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# Bullying Girls – Changes after Brief Strategic Family Therapy: A Randomized, Prospective, Controlled Trial with One-Year Follow-Up

Marius Nickel[a, b, c] Johannes Luley[a] Jakub Krawczyk[b] Cerstin Nickel[a] Christoph Widermann[a] Claas Lahmann[c] Moritz Muehlbacher[b] Petra Forthuber[a] Christian Kettler[a] Peter Leiberich[c] Karin Tritt[c] Ferdinand Mitterlehner[a] Patrick Kaplan[b] Francisco Pedrosa Gil[d] Wolfhardt Rother[a] Thomas Loew[c]

[a]Clinic for Psychosomatic Medicine, Inntalklinik, Simbach am Inn, Germany; [b]University Clinic for Psychiatry 1, PMU, Salzburg, Austria; [c]Department of Psychosomatic Medicine, University Clinic, Regensburg, and [d]Psychosomatic Ambulance, Medicine Clinic, Ludwig-Maximilians-University, Munich, Germany

**Key Words**

Bullying girls · Risk-taking behavior · Anger · Interpersonal relationships · Health-related quality of life · Brief strategic family therapy

**Abstract**

***Background:*** Many girls bully others. They are conspicuous because of their risk-taking behavior, increased anger, problematic interpersonal relationships and poor quality of life. Our aim was to determine the efficacy of brief strategic family therapy (BSFT) for bullying-related behavior, anger reduction, improvement of interpersonal relationships, and improvement of health-related quality of life in girls who bully, and to find out whether their expressive aggression correlates with their distinctive psychological features. ***Methods:*** 40 bullying girls were recruited from the general population: 20 were randomly selected for 3 months of BSFT. Follow-up took place 12 months after the therapy had ended. The results of treatment were examined using the Adolescents' Risk-taking Behavior Scale (ARBS), the State-Trait Anger Expression Inventory (STAXI), the Inventory of Interpersonal Problems (IIP-D), and the SF-36 Health Survey (SF-36). ***Results:*** In comparison with the control group (CG) (according to the intent-to-treat principle), bullying behavior in the BSFT group was reduced (BSFT-G from n = 20 to n = 6; CG from n = 20 to n = 18, p = 0.05) and statistically significant changes in all risk-taking behaviors (ARBS), on most STAXI, IIP-D, and SF-36 scales were observed after BSFT. The reduction in expressive aggression (Anger-Out scale of the STAXI) correlated with the reduction on several scales of the ARBS, IIP-D, and SF-36. Follow-up a year later showed relatively stable events. ***Conclusions:*** Our findings suggest that bullying girls suffer from psychological and social problems which may be reduced by the use of BSFT. Expressive aggression in girls appears to correlate with several types of risk-taking behavior and interpersonal problems, as well as with health-related quality of life.



## Introduction

Anger and aggression are among the commonest and most troublesome causes of referrals of young people to physicians [1]. Around 10–30% of all schoolchildren show bullying behavior, about half of them being girls [2, 3]. Violence-related behavior, sexual disinhibition and risk-taking behavior are significant problems worldwide [4–6]. Violence-related behavior is most highly associated

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Dr. med. Marius Nickel
Clinic for Psychiatry and Psychosomatic Medicine
Inntalklinik
DE–84359 Simbach am Inn (Germany)
Tel. +49 8571 985302, Fax +49 8571 985303, E-Mail m.nickel@inntalklinik.de

