ORIGINAL PAPER

Comparing Effectiveness of Treatments for Borderline Personality Disorder in Communal Mental Health Care: The Oulu BPD Study

V. Leppänen[1] · H. Hakko[2] · H. Sintonen[3] · S. Lindeman[4]

Abstract The implementation of effective psychotherapies in community mental health care is challenging. This study aimed to create a well-structured and easily applicable treatment model for patients with severe borderline personality disorder (BPD). We integrated a schema therapy based psycho-educational group into an available individual therapy. Two groups were formed: (1) community treatment by experts (CTBE) patients (n = 24) receiving new treatment and (2) treatment as usual (TAU) patients (n = 47). Changes in symptoms were measured by Borderline Personality Disorder Severity Index-IV interview and quality of life by the 15D health-related quality of life questionnaire. After 1 year the CTBE patients showed a significant reduction in a wider range of BPD symptoms and better quality of life than TAU patients. The results of this study are encouraging. A well-structured treatment model was successfully implemented into community mental health care with improved patient adherence to treatment and superior treatment outcomes compared to TAU patients.

Keywords Borderline personality disorder · Cognitive therapy · Randomized trial · General mental health services

Introduction

Borderline personality disorder (BPD) is a severe disorder that impacts significantly upon the functional ability and quality of life of those affected, and places an extensive burden on health care systems. Inheritable factors, childhood adversities and low socio-economic status have all been found to predispose to the condition. BPD is characterized by considerable psychiatric and somatic comorbidity, and is associated with a predisposition to self-harming behaviour (American Psychiatric Association 2000; Cramer et al. 2006; Gunderson 2011; Leichsenring et al. 2011; Skodol et al. 2002; Zanarini et al. 1998; Zanarini et al. 2004).

In Finland patients with BPD are primarily treated within the general mental health care system. BPD patients are usually unable to access private-sector therapies due to their high costs. The Finnish Social Insurance Institution (KELA) can reimburse the costs of rehabilitative psychotherapy, but patients with BPD generally do not meet the funding criteria, since the rehabilitative psychotherapy requires good adherence to treatment, or a realistic likelihood of recovery from working disability. Therefore, responsibility for providing treatment to these patients lies

✉ V. Leppänen
virpi.leppanen@ouka.fi

H. Hakko
helina.hakko@oulu.fi

H. Sintonen
harri.sintonen@helsinki.fi

S. Lindeman
sari.lindeman@uef.fi

[1] Social and Health Services, Mental Health Services, P.O. Box 13, 90015 Oulu City, Finland

[2] Department of Psychiatry, Oulu University Hospital, P.O. Box 26, 90029 Oulu City, Finland

[3] Health Economics, Department of Public Health, University of Helsinki, P.O. Box 41, 00014 Helsinki, Finland

[4] Institute of Clinical Medicine, Department of Psychiatry, Central Finland Health Care District, Jyväskylä Central Hospital, University of Eastern Finland, Matarankatu 6 B, 40100 Jyväskylä, Finland

primarily within the public sector, particularly within the community mental health care system.

Patients with severe BPD pose a range of challenges for health care professionals working in community mental health care. BPD patients are often viewed in negative terms by professionals and the public because BPD may adversely affect interpersonal relationships, including relationships with professionals. In the worst cases BPD is associated with stigma affecting how professionals tolerate behaviour and emotions of these patients. Patients with severe BPD are often perceived to be particularly difficult. (Aviram et al. 2006; Koekkoek et al. 2009; Westwood and Baker 2010). Therefore, identifying and implementing better care for patients with BPD in the context of the existing health care system is vitally important.

In recent years, several promising psychotherapeutic treatments have been developed for BPD (Clarkin 2013). Dialectical behaviour therapy (DBT) is shown to decrease self-harm, suicide attempts and the need for hospital treatment of BPD patients (Linehan et al. 2006; van den Bosch et al. 2005). Schema-focused psychotherapy (SFT, later schema therapy, ST) has been reported to significantly reduce all BPD symptoms and general psycho-pathological dysfunction and to improve quality of life (J. Giesen-Bloo et al. 2006; Jacob and Arntz 2013; Nadort et al. 2009; Sempértegui et al. 2013). However, the implementation of ST and DBT in general mental health care practice poses major challenges. These therapy options are not generally available in the public sector because they require further comprehensive training of therapists, additional relevant funding for costs of education and the existence of health care units committed to the provision of these types of treatments. In practice, DBT and ST are currently rarely available in Finland. However, given that these treatments have been proved to be efficient and to yield good results among patients with BPD, there is a strong case for adapting and modifying them so that they can be applied using the resources currently available in the public health care system.

The aims of the present study were (1) to create a structured treatment model which is easily applicable to community mental health care by using the existing staff and economic resources available within public health care, and (2) to evaluate its effectiveness in relation to treatment as usual. The treatment model was created by using the knowledge of two cognitive therapy models, ST and DBT. First we reviewed and modified the psycho-educational group schemas outlined in Linehańs Skills Training Manual for Treating Borderline Personality Disorder (Linehan 1993) and Youngś Schema Therapy (Young et al. 2003) and adjusted the theory of ST into the group material of DBT. We preferred conceptualization with schema modes of ST to the mindful awareness of DBT. Therefore, our psycho-educational group manual was based on the theory of ST while incorporating the important themes of emotions, behavior and distress from the DBT manual. We also wanted to maintain the effective combination of group meetings and individual therapy with consultation groups for therapists. The changes in borderline personality disorder (BPD) symptoms and in the health-related quality of life were analysed by comparing the baseline measures with those after 1 year of treatment. BPD symptoms were assessed using the Borderline Personality Disorder Severity Index-IV (BPDSI-IV)(J. H. Giesen-Bloo et al. 2010) and the quality of life with the 15D health-related quality of life (HRQoL) instrument (Sintonen 2001).

Methods

Design

The Oulu BPD study was a randomized, multisite trial implemented by Oulu city social and health care services (including mental health care services). The patients (n = 71) were randomized into two groups: (1) patients receiving manual-based treatment (n = 24) combining elements of ST and DBT and delivered by Community Treatment By Experts (hereafter CBTE), and (2) patients (n = 47) receiving Treatment As Usual (hereafter TAU). For each case (CBTE patient), two sex-, age- and BDPSI-IV total score- matched controls (TAU patients) were randomly selected in order to create a representative control group. The convenience sampling method was used when recruiting the patients into the Oulu BPD study. Mental health professionals were asked to identify which of their patients had severe BPD symptoms, fulfilled the inclusion criteria for entry and were willing to participate in the study. Each patientś first BPDSI- IV assessment by blinded raters took place after their inclusion into the Oulu BPD study, but before randomization. The randomization list was prepared using appropriate statistical methods by a person who had no contact with the patients. The final number of participants for this study was influenced by the reality that a limited number of psycho-educational groups for CBTE patients could be formed using the amount of professional resources available (i.e. numbers of experts, group leaders and persons conducting outcome measurements). It was possible to form three psycho-educational groups, each containing eight patients.

