sample of clinically referred adolescents with mental disorders by combining the perspective of the youngsters themselves, their parents, and a therapist, and describing the components of the treatment modules used. Moreover, to the best of our knowledge, TS following outpatient CBT in adolescents with mental disorders in a routine care unit has not been examined at all.

Based on the aforementioned study findings, we investigate the following hypotheses:

1. The overall TS rated by patients, parents and therapists will be high, with therapists showing the lowest TS;
2. Correlations between the three rater perspectives will be statistically significant but low to moderate;
3. TS will be best predicted by characteristics of the mental disorder, the treatment, and to a smaller degree by socio-demographic variables.

Methods

Procedure

Criteria for inclusion in this therapy study were age between 11 and 21 years, diagnosis of a mental disorder according to the ICD-10 criteria, ability to attend weekly treatment appointments, and an overall positive prognosis for outpatient treatment according to clinical judgment. Exclusion criteria were excessive use of alcohol or other drugs, and the need for inpatient treatment. Moreover, patients who had received only diagnostic assessments followed by brief counseling (fewer than 10 appointments in total) were excluded. The study was approved by the Ethics Committee of the University of Cologne and written informed consent was obtained from all youths and parents who participated in the study.

Youths were either referred directly by their parents or by other inpatient or outpatient units of the University of Cologne or other hospitals, private psychiatric practices or psychotherapeutic practices. A consultation appointment lasting for 1–2 h was held by licensed child and adolescent psychotherapists (one of the authors), who were at the same time accredited supervisors (with two exceptions: P. V., D. P.). During this appointment, eligibility for treatment and for the study was examined and information on the treatment was given. Study eligibility was assessed during the 1–10 weeks before the start of treatment; participants were included consecutively in the study. The first assessment (pre-assessment) included a set of standardized

questionnaires in patient, parent and therapist ratings, and occurred within the first five treatment sessions. The second assessment (post-assessment) took place at the end of the treatment and again included ratings from patients, parents and therapists.

Between January 2006 and March 2015, a total of 2676 patients aged 11 or over fulfilled the entry criteria and were included in the study. By March 2015, 1979 patients had finished their appointments. Of these, episodes with less than ten appointments in total ($n=401$) were excluded. 1578 patients had received at least ten treatment sessions (100%). Complete assessments were available for $n=956$ (61%) adolescents. This sample was used for the main analysis.

Measures

Diagnostic interviews

All clinical diagnoses were based on clinical examination using the clinical rating scales of a German semi-structured clinical interview based on the diagnostic criteria of DSM-IV and ICD-10 (DISYPS-II; [41]). Studies in field and clinic-referred samples of children and adolescents have shown acceptable to excellent internal consistencies (ranging from $\alpha=0.69$ to $\alpha=0.95$) and moderate correlations between clinical ratings based on parent and adolescent interviews [42].

Treatment satisfaction

TS was measured using the "Therapy Evaluation Questionnaire" (TEQ) [18] consisting of three versions: patient, parent and therapist ratings. This German-language questionnaire comprises 20 items in patient rating (21 items in parent rating and 26 items in therapist rating) with response options ranging from 0 ('poor') to 4 ('excellent'). The different subscales are as follows: three subscales in patient rating ('treatment success', 'relationship with therapist' and 'general treatment conditions'), two subscales in parent rating ('treatment success' and 'course of treatment') and five subscales in therapist rating ('treatment success regarding the patient', 'treatment success regarding the family', 'patient cooperation', 'cooperation of the mother', and 'cooperation of the father'). For every rater, a mean score can be calculated by summing up the item scores and dividing by the number of items. Internal consistencies were satisfactory (most scales' Cronbach's $\alpha \geq 0.80$) and the retest reliability (17 months) was between $r=0.36$ and $r=0.79$ [18]. Internal consistencies in our sample were patient: $\alpha=0.63$, therapist: $\alpha=0.71$ and parent: $\alpha=0.93$. Scale scores can be interpreted as follows: completely unsatisfied ($0 \leq x \leq 0.5$); predominantly unsatisfied ($0.5 < x \leq 1.5$); partly satisfied ($1.5 < x \leq 2.5$); predominantly satisfied ($2.5 < x \leq 3.5$); completely satisfied ($3.5 < x \leq 4.0$) [18].

Emotional and behavioral problems

Mental health problems were assessed using the German versions of the Achenbach System of Empirically Based Assessment (ASEBA) [37]. The Youth Self Report (YSR; 112 items) was used in patient rating and the Child Behavior Checklist (CBCL; 113 items) in parent rating. Reliability and validity of the German versions of these instruments has been shown to be at least satisfactory [37, 43, 44]. Furthermore, internal consistencies of an overlapping clinic-referred sample have been shown to be excellent (CBCL $\alpha=0.94$; YSR $\alpha=0.92$) [37].