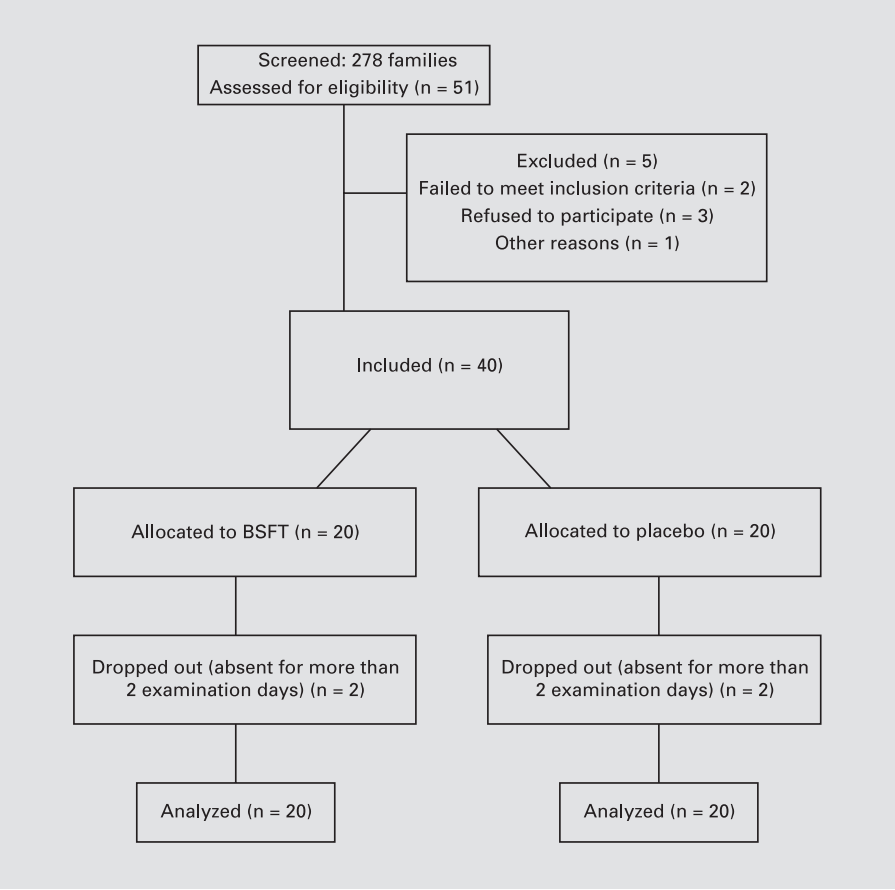


**Fig. 1.** Flow diagram of patients' progress through the phases of the trial.

with smoking, drinking, and having been bullied [4]. Also contact with delinquent friends and excessive media use such as television viewing and electronic game playing is linked to indirect and/or direct violence and bullying at school [6]. Most studies suggest that bullies share psychological and social problems associated with high levels of anger and poor health-related quality of life [7, 8].

Treatments for aggression should generally combine pharmacological agents [9, 10] and environmental or psychotherapeutic (as well as family therapeutic) [11–13] measures. The degree of family conflict, domestic violence, and family support have a critical influence on the extent of this problem [13, 14].

Brief strategic family therapy (BSFT) focuses on assessing the family's conflict resolution style and developing specific interventions to help families negotiate and resolve their differences more effectively [15]. BSFT targets children and adolescents between the ages of eight and seventeen who are currently displaying behavioral problems or are at risk for developing them [16]. The goal of BSFT is to improve youth behavior by improving family relationships that are presumed to be directly related to the youth behavior problems, and to improve relationships between the family and other important systems which influence youth (e.g. school, peers) [13, 17].

The aim of this study was to find out whether the use of BSFT is effective in improving behavior, reducing anger, and improving interpersonal relationships and the health-related quality of life in girls with bullying behavior. We also wanted to investigate whether the girls' expressive aggression correlates with their behavior, problems in their interpersonal relationships, and their health-related quality of life.

## Methods

*Study Subjects*

Between 1998 and 2004, 278 randomly selected families (fig. 1) with female children which were last-year (usually 15 years old) students in the secondary school, the basic economical vocational

school or last-year basic level students (also usually 15 years old) of the comprehensive secondary school (grammar school) were contacted by trained staff by telephone. The girls from these families were asked about any possible kind of bullying behavior, if indeed there were any.

The inclusion criteria for the study were to be 15 years old and to have shown direct verbal and/or physical bullying behavior for at least 6 months. Exclusion criteria were psychotic illnesses, liability to prosecution, current ingestion of psychotropic medication and/or psychotherapy, and current Substance Use Disorder. Fifty-one girls (fig. 1) who were assessed after the telephone interview as potentially meeting the inclusion criteria for the study and who seemed to be enough motivated to go for family therapy were invited with their families to participate in a face-to-face interview. They were asked about their sociodemographic details, tested for psychiatric disorders according to the DSM-IV, and with the Adolescents' Risk-taking Behavior Scale (ARBS), the State-Trait Anger Expression Inventory (STAXI), the Inventory of Interpersonal Problems (IIP-D), and the SF-36 Health Survey (SF-36).

The necessary sample size was calculated for a type I error of 5% ($z_1 = 1.96$) and a power analysis of 80% ($z_2 = 0.842$), based on the mean value ($m_1 = 19.4$ and $m_2 = 14.2$) and standard deviation ($s_1 = 6.3$ and $s_2 = 5.2$) for the Anger-Out (AO) scale of the STAXI, which were obtained from a small pilot study. The formula is n (per group) = $[(z_1 + z_2)^2 \times (s_1^2 + s_2^2)]/(m_1 - m_2)^2$ [18]. This resulted in a group size of n = 40. Twenty girls were randomly selected for a family therapy programme (FamTh-G) and 20 were in the control group (CG), using Excel tables with random numbers (fig. 1). Both randomizations were performed in the clinic administration section under conditions of secrecy.

All families appeared for the first therapy appointment – the BSFT-G (33 parents, 20 subjects and 10 younger siblings), the CG (35 parents, 20 subjects and 9 younger siblings). If the parents were separated, we attempted to invite both, as long as their homes were within a reasonable distance. They were reminded about the appointment 3–5 times by phone.

*Assessment*

The questionnaires included sociodemographic data, the ARBS, the STAXI, and the SF-36.