Signed informed consent was obtained following a full explanation of the procedures.

The Ethics Committee of Oulu University Hospital approved the study (18 June 2009, No. 41/2009).

Participants

The mental health care catchment area (City of Oulu) consisted of approximately 140,000 residents. The BPD patients groups eligible for this study consisted of patients from the six local units for mental health care services in the city of Oulu. SCID II interviews (First et al. 1994) were conducted for all patients who had symptoms of borderline personality disorder, including some with severe symptoms such as suicide attempts, previous hospital treatments or other treatments without significant recovery. Inclusion criteria for the study were that patients fulfilled the SCID II criteria for BPD, were over 20 years of age, and suffered from severe symptoms of BPD. Severe symptoms included parasuicidal behaviour (such as cutting, other forms of self-harm, impulsive overdosing of medicines), attempted suicide, considerable emotional instability affecting social and professional life, and previous unsuccessful treatments (one or more), where the patient withdrew from treatment or was still suffering from severe symptoms despite treatment. Exclusion criteria were: schizophrenia spectrum diseases/psychoses, bipolar disorder (type I), neuropsychiatric disorder and severe substance abuse problem (which clearly impaired commitment to treatment). Axis I disorders were diagnosed according to SCID-I (First et al. 1997), and the presence of neuropsychiatric disorder and substance abuse was assessed by a clinician.

Community Treatment by Experts

In the Oulu BPD study the Community Treatment by Experts (CTBE) refers to treatment provided by therapists who meet patients once a week, and whose work is reviewed by a consultation group. Community Experts were primarily selected on the basis of their willingness to treat patients with BPD independent of the length or content of their formal education. During the preceding year of treatment (spring 2009 to spring 2010), open lectures on BPD, schema-focused psychotherapy, dialectical behaviour therapy and attachment theory were arranged for all mental health care staff members. At these events, staff members interested in participating in the study were asked to contact the project leader (VL). Experts had to fulfil the following criteria: willingness to treat patients with severe BPD, commitment to weekly individual sessions with patients over a 1 year period (from August 2010 to July 2011, a total of 40 sessions, lasting 45–60 min at the expert's discretion), and commitment to participation in an experts' joint consultation group (2 h every 2 weeks) to share experiences and educate each other. The aim of these meetings was to promote the therapeutic process. The following were not required: actual psychotherapy training of

3–6 years duration allowing them to use the professional title of psychotherapist, and experience in treating patients with BPD. The patients randomized to CTBE (n = 24) received individual therapy sessions once a week, each lasting 45–60 min. In addition, each patient attended a total of 40 ninety minute psycho-educational group sessions during 1 year (approximately once a week). None of the experts participating to the study had a formal schema therapist education. The content of each individual therapy sessions was determined individually between the therapist and the patient. The psycho-educational group's manual was available for the therapists. The majority of the patients completed some of their homework during their individual therapy sessions. In the consultation groups, the therapists learned to conceptualize patients' problems and symptoms using schema modes, and they were advised to use limited parenting and empathic confrontation. A key objective of the therapy was to help patients to make changes in their functioning and behavior in a stance of acceptance.

Each of the three psycho-educational groups contained eight patients and two permanent group leaders. During the 3–11 sessions, the patients attended lectures on early maladaptive schemas and schema modes, which are central to ST (Young et al. 2003) and, during the 12–36 sessions, the focus was on issues central to DBT (Linehan 1993). The themes presented were as follows: 1. Rules and orientation (sessions 1–2), 2. Schema modes and how to recognize them (sessions 3–11) (Young et al. 2003), 3. Emotion regulation skills (sessions 12–19), 4. Interpersonal effectiveness skills (sessions 20–29), 5. Distress tolerance skills (sessions 30–36) (Linehan 1993), and repetitions (schema modes, emotion regulation skills, interpersonal effectiveness skills, distress tolerance skills, sessions 37–40, respectively).

During the sessions, the group leaders used a whiteboard to illustrate the themes. The patients had agreed to rules about attendance, punctuality and substance abuse. The group leaders used a manual compiled by the project leader in 2009 (VL, an experienced psychotherapist). Prior to the study period, VL, the three group leaders and one experienced psychotherapist (SL) piloted all of the group sessions and made any necessary modifications to the manual.

After each psycho-educational group session, patients received materials to enable them to practise therapy exercises at home. The material included homework which had been presented in the session. The key aim of the homework was to learn to recognise schema modes and use recognised schema modes to learn to regulate emotions, social life and anxiety. Each patient discussed their homework with their individual therapist within their therapy sessions.

There were three psycho-educational group leaders (two psychiatric nurses and one occupational therapist) for the psycho-educational groups. Each group had two leaders who were present during the entire intervention period. The inclusion criteria for the group leaders were similar to those for the experts (see above). They were also required to have previous experience of leading various types of psycho-educational or therapeutic groups.

The following major protocol adjustments were applied for this study: (1) compared to the original ST protocol, duration of therapy was reduced from 3 to 1 year and mental health care professionals—who were not necessarily psychotherapists—were trained in three sessions delivered by Finnish psychotherapists; and (2) compared to the original DBT protocol, the duration of psycho-educational group sessions was reduced (from 2.5 to 1.5 h) and themes were altered (e.g. mindfulness replaced by schema modes), and there was no additional support from the CTBE therapist between sessions. CTBE therapist supervision was provided once every two weeks for two hours, with each group including three to four therapists and one leader (VL or SL). A summary of the CTBE intervention model is presented in Fig. 1.