Basic documentation form

Therapists assessed socio-demographics (e.g., relationship of the parents, number of children in the family) at treatment start and therapy data at treatment end (e.g., number of therapy sessions, type and sum of different CBT interventions used) using the standardized "basic documentation form" [45]. Mental disorders were documented on the six axes of the 'multi-axial classification of child and adolescent psychiatric disorders in ICD-10' [46]. Cognitive functioning was measured using the Wechsler Intelligence Scale for Children (WISC-III, [47]), the Wechsler Adult Intelligence Scale (WAIS, [48]) or based on clinical rating, and coded on axis 3 of the multi-axial classification of child and adolescent psychiatric disorders in ICD-10 (ranging from 1—very high intelligence to 8—very severe impairment of intelligence). The global impairment (axis 6) ranged from 0 (very good functioning in all areas) to 8 (needs persistent support 24 h per day) and was assessed at pre- and post-assessment. Moreover, the following clinical ratings were included at the end of the treatment: (1) prognosis for symptom development, with scores ranging from 1 (completely cured) to 5 (poor prognosis); (2) prognosis for overall situation, with scores ranging from 1 (completely cured) to 5 (poor prognosis), and (3) cooperation of youngsters and parents, ranging from 1 (no cooperation) to 5 (very good cooperation).

Outpatient treatment

Treatment took place at the university outpatient clinic of a school for child and adolescent cognitive-behavior therapy in Germany. Therapists were postgraduate students with a Master's degree (psychology or education) who were in the second half of their 5-year training in child and adolescent CBT. The training includes 600 therapy sessions performed under the guidance of an accredited supervisor

for CBT (1 h of supervision every fourth therapy session). Treatment costs were covered by the German health insurance system.

Statistical analysis

The main analysis included patients with at least ten treatment sessions ($n = 956$; completer sample). To check for representativeness, two different analyses were conducted: first, the completer sample ($n = 956$) was compared to the sample excluded due to missing data ($n = 622$; missing data sample). Second, the completer sample was compared to the youths who were not part of the further analysis due to a brief counseling with fewer than ten appointments ($n = 401$, brief counseling sample). Comparisons were realized for pre-assessment data, socio-demographic data, clinical ratings, and therapy characteristics using *t* tests for independent samples and Chi-square tests (in the case of dichotomous variables). The magnitude of differences was calculated using Cohen's *d* effect size $((M_{incomplete} - M_{complete})/(SD_{pooled})$ [49] for continuous variables and odds ratios for dichotomous variables.

TS was described using means and standard deviations for all scales (averaged raw scores). To examine differences between the rater groups, a univariate analysis of variance (ANOVA) as well as post hoc tests and contrasts were conducted for TS ratings.

Moreover, bivariate correlations of patient, parent and therapist ratings were calculated. Overall changes during treatment according to the YSR and CBCL were analyzed by comparing the total scores of the pre- to post-assessment ratings using *t* tests for dependent samples and by computing Cohen's *d* effect sizes for continuous variables $((M_{pre} - M_{post})/SD_{pre})$ [49].

To examine differential effects, regression analyses were conducted for three outcome measures (TEQ total scores of TS of patients, parents and therapists) and all basic documentation variables (50 variables in total) were analyzed. Variables with high multicollinearity were excluded (variance inflation factor > 10, tolerance < 0.1) [50–53]. The predictor variables were grouped into four blocks from proximal to distal (patient variables (e.g., age), mental disorder characteristics (e.g., grouped axis 1 diagnosis, parent-rated mental disorder symptoms at post), socio-demographic variables (e.g., relationship status of parents), and therapy variables (e.g., number of treatment sessions)). In a first step, bivariate correlations were carried out to assess the relationship between the TEQ total scores and each potential predictor. In the next step, the significant predictors ($p < 0.05$) were included blockwise in a hierarchical regression analysis for each outcome measure.

Results

Participants

Of the 956 participants, $n = 543$ were boys (56.8%) and $n = 413$ were girls (43.2%). The age range of the sample was 11; 0–20; 4 years ($M = 14.3$; SD = 2.2). Most patients were of average intelligence ($n = 715$, 74.8%; $n = 150$ (15.7%) above-average and $n = 91$ (9.5%) below-average). The parents of $n = 355$ patients (37.1%) were separated and parents of $n = 350$ patients (36.6%) reported at least one family member having at least one present or past mental disorder. $n = 308$ (32.2%) of the patients had repeated at least one school year or gone through an irregular school change.

