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Effectiveness of psychoanalysis and long-term psychodynamic psychotherapy on personality and social functioning 10 years after start of treatment

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ABSTRACT

The evidence on potentially greater benefits of psychoanalysis (PA) vs. long-term psychodynamic psychotherapy (LPP) is scarce. This study compared the effectiveness of PA and LPP on personality and social functioning during a 10-year follow-up from the beginning of the treatments. The eligible patients, 41 self-selected for PA and 128 assigned to LPP, were 20–45 years of age and had anxiety or mood disorder. Outcomes were analyzed using ten standard measures of personality and social functioning, carried out 5–9 times during the follow-up. Different change patterns by time in PA and LPP emerged, suggesting less benefit of PA during the first years of follow-up and more benefit in most outcomes thereafter. Greater post-treatment improvement in PA than in LPP was seen up to 1–2 years after PA had ended in more mature defense style (DSQ), level of personality organization (LPO), more positive self-concept (SASB), more improved social adjustment (SAS-SR) and sense of coherence (SOC). However, at the 10-year follow-up the differences were non-significant. In conclusion, PA may give some additional benefits when long-term aims are linked to personality and social functioning. The relatively small differences and higher costs in comparison to LPP may restrict the feasibility of PA.

1. Introduction

There is increasing evidence from clinical trials that long-term psychodynamic psychotherapy (LPP) has some additional benefits in comparison to short-term therapies for patients with anxiety and depressive disorders, by producing more improvement in symptoms, work ability, personality functioning and endured remission during a long follow-up (Huber et al., 2012; Knekt et al., 2013, 2016). Even more than LPP, psychoanalysis (PA) has been suggested as a treatment option when the patient has pervasive personal suffering due to developmentally induced psychological problems and when the expectations from the treatment are linked to long-term goals related to personality growth, restructuring of personality organization, and lessening vulnerability to life stresses (American Psychiatric Association, 1985; Gabbard et al., 2002).

In line with this, symptom change, primarily and alone, is a rather crude indicator of therapeutic benefits when comparing the effectiveness of such an intensive and personally deep process as PA with other therapies (Fonagy, 2003). Rather, as the treatment requires exceptional commitment from both the patient and the analyst, profound changes in personality and social functioning – in addition to symptomatic improvement – are expected to occur, to last and even continue to develop several years after the treatment (Bachrach et al., 1991).

There are similarities and differences in the technique and aims of LPP and PA. They share the common elements of the psychoanalytic way to listen, understand and to utilize the basic techniques of both, such as drawing the patient's attention to wishes, feelings or ideas that the patient may not be aware of, using clarification and various modes of interpretation (Seybert et al., 2011). However, in PA, the greater intensity, dosage and length of the treatment, and the utmost goal of developing a self-analytic function, i.e. greater capacity to carry on analytic work by oneself, have been claimed to be essential

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(Busch, 2014). Only little research comparing the effectiveness of LPP and PA is available in the treatment of patients with anxiety and depressive disorders (deMaat et al., 2013). A German trial comparing a relatively low intensity LPP and PA showed greater effects in PA than LPP during a 3-year follow-up in personality functioning (Huber et al., 2013). In a Swedish cohort study more improvement was found in PA than in LPP in personality functioning and symptoms, which further improved during a 3-year follow-up after PA (Sandell et al., 2000). Greater improvement in the self-analytic function and in the capacity to actively confront and contain difficult emotions, representing aspects of personality functioning, have been suggested to be key factors of the additional benefits of PA (Falkenström et al., 2005).

In the Helsinki Psychotherapy Study (HPS), the benefits of PA in psychiatric symptoms, diagnoses and work ability were compared in a quasi-experimental design with those of two short-term therapies and LPP during a 5-year follow-up from the beginning of the therapies, and PA was found to be in general more effective than the therapies at the end of the follow-up (usually the end-point of PA) (Knekt et al., 2011a). Likewise, the cumulative use of additional psychiatric treatment appeared to be the lowest in that group (Knekt et al., 2011b). However, in a follow-up extended beyond the end of PA, the last assessments being either 7 or 10 years after the beginning of treatments, there appeared to be either no or only small differences between PA and LPP in these outcome domains, one indicator being a lower level of personality disorder diagnoses in the PA group at the last, 7-year follow-up (Knekt et al., 2018).

It is not known whether the potentially greater benefits of PA would also be manifested in other dimensions relevant for personality integrity and functioning and in improvement of social competences. Accordingly, we studied the effectiveness of PA and LPP on changes in personality and social functioning during a 10-year follow-up from the beginning of the treatments. Our specific hypotheses, based on findings of previous research and theory (Huber et al., 2013, Knekt et al., 2011a, Sandell et al., 2000, Busch 2014), were: 1) The quantitative and qualitative differences between PA and LPP would be manifested in different types of change patterns especially in the area of personality functioning. More beneficial changes in personality functioning during the 10-year follow-up would be expected in the PA group than in the LPP group, and most likely these benefits would be manifested after the end-point of PA, i.e. after the 5-year follow-up; 2) More beneficial changes, respectively, would be expected in social functioning in the PA group; 3) Due to the relatively good expected outcomes in both treatment groups and significantly greater direct costs of PA, the cost-effectiveness ratio would be expected to favor LPP over PA.

2. Methods

2.1. Patients and study design

The patient sample of this study consists of persons assigned to long-term psychodynamic and -analytic treatments provided by the HPS (Knekt and Lindfors, 2004; Knekt et al., 2011a) (Fig. 1). In the study altogether 326 of the 459 eligible patients were randomized to two different types of short-term psychotherapy (n = 198) or to long-term psychodynamic psychotherapy (LPP) (n = 128), from 1994 to 2000 (Knekt et al., 2008). In addition 41 patients were pre-screened by the treating psychoanalyst and self-selected for PA. To be included in the study, the patients, i.e. 128 patients from LPP and the 41 from PA, were required to be 20–45 years of age, and to have a long-standing anxiety or mood disorder causing work dysfunction. Patients with psychotic disorder, severe personality disorder, adjustment disorder, substance abuse or organic disorder were excluded. The randomized clinical trial on effectiveness of LPP in comparison to short-term therapies during a 10-year follow-up has been reported previously (Knekt et al., 2016). In this cohort study the sample consisted of the patients randomized to LPP and of those allocated to PA, comprising altogether 169 patients.

After assignment to the treatment group, participation was refused by 26 patients assigned to LPP and by one patient assigned to PA. Of the patients starting the assigned therapy, 21 and 5 patients discontinued the treatment prematurely, respectively. The reasons for discontinuing the treatment were related to life situations and disappointment with the treatment. After selection for treatment, the patients were monitored for 10 years. According to the study protocol, patients were provided with LPP or PA, both followed by no treatment. Written informed consent was obtained from the patients after giving them a complete description of the study. The study protocol was approved by the Helsinki University Central Hospital's ethics council.