The ARBS is a procedure for assessing risk-taking behavior in adolescents consisting of seven scales: Drug Use (DU), Smoking (S), Binge Drinking (BD), Excessive Media Use (EMU), Sex without Condom (SWC), Sex while using Drugs and Alcohol (SWDA), Sexual Disinhibition (SDI), and Index (I). The score ranged from 0 to 4 on each scale, with 4 points indicating the most marked current risk-taking behavior. Thus, subjects could get between 0 and 28 points on the index. Validation of the ARBS (a test we developed) has not yet been concluded. Thus, no values or references can be given.

The STAXI is a procedure for assessing anger and expression of anger (for female test subjects: Cronbach's Alpha = 0.76–0.89; retest correlation 8 weeks later = 0.55–0.75), consisting of 44 items, forming 5 scales:

- State-Anger (S-A) – subjective state of anger at the time of measurement
- Trait-Anger (T-A) – readiness to react with anger (normal value: 18.1, SD = 5.34)
- Anger-In (AI) – tendency to suppress anger (normal value: 16.0, SD = 4.04)
- Anger-Out (AO) – tendency to direct anger outwards (normal value: 13.0, SD = 4.02)
- Anger-Control (AC) – tendency to keep anger under control (normal value: 22.4, SD = 5.29)

The values for S-A and T-A range from 10 to 40 and the others from 8 to 32 [19]. The IIP-D is primarily a questionnaire for individual status and change in clinical and personality psychology (for male and female subjects Cronbach's Alpha = 0.49–0.88). The scales of the questionnaire are derived from theory and describe eight sub-dimensions of the interpersonal circumplex: overly autocratic/dominant (PA), overly quarrelsome/competitive (BC), overly distant/cold (DE), overly introverted/socially avoiding (FG), overly sub-assertive/submissive (HI), overly exploitable/compliant (JK), overly nurturant/friendly (LM), overly expressive/importunate (NO). With the IIP-D, one can obtain a complex picture of a person's interpersonal problems with relatively little effort. The consistency coefficients (Cronbach's alpha) average around 0.60. The IIP-D is designed as a self-rating scale. The answers are coded into a rating scale on the questionnaire corresponding to 0–4. The raw values for the individual items are then added for each scale and the sums result in the scale's raw values [20].

The SF-36 was developed to obtain individual reports from patients on their health-related quality of life, irrespective of their current state of health and age. It consists of a questionnaire with 36 items that are categorized according to several subject areas. The items record eight dimensions of subjective health: physical functioning (PHFU), role limitations due to physical health (role-physical) (ROPH), bodily pain (BOPA), general health perceptions (GEPE), vitality (VITA), social functioning (SOFU), role limitations due to emotional problems (role-emotional) (ROEM) and mental health (PSYC). The items and scales of the SF-36 were calculated so that a higher score corresponds to a better state of health. A higher score in functionality, for instance, indicates better functionality in the subject and a higher score on the pain scale means freedom from pain. The scale's raw values are converted into transformed scale values (T values). Reliability testing indicates an internal consistency ranging approximately 0.77 to 0.93 [21].

*Design*

We treated the subjects in the BSFT-G between August 1999 and October 2003 with a short-term, problem-focused intervention that included twelve 100-min sessions once a week over a period of 12 weeks in the therapists' offices. Therapists (family therapists with certification) and co-therapists (candidates for certification as family therapist) were randomly assigned to the families. The therapy was based on the assumption that adaptative family interactions can play a pivotal role in protecting children from negative influences, and that maladaptive family interactions can contribute to the evolution of behavior problems and consequently is a primary target for intervention. The goal of therapy was to improve the girls' behavior problems by improving family interactions that are presumed to be directly related to the symptoms, thus reducing risk factors and strengthening protective factors for adolescent drug abuse and other conduct problems. Major techniques used were joining (engaging and entering the family system), diagnosing (identifying maladaptative interactions and family strengths) and restructuring (transforming maladaptative interactions). We have provided families with the tools to overcome individual and family risk factors through focused interventions to improve maladaptative patterns of family interaction and skill-building strategies