Based on semi-structured clinical interviews (DISYPS-II; [41]), the most common mental disorders were attention-deficit/hyperactivity disorders ($n = 205$, 21.5%), conduct disorders ($n = 137$, 14.3%), anxiety disorders ($n = 200$, 21.0%), depressive disorders ($n = 94$, $n = 9.8\%$), other emotional disorders ($n = 84$, 8.8%), obsessive–compulsive disorders ($n = 67$, 7.0%), eating disorders ($n = 36$, 3.8%), autism spectrum disorders ($n = 36$, 3.8%) and tic disorders ($n = 34$, 3.6%). 318 participants (33.3%) had two or more mental disorders.

The global impairment rated at pre-assessment based on the multiaxial system of ICD-10 [46] was as follows: $n = 4$ of the patients (0.4%) had no impairment, $n = 41$ patients (4.3%) had satisfactory functioning, $n = 123$ patients (12.9%) had mild impairment, $n = 416$ patients (43.5%) had moderate impairment, $n = 302$ patients (31.6%) had serious impairment in at least one area, $n = 61$ patients (6.4%) had serious impairment in most areas, and $n = 9$ patients (0.9%) had severe and profound impairment in most areas.

The mean treatment duration was $M = 17.3$ months (SD = 8.6, range 2.3–69.9), with an average of $M = 42.5$ treatment sessions (SD = 19.9, range 10–127). Table 1 shows the most frequent therapy interventions, as rated by the therapists at the end of treatment. Almost all therapies included patient-centered interventions, and in more than 95%, parent-/family-centered interventions were part of the treatment. 33.1% of all treatments included interventions in schools and 27.5% therapies included socio-therapeutic interventions. 20.2% of the patients received additional pharmacotherapy (one or more substances).

Representativeness of complete data

Table 2 shows the representativeness of complete data (completers vs. patients excluded due to missing data), which revealed significant differences for all variables with small to medium effect sizes. Patients with complete data

Table 1 Most frequent interventions in the total sample ($n=956$)

Intervention	Percentage of patients
Patient-focused interventions in total	99.7
Psychoeducation and cognitive methods	99.7
Token economies	84.6
Social skills training	74.3
Parent-/family-focused interventions in total	95.4
Psychoeducation and cognitive methods	95.0
Guidance to implement token economies	75.0
Methods to enhance the relationship between parents and youths	62.2
School-focused interventions in total	33.1
Psychoeducation and cognitive methods	31.9
Guidance to implement token economies	18.0
Methods to enhance the relationship between teacher and youths	7.4
Sociotherapeutic interventions in total	27.5
Counseling of social worker	15.7
Involvement of youth welfare office	10.4
Counseling from other involved therapists/physicians	9.1
Medication in total	20.2
Methylphenidate or atomoxetine	12.7
Antidepressants	5.3
Neuroleptics	2.7

Table 2 Comparison of longer treatments (minimum ten treatment sessions): cases with complete data pre- and post-assessment ($n=956$) with those with incomplete data ($n=622$)

	Complete data ($n=956$)		Incomplete data ($n=622$)		Test statistic	Statistical significance	Effect size (d) or odds ratio (OR)
	M or %	SD	M or %	SD		p	
Sociodemographic factors							
Age at start of the treatment	14.25	2.14	15.02	2.47	$t=-6.30$	<0.001	$d=0.34$
Gender: % boys	56.8		51.5		$\chi^2=4.22$	<0.05	OR = 1.24
Classification of intelligence	2.94	0.60	3.02	0.59	$t=-2.48$	<0.05	$d=0.13$
Relationship status of parents: % separated	43.7		49.1		$\chi^2=4.21$	<0.05	OR = 1.24
Parent and adolescent ratings (pre, raw scores)							
CBCL total[a]	43.96	22.58	48.33	23.13	$t=-3.47$	<0.01	$d=0.19$
YSR total[b]	43.22	23.13	48.81	24.28	$t=-4.34$	<0.001	$d=0.24$
Therapist rating							
Global impairment (pre)	1.97	1.30	2.71	1.49	$t=-10.17$	<0.001	$d=0.53$
Improvement global impairment (pre-to-post)	1.28	1.34	0.71	1.43	$t=7.92$	<0.001	$d=0.41$
Cooperation of the patient (post)	3.87	0.86	3.42	0.94	$t=9.64$	<0.001	$d=0.50$
Cooperation of the parent (post)	3.78	0.86	3.17	0.99	$t=11.92$	<0.001	$d=0.66$
Number of treatment sessions	42.48	19.91	33.36	20.78	$t=-8.74$	<0.001	$d=0.45$