The mean age of the patients was 32 years (SD = 7) and about three quarters of them were women. Most of the patients (86%) had a diagnosis of depressive disorder, about a third (37%) an anxiety disorder diagnosis, and about one in five had a non-severe personality disorder (Knekt and Lindfors, 2004). The self-selected PA group differed in some respects from the LPP group: The proportion of patients with an academic education was higher in the PA group than in the LPP group, and they tended to have more anxiety symptoms and comorbidity. However, characteristics related to psychological suitability, e.g. a global suitability score, reaction to trial interpretation and motivation for psychotherapy, were more beneficial in the PA group than in the LPP group (Table 1) (Knekt et al., 2011a).

2.2. Therapies and therapists

Both treatments were based on variations of the psychoanalytic theory and technique (e.g. ego psychological, object-relations, self-psychological and attachment models), and were conducted in accordance with clinical practice. Accordingly, the therapists personally modified their interventions during the treatment process according to the patient's needs within the respective framework, respecting thus treatment integrity (Knekt et al., 2008; Sandell et al., 2000). Although LPP and PA are both long-term treatments, they differed markedly by the mean length of the treatments, 31.3 (SD = 11.9) and 56.3 (SD = 21.3) months, and by the mean number of sessions, 232 and 646, respectively (Knekt et al., 2011a). The majority of both treatments (78% in LPP and 85% in PA) were considered to be adequate in terms of pre-determined minimum dosage criteria, i.e. at least 120 and 400 sessions – on average twice a week for 1 ½ years in LPP and four sessions a week for 2 ½ years in PA.

LPP is an open-ended, intensive, transference-based therapeutic approach which helps patients by exploring and working through a broad area of intrapsychic and interpersonal conflicts. Both interpretative and supportive elements are used. The orientation followed the clinical principles of LPP (Gabbard, 2004). The frequency of sessions in LPP was 2–3 times a week during approximately 3 years. PA is an open-ended, highly intensive, transference-based psychodynamic therapeutic approach which helps patients by thoroughly analyzing and working through a broad area of intrapsychic and interpersonal conflicts. More than LPP, PA aims at increasing the person's self-understanding and capacity for self-reflection long after the treatment has ended (Zerbe, 2007). In variance with LPP, the therapeutic setting and technique in PA are characterized by greater intensity needed for facilitating maximum development of transference by the use of couch and free association for exploring unconscious conflicts, developmental deficits, and distortions of intrapsychic structures (Greenson, 1985). The frequency of sessions in PA was 4 times a week during approximately 5 years.

Altogether 59 therapists carried out the treatments, of whom 29 provided LPP, 18 PA, and 12 both LPP and PA (Knekt et al., 2011a). All therapists had received standard training in the respective therapy form. Eligible therapists were also required to have at least 2 years of experience after completion of their training in the specific treatment modality provided in the study. The mean number of years of clinical practice in LPP was 18 among the LPP therapists and in PA 15 years among those providing PA.

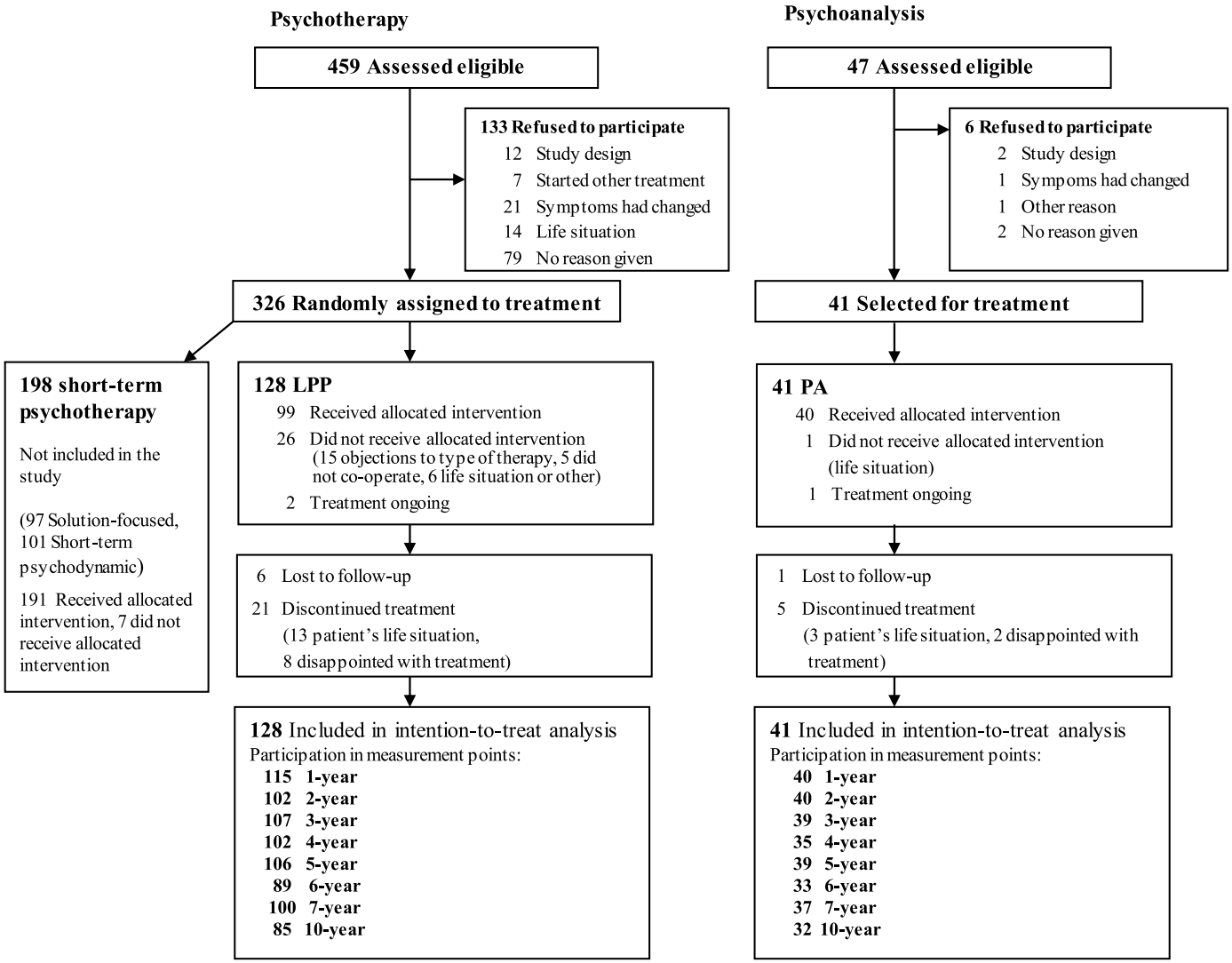

Fig. 1. Flow-chart of the study.