**Table 1.** Changes on the Adolescents Risk-taking Behavior Scale (ARBS)

| | Drug use<br>DU | Smoking<br>S | Binge drinking<br>BD | Excessive media use<br>EMU | Sex without condom<br>SWC | Sex while using drugs and alcohol<br>SWDA | Sexual disinhibition<br>SD | Index<br>I |
|---|---|---|---|---|---|---|---|---|
| *Initial testing* | | | | | | | | |
| BSFT-G (n = 20) | 1.5 (0.9) | 2.3 (0.6) | 1.7 (0.7) | 1.8 (0.7) | 1.5 (1.1) | 1.4 (0.7) | 2.3 (0.6) | 12.4 (4.4) |
| CG (n = 20) | 1.5 (0.8) | 1.5 (0.7) | 2.1 (0.8) | 1.7 (0.7) | 1.4 (0.9) | 1.5 (0.8) | 1.8 (1.0) | 11.4 (2.3) |
| *Final testing and follow-up* | | | | | | | | |
| BSFT-G (n = 20) | 0.3 (0.5)[a] | 1.6 (0.6)[a] | 0.6 (0.6)[a] | 0.6 (0.6)[a] | 0.1 (0.3)[a] | 0.4 (0.5)[a] | 0.9 (0.4)[a] | 4.4 (2.2)[a] |
| | 0.5 (0.5)[b] | 1.4 (0.7)[b] | 0.7 (0.5)[b] | 0.5 (0.5)[b] | 0.3 (0.5)[b] | 0.5 (0.5)[b] | 1.1 (0.6)[b] | 4.9 (1.7)[b] |
| CG (n = 20) | 1.6 (0.9)[a] | 1.6 (0.7)[a] | 2.2 (0.7)[a] | 1.9 (0.6)[a] | 1.5 (0.8)[a] | 1.8 (0.7)[a] | 2.1 (0.8)[a] | 12.7 (1.8)[a] |
| | 1.3 (0.9)[b] | 1.7 (0.7)[b] | 2.1 (0.8)[b] | 1.5 (0.7)[b] | 1.5 (0.9)[b] | 1.9 (0.7)[b] | 2.2 (0.7)[b] | 12.1 (2.2)[b] |
| Mean difference[a] | –1.3 | –0.8 | –1.2 | –1.4 | –1.3 | –1.3 | –1.7 | –9.3 |
| Mean difference[b] | –0.8 | –1.1 | –1.0 | –1.1 | –1.3 | –0.6 | –1.6 | –8.2 |
| 95% CI[a] | [–1.8; –0.8] | [–1.2; –0.4] | [–1.6; –0.8] | [–1.8; –1.0] | [–2.0; –1.0] | [–1.7; –0.9] | [–2.2; –1.2] | [–11.1; –7.5] |
| 95% CI[b] | [–1.3; –0.3] | [–1.5; 0.1] | [–1.4; –0.6] | [–1.5; –0.7] | [–1.8; –0.8] | [–1.7; –0.9] | [–2.1; –1.1] | [–10.0; –6.4] |
| p (U test) | <0.001[a]<br>= 0.03[b] | <0.001[a]<br>= 0.09[b] | <0.001[a, b] | <0.001[a, b] | <0.001[a, b] | <0.001[a, b] | <0.001[a, b] | <0.001[a, b] |

BSFT-G = Group treated with brief strategic family therapy; CG = control group; DI = difference in score for change between the two groups; 95% CI = 95% confidence interval.

Mean value (with SD).

[a] After 12 weeks' therapy.

[b] Follow-up 1 year later.

to strengthen families. We have fostered family communication, parenteral leadership, appropriate parenteral involvement, problem solving, clear rules and consequences, mutual support among parenting figures.

The control group was treated simultaneously and just as frequently as the BSFT-G, but with a placebo intervention. This consisted of structural, detailed question sessions on how they felt, their daily activities and events. Rigorous attention was paid to their not receiving any of the previously described family therapeutic interventions.

Questionnaires were filled in during face-to-face interviews (blinded staff) every two weeks (risk-taking behavior only before and after therapy) independently of the therapy sessions. Girls were merely reminded 3–4 times about the next testing appointment. Two of the girls/families in the family therapy group, and two girls/families in the comparison group dropped out. They did not appear more than three times for therapy, or more than three times for assessment. Follow-up took place 1 year after therapy had ended.

Six trained interviewers were allotted to each examination. The data was fed to the computer twice independently and automatically checked for deviations. 2.7% of the entries were identified accordingly as erroneous and adjusted. The study was concluded according to plan.

*Source of Funding and Ethical Consideration*

The study was planned and performed in accordance with the Declaration of Helsinki and ethical laws pertaining to the medical professions. The design of this trial was approved by the clinic's 'Ethikkommission' (the German equivalent of the Committee on Human Subjects). The study was conducted independent of any institutional influence and was not funded. Parents gave written informed consent.

*Data Analysis*

We used the statistical program SPSS, Version 11 (SPSS, Chicago, Ill., USA). The Mann-Whitney U-Test or the Exact Fishers' Test were carried out. We employed standard deviations, differences in change between the two groups (DI) with their 95% confidence intervals (95% CI, range of the mean differences for a certain parameter between the two groups), probability (p), and rank correlation coefficients according to Spearman ($R^2$) for reporting the treatment results according to the intent-to-treat principle [18].