[a]Parent rating: complete data of $n=956$ cases were compared to $n=534$ incomplete cases with pre-assessment data

[b]Patient rating: complete data of $n=956$ cases were compared to $n=545$ incomplete cases with pre-assessment data

were younger, more often male, had a higher intelligence level, and their parents were less often separated. Additionally, they showed fewer mental disorder symptoms at pre-assessment (YSR and CBCL), and therapists rated them to be less impaired at treatment begin and to have a larger improvement during therapy, and reported a better cooperation between parents and adolescents. Moreover, completers had a longer treatment duration.

The comparison of patients with complete data to those with fewer than ten appointments (brief counseling) revealed some statistically significant differences, with at most small effect sizes for socio-demographic factors and no statistically significant differences in parent- and patient-reported mental health problems. In therapist rating, large effect sizes were found. Patients with complete data were younger, their parents were less often separated, and according to therapist rating, patients were less impaired at treatment start, had a larger improvement during therapy, and therapists reported a better cooperation of parents and youngsters (see Supplementary Table 1, available online).

Treatment satisfaction

Table 3 shows the TS of the parents, patients and therapists. The overall treatment satisfaction was high ('predominantly satisfied') in parent ($M = 3.34$, SD = 0.57), patient ($M = 3.18$; SD = 0.57) and therapist ratings ($M = 2.69$; SD = 0.60). The ANOVA revealed significant differences between the three rater groups ($F(2,1908.37) = 314.66$, $p < 0.001$). Post hoc tests and contrasts also revealed significant differences between all rater groups (all tests $p < 0.001$). Therapists showed the lowest TS. 92.0% of the parents, 87.8% of the patients and 64.0% of the therapists were completely or predominantly satisfied. Interrater correlations were in a moderate range and statistically significant: parent–patient: $r = 0.35$ ($p < 0.01$), parent–therapist: $r = 0.48$ ($p < 0.01$), and patient–therapist: $r = 0.44$ ($p < 0.01$).

Table 3 Treatment satisfaction (TS): means and standard deviations of the TEQ scales (parent, patient, therapist, $n = 956$)

	M	SD
Parent		
Treatment success	2.81	0.84
Relationship with therapist	3.60	0.52
Total score	3.33	0.57
Patient		
Treatment success	2.98	0.79
Relationship with therapist	3.50	0.64
General treatment conditions	3.02	0.65
Total score	3.18	0.57
Therapist		
Treatment success regarding the patient	2.83	0.83
Treatment success regarding the family	2.18	0.76
Patient cooperation	2.89	0.72
Cooperation of the mother	2.91	0.80
Cooperation of the father	2.82	0.81
Total score	2.69	0.60

Symptom reduction

Analysis of the completer sample ($n = 956$) revealed highly significant reductions of symptoms from pre- to post-assessment according to the CBCL and YSR total score, with medium effect sizes (parent rating: $d = 0.64$, $p < 0.001$; patient rating: $d = 0.54$, $p < 0.001$).

Differential effects

Results of the bivariate correlations between TS (TEQ total scores in parent, patient and therapist ratings) and potential predictors are presented in Table 4. Most of the patient, mental disorder and socioeconomic variables showed no statistically significant or low to moderate correlations with TS (range between $r = -0.55$ and $r = 0.48$). The highest correlation, which was highly statistically significant, was found between therapist-rated TS and therapist-rated global impairment at treatment end ($r = -0.55$), indicating that the lower the global impairment at treatment end, the higher the therapist-rated TS. Correlations between TS and therapy variables revealed some moderate, highly statistically significant correlations (range between $r = -0.56$ and $r = 0.63$). The highest correlation was found between the therapist-rated TS and the therapist-rated cooperation of the patient, indicating higher therapist-rated TS with higher cooperation ($r = 0.63$).

Results of the final steps of the hierarchical regression analysis for parent-, patient- and therapist-rated TS are summarized in Table 5. Due to collinearity, all pre-treatment scores were excluded (CBCL and YSR total score, axis 6).

TS rated by parents was predicted by the patients' age at treatment start (lower age predicted higher TS), the CBCL total score at treatment end (lower score predicted higher TS), and several therapy variables: cooperation of patients and parents (higher cooperation predicted higher TS), prognosis for overall situation (better prognosis predicted higher TS), the number of parent-/family-focused CBT interventions (more interventions predicted higher TS) and the number of treatment sessions (more treatment sessions predicted higher TS). All variables together explained $R^2_{adj.} = 0.203$ of the variance in parent satisfaction.