Table 1
Mean (SD) levels of baseline characteristics of the patients intended to treat.

Characteristic	LPP (N = 128)	PA (N = 41)	p-value[a]
Socioeconomic variables			
Age (years)	31.6 (6.6)	30.4 (5.6)	0.32
Males (%)	21.1	31.7	0.17
Academic education (%)	28.1	46.3	0.03
Employed or student (%)	75.4	87.8	0.13
Psychiatric diagnosis			
Depressive disorder (%)	85.9	87.8	0.76
Anxiety disorder (%)	36.7	39.0	0.79
Personality disorder (%)	12.5	19.5	0.27
Psychiatric co-morbidity (%)	36.7	48.8	0.17
Psychiatric history and previous psychiatric treatment			
First symptoms at age < 22 years (%)	63.0	55.0	0.37
Psychotherapy (%)	19.0	26.8	0.29
Psychotropic medication (%)	12.8	7.7	0.39
Hospitalization (%)	2.4	0.0	0.32
Suitability for psychotherapy scale (SPS)			
Summary score of SPS (% good)	34.4	53.7	0.04
Trial interpretation (% good)	25.8	36.6	0.23
Motivation (% good)	39.0	68.0	< 0.001

[a] Test for difference between LPP and PA

2.3. Assessments

A semi-structured interview (Knekt and Lindfors, 2004) was used to identify psychiatric diagnoses of the patients on DSM-IV axes I and II (American Psychiatric Association, 1994). Information on potential confounding factors at baseline was gathered by interview, i.e. the global suitability score of the Suitability for Psychotherapy Scale (SPS score) and two of its sub-scores, response to trial interpretation and motivation for psychotherapy (Laaksonen et al., 2012), and the Quality of Object Relations Scale (QORS) (Azim et al., 1991), by self-reports on socio-demographic factors, psychiatric symptoms (Symptom Check List 90, Global Severity Index (SCL-90-GSI) (Derogatis et al., 1973), and with standard outcome measures presented below.

The outcome measures covered the domains of personality and social functioning. Personality functioning was measured at baseline and from 4 to 8 times during the 10-year follow-up, using one interview scale and five scales based on self-report questionnaires. The Level of Personality Organization (LPO) (Valkonen et al., 2012), based on a modification of Kernberg's structural interview (Kernberg, 1981), assessed personality organization, i.e. the severity of personality pathology, on a scale varying from 1.0 (normal) to 7.0 (psychotic disorder). The 36-item Structural Analysis of Social Behavior self-concept (introject) questionnaire (SASB) (Benjamin, 1996), is based on a circumplex model, on which a person's self-concept is summarized and

described as two vector scores, the horizontal (love–hate) affiliation (AF) axis and the vertical (emancipation–control) autonomy (AU) axis. A greater AF score indicates more positive self-concept ('self-love') and a greater AU score a self-concept characterized by a high levels of emancipation and autonomy. The total score of the 64-item Inventory of Interpersonal Problems (IIP) reflects the overall level of distress from interpersonal problems, across eight types of problems: dominancy, vindictiveness, coldness, social inhibition, non-assertiveness, overly accommodation, self-sacrificing, and neediness (Horowitz et al., 2000). Lastly, the immature and the mature defense style scores of the 88-item Defense Style Questionnaire (DSQ) (Andrews et al., 1989) were assessed. The DSQ measures an individual's relatively stable way to protect oneself against anxiety and from awareness of internal or external dangers or stressors (Bond, 2004). The immature defense style score, consisting of 46 items of the 88-item DSQ, was used as the pre-determined primary indicator of effectiveness in the personality functioning domain.

Social functioning was measured at baseline and 6 to 8 times during the 10-year follow-up, with four self-report scales. The 54-item Social Adjustment Scale (SAS-SR) measured functioning on six role areas of social functioning, work/school/housework, leisure activities, relationships with extended family, couple relationship, as a parent and as a member of the family unit, and was used as the primary indicator of effectiveness in the social functioning domain (Weissman and Bothwell, 1976). A lower SAS-SR score indicated better functioning. The 29-item Sense of Coherence Scale (SOC) (Antonovsky, 1993) measured the person's coping capacity as a trust in life being meaningful, manageable and comprehensible, a higher score indicating better sense of coherence. The 8-item Perceived Competence scale (Härkäpää, 1995; Wallston, 1990), measured the ability to accomplish things that are important to one self, a higher score indicating greater perceived competence. Finally, a generic quality of life scale was included, the 20-item Life Situation Survey (LSS) which measured subjective well-being and satisfaction across different areas of life (e.g. health, economic situation, personal relationships, overall satisfaction with one's self and life) (Chubon, 1987).

The estimation of direct costs incurred by the treatment of mental disorders consisted of five different aggregate cost components: 1) protocol-based and additional LPP and PA sessions, 2) auxiliary psychotherapy sessions (individual short- or long-term therapy, group therapy, marital or family therapy), 3) outpatient visits due to mental disorders, 4) psychotropic medication, and 5) inpatient care in hospital due to mental disorders. Information on the use of psychotropic medication and of hospitalization were based on patient-level registers and information about the amounts of other services used was obtained from the patients themselves in yearly inquiries, except the 10-year inquiry, which covered the three-year period from the 7th to the 10-year follow-up. All costs were converted to the 2015 price level by using official price indices estimated by Statistics Finland. When costs were discounted a three percent yearly discount rate was used. All costs were included in the analysis in full regardless of the payer. The estimation of costs is described in more detail in Maljanen et al., (2012).

2.4. Drop-out from assessments

Participation in the assessments during the first five years after being assigned to treatment was very high, varying from 80% to 90% in the LPP group and from 85% to 98% in the PA group (Fig. 1). During the latter part of the follow-up participation decreased only slightly until the 7-year follow-up, and to a greater degree by the end of the 10-year follow-up, being still satisfactory, i.e. 66% in LPP and 78% in PA.

2.5. Auxiliary treatment

During the 10-year follow-up 69% in the LPP group and 74% in the PA group used auxiliary psychiatric treatment, i.e. psychotropic medication (antidepressive, anxiolytic, antipsychotic and psychiatric combination drugs), short- or long-term individual or other type of psychotherapy (various orientations), or in-patient treatment. In both groups over 50% received psychotropic medication and over 40% auxiliary psychotherapy. A total of 10% in the LPP and 2% in the PA group were hospitalized due to psychiatric reasons on some occasion.