## Results

Girls in the two groups were in good physical condition, of comparable mean age (FamTh-G: 15.5 ± 0.5 years; CG: 15.5 ± 1.0 years), Body Mass Index (BMI) (BSFT-G: 24.7 ± 4.2; CG: 25.2 ± 4.5) [22], and baseline testing (tables 1–4). Approximately the same numbers in each group were victims of bullying themselves [BSFT-G:

**Table 2.** Changes on the State-Trait Anger Expression Inventory (STAXI)

| | State-Anger S-A | Trait-Anger T-A | Anger-In AI | Anger-Out AO | Anger-Control AC |
|---|---|---|---|---|---|
| *Initial testing* | | | | | |
| BSFT-G (n = 20) | 20.6 (1.3) | 20.3 (1.3) | 16.9 (1.1) | 17.9 (1.4) | 20.6 (0.8) |
| CG (n = 20) | 20.7 (1.2) | 20.0 (1.6) | 17.2 (1.2) | 18.4 (1.6) | 20.0 (0.9) |
| *Final testing and follow-up* | | | | | |
| BSFT-G (n = 20) | 17.4 (1.0)[a] | 17.3 (1.3)[a] | 14.8 (1.2)[a] | 15.2 (1.2)[a] | 21.8 (1.0)[a] |
| | 17.6 (1.7)[b] | 17.7 (1.3)[b] | 15.2 (1.2)[b] | 15.9 (1.4)[b] | 21.3 (0.9)[b] |
| CG (n = 20) | 20.5 (1.4)[a] | 19.7 (1.5)[a] | 17.5 (1.3)[a] | 18.1 (1.7)[a] | 20.1 (1.1)[a] |
| | 20.6 (1.2)[b] | 20.0 (1.4)[b] | 16.9 (1.3)[b] | 18.2 (1.9)[b] | 20.3 (0.7)[b] |
| Mean Difference | –3.1[a] –3.0[b] | –2.9[a] –2.6[b] | –2.4[a] –1.4[b] | –2.4[a] –1.8[b] | 1.1[a] 0.4[b] |
| 95% CI | [–3.6; –2.5][a] [–3.7; –2.2][b] | [–3.4; –2.1][a] [–3.3; –1.9][b] | [–3.0; 1.7][a] [–1.9; 0.9][b] | [–3.0; –1.8][a] [–2.5; –1.1][b] | [0.7; 1.6][a] [–0.1; 0.9][b] |
| p (U test) | <0.001[a, b] | <0.001[a, b] | = 0.11[a] = 0.10[b] | <0.001[a, b] | <0.001[a] = 0.09[b] |

BSFT-G = Group treated with brief strategic family therapy; CG = control group; DI = difference in score for change between the two groups; 95% CI = 95% confidence interval.

Mean values (with SD).

[a] After 12 weeks' therapy.

[b] Follow-up 1 year later.

**Table 3.** Changes on the Inventory of Interpersonal Problems (IIP-D)

| | Overly autocratic/ dominant (PA) | Overly quarrelsome/ competitive (BC) | Overly distant/cold (DE) | Overly introverted/socially avoiding (FG) | Overly sub-assertive/ submissive (HI) | Overly exploitable/ compliant (JK) | Overly nurturant/ friendly (LM) | Overly expressive/importunate (NO) |
|---|---|---|---|---|---|---|---|---|
| *Initial testing* | | | | | | | | |
| BSFT-G (n = 20) | 10.8 (1.4) | 11.2 (1.4) | 12.5 (1.3) | 13.1 (2.0) | 12.8 (1.3) | 14.1 (1.3) | 13.1 (1.4) | 13.3 (1.4) |
| CG (n = 20) | 10.3 (1.3) | 11.4 (1.3) | 12.6 (1.7) | 13.8 (2.0) | 12.7 (1.3) | 13.6 (1.6) | 12.7 (1.8) | 13.4 (1.2) |
| *Final testing and follow-up* | | | | | | | | |
| BSFT-G (n = 20) | 7.2 (1.4)[a] | 7.5 (1.3)[a] | 8.7 (1.3)[a] | 9.3 (1.9)[a] | 12.2 (1.2)[a] | 13.4 (1.5)[a] | 12.4 (1.5)[a] | 8.1 (1.7)[a] |
| | 8.5 (1.4)[b] | 8.5 (1.6)[b] | 10.1 (1.5)[b] | 10.3 (1.9)[b] | 12.4 (1.3)[b] | 13.4 (1.4)[b] | 12.5 (1.4)[b] | 8.7 (2.1)[b] |
| CG (n = 20) | 10.5 (1.4)[a] | 11.7 (1.2)[a] | 12.4 (1.3)[a] | 13.6 (2.1)[a] | 12.2 (1.5)[a] | 13.2 (1.7)[a] | 12.6 (2.0)[a] | 13.4 (1.4) |
| | 10.7 (1.4)[b] | 12.2 (1.5)[b] | 12.7 (2.1)[b] | 14.1 (2.2)[b] | 12.7 (1.7)[b] | 13.3 (2.0)[b] | 13.1 (2.1)[b] | 13.7 (1.8)[b] |
| Mean Difference | –3.9[a] –1.8[b] | –4.1[a] –1.8[b] | –3.5[a] –2.3[b] | –3.6[a] –2.5[b] | –0.1[a] –0.5[b] | –0.3[a] –0.5[b] | –0.5[a] –1.1[b] | –5.2[a] –4.9[b] |
| 95% CI | [–4.3; –3.4][a] [–3.4; –2.1][b] | [–4.8; –3.2][a] [–4.5; –2.5][b] | [–4.3; –2.8][a] [–3.5; –1.5][b] | [–4.2; –3.0][a] [–4.0; –2.2][b] | [–0.7; 0.5][a] [–1.2; 0.3][b] | [–0.9; 0.3][a] [–1.4; 0.5][b] | [–1.1; 0.1][a] [–1.7; –0.3][b] | [–5.8; –4.5][a] [–3.4; –2.1][b] |
| p (U test) | <0.001[a, b] | <0.001[a, b] | <0.001[a, b] | <0.001[a, b] | = 0.93[a] = 0.23[b] | = 0.57[a] = 0.24[b] | = 0.06[a] = 0.009[b] | <0.001[a, b] |