The patient-rated TS was predicted by the YSR total score at treatment end (lower score predicted higher TS), the number of children living in the family (lower number predicted higher TS), the cooperation of patients (higher cooperation predicted higher TS) and parents (lower parental cooperation predicted higher TS) during therapy, the prognosis for the overall situation (better prognosis predicted higher TS), the number of treatment sessions (higher number predicted

Table 4 Bivariate correlations between parent-, patient- and therapist-rated treatment satisfaction (TS, total score TEQ) and grouped predictor variables ($n = 956$)

Rating perspective—treatment satisfaction	Parent	Patient	Therapist
Patient variables			
Age	−0.12**	0.05	−0.03
Gender (1 = boy, 2 = girl)	−0.07*	0.02	−0.05
Mental disorder characteristics			
Axis 1—grouped clinical diagnosis			
Externalizing clinical diagnoses	−0.03	−0.05	−0.06
Internalizing clinical diagnoses	0.06	0.05	0.05
Both externalizing and internalizing clinical diagnoses	−0.02	−0.01	−0.08**
Other diagnoses	−0.04	0.00	0.04
Axis 3—intellectual level	0.02	−0.04	−0.14**
Axis 6—global impairment			
Global impairment (pre)	−0.02	−0.12**	−0.08*
Global impairment (post)	−0.26**	−0.37**	−0.55**
Improvement global impairment (pre to post)	0.23**	0.27**	0.48**
Parent-rated mental disorder symptoms			
CBCL total score (pre)	−0.08**	−0.15**	−0.18**
CBCL total score (post)	−0.22**	−0.27**	−0.33**
CBCL total score—improvement (pre to post)	0.15**	0.13**	0.15**
Youth-rated mental disorder symptoms			
YSR total score (pre)	−0.06	−0.09**	−0.09**
YSR total score (post)	−0.14**	−0.24**	−0.24**
YSR total score—improvement (pre to post)	0.09**	0.15**	0.15**
Socio-demographic variables			
Axis 5 grouped abnormal psychosocial situations			
Abnormal intrafamilial relationships	−0.07*	−0.05	−0.15**
Familial mental disorder deviance or handicap	−0.05	−0.08*	−0.15**
Inadequate/distorted intrafamilial communication	−0.10**	−0.08*	−0.17**
Abnormal qualities of upbringing	−0.09**	−0.11**	−0.22**
Abnormal immediate environment	−0.04	−0.02	−0.11**
Acute life events	−0.01	−0.03	−0.05
Societal stressors	−0.01	0.03	−0.07*
Chronic interpersonal stress associated with school work	0.01	−0.09**	−0.07*
Stress resulting from the child´s disorder	−0.04	−0.02	−0.07*
Total of abnormal psychosocial situations	−0.09**	−0.09**	−0.22**
Parents living together (0 = no, 1 = yes)	−0.01	0.03	−0.06
Level of education (0 = no school-leaving qualification to 6 = university degree)			
Mother	0.01	0.02	0.10**
Father	0.02	0.06	0.15**
Current employment (0 = no employment to 5 = full-time employment)			
Mother	0.04	0.09*	0.06
Father	0.03	−0.06	0.04
Social class (1 = unskilled worker to 11 = head of larger company)	0.02	0.04	0.16**
Mental disorders in family	0.03	−0.04	−0.05
Other diseases in family	−0.02	−0.04	−0.07
Number of siblings	−0.03	−0.07*	−0.02
Number of children in family	−0.02	−0.08*	−0.02
Therapy variables			
Number of specific interventions			
Diagnostic assessments	0.01	0.00	0.02

Table 4 (continued)

Rating perspective—treatment satisfaction	Parent	Patient	Therapist
Patient-focused CBT interventions	0.12**	0.14**	0.18**
Parent-/family-focused CBT interventions	0.17**	0.09**	0.17**
School-focused CBT interventions	0.03	−0.06	−0.05
Sociotherapeutic interventions	−0.09**	−0.14**	−0.17**
Other parallel therapies (i.e., occupational therapy)	−0.03	−0.02	−0.01
Number of all interventions	0.08*	0.01	0.05
Pharmacotherapy (0 = no, 1 = yes)	−0.03	−0.07*	−0.02
Cooperation of the patient	0.31**	0.50**	0.63**
Cooperation of the parents	0.38**	0.21**	0.60**
Prognosis for symptom development (1 = very good; 5 = poor prognosis)	−0.29**	−0.39**	−0.56**
Prognosis for overall situation (1 = very good; 5 = poor prognosis)	−0.29**	−0.39**	−0.54**
Number of treatment sessions	0.11**	0.12**	0.12**
Regular treatment end (0 = no; 1 = yes)	0.24**	0.33**	0.42**