2.6. Statistical methods

A cohort study design with repeated measurements was used. The effectiveness of LPP and PA was compared in an 'intention-to-treat' (ITT) design, which included all the patients who had been assigned to treatment. The primary analyses were based on the assumption of ignorable dropouts (Härkänen et al., 2005). The statistical analyses were based on linear mixed models (Verbeke and Molenberghs, 1997). The dependent variables were the primary and secondary measures of the two hypotheses. The pre-determined primary measures were the DSQ immature defense style score (personality functioning), and SAS-SR (social functioning). Effect sizes, estimated as model-adjusted mean differences between LPP and PA using predictive margins, were calculated piecewise for the different time points (Graubard and Korn, 1999; Lee, 1981). The delta method was applied to calculate the confidence intervals for the mean differences (Migon and Gamerman, 1999). Global statistical significance tests were performed separately for each of the two hypotheses using the Wald test. Two primary ITT models were used. The basic model included the main effects of time, treatment group (LPP and PA), the difference between theoretical and realized date of measurement, first-order interaction of time and treatment group, and the outcome variable at baseline. A final complete model further included covariates (i.e. sex, marital status, education, currently employed or studying, and the SPS score) which satisfied the criteria for confounding (Rothman et al., 2008). Additionally, the complete model on personality functioning was extended by including psychiatric symptoms (SCL-90-GSI) as time-dependent covariate at each time-point, to test whether the differences in the relatively stable personality changes remained significant after the adjustments.

Complementary 'as-treated' (AT) analyses were performed taking into account violation of the treatment standards. The AT model was created by completing the complete ITT model with time-dependent covariates regarding the quality of the protocol-based treatment of the PA and LPP given (i.e. withdrawal from treatment, waiting time from baseline examination to the start of study treatment, and discontinuation of study treatment) and use of auxiliary treatment (i.e. additional psychotherapy, psychotropic medication, and psychiatric hospitalization) at baseline and the measurement points during the follow-up. Since no major differences were found between the ITT and AT models, the results presented are based on the complete ITT model.

The analyses of costs were based on comparisons of the averages of different cumulative cost items. Some of the missing values of cost variables were imputed using the R statistical software (R Core Team, 2017), and the multiple imputation based on chained equations and the random forest method implemented in the R packages mice (van Buuren and Groothuis-Oudshoorn, 2011), miceadds (Robitzsch et al., 2017) and randomForest (Liaw and Wiener, 2002). Altogether 50 imputed data sets were generated. Each imputed data set was then bootstrapped 10 times in order to analyze the cost variables.

All statistical analyses were carried out with SAS software (SAS Institute Inc., 2011).

3. Results

3.1. Personality functioning

In line with our hypothesis, a statistically significantly different pattern by time was seen for the primary outcome indicator, immature

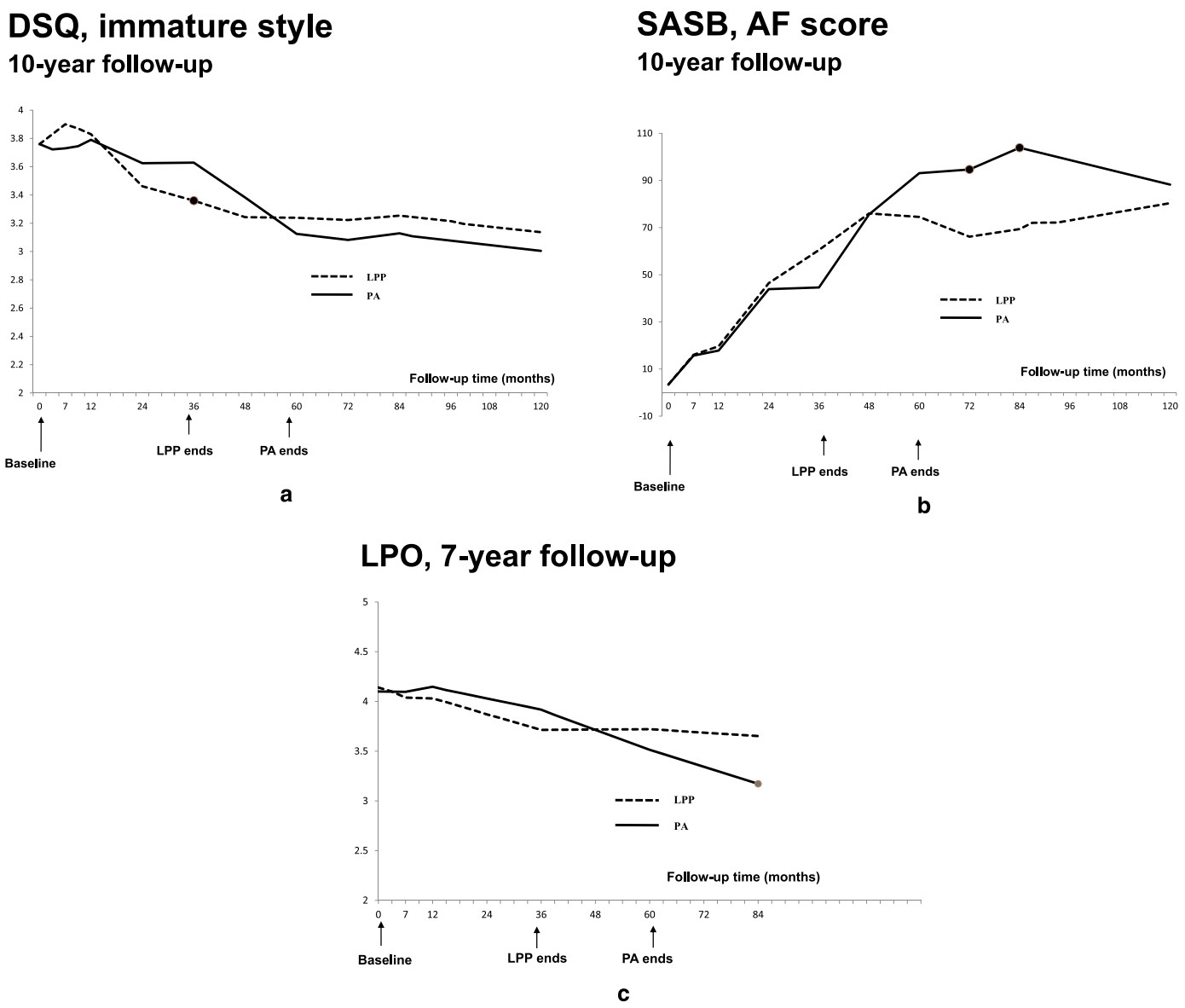

Fig. 2. Change profiles during the 10-year follow-up in DSQ immature defense style (2a), SASB AF (2b), and LPO (2c) scores in LPP and PA.