BSFT-G = Group treated with brief strategic family therapy; CG = control group; DI = difference in score for change between the two groups; 95% CI = 95% confidence interval.

Mean value (with SD).

[a] After 12 weeks' therapy.

[b] Follow-up 1 year later.

**Table 4.** Changes on SF-36 Health Survey (SF-36, T values)

| | Physical functioning PHFU | Role physical ROPH | Bodily pain BOPA | General health perceptions GEPE | Vitality VITA | Social functioning SOFU | Role emotional ROEM | Mental health PSY |
|---|---|---|---|---|---|---|---|---|
| *Initial testing* | | | | | | | | |
| BSFT-G (n = 20) | 94.6 (4.1) | 94.3 (4.7) | 91.6 (4.2) | 79.9 (5.3) | 67.2 (4.8 | 86.9 (3.0) | 84.7 (3.1) | 66.0 (4.9) |
| CG (n = 20) | 93.2 (4.0) | 95.2 (4.9) | 90.9 (4.4) | 80.1 (5.3) | 66.6 (4.7) | 85.0 (2.9) | 85.0 (3.7) | 66.8 (4.1) |
| *Final testing and follow-up* | | | | | | | | |
| BSFT-G (n = 20) | 95.0 (3.6)[a] | 95.4 (3.1)[a] | 93.5 (3.1)[a] | 85.6 (3.7)[a] | 73.1 (4.3)[a] | 92.6 (4.0)[a] | 90.4 (4.1)[a] | 72.3 (4.9)[a] |
| | 94.7 (3.5)[b] | 95.6 (2.9)[b] | 93.0 (3.2)[b] | 84.7 (3.3)[b] | 72.9 (4.7)[b] | 91.3 (3.4)[b] | 89.6 (4.0)[b] | 71.3 (5.0)[b] |
| CG (n = 20) | 93.8 (3.8)[a] | 95.3 (3.7)[a] | 91.2 (4.2)[a] | 80.1 (5.1)[a] | 66.5 (4.8)[a] | 85.6 (3.9)[a] | 85.7 (4.6)[a] | 67.3 (4.7)[a] |
| | 92.8 (3.7)[b] | 94.6 (3.9)[b] | 91.2 (5.2)[b] | 79.1 (5.2)[b] | 65.8 (4.1)[b] | 85.3 (3.0)[b] | 83.8 (5.3)[b] | 66.3 (3.8)[b] |
| Mean Difference | 0.2[a] 0.6[b] | 1.1[a] 1.9[b] | 1.5[a] 1.1[b] | 5.8[a] 5.9[b] | 6.1[a] 6.5[b] | 5.2[a] 4.1[b] | 5.1[a] 6.1[b] | 5.8[a] 4.2[b] |
| 95% CI | [–0.7; 0.3][a] | [–0.5; 2.6][a] | [0.3; 2.8][a] | [4.9; 6.6][a] | [4.9; 7.1][a] | [4.3; 6.1][a] | [4.2; 6.0][a] | [4.9; 6.8][a] |
| | [–0.1; 1.2][b] | [0.1; 1.3][b] | [–0.2; 2.3][b] | [4.7; 7.0][b] | [5.4; 7.6][b] | [2.7; 5.6][b] | [3.7; 8.5][b] | [4.5; 7.1][b] |
| p (U Test) | = 0.44[a] = 0.09[b] | = 0.95[a] = 0.08[b] | <0.05[a] = 0.14[b] | <0.001[a,b] | <0.001[a,b] | <0.001[a,b] | <0.001[a,b] | <0.001[a,b] |

FamTh-G = Group treated with 'brief strategic' family therapy; CG = control group; DI = difference in score for change between the two groups; 95% CI = 95% confidence interval.

Mean values (with SD).

[a] After 12 weeks' therapy.