* $p < .05$

** $p < .01$

Table 5 Final step of the hierarchical regression analysis for the prediction of parent-, patient- and therapist-reported TS ($n = 956$)

Rating perspective—TS	Parent		Patient		Therapist	
	$\beta_{std.}$	$R^2_{adj.}$	$\beta_{std.}$	$R^2_{adj.}$	$\beta_{std.}$	$R^2_{adj.}$
Patient variables		0.012				
Age	−0.070*					
Mental disorder characteristics		0.093		0.158		0.321
Global impairment (post)					−0.095*	
CBCL total score (post)	−0.116*				−0.058*	
YSR total score (post)			−0.119**			
Sociodemographic variables				0.163		0.346
Axis 5: abnormal qualities of upbringing					−0.090*	
Number of children in family			−0.064*			
Therapy variables		0.203		0.322		0.594
Number of parent-/family-focused CBT interventions	0.074*				0.074**	
Number of sociotherapeutic interventions					0.063*	
Cooperation of the patient	0.117*		0.387**		0.312**	
Cooperation of the parents	0.256**		−0.085*		0.297**	
(neg.) Prognosis for overall situation	−0.107*		−0.137**		−0.111**	
Number of treatment sessions	0.065*		0.063*			
Regular treatment end (0 = no; 1 = yes)			0.100**		0.081**	

β_{std} = standardized regression coefficient, p = significance, $R^2_{adj.}$ = cumulative adjusted R^2

*$p < 0.05$

**$p < 0.01$

higher TS) and a regular end of treatment (regular end predicted higher TS). Overall, these variables explained 32.2% of the variance in patient-reported TS variance.

Finally, in therapist rating, TS was predicted by the CBCL total score (lower total score predicted higher TS) and the global impairment (lower score predicted higher TS) at treatment end. Moreover, within the socio-demographic variables, abnormal qualities of upbringing emerged as a statistically significant predictor (lower abnormal quality predicted higher TS). Within therapy variables, the following statistically significant predictors were identified: cooperation of patients and parents during therapy (higher cooperation predicted higher TS), the number of parent-/family-focused CBT and of sociotherapeutic interventions

(more interventions predicted higher TS), the prognosis for the overall situation (better prognosis predicted higher TS), and a regular end of treatment (regular end predicted higher TS). Overall, these variables explained $R^2_{adj.} = 0.594$ variance in therapist-rated TS.

Discussion

The aim of this study was to extend the existing knowledge in the field of health care by investigating TS and potential predictors thereof, as rated by multiple informants (patient, parent, therapist), within a large sample of clinically referred adolescents following routine CBT. The examined sample was very heterogeneous in terms of diagnoses and impairment, ranging from patients with less severe mental disorders without serious impairment, who were included due to their burden and distress according to ICD-10, to patients with very serious impairment including severe disorders such as autism spectrum disorders, for which CBT (including parent management training) has also been shown to be effective (e.g., [54, 55]).

TS was assessed via a standardized questionnaire (TEQ) from three different perspectives—parent, patient and therapist ratings. Besides investigating TS from this triple perspective, we investigated potential predictors associated with TS. In this regard, we examined patient-related and socio-demographic data, clinical ratings and diagnosis, as well as parent and adolescent ratings. A total of 50 variables were grouped into four different categories and statistically significant predictors were included blockwise, from patient-related factors to variables concerning the treatment itself.

The overall TS was high in patient, parent and therapist ratings. It is difficult to draw comparisons between the present findings regarding TS following routine CBT and the results from previous studies, as past research has investigated highly diverse forms and intensities of inpatient and outpatient counseling and therapy. Our findings reveal similar levels of TS to those found in previous studies which included only one rating perspective (either patient or parent rating) (e.g., [17, 38]). Studies including both parent and patient rating perspectives, examining diverse forms of therapies, found that parent-reported TS was higher than patient-reported TS [15, 16, 19–23]. Our results, therefore, add important knowledge to the research field by replicating these findings within a large sample of clinically referred adolescents following routine CBT. The lowest TS was found in therapist rating (64% of the therapists being at least predominantly satisfied). Only a small number of studies have included the therapist's perspective in the investigation of TS, and these examined smaller cohorts. These studies revealed similar results to the present findings (e.g., [18, 21, 27–29]). Our findings, therefore, support previously found outcomes within a large sample of clinically referred adolescents after routine CBT. The correlations between patient, parent and therapist ratings in the present study were all statistically significant and in a moderate range, thus confirming previous findings (e.g., [11, 15, 16, 18–21, 24–29]). The finding of only moderate correlations between different raters underlines the importance of including all rater perspectives, as called for by other researchers (i.e., [12, 14, 15, 36]), as no conclusion can be drawn from one rater to another. The consideration of the therapist perspective as a particularly critical rater seems to be very important and may help therapists to reflect on and, therefore, enhance the quality of their therapies by comparing their perspective with the perspectives of patients or parents. This procedure might help the therapist to identify his or her own strengths and weaknesses in the therapeutic process.