Treatment as Usual

Patients (n = 47) were randomized to the treatment as usual (TAU) group to receive treatment that would normally be offered, in accordance with the current treatment practices of Oulu city mental health care services. The social and health services of the city of Oulu represent a typical Finnish community health care system, with services are organized regionally within the city. In Oulu city mental health care services, a patient's treatment is arranged according to their postcode. Regional workgroups are responsible for treatment of all types of psychiatric disorders. Practically, this means that each mental health care professional treats various types of patients and workgroups cannot choose to specialize and only treat a specific group of psychiatric patients. The content of a health care professional's mental health care education, the length of their clinical career and their perceived interest in
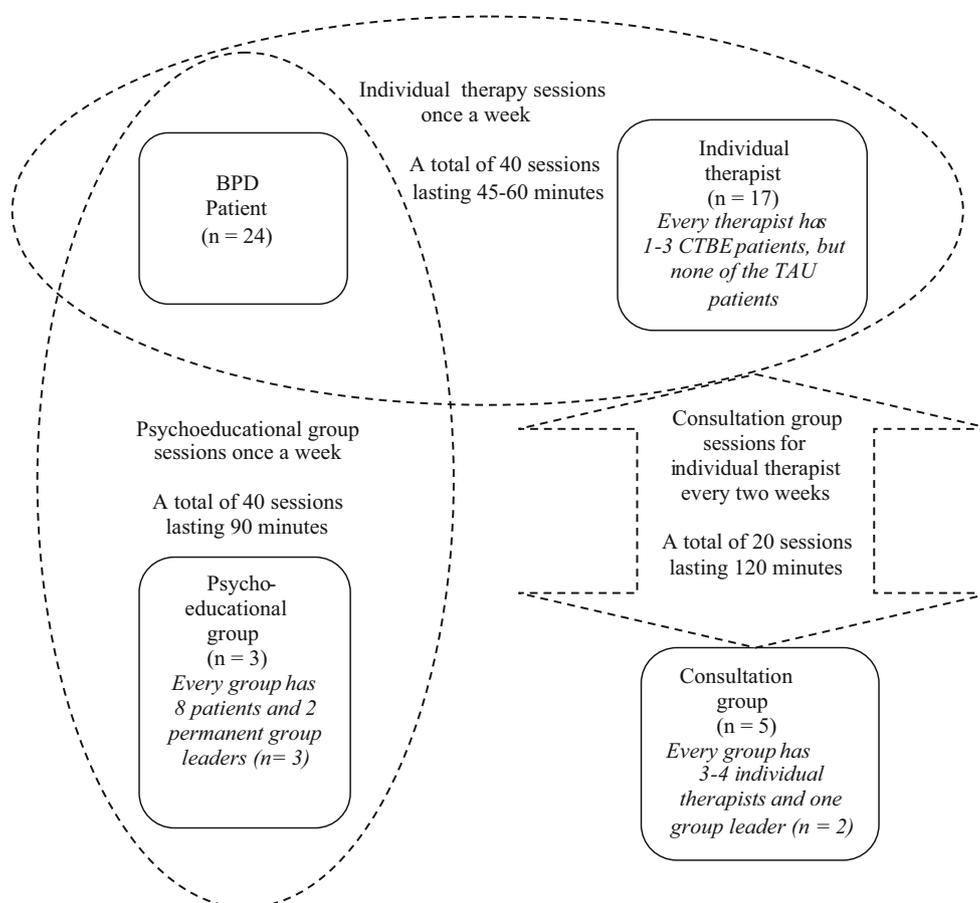

Fig. 1 Summary of the CTBE intervention. *CTBE* community treatment by experts, *TAU* treatment as usual

BPD patients varies between regional workgroups. Therefore, there is presumed heterogeneity in the content of treatment received by patients with BPD throughout the area. The treatments provided in "treatment as usual" can vary widely, from supportive weekly psychotherapy sessions to visits every few weeks, from occasional doctor's appointments for drug control to home rehabilitation.

Measures

The primary outcome measure was borderline symptoms, as measured by the Finnish version of the Borderline Personality Disorder Severity Index-IV (hereafter the BPDSI-IV). The BPDSI-IV is a semi-structured interview consisting of 70 items organized into nine subscales: (1) abandonment, (2) unstable relationships, (3) identity disturbance, (4) impulsivity, (5) parasuicidality, suicide plans and attempts, (6) affective instability, (7) emptiness, (8) outburst of anger, and (9) paranoid and dissociative ideation. For each item, the frequency is rated on an 11-point scale, running from 0 (never) to 10 (daily) over the previous 3 months. The answers are classified (and scored) from never (0 point) to daily (10 points), or rated on a 5-point Likert scale (Giesen-Bloo et al. 2010). The mean of each item is calculated for each subscale. The total BPDSI-IV score is the sum of the means of the nine subscales. For a more detailed description of the BPDSI-IV and translation process, see our earlier paper (Leppänen et al. 2013). BPDSI-IV interviews were conducted at baseline (April–May 2010) and following 1 year of treatment (July–August 2011). Since the total scores of BPDSI-IV measure only provide a general overview of the severity of the symptoms, the subscales of the BPDSI-IV are also analysed to reveal a more detailed symptom profile. The latter is useful when focusing on the content of treatment of patients with BPD. BPDSI-IV interviews were blinded and conducted by three interviewers: two psychiatric nurses and a physician.

A secondary outcome measure in the current study was health-related quality of life assessed using the 15D measure of Health Related Quality of Life (HRQoL). The 15D instrument includes 15 dimensions: mobility, vision, hearing, breathing, sleeping, eating, speech, excretion, usual activities, mental function, discomfort and symptoms, depression, distress, vitality, and sexual activity (Sintonen 1994a, b, 2001). Each dimension has five grades of severity. The single index score (15D score), represents the overall HRQoL and the dimension level values and reflects the beneficence of the dimension values relative to having no problems on the dimension and to being dead, both on a 0–1 scale (0 = being dead, 1 = full health). The scores are calculated from the health state descriptive system using a set of population-based preference or utility weights (Sintonen 1994a). In practice, a change or