[b] Follow-up 1 year later.

n = 8 (40.0%); CG: n = 9 (45.0%)] lived with their parents [BSFT-G: n = 12 (60.0%); CG: n = 13 (65.0%)]. Among the girls, according to the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV), conduct disorder [BSFT-G: n = 6 (30.0%); CG: n = 7 (35.0%)], oppositional defiant disorder [BSFT-G: n = 5 (25.0%); CG: n = 5 (25.0%)], bulimia [BSFT-G: n = 4 (20.0%); CG: n = 4 (20.0%)], Borderline Personality Disorder [BSFT-G: n = 4 (20.0%); CG: n = 3 (15.0%)], and attention-deficit/hyperactivity disorder [BSFT-G: n = 1 (5.0%); CG: n = 2 (10.0%)] were diagnosed. Most girls (70%) met criteria for more than one disorder.

In ARBS, STAXI [19] and IIP [20] initial testing, relative distinctly increased scores were observed by those in both groups at the time of their entry into the study. Initial testing with SF-36 produced relatively low T values on the scales, general health perceptions (GEPE), vitality (VITA), social functioning (SOFU), role-emotional (ROEM) and mental health (PSYC) [21].

Three months later, bullying behavior was reduced (BSFT-G from n = 20 to n = 6; CG from n = 20 to n = 18, p = 0.05), and statistically significantly marked reductions of all types of risk-taking behavior asked about (table 1), on all STAXI scales (with the exception of AI; table 2), on the PA, BC, DE, FG, JK, and NO scales of the IIP (table 3), and on the BOPA, GEPE, VITA, SOFU, ROEM, and PSYC scales of SF-36 (table 4) were noted in the BSFT-G.

Reduction of expressive aggression (AO scale of the STAXI) correlated significantly (all $p < 0.01$) with the reduction on the BD ($R^2 = 0.532$), SWDA ($R^2 = 0.544$), and SDI ($R^2 = 0.561$) scales of the ARBS (all $p < 0.05$), PA ($R^2 = 0.817$), BC ($R^2 = 0.929$), DE ($R^2 = 0.955$), FG ($R^2 = 0.972$) and NO ($R^2 = 0.915$) scales of the IIP-D, and with the increase in the GEPE ($R^2 = 0.729$), VITA ($R^2 = 0.939$), SOFU ($R^2 = 0.870$), ROEM ($R^2 = 0.971$), and PSYC ($R^2 = 0.606$) scales of the SF-36 (all $p < 0.01$).

As an example, figure 2 shows the course of change in the Anger-Out scale (AO) of the STAXI. Marked worsening of the symptoms was noticeable around the sixth week of therapy on all scales in the BSFT-G.

At follow-up, bullying behavior was reduced (BSFT-G from n = 20 to n = 10; CG from n = 20 to n = 17, p = 0.21). Tables 1–4 show the follow-up testing with the ARBS, STAXI, IIP-D and the SF-36.

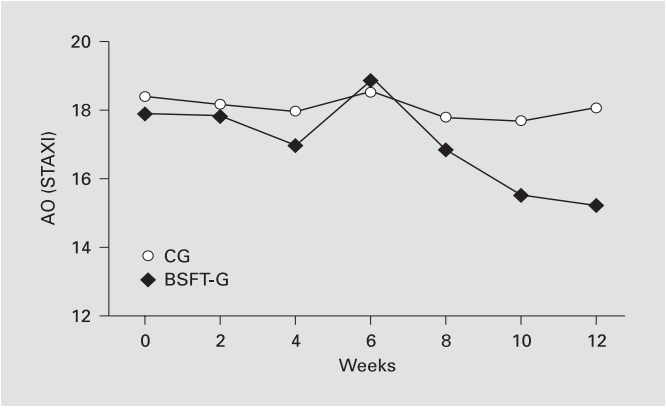


**Fig. 2.** Course of change on the Anger-Out scale (AO) of the STAXI.

## Discussion

Analysis of the sociodemographic, psychiatric, and risk-taking behavior data permitted the two groups to be compared [5, 22, 23]. The initial measurements support previous findings that girls with bullying behavior often were bullying victims themselves [23], show relatively high violence-related behavior and sexual risk-taking behavior levels [4, 5, 24–26] and anger levels [10, 19], in addition to disturbed interpersonal relationship patterns [11, 20]. Their initial general health perceptions, vitality, social functioning, role limitations resulting from emotional problems and mental health were distinctly below normal values [8, 21].