Our results on differential effects of patient-related variables (age, gender) show a weak, statistically significant relation between age and parent-rated TS, with parents of younger patients reporting a higher TS. This might reflect the fact that parents of younger children are normally more involved in the therapy process, possibly leading them to perceive a higher TS. Nevertheless, the age at onset of therapy only explained a very small amount of variance, and no relation at all was found with patient-rated or therapist-rated TS, or concerning gender and TS in all three rating perspectives. The existing literature presents inconsistent results regarding these variables, leading to the assumption that age and gender apparently do not have a substantial effect on the perceived TS.

Our regression analysis concerning mental disorder characteristics and TS found no relation at all between TS and type of grouped mental disorder, thus supporting some previous findings [11, 35]. In contrast, Barber et al. [16] as well as Bjorngaard et al. [31] found a higher TS in children and adolescents with internalizing disorders following a not further described health care delivery in outpatient departments of Child and Adolescent Mental Health Services. Future studies will have to clarify whether the relation between TS and type of mental disorder varies depending on the type of setting or treatment used.

Nevertheless, some statistically significant bivariate correlations between mental disorder characteristics and TS were found, most of them in a low or moderate range. In parent, patient and therapist ratings, the highest correlations were found between TS and the therapist-rated global impairment at treatment end: the lower the global impairment was at discharge, the higher was the parent-, patient- and therapist-rated TS. A similar trend was found concerning the CBCL/YSR total score at discharge: The lower the parent- and patient-reported mental health problems were, the higher was the TS. Interestingly, these correlations were larger than those reflecting changes in mental disorder

symptoms or global impairment during therapy. Apparently, TS is more strongly associated with the status at treatment end than with symptom changes during therapy. However, after entering these variables into a hierarchical regression analysis, in parent rating, only the CBCL total score at post remained as a significant predictor, accounting for 9.3% of the variance. This was the case for the CBCL total score and the global impairment at treatment end in therapist rating (32.1% explained variance in total), while in patient rating, only the YSR total score at post emerged as a significant predictor (15.8% of explained variance). These results support findings on parent rating from other research groups [11, 20]. Our findings add further evidence to the hitherto inconsistent findings concerning the relation between TS and mental disorder symptoms in self-rating. Moreover, they support the findings of Garland et al. [11] as well as Godley et al. [20], who revealed a negative association of self-rated TS and mental health problems at treatment end. Our study is the first to show that there might be a fundamental relation of parent-reported mental disorder symptoms and global impairment at treatment end with the therapist-rated TS. Clearly, when rating their own TS, therapists rely strongly on the patient's mental status and extent of impairment at treatment end.

The results of our regression analysis on socio-demographic variables show that no noteworthy amount of variance was explained by socio-demographic factors (an additional 0.5–2.5% of explained variance) after entering patient and mental disorder variables. In patient rating, as a trend, we found that the smaller the number of children in the patient's family, the higher was the patient's TS, and in therapist rating, the fewer abnormal qualities of upbringing, the higher was the therapist-rated TS (both variables emerged as statistically significant predictors, but with only a small amount of explained variance). It is important to note that no substantial relation was found between TS and any kind of abnormal psychosocial situation, or with the parents' educational level, current occupation, or social class. Based on these results, therapists should rely on the above-mentioned mental disorder variables when considering TS, as socio-demographic factors do not add any further information concerning the prediction of TS. These results are, therefore, in line with findings from other researchers (e.g., [15, 16, 34]).