difference of about 0.03 in the 15D score is clinically important in the sense that people can generally feel the difference. Further, the 15D compares favourably with similar instruments in most of the important properties (Sintonen 1994a, b, 2001; Stavem et al. 2001). The 15D questionnaires were posted to patients, who were asked to return the completed questionnaire by pre-paid post. The reference values of the 15D for the general population is based on the National Health 2000 Health Examination Surveys, representing the Finnish population aged 30 and over (Aromaa and Koskinen 2004) and age-matched survey individuals (n = 4044) were used in the current study for comparison of 15D scores of the BPD patients with the general population values.
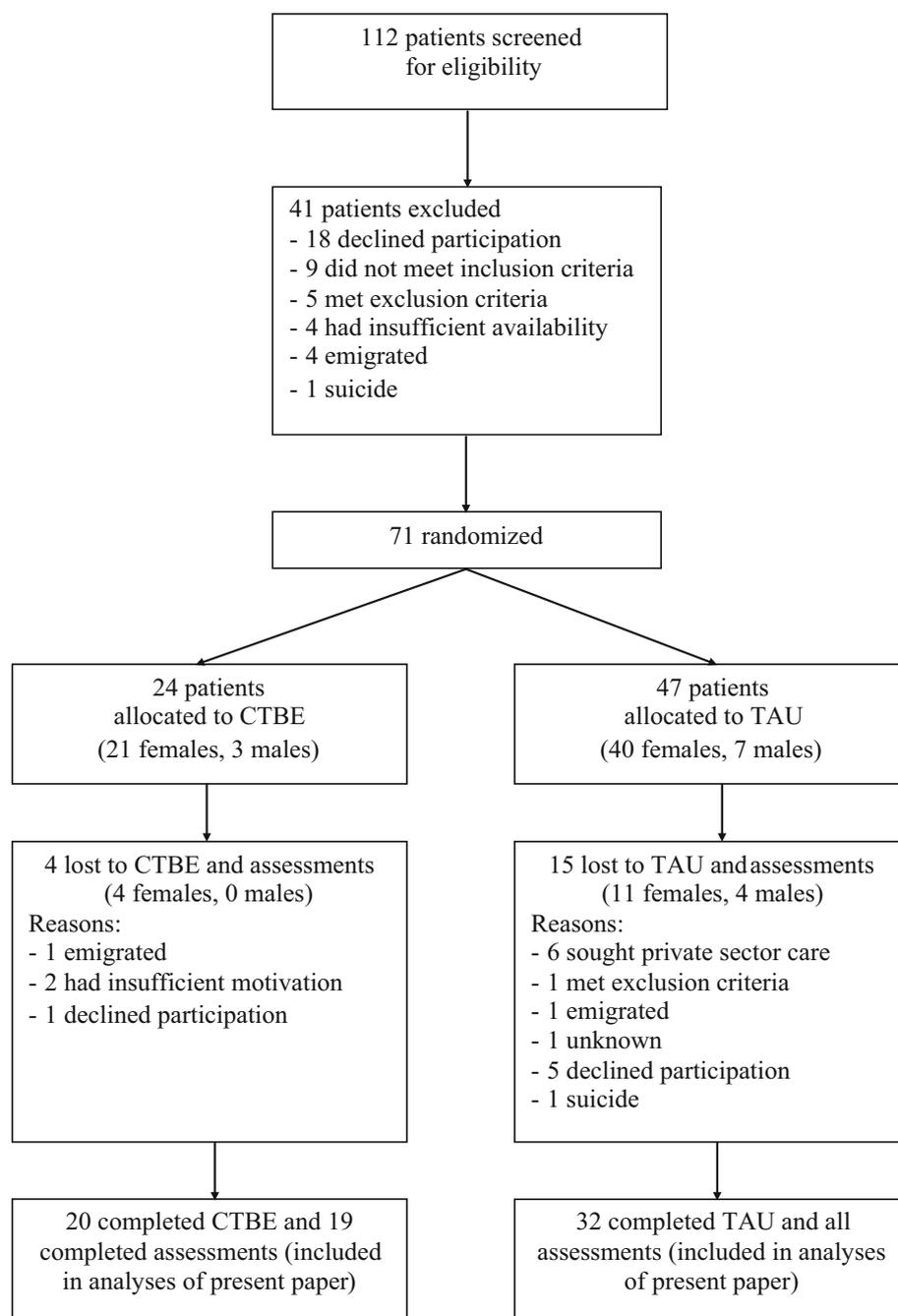
Sample Size and Data Analyses

An intention-to-treat approach was applied using the last observation carried forward method for trend analyses. Statistical significance of group differences in categorical variables was assessed using Pearson's Chi square test or Fisher's Exact test, and in continuous variables using Student's *t* test or the Mann–Whitney *U* test. Change between the baseline and 1-year treatment was analysed using the paired samples *t* test or Wilcoxon signed rank test. If statistical assumptions of parametric tests were violated, non-parametric tests were used instead. The independent samples t-test was used to compare the mean HRQoL scores of the groups cross-sectionally. When comparing the HRQoL scores of the groups at 1 year, adjustment was also made for the baseline difference in HRQoL scores between the groups using linear regression analysis, with the HRQoL score at 1 year as the dependent variable and HRQoL score at baseline and group dummy (0/1) as explanatory variables. All of the tests were two-tailed and interpreted with a significance level of 5 %. Analyses were performed using PASW Statistics, version 18 for Windows (SPSS INC 2009).

Results

Sample Characteristics

The Oulu BDP study was conducted between August 1, 2010 and July 31, 2011. A patient flow diagram is presented in Fig. 2. Of the 112 patients referred to the study, 71 (63.4 %) participated in the final study and, of these, 20 (83.3 %) out of 24 CTBE patients, and 32 (68.1 %) out of 47 TAU patients successfully completed the 1 year intervention period. One CTBE patient had incomplete information in HRQoL assessment and, thus, the final study sample of the current study was 51 patients.

Fig. 2 Patient flow in Oulu BPD study. *CTBE* community treatment by experts, *TAU* treatment as usual

112 patients screened for eligibility

41 patients excluded
- 18 declined participation
- 9 did not meet inclusion criteria
- 5 met exclusion criteria
- 4 had insufficient availability
- 4 emigrated
- 1 suicide

71 randomized

24 patients allocated to CTBE (21 females, 3 males)

47 patients allocated to TAU (40 females, 7 males)

4 lost to CTBE and assessments (4 females, 0 males)
Reasons:
- 1 emigrated
- 2 had insufficient motivation
- 1 declined participation

15 lost to TAU and assessments (11 females, 4 males)
Reasons:
- 6 sought private sector care
- 1 met exclusion criteria
- 1 emigrated
- 1 unknown
- 5 declined participation
- 1 suicide

20 completed CTBE and 19 completed assessments (included in analyses of present paper)

32 completed TAU and all assessments (included in analyses of present paper)

Socio-demographics

The socio-demographic characteristics of the study sample are presented in Table 1. The only difference was seen in marital status in which the proportion of married/cohabiting patients was statistically significantly higher in the CTBE group (52.6 %) compared to the TAU group (18.8 %).

BPD Symptoms and the Change During Intervention

Since CTBE and TAU groups were matched by age, sex and baseline BPDSI-IV score, no difference was present in the baseline BPDSI-IV total score between the CTBE (M = 27.2, SD = 9.2) and TAU (M = 28.3, SD = 9.3) groups ($t(49) = -.39$, $p = .696$). After 1 year of

Table 1 Socio-demographic characteristics of 51 study participants

	Study groups		Difference between study groups	
	Community Treatment By Experts (CTBE) patients ($n = 19$)	Treatment As Usual (TAU) patients ($n = 32$)	Test statistic	p^a
			t (d.f.)	
Age (in years) at baseline, mean (SD)	31.9 (8.3)	32.3 (8.8)	−0.19 (49)	0.847
			χ2 (d.f.)	
Gender			0.11 (1)	1.000
Male	3 (15.8)	4 (12.5)		
Female	16 (84.2)	28 (87.5)		
Marital status			7.00 (2)	0.024
Unmarried	7 (36.8)	16 (50.0)		
Married/cohabiting	10 (52.6)	6 (18.8)		
Divorced	2 (10.5)	10 (31.3)		
Education			2.49 (3)	0.512
Basic education/High school	4 (21.1)	10 (31.3)		
Vocational school/professional courses	8 (42.1)	16 (50.0)		
Tertiary level education	5 (26.3)	5 (15.6)		
Tertiary level education not completed	2 (10.5)	1 (3.1)		
Employment status			3.73 (3)	0.282
Part-/full-time work	5 (26.3)	3 (9.4)		
Unemployed/student	3 (15.8)	7 (21.9)		
Sick leave, temporary disability pension	10 (52.6)	16 (50.0)		
Full disability pension	1 (5.3)	6 (18.8)		

Values are number of subjects (%), if not otherwise stated

[a] Student's *t* test in continuous variable, otherwise Pearson's Chi square or Fisher's Exact test, two-tailed significance

treatment, the mean BPDSI-IV score was lower in the CTBE group (M = 17.5, SD = 10.1) than in the TAU group (M = 21.5, SD = 11.4), but the difference between patient groups was not statistically significant ($t(49) = -1.24$, $p = .220$).