defense style (DSQ) ($p = 0.002$, Fig. 2a) and the secondary indicators, SASB, AF score ($p = 0.06$, Fig. 2b) and LPO ($p = 0.008$, Fig. 2c) in the LPP and PA groups (Table 2). All three variables suggested less benefit from PA during the first years of follow-up and more benefit from the 5th year onwards. In line with our hypothesis, the strongest differences in favor of PA were seen approximatively 1–2 years after PA had ended (i.e. at the 6th and/or 7th year of follow-up) for mature defense style (DSQ), positive self-concept (SASB, AF score), and mature level of personality organization (LPO). At the final 10-year follow-up point, no significant differences in effectiveness on personality functioning between the two treatment groups remained. The differences found remained essentially unchanged after controlling for changes in psychiatric symptoms at the different time points (data not shown).

3.2. Social functioning

In line with our hypothesis, a statistically significantly different pattern by time was seen for the primary outcome indicator, social adjustment (SAS-SR) ($p = 0.004$, Fig. 3a) and for all the secondary indicators, SOC ($p = 0.002$, Fig. 3b), Perceived competence ($p = 0.04$, Fig. 3c), and LSS ($p = 0.001$, Fig. 3d) in the LPP and PA groups (Table 3). The strongest differences in favor of PA were also seen here at the 7-year follow-up point, for SAS-SR and SOC, but at the 5-year point for LSS. Greater early change in Perceived competence in the LPP group was an exception. In accordance with the findings in personality functioning, no significant differences in effectiveness between the two treatment groups remained at the 10-year follow-up point.

3.3. Costs

Due to either no or only minimal differences in the area under the curve (AUC) estimation of effectiveness (Pruessner et al., 2003) between the PA and the LPP groups during the entire 10-year follow-up, i.e. in the mean values of the primary outcome indicators, a thorough cost-effectiveness analysis was not considered reasonable. However, the comparison of direct costs of the treatments is considered valuable. Mainly due to the significantly longer duration and greater frequency of sessions in PA, the average total undiscounted direct costs (63,034 euros) during the 10-year follow-up were almost three times the level of persons belonging to the LPP group (22,755 euros) (Fig. 4). Using a three percent yearly discount rate decreased the total costs to 47,602 and 17,184 euros, respectively. In both groups the majority of the costs

Table 2
The mean level of the PA group and score differences (95% confidence interval, CI) between the LPP and the PA groups on personality functioning during the 10-year follow-up.

		LPP			PA			LPP - PA Mean score difference (95% CI)	
Variable	Follow-up (years)	*N*	Mean[a]	sd	*N*	Mean[a]	Sd	Basic model, unadjusted[b]	Complete model, baseline adjusted[c]
Personality functioning									
DSQ, immature defense style	0	125	3.96	0.06	41	3.77	0.12	0.04 (−0.21, 0.30)	
	1	94	3.82	0.07	38	3.68	0.13	−0.03 (−0.32, 0.26)	0.04 (−0.22, 0.29)
	2	91	3.50	0.08	38	3.56	0.14	−0.24 (−0.55, 0.07)	−0.16 (−0.43, 0.11)
	3	88	3.40	0.09	34	3.58	0.15	−0.37 (−0.71, −0.02)	−0.27 (−0.58, 0.04)
	4	89	3.28	0.08	34	3.30	0.15	−0.22 (−0.55, 0.12)	−0.14 (−0.43, 0.16)
	5	101	3.29	0.09	35	3.07	0.15	0.07 (−0.28, 0.41)	0.11 (−0.17, 0.40)
	6	79	3.25	0.09	32	3.01	0.16	0.07 (−0.29, 0.43)	0.14 (−0.17, 0.45)
	7	86	3.28	0.09	32	3.05	0.15	0.05 (−0.31, 0.40)	0.12 (−0.18, 0.43)
	10	85	3.22	0.09	32	2.96	0.17	0.05 (−0.35, 0.45)	0.13 (−0.23, 0.49)
Change (%)	0–10		18.7			21.5			
p-value[d]									0.002
DSQ, mature defense style	0	125	5.16	0.09	41	5.31	0.17	−0.22 (−0.58, 0.14)	
	1	94	5.43	0.08	38	5.48	0.14	−0.12 (−0.42, 0.19)	−0.07 (−0.34, 0.20)
	2	91	5.54	0.09	38	5.77	0.15	−0.30 (−0.65, 0.04)	−0.23 (−0.55, 0.09)
	3	88	5.74	0.10	34	5.69	0.17	−0.01 (−0.40, 0.37)	0.04 (−0.30, 0.39)
	4	89	5.80	0.10	34	5.73	0.17	−0.01 (−0.39, 0.37)	0.05 (−0.32, 0.42)
	5	101	5.86	0.10	35	6.07	0.17	−0.26 (−0.65, 0.12)	−0.19 (−0.55, 0.16)
	6	79	5.61	0.11	33	5.98	0.19	−0.42 (−0.85, 0.02)	−0.33 (−0.73, 0.07)
	7	86	5.73	0.10	32	6.15	0.17	*−0.51 (−0.89, −0.13)*	*−0.42 (−0.80, −0.04)*
	10	85	5.86	0.11	32	6.03	0.22	−0.23 (−0.71, 0.25)	−0.18 (−0.66, 0.30)
Change (%)	0–10		13.6			13.6			
p-value[d]									0.30
SASB, AF score	0	124	7.86	5.15	41	−7.60	9.46	20.6 (0.43, 40.7)	
	1	93	25.3	6.50	38	9.46	11.0	21.6 (−3.24, 46.3)	1.83 (−18.7, 22.3)
	2	89	51.4	6.97	36	35.3	11.8	22.7 (−4.42, 49.8)	2.55 (−20.7, 25.8)
	3	89	66.1	7.23	36	36.5	12.5	35.9 (7.88, 63.8)	15.9 (−9.07, 40.9)
	4	89	79.8	6.72	34	67.3	11.9	20.6 (−5.87, 46.9)	0.40 (−22.6, 23.4)
	5	99	76.6	6.92	35	82.8	12.1	0.88 (−26.2, 28.0)	−18.6 (−43.2, 5.97)
	6	77	70.2	7.61	32	85.2	13.0	−8.60 (−37.4, 20.2)	*−28.5 (−55.5, −1.58)*
	7	86	74.1	7.48	32	96.0	12.7	−16.7 (−45.1, 11.7)	*−34.5 (−61.7, −7.31)*
	10	76	85.8	8.07	31	81.6	15.9	8.13 (−28.2, 44.5)	−7.84 (−42.8, 27.1)
Change (%)	0–10		37.5			45.8			
p-value[d]									0.06
SASB, AU score	0	124	−29.3	3.25	41	−38.6	5.88	8.78 (−4.03, 21.6)	
	1	93	−22.5	3.27	38	−26.6	5.51	3.75 (−8.53, 16.0)	−1.12 (−11.9, 9.68)
	2	89	−11.5	3.53	36	−23.7	5.98	12.5 (−1.02, 26.0)	6.41 (−6.16, 19.0)
	3	89	−3.51	4.05	36	−19.3	6.89	15.9 (0.74, 31.1)	9.96 (−4.59, 24.5)
	4	89	5.10	3.80	34	−7.57	6.75	15.0 (−0.01, 30.1)	7.55 (−6.95, 22.1)
	5	99	3.76	3.63	35	−6.77	6.37	11.0 (−2.80, 24.9)	5.58 (−7.81, 19.0)
	6	77	7.50	3.92	32	−4.30	6.69	11.8 (−3.40, 26.9)	5.71 (−8.51, 19.9)
	7	86	2.96	4.14	32	1.79	7.01	1.41 (−14.2, 17.0)	−4.79 (−19.7, 10.1)
	10	76	9.56	4.09	31	−0.58	7.99	9.65 (−8.13, 27.4)	6.98 (−10.8, 24.7)
Change (%)	0–10		22.8			23.6			
p-value[d]									0.41
IIP, total score	0	125	82.9	2.74	41	89.2	5.03	−7.45 (−18.5, 3.59)	
	1	93	72.5	3.43	38	83.2	5.82	−12.4 (−25.5, 0.68)	−6.30 (−16.9, 4.33)
	3	88	59.6	3.28	37	67.9	5.66	−10.4 (−22.9, 2.05)	−4.68 (−15.8, 6.46)
	5	97	54.5	3.47	35	52.4	6.08	0.72 (−13.0, 14.4)	5.25 (−6.92, 17.4)
	7	84	54.4	3.65	31	51.3	6.24	1.19 (−12.8, 15.1)	6.79 (−5.28, 18.9)
	10	85	49.9	3.65	32	49.4	6.86	−0.24 (−16.2, 15.7)	1.43 (−13.3, 16.2)
Change (%)	0–10		39.8			44.6			
p-value[d]									0.33
LPO	0	128	4.13	0.06	41	4.17	0.10	−0.00 (−0.22, 0.22)	
	1	99	4.03	0.06	40	4.15	0.10	−0.14 (−0.37, 0.10)	−0.06 (−0.26, 0.13)
	3	92	3.71	0.09	39	3.92	0.14	−0.23 (−0.58, 0.12)	−0.15 (−0.46, 0.15)
	5	100	3.72	0.10	38	3.51	0.17	0.16 (−0.24, 0.55)	0.26 (−0.10, 0.62)
	7	87	3.65	0.10	37	3.17	0.19	0.37 (−0.07, 0.79)	*0.53 (0.12, 0.94)*
Change (%)	0–7		11.6			24.0			
p-value[d]									0.008