The present study adds important knowledge to the research field, as the relation between TS and therapy-related variables has not been sufficiently investigated so far. Interestingly, variables concerning the therapy process accounted for a relevant additional amount of explained variance in all three rating perspectives (between 11.0 and 24.8%) and several significant predictors were found. The most relevant predictor in patient and therapist ratings was the patient's cooperation during therapy, rated by the therapist at the end of therapy (the higher the cooperation, the higher the TS). In parent and therapist ratings, a similar association was found for parental cooperation. The perceived cooperation of parents and patients during therapy emerged as an important predictor of TS for all involved. Therefore, a limited cooperation during therapy might be a cue for the therapist to optimize therapy contents to increase TS and thus prevent treatment dropouts. Additionally, some less important predictors were found: the number of parent-/family-focused CBT interventions (the more interventions, the higher the TS in parent and therapist ratings); sociotherapeutic interventions (the more interventions, the higher the TS in therapist rating); the prognosis for the overall situation (the better the prognosis, the higher the TS in patient and therapist ratings); the number of treatment sessions (the more sessions, the higher the TS in parent and patient ratings); and whether treatment came to a regular end (a regular treatment end was associated with a higher perceived TS for all three raters). Previous studies investigating treatment length and the total number of therapy sessions have shown inconsistent results [11, 17, 21, 31, 33, 35]. Our results, therefore, support previous findings of a positive relation between TS and the number of treatment sessions [11, 17, 31]. Nevertheless, based on the present findings, this relation does not seem to be fundamental, as correlations were in a lower range.

Overall, our results on differential effects show that particularly in parent and patient ratings, a large amount of variance remained unexplained by the predictors examined in the present study. Future studies will have to clarify the question whether other factors, which were not measured in the present study, affect TS, for instance 'feeling reassured at the first appointment' or 'satisfaction with the frequency of sessions, time to formulate questions, agreeing to the consultation (patients) and accessibility by telephone', as found by Kapp and coworkers [15], or the waiting time until the start of treatment [31]. Furthermore, future studies should investigate whether other instruments would be more appropriate for the measurement of TS, such as the Consumer Satisfaction Questionnaire [56].

Some limitations of the present study need to be taken into account. The first limitation concerns a potential selection bias of the analyzed sample, as only treatments with complete assessments were included in the analysis and treatments with fewer than ten treatment sessions were excluded. Our representativeness analysis showed that excluded patients were more impaired at treatment start in parent and patient ratings, and therapists rated their treatments to be less successful, although the differences between these two groups were mostly within the small to medium range. Nevertheless, it is probable that our findings within the completer sample might overestimate the TS of the total sample, as found by Kapp et al. [15]. In this regard, there is another important point to consider:

families most often returned their questionnaires to the therapist him/herself. This might have influenced parents and patients to provide socially desirable answers concerning TS, thus presenting a further potential bias of the present results. Second, when interpreting the TS intercorrelations, it has to be noted that the parent, patient and therapist versions of the TEQ are not completely identical in terms of items and scales. Moreover, the internal consistency of The TEQ in our sample was questionable in self-rating. Third, when investigating the findings on differential effects, it should be kept in mind that in therapist rating, three of the six scales of the TEQ assess the cooperation of mother, father and the youngster him/herself. Obviously, this influences the relation between the cooperation rated by the therapist in the basic documentation form and the TS total score in the TEQ therapist rating. However, it is an interesting and important finding that these two items of the basic documentation form (cooperation of the parents and the youngsters) explain such a large amount of variance in therapists' TS. Fourth, although the therapists were guided by supervisors in implementing CBT interventions, treatment integrity was not formally assessed in terms of a systematic analysis of videos of treatment sessions or interrater agreement of therapist rating. Moreover, a part of the sample received additional psychopharmacotherapy or sociotherapy, which presumably might have influenced TS. Finally, treatments were performed in a regular care setting, but patients were treated by therapists in advanced psychotherapy training and not by fully licensed therapists in private practices. Therefore, we cannot analyze whether the therapists who provided the treatments in the present study are representative for therapists working in regular routine care settings. Future investigations will have to address this question of potential differences between these two groups in terms of treatment effects, TS and predictors of TS.

Despite these limitations, the results of this large study on TS following routine CBT of adolescents with mental disorders reveal a high TS in parent, patient and therapist ratings. A large amount of the variance in TS was explained by mental disorder characteristics and therapy variables, whereas the influence of patient-related or socio-demographic variables turned out to be negligible. This is highly important, as therapists can influence these key factors by optimizing their individualized treatments, which could in turn help to reduce treatment dropout rates when treating adolescents with mental disorders. The next important step will be to extend these findings through structural equation modeling analysis and to determine which specific interventions show the strongest associations with parental and adolescent cooperation during treatment and with low mental disorder symptoms at treatment end to enhance TS. This question should be addressed in future studies on routine CBT of children and adolescents with mental disorders.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

Ethical standards This study has been approved by the ethics committee at the University of Cologne and has, therefore, been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki and its later amendments. All persons gave their informed consent prior to their inclusion in the study.

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