As presented in Table 2, the total BPDSI-IV scores decreased statistically significantly during the year of treatment both in the CTBE group and in the TAU group. In general, the mean change in BPDSI-IV subscales scores (i.e. improvement between baseline and 1-year assessments) was more notable in CTBE patients compared to TAU patients, except in abandonment and unstable relationships. The CTBE group improved significantly in seven (78 %) of nine subscales: (1) unstable relationships, (2) identity disturbance, (3) impulsivity, (4) parasuicidality, suicide plans and attempts, (5) emptiness, (6) outbursts of anger and (7) paranoid and dissociative ideation, while in the TAU group statistically significant improvement was observed in four (44 %) subscales: (1) unstable relationships, (2) identity disturbance, (3) emptiness and (4) outbursts of anger.

Health Related Quality of Life and the Change During Intervention

Health related quality of life of the patients was assessed using the total 15D score and the scores obtained for each dimension were compared with age-matched general Finnish population scores. With the exception of mobility, hearing, eating and speech, the 51 BPD patients were statistically significantly worse off in all 15D dimensions and in the total 15D score compared to the age-matched general population (Fig. 3). The mean differences in the 15D scores between the BPD patients and the general population were also clinically important (i.e. >0.03).

The mean 15D profiles of the CTBE and TAU patients at baseline and 1 year after the intervention are presented in Fig. 4. At baseline (Fig. 4a) the CTBE and TAU groups did not differ statistically significantly in the total 15D score and the level values of 15D dimensions, expect in mobility. In TAU patients the mean mobility level value was 0.955 (SD = 0.13), while it was 1.00 for all CTBE patients (t(49) = 2.40, $p = 0.023$). At 1 year after the intervention

Table 2 Mean Scores (and Standard Deviations) on BPDSI-IV symptom scores, within-groups differences between measurements

	Community Treatment By Experts (CTBE) (n = 19)					Treatment As Usual (TAU) (n = 32)				
	Baseline M (SD)	After one-year treatment Mean (SD)	Difference between measures Mean(SD)	t(18)	p^a	Baseline Mean (SD)	After one-year treatment Mean (SD)	Difference between measures Mean (SD)	t(31)	p
Abandonment	1.59 (1.28)	1.42 (1.39)	−0.17 (1.56)	−0.46	.65	2.33 (1.42)	1.88 (1.97)	−0.45 (1.68)	−1.52	.14
Unstable relationships	1.45 (1.05)	1.01 (0.72)	−0.45 (0.95)	−3.59	.033	2.05 (1.51)	1.34 (0.97)	−0.70 (1.45)	−2.72	.011
Identity disturbance	4.98 (2.16)	2.17 (1.78)	−2.81 (2.07)	−5.94	<.001	4.74 (2.01)	3.02 (2.06)	−1.72 (2.27)	−4.28	<.001
Impulsivity	1.70 (1.31)	0.99 (0.76)	−0.71 (1.11)	−2.81	.012	1.40 (0.94)	1.22 (0.81)	−0.18 (0.82)	−1.25	.22
Parasuicidality, suicide plans and attempts	0.87 (0.78)	0.41 (0.49)	−0.46 (0.69)	−2.91	.009	0.70 (0.94)	0.51 (0.76)	−0.19 (0.84)	−1.29	.21
Affective instability	7.10 (1.90)	5.65 (2.83)	−1.45 (3.50)	−1.80	.09	6.84 (2.25)	6.26 (2.65)	−0.58 (1.95)	−1.67	.10
Emptiness	5.66 (2.81)	3.55 (3.24)	−2.11 (3.55)	−2.59	.018	5.61 (2.63)	4.14 (3.31)	−1.47 (2.76)	−3.01	.005
Outburst of anger	1.67 (1.36)	0.80 (1.30)	−0.87 (1.30)	−2.91	.009	2.09 (1.60)	1.27 (1.52)	−0.82 (1.79)	−2.60	.014
Paranoid and dissociative ideation	2.19 (1.74)	1.55 (1.70)	−0.64 (1.13)	−2.50	.022	2.50 (2.31)	1.84 (1.45)	−0.66 (2.24)	−1.67	0.11
Total	27.21 (9.20)	17.54 (10.14)	−9.67 (10.25)	−4.11	.001	28.27 (9.30)	21.48 (11.41)	−6.78 (9.24)	−4.15	<.001

[a] Paired samples t test, except Wilcoxon Signed Ranks test in unstable relationship of CTBE patients, two-tailed significance

(Fig. 4b) there were statistically significant differences between the randomized groups in the total 15D score (CTBE, M = 0.809, SD = 0.083 vs. TAU, M = 0.737, SD = 0.136; t(49) = 2.10, p = .041) as well as in vision (CTBE, M = 0.977, SD = 0.068 vs. TAU, M = 0.898, SD = 0.162; t(49) = 2.41, p = .020), in breathing (CTBE, M = 0.936, SD = 0.127 vs. TAU, M = 0.805, SD = 0.201; t(49) = 2.41, p = .020), and in discomfort and symptoms (CTBE, M = 0.748, SD = 0.181 vs. TAU, M = 0.602, SD = 0.320; t(49) = 2.09, p = .042).

In the TAU group, the total 15D score did not change during the 1-year intervention (baseline, M = 0.741, SD = 0.11 vs. 1-year, M = 0.737, SD = 0.14; t(31) = 0,31; mean difference M = 0.005, SD = 0,08, p = 0.762), but improved slightly in the CTBE patients (baseline, M = 0.788, SD = 0.07 vs. 1-year, M = 0.809, SD = 0.08; mean difference M = 0.021, SD = 0.08, t(18) = 0,31, p = 0.250). However, after adjusting for baseline total 15D score at baseline, the change in the CTBE group in the total 15D score compared to the TAU group remained clinically important (Δ 0.031), but no longer statistically significant (F(1) = 1.64, p = 0.206).

Discussion

It has recently been proposed that health care reform must focus on improving health and health care value for patients and highlighted that only medical teams can improve the value of health care (Porter and Teisberg 2007). In patients with severe borderline personality disorder (BPD) in Finland the responsibility for their treatment is assigned to the community mental health care system. In order to provide these patients with prompt and appropriate health care, a structured and easily implementable treatment model is required. It would be beneficial that such a treatment model can be incorporated into existing health systems and is not dependent on the availability of individual health care professionals with specific training for psychotherapy.