[a] The complete intention-to-treat model (ITT), including time, treatment group, the difference between theoretical and realized date of measurement, the first-order interaction of time and treatment group, and the confounding factors (i.e. sex, marital status, education, currently employed or studying, response to trial interpretation and motivation for psychotherapy and the SPS score).

[b] The basic ITT model, i.e. excluding confounding factors, unadjusted for baseline level of the outcome variable considered.

[c] Complete ITT model further adjusted for the baseline level of the outcome measure considered.

At the underlined entries the differences between the therapy groups are statistically significant (*p*-values < 0.05), greater effectiveness of PA vs. LPP in italics.

[d] Global test, *p*-value for group differences during follow-up.

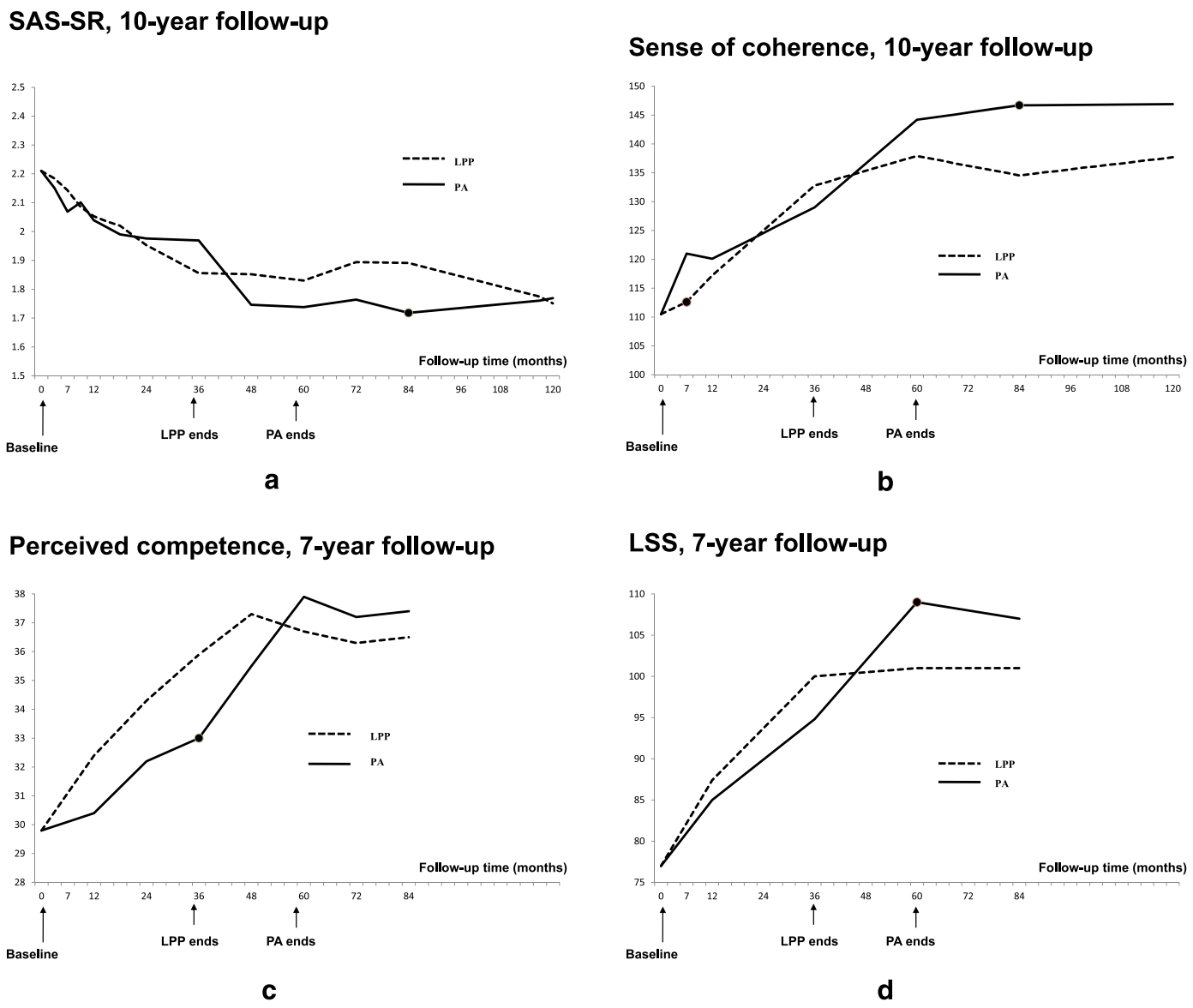

Fig. 3. Change profiles during the 10-year follow-up in SAS-SR (3a), SOC (3b), Perceived competence (3c), and LSS (3d) scores in LPP and PA.

(74% and 85%) occurred when the study therapies were in progress, i.e. during the first three years in the LPP group and during the first five years in PA. At the 10-year follow-up the average total costs during the last year were at a comparable level, 949 and 902 euros, in PA and LPP. Based on the relatively small significant differences in effectiveness between the therapies and the significantly greater costs of PA, the latter cannot generally be considered a cost-effective option.

4. Discussion

4.1. Main results

In this study the effectiveness of PA and LPP in the treatment of patients with depressive or anxiety disorder was compared during a 10-year follow-up from the beginning of the treatments. It was hypothesized that different types of change patterns would emerge and that PA would have greater potential than LPP even years after the treatment had ended, for providing more sustained changes in personality functioning and social functioning. Accordingly, it was found that the change patterns, indeed, were different. Through the 10-year follow-up, and specifically from the 5-year to the 7-year follow-up, more improvement occurred in different aspects of personality functioning (i.e. mature defense style, self-concept, and level of personality organization), as well as in social functioning (social adjustment, sense of coherence and quality of life), in the PA group than in the LPP group. However, none were sustained until the 10-year follow-up. During the earlier follow-up occasions when PA was usually still ongoing, practically all the statistically significant differences favoring LPP by faster improvement in personality functioning (at the 3-year follow-up when LPP usually ended) were due to pre-treatment differences between the groups. These differences appeared to be non-significant when the confounding was adjusted.