BSFT led to a significantly greater reduction in drug use, smoking, binge drinking, excessive media use, having sex without a condom, having sex while using drugs and alcohol, and in sexual disinhibition, and on six scales in the assessment of interpersonal problems tested with the IIP: PA, BC, DE, FG, JK, and NO than in the control group. More precisely, BSFT reduced problems in accepting others, wanting to change or influence them too much, controlling others too much or frequently having problems with them. Patients with these symptoms focus too much on their independence and report difficulty in submitting (PA), trusting others or being too distrustful of them, supporting others and really taking care of their problems or needs, letting go of feelings of revenge (BC), getting close to others or showing affection (DE), making contacts, reaching out to others or engaging in activities with them, expressing their emotions (FG), distinguishing themselves from others (JK), keeping confidences, being too open and putting too much value on attention from others, being alone and keeping themselves from getting involved in other people's affairs (NO) [20]. These results support findings from previous studies designed by Coatsworth et al. [27] and Santisteban et al. [28] which showed that BSFT can reduce risk-taking and dangerous behavior in adolescents.

Conversely, no significant differences were found with problems in letting others know what they do and do not want (HI), or with difficulty setting boundaries between themselves and others (LM).

BSFT resulted in a significantly greater difference in change on all five STAXI scales with the exception of Anger-In than in the control group. Girls with high S-A scores experience relatively intensive feelings of anger, and those with high T-A scores experience anger relatively frequently. Whether they suppress their anger or direct it inwards can be assessed through the AI, AO, and AC scales. Because AI and AO are independent of each other, subjects can have high scores on both scales [19]. Girls with high AC scores expend a lot of energy on directing and controlling their emotions in situations that provoke anger [19]. Among our subjects, BSFT appeared to influence the intensity of the perceived feeling of anger as well as the threshold for perceiving anger. Furthermore, the manner of intra-psychological processing of aggression was possibly influenced, and in the final analysis, even the socially desirable control of anger as well [19]. This supports findings published by Spoth et al. [29] and Santisteban et al. [28] that brief family interventions can reduce aggressive and hostile behaviors.

With regard to health-related quality of life (SF-36), BSFT was significantly superior to the placebo on five scales. It improved personal assessment of one's own health (GEPE), increased vitality (VITA), reduced restrictions in social and vocational activities (SOFU, ROEM) and significantly improved the emotional state of health (PSY) [21]. The scales, physical functioning (PHFU), role limitations due to physical health (ROPH), and bodily pain (BOPA) were already relatively high on initial testing, which would indicate good health-related quality of life, associated with the subject's physical condition and shown by a very good state of physical health [21]. We supposed that is the first report in reference to change in quality of life in bullying girls after family therapy.

Reduction of expressive-aggressive anger processing (AO scale of the STAXI) correlated significantly with a reduction of excessive drinking (BD scale of the ARBS) and risky sexual behavior (SWDA and SDI scales of the ARBS), as well as with a reduction of the autocratic-dom-

inant (PA scale of IIP-D), the quarrelsome/competitive (BC scale of the IIP-D), and the too expressive-importunate (NO scale of the IIP-D) behavior of the girls. In addition, reduction of expressive-aggressive anger processing correlated significantly with an increase in personal assessment of one's own health (GEPE scale of the SF-36), vocational activities (ROEM scale of the SF-36), and the emotional state of health (PSY scale of SF-36). The correlations listed may suggest a connection between changes in expressive anger level and changes in risk-taking behavior, the development of interpersonal relationships, and in the health-related quality of life.

The worsening of the symptoms around the sixth week of therapy, which was only noted in the group treated with family therapy, could presumably be traced back to the frankly addressed intrafamilial conflicts [cf. 13, 15–17]. It may be assumed that dealing with them produced improvement which was visible on all the scales examined.

Follow-up 1 year after BSFT showed that the results of treatment had remained relatively stable, despite slight worsening of the scores.

Involving families of troubled girls in all phases of treatment is believed to be essential and aids both in successful reintegration of the patient into the community and prevention of relapse [13, 15–17, 27–34]. This study shows that even bullying girls were able to cope well with BSFT. The clear time-frame and the relatively small amount of time spent on it proved to boost compliance. The test subjects showed a significant reduction in risk-taking behavior and in their potential for aggression after treatment, as well as improvement in their interpersonal relationships and in the health-related quality of their lives. BSFT seems to achieve efficacy, lasting complaint resolution in a high percentage of cases which are at least comparable to other treatment methods used in aggressive adolescents, such as the short-term community-based early intervention program [35], primary care-based intervention [36] or diverse school anti-bullying intervention programs [37–40].

*Limitations*

This study had several methodological limitations. Firstly, the sample size was (in spite of a valid power analysis) relatively small. Secondly, the sample consisted only of girls. Whether these results could also be replicated with male aggressiveness should be investigated. Thirdly, the sample was composed of moderately aggressive girls, who did not have Substance Use Disorder, had not become criminal, and who were motivated enough to go for family therapy and still had sufficient resources to undergo that therapy. Fourthly, the length of this trial was only 6 months, which probably kept the dropout rate low, in particular in the control group. Fifthly, learning disabilities were not considered. Finally, validation of the ARBS has not yet been concluded. However, even without normal values being assumed, the changes in this study may be followed easily.

Further studies are planned, in order to throw light on the permanence of positive treatment effects such as this.

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