In a process influenced by the interests and preferences of this study's contributors' and their backgrounds in cognitive therapy education, we created a new kind of treatment model (Community Treatment by Experts, CTBE) designed for implementation in local community mental health care settings. Our model integrates a schema therapy based psycho-educational group into existing individual therapy models with consultation groups for therapist. Both schema therapy (ST) and dialectical behavior therapy (DBT) are effective treatments but, in reality, cannot be easily implemented within the Finnish community mental health care system. ST offer an easily understandable way to conceptualize BPD and the structure of DBT broadens the individual therapy approach by combining it with group sessions and by giving specific support to the therapists involved. The strength of the community mental health care system is that teams are already in place and it is possible to utilize a broad range of

Fig. 3 Health related quality of life of 51 patients with BPD at baseline in relation to the values from the age-matched general Finnish population. *Note*: *CTBE* community treatment by experts, *TAU* treatment as usual; Move = mobility; See = vision; Hear = hearing; Breath = breathing; Sleep = sleeping; Eat = eating; Speech = speech; Excret = excretion; Uact = usual activities; Mental = mental function; Disco = discomfort and symptoms; Depr = depression; Distr = distress; Vital = vitality; Sex = sexual activity
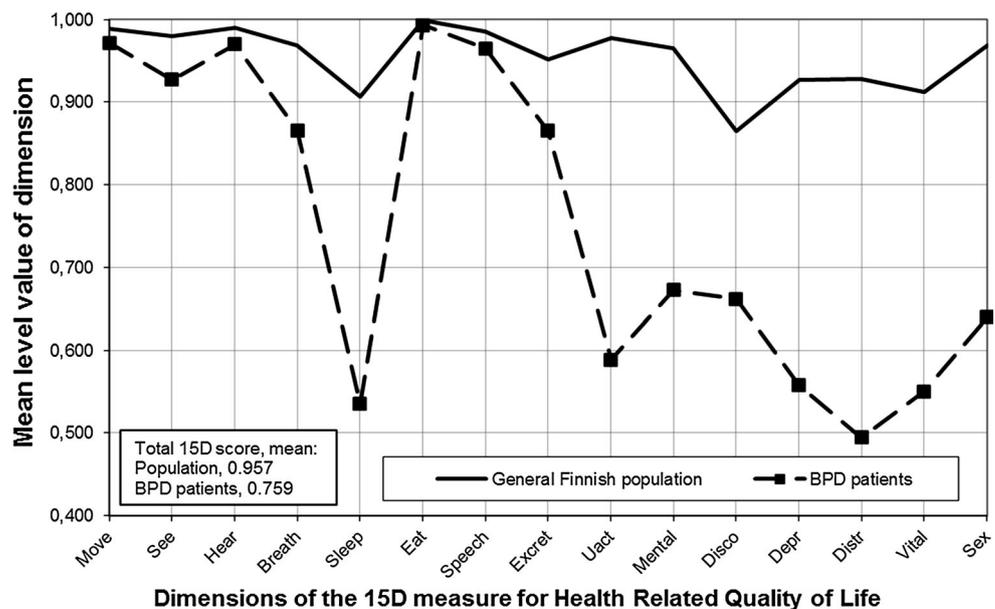
professionals in the delivery of treatments. This kind of treatment model is also more robust to potential obstacles such as employee absence through illness.
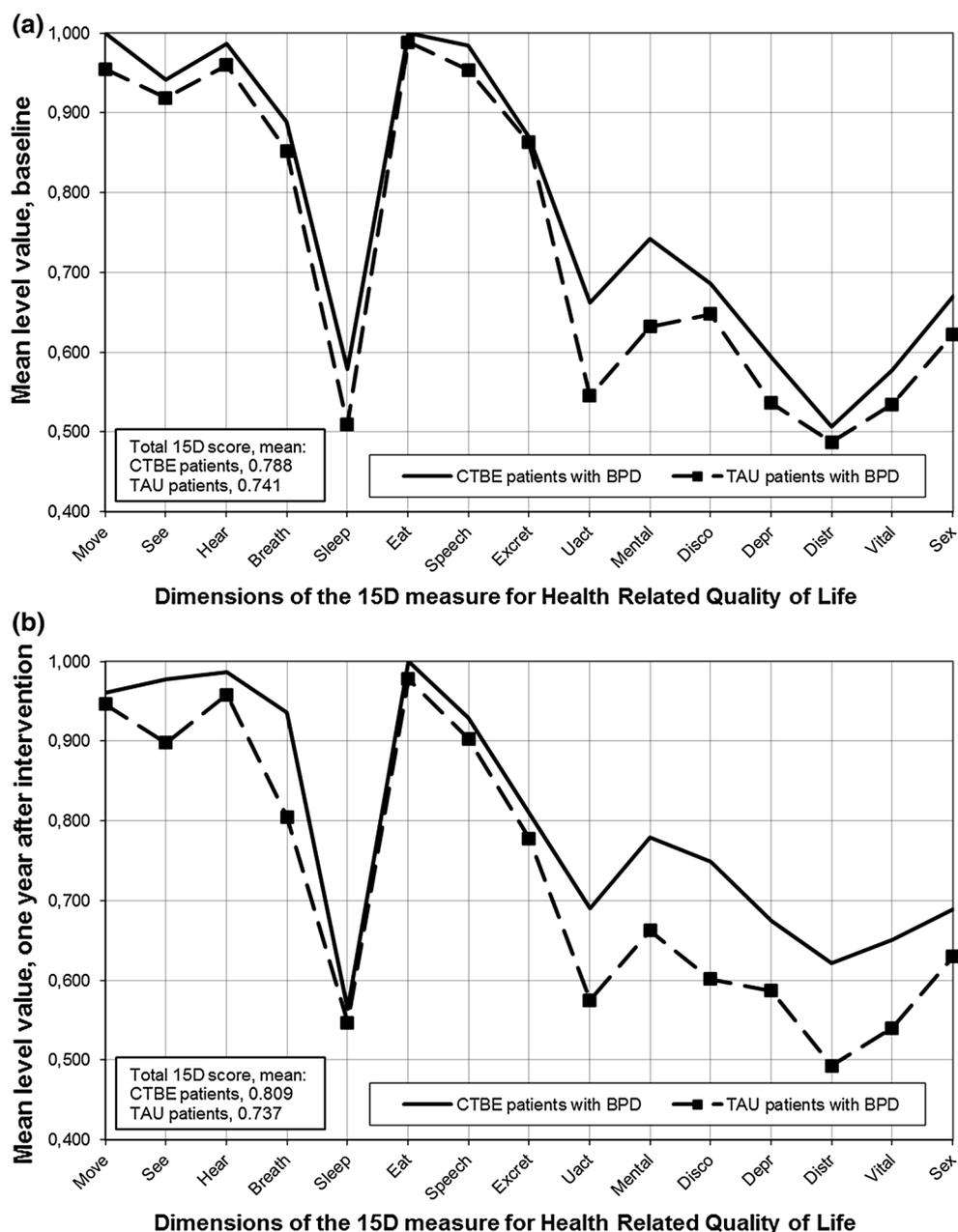
The CTBE intervention was developed specifically for the community mental health services of Oulu city. This 1-year study demonstrated that implementation was successful in all respects, with promising results regarding the major outcomes. Given that BPD generally affects a large proportion of psychiatric patients and, in reality, neither ST nor DBT are routinely available in public mental health care settings, research into the implementation and effectiveness of this combination in community mental health care could have an important contribution to improving care for patients with BPD. Since August 2011 CTBE has been made available to all patients with BPD in Oulu city social and health care services. From August 2012 onwards a new psychiatric team with one psychiatrist, one occupational therapist and six psychiatric nurses have been treating severe BPD patients using CTBE as the main form of treatment intervention. As of 2014 the team take care of about one hundred BPD patients in Oulu city.