Our finding of PA being more effective in some indicators of personality and social functioning than LPP up to two years after the treatment had ended is in line with another cohort study with similar dosage and length of the treatments, although in this study only limited significant additional increase of benefits in PA and no decrease in LPP after the end-point of the treatments were noted (Blomberg et al., 2001; Sandell et al., 2000). Likewise, our findings concerning more improvement in PA than LPP in personality and social functioning and no significant additional advantage in symptomatic improvement (Knekt et al., 2018) coincide with the Munich trial findings three years

Table 3
The mean level of the PA group and score differences (95% confidence interval, CI) between the LPP and the PA groups on social functioning during the 10-year follow-up.

		LPP			PA			LPP - PA Mean score difference (95% CI)	
Variable	Follow-up (years)	*N*	Mean[a]	sd	*N*	Mean[a]	Sd	Basic model, unadjusted[b]	Complete model, baseline adjusted[c]
Social functioning									
SAS-SR	0	125	2.19	0.04	41	2.27	0.07	−0.09 (−0.23, 0.05)	
	1	94	2.04	0.04	38	2.06	0.06	−0.05 (−0.19, 0.10)	0.01 (−0.12, 0.14)
	2	90	1.94	0.04	38	2.00	0.07	−0.09 (−0.24, 0.07)	−0.02 (−0.17, 0.12)
	3	89	1.84	0.04	36	1.99	0.07	−0.18 (−0.33, −0.02)	−0.11 (−0.27, 0.04)
	4	88	1.84	0.04	34	1.77	0.07	0.04 (−0.01, 0.19)	0.11 (−0.04, 0.25)
	5	100	1.83	0.04	35	1.77	0.07	0.03 (−0.13, 0.19)	0.09 (−0.06, 0.25)
	6	79	1.88	0.05	33	1.80	0.08	0.05 (−0.12, 0.23)	0.13 (−0.03, 0.29)
	7	86	1.87	0.04	32	1.74	0.07	0.11 (−0.06, 0.27)	*0.17 (0.01, 0.33)*
	10	85	1.75	0.05	32	1.79	0.09	−0.05 (−0.27, 0.16)	−0.02 (−0.22, 0.18)
Change (%)	0–10		20.1			21.1			
p-value[d]									0.004
SOC	0	125	113	1.86	41	108	3.41	7.24 (−0.12, 14.6)	
	1	94	119	2.31	38	118	3.91	4.49 (−4.30, 13.3)	−2.96 (−10.7, 4.76)
	3	89	134	2.55	36	126	4.35	11.7 (1.81, 21.5)	3.80 (−5.36, 13.0)
	5	100	139	2.38	35	141	4.18	0.74 (−8.76, 10.2)	−6.31 (−14.7, 2.07)
	7	86	137	2.81	32	145	4.76	−4.97 (−15.6, 5.62)	*−12.2 (−22.3, −2.08)*
	10	85	139	2.96	32	144	5.68	−2.37 (−15.0, 10.3)	−9.13 (−20.9, 2.59)
Change (%)	0–10		23.0			33.3			
p-value[d]									0.002
Perceived competence	0	126	30.1	0.60	41	28.8	1.09	1.34 (−1.01, 3.74)	
	1	105	32.6	0.70	38	30.6	1.23	2.41 (−0.43, 5.25)	2.01 (−0.37, 4.37)
	2	97	34.6	0.70	36	32.3	1.22	2.80 (−0.10, 5.70)	2.17 (−0.36, 4.70)
	3	99	36.1	0.76	36	33.0	1.35	3.49 (0.38, 6.60)	2.92 (0.05, 5.80)
	4	101	37.3	0.68	34	35.5	1.27	2.39 (−0.45, 5.23)	1.78 (−1.05, 4.62)
	5	100	36.7	0.70	35	37.8	1.24	−0.57 (−3.42, 2.29)	−1.22 (−3.97, 1.54)
	6	87	36.5	0.81	34	37.3	1.41	−0.33 (−3.52, 2.89)	−0.89 (−3.84, 2.06)
	7	96	36.8	0.72	33	37.7	1.27	−0.59 (−3.52, 2.35)	−0.84 (−3.73, 2.05)
Change (%)	0–7		22.3			30.9			
p-value[d]									0.04
LSS	0	125	78.1	1.59	41	75.9	2.91	1.13 (−5.14, 7.39)	
	1	93	87.4	1.95	38	85.0	3.27	1.83 (−5.67, 9.32)	0.90 (−6.35, 8.14)
	3	88	100	2.33	37	94.8	3.91	4.99 (−4.05, 14.0)	3.89 (−4.77, 12.5)
	5	99	101	2.17	35	109	3.78	−8.45 (−17.1, 0.16)	*−9.57 (−17.4, −1.74)*
	7	86	101	2.43	32	107	4.11	−7.23 (−16.6, 2.14)	−8.08 (−16.9, 0.77)
Change (%)	0–10		29.3			41.0			
p-value[d]									0.001