The results of the current project are promising and endorse the use of this novel psychotherapeutic treatment approach throughout Finland, but modified and scaled to suit community health care system resources and using existing health care professionals without the need for major training or other new resources. The results of our study demonstrated that CTBE led to clinically important improvements in the major problems facing patients with BPD: parasuicidality, impulsivity, paranoid and dissociative ideation, and poor quality of life. CTBE also achieved

patient adherence to treatment more often than TAU (81 vs. 68 %), which is in line with the result of a meta-analysis of Barnicot et al. (2011) showing a completion rate of 75 % for interventions of <12 months in psychotherapy for BPD. Our key findings accord with previous research covering ST and DBT in relation to parasuicidality of patients with BPD, BPD severity and quality of life. It is notable that both the CTBE and TAU group of patients had substantially lower mean HRQoL scores than Finnish population norms both at baseline and end of 1-year treatment. In the CTBE group, the degree of improvement in HRQoL was substantial and considered to be clinically important, while in the TAU group no essential change was observed. One possible explanation for this finding is the "Hawthorne effect" (Shuttleworth 2009), whereby CTBE patients would have improved because of their participation in a study. It is justifiable to assume, however, that it is the new kind of treatment model and patients' commitment to CTBE therapies that better explain the improved clinical outcomes.

We believe that the schema therapy based well-structured treatment model, CTBE, may be more effective in increasing distress tolerance and associated control of maladaptive behaviour, such as parasuicidality and impulsivity, than treatment as usual. This could be attributed to the extended time spent in the psycho-educational group sessions focused on teaching distress tolerance and recognising maladaptive schema modes and how to control them. An alternative interpretation could be that offering such a stable individual treatment setting could have the potential to improve treatment. In contrast to most previous studies of patients with BPD, our study also included male

Fig. 4 Mean 15D profiles and scores of the patient groups compared to the age-standardized general population. **a** Baseline assessment, **b** 1-year after treatment. *Note*: *CTBE* community treatment by experts; *TAU* treatment as usual; Move = mobility; See = vision; Hear = hearing; Breath = breathing; Sleep = sleeping; Eat = eating; Speech = speech; Excret = excretion; Uact = usual activities; Mental = mental function; Disco = discomfort and symptoms; Depr = depression; Distr = distress; Vital = vitality; Sex = sexual activity

(a)
Total 15D score, mean:
CTBE patients, 0.788
TAU patients, 0.741

CTBE patients with BPD — TAU patients with BPD

Dimensions of the 15D measure for Health Related Quality of Life

(b)
Total 15D score, mean:
CTBE patients, 0.809
TAU patients, 0.737

CTBE patients with BPD — TAU patients with BPD

Dimensions of the 15D measure for Health Related Quality of Life

patients and, hence, the results are probably more relevant and representative. In general, the subjects in this study were chronically suicidal patients suffering from severe BPD symptoms, hence it is not known whether our results are applicable to less severely dysfunctional or non-suicidal patients.

Many methodological requirements for a high quality study are met in this randomized controlled trial. Recruitment took place according to standard procedures at each of the six local mental health service centre units. Allocation was concealed through randomization by an external researcher, prior to which patients were matched for age and severity of BPD symptoms. There were no significant

disparities in the pre-selected socio-demographic or clinical variables at baseline indicating a successful randomization process. Inclusion and exclusion criteria were defined and patients were diagnosed using SCID I and SCID II interviews.

There are some limitations, however. Implementation and assessments were conducted using existing health care professionals without major additional training or other new resources, so the decisive factors determining the number of patients in the study groups were the availability of health care professionals (i.e. the experts, group leaders and of persons conducting the outcome measurements). This was a pilot study in which the CTBE was used for the

first time in clinical practice for the treatment of patients with BPD and, thus, the method was not fine-tuned and none of the health care professionals involved were experienced in its use. During the year long intervention, the CTBE patients made, on average, 73 visits to Oulu mental health services compared to an average of only 21 visits in TAU patients. Therefore, the possibility of nonspecific treatment effects may also exist.

However, despite these constraints we believe that our results indicate important clinical improvements in the CTBE group. Given that most of the patients with severe borderline symptoms had been defined as 'treatment-resistant', we did not expect full recovery (BPDSI-IV scores less than 15) (Jacobson and Truax 1991), but merely significant positive change. Although the main primary outcomes were determined by assessors blinded to allocation status, they could not remain blind to the treatment condition of the patients included. Nor are patients blind to their treatment condition. In this study, however, the BPDSI-IV interview-based measures were supplemented by self-reported questionnaires that were not influenced by the assessors. The likelihood for Type I and Type II errors cannot excluded, since many statistical comparisons were performed and the subsamples in some statistical analyses may have been too small, thus reducing the statistical power and likelihood of revealing truly significant findings. We considered correcting for multiple comparisons but, due to our limited sample size, such corrections were considered to be rather artificial. There is an ongoing debate about the need to adjust for multiple comparisons. (Nakagawa 2004; Perneger 1998; Rothman 1990).

Our study outlines a positive perspective on the treatment of patients with BPD in community mental health care settings. Probably the most effective elements of our combined model are (1) learning to identify and control maladaptive schema modes in psycho-educational groups, (2) expertś freedom to work without a manual or specific guidelines, and (3) the use of expert consultation groups. Future research is required to verify our findings and to assess the cost-effectiveness of this model.

Conflict of interest   None.

References

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders. text revision. (DSM- IV- TR)* (4th ed.). Washington, DC: American Psychiatric Association.

Aromaa, A., & Koskinen, S. (Eds.). (2004). *Health and functional capacity in Finland. Baseline results of the health 2000 health examination survey*. Finland: Publications of the National Public Health Institute B12.

Aviram, R. B., Brodsky, B. S., & Stanley, B. (2006). Borderline personality disorder, stigma, and treatment implications. *Harvard Review of Psychiatry, 14*(5), 249–256.

Leppänen, V., Lindeman, S., Arntz, A., & Hakko, H. (2013). Preliminary evaluation of psychometric properties of the Finnish Borderline Personality Disorder Severity Index: Oulu-BPD-study. *Nordic Journal of Psychiatry, 67*, 312–319.

Barnicot, K., Katsakou, C., Marougka, S., & Priebe, S. (2011). Treatment completion in psychotherapy for borderline personality disorder—a systematic review and meta-analysis. *Acta Psychiatrica Scandinavica, 123*(5), 327–338.

Clarkin, J. F. (2013). Review: Some evidence of benefit for psychotherapies in borderline personality disorder. *Evidence-Based Mental Health, 16*(1), 17.

Cramer, V., Torgersen, S., & Kringlen, E. (2006). Personality disorders and quality of life. A population study. *Comprehensive Psychiatry, 47*(3), 178–184.

First, M. B., Spitzer, R. L., Gibbon, M., & Williams, J. (Eds.). (1997). *Structured clinical interview for DSM-IV axis I disorders (SCID I)*. New York: Biometric Research Department.

First, M. B., Spitzer, R. L., Gibbon, M., Williams, J., & Benjamin, L. (Eds.). (1994). *Structured clinical interview for DSM-IV axis II disorders (SCID II)*. New York: Biometric Research Department.

Giesen-Bloo, J., Van Dyck, R., Spinhoven, P., Van Tilburg, W., Dirksen, C., Van Asselt, T., et al. (2006). Outpatient psychotherapy for borderline personality disorder: Randomized trial of schema-focused therapy versus transference-focused psychotherapy. *Archives of General Psychiatry, 63*(6), 649–658.

Giesen-Bloo, J. H., Wachters, L. M., Schouten, E., & Arntz, A. (2010). The borderline personality disorder severity index-IV: Psychometric evaluation and dimensional structure. *Personality and Individual Differences, 49*(2), 136–141.

Gunderson, J. G. (2011). Borderline personality disorder. *The New England Journal of Medicine, 364*, 2037–2042.

Jacob, G. A., & Arntz, A. (2013). Schema therapy for personality disorders—A review. *International Journal of Cognitive Therapy, 6*(2), 171–185.

Jacobson, N. S., & Truax, P. (1991). Clinical significance: A statistical approach to defining meaningful change in psychotherapy research. *Journal of Consulting and Clinical Psychology, 59*(1), 12–19.

Koekkoek, B., Van Meijel, B., Schene, A., & Hutschemaekers, G. (2009). Clinical problems in community mental health care for patients with severe borderline personality disorder. *Community Mental Health Journal, 45*, 508–516.

Leichsenring, F., Leibing, E., Kruse, J., New, A. S., & Leweke, F. (2011). Borderline personality disorder. *Lancet, 377*, 74–84.

Linehan, M. M. (1993). *Skills training manual for treating borderline personality disorder*. New York, NY: The Guilford Press.

Linehan, M. M., Comtois, K. A., Murray, A. M., Brown, M. Z., Gallop, R. J., Heard, H. L., et al. (2006). Two-year randomized controlled trial and follow-up of dialectical behavior therapy versus therapy by experts for suicidal behaviors and borderline personality disorder. *Archives of General Psychiatry, 63*(7), 757–766.

Nadort, M., Arntz, A., Smit, J. H., Giesen-Bloo, J., Eikelenboom, M., Spinhoven, P., et al. (2009). Implementation of outpatient schema therapy for borderline personality disorder with versus without crisis support by the therapist outside office hours: A randomized trial. *Behaviour Research and Therapy, 47*(11), 961–973.

Nakagawa, S. (2004). A farewell to Bonferroni: The problems of low statistical power and publication bias. *Behavioral Ecology, 15*(6), 1044–1045.

Perneger, T. V. (1998). What's wrong with Bonferroni adjustments. *British Medical Journal, 316*(7139), 1236–1238.

Porter, M. E., & Teisberg, E. O. (2007). How physicians can change the future of health care. *Journal of the American Medical Association, 297*(10), 1103–1111.

Rothman, K. J. (1990). No adjustments are needed for multiple comparisons. *Epidemiology, 1*(1), 43–46.

Sempértegui, G. A., Karreman, A., Arntz, A., & Bekker, M. H. (2013). Schema therapy for borderline personality disorder: A comprehensive review of its empirical foundations, effectiveness and implementation possibilities. *Clinical Psychology Review, 33*(3), 426–447.

Shuttleworth, M. (2009). Hawthorne effect. Retrieved Sep 29, 2014 from *Explorable.Com*: https://explorable.com/hawthorne-effect

Sintonen, H. (1994a). *The 15D measure of health related quality of life: II feasibility, reliability and validity of its valuation system*. Melbourne: Centre for Health Program Evaluation, Monash University.

Sintonen, H. (1994b). *The 15D measure of health related quality of life: Reliability, validity and sensitivity of its health state descriptive system*. Melbourne: Centre for Health Program Evaluation, Monash University.

Sintonen, H. (2001). The 15D instrument of health-related quality of life: Properties and applications. *Annals of Medicine, 33*(5), 328–366.

Skodol, A. E., Siever, L. J., Livesley, W. J., Gunderson, J. G., Pfohl, B., & Widiger, T. A. (2002). The borderline diagnosis II: Biology, genetics, and clinical course. *Biological Psychiatry, 51*(12), 951–963.

SPSS INC. (2009). *PASW statistics for windows, version 18.0* SPSS Inc.

Stavem, K., Bjørnaes, H., & Lossius, M. I. (2001). Properties of the 15D and EQ-5D utility measures in a community sample of people with epilepsy. *Epilepsy Research, 44*(2–3), 179–189.

Van den Bosch, L. M., Koeter, M. W., Stijnen, T., Verheul, R., & Van den Brink, W. (2005). Sustained efficacy of dialectical behaviour therapy for borderline personality disorder. *Behaviour Research and Therapy, 43*(9), 1231–1241.

Westwood, L., & Baker, J. (2010). Attitudes and perceptions of mental health nurses towards borderline personality disorder clients in acute mental health settings: A review of the literature. *Journal of Psychiatric and Mental Health Nursing, 17*, 657–662.

Young, J. E., Klosko, J. S., & Weishaar, M. E. (2003). *Schema therapy. A practitioner' s guide*. New York: The Guilford Press.

Zanarini, M. C., Frankenburg, F. R., Dubo, E. D., Sickel, A. E., Trikha, A., Levin, A., et al. (1998). Axis II comorbidity of borderline personality disorder. *Comprehensive Psychiatry, 39*(5), 296–302.

Zanarini, M. C., Frankenburg, F. R., Hennen, J., Reich, D. B., & Silk, K. R. (2004). Axis I comorbidity in patients with borderline personality disorder: 6-year follow-up and prediction of time to remission. *American Journal of Psychiatry, 161*(11), 2108–2114.