[a] The complete intention-to-treat model (ITT), including time, treatment group, the difference between theoretical and realized date of measurement, the first-order interaction of time and treatment group, and the confounding factors (i.e. sex, marital status, education, currently employed or studying, response to trial interpretation and motivation for psychotherapy and the SPS score).
[b] The basic ITT model, i.e. excluding confounding factors, unadjusted for baseline level of the outcome variable considered.
[c] Complete ITT model further adjusted for the baseline level of the outcome measure considered.
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[d] Global test, *p*-value for group differences during follow-up.

after the end of the psychodynamic and -analytic therapies; although, in that study, both of the long-term therapies were provided with much fewer sessions and lesser duration (Huber et al., 2013). The present study thus partially replicated previous evidence of greater effectiveness of PA in comparison to LPP which manifests years after termination in the primary target areas of PA. It is also in line with the limited findings from follow-up studies which indicate that changes in personality are either stable or increased in PA after it has ended (de Maat et al., 2013). The finding that the advantage of PA was rather limited and was diluted at the final 10-year follow-up, partly due to additional positive change happening in the LPP group, was unexpected and requires additional research on the determinants of changes in the three last years of the follow-up. The modesty of the differences is important from a clinical point of view, as the duration and dosage of the treatments differ greatly. Accordingly, the relatively high dosage of LPP used in this study may indicate that for many patients it is as sufficient as the much higher dosage of PA in enabling continued post-treatment improvement.

The specificity of the additional benefits of PA in personality and social functioning highlight the importance of the treatment time frame in achieving functional accomplishments, as suggested previously in cohort studies focusing on the length of treatment necessary for providing recovery in personality-related problems (Kopta et al., 1994; Perry et al., 1999). Likewise, the specificity of the PA benefits can be put into perspective when compared to the difference between LPP and short-term treatments during a 10-year follow-up, which showed greater benefits in LPP in symptoms but no difference in personality and social functioning (Knekt et al., 2016). As PA in this study had both a higher dosage and greater intensity than LPP and may have differed by a more pronounced use of some psychoanalytic techniques, like insight-oriented exploration of the patient's wishes, dreams and fantasies from it, it is not known which aspects of the PA treatments were responsible for the extended results in personality and social functioning – and which aspects of both treatments were crucial for the relatively small differences between them. Although purely greater extent of psychoanalytic techniques have previously been suggested to be associated with greater benefits in PA (Zimmermann et al., 2015), their skillful use, e.g. well-timed interpretations, sensitive integration to the patient's present life experiences and realities, in combination with the quality of the therapeutic relation, and the fit between patient and therapist

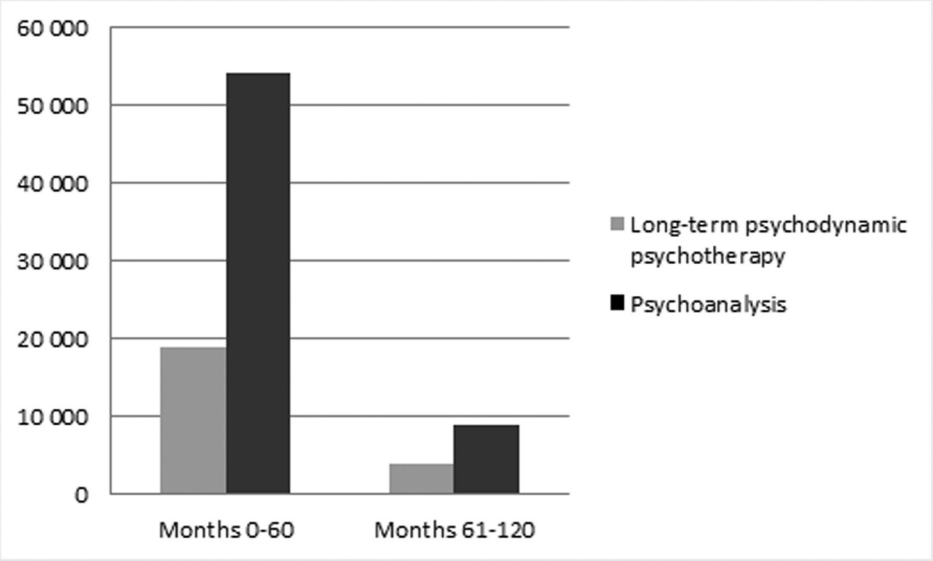

Fig. 4. Cumulative direct costs (euros) during the 10-year follow-up in LPP and PA.

(Bush and Meehan, 2011) might also be relevant. Accordingly, further research focused on the importance of treatment duration, session frequency and different aspects of the treatment process, as well as factors related to patient and therapist characteristics, are needed to investigate their impact on the different outcome dimensions.

From a cost-effectiveness and public health perspective, the almost three times higher direct costs of PA than LPP and its relatively limited additional long-term benefits in the outcome dimensions assessed do not favor its use as a standard treatment in this patient population.

4.2. Methodological considerations

There are several strengths of the study design and its methods, discussed in greater detail elsewhere (Knekt et al., 2011a, b). First, a cohort of outpatients with similar inclusion and exclusion criteria was selected for this comparative cohort study, the patients were followed throughout an exceptionally long follow-up with repeated measurements covering different aspects of the outcome domains, which were relevant for aims of both treatments. Second, the participation percentage was relatively high in both groups up to the 7-year follow-up, and only slightly decreased by the final 10-year follow-up. Third, even though there were some differences in the pre-treatment characteristics of the patients self-selected to PA and those randomized to LPP, adjustment for potential confounding factors was used in the statistical analyses to reduce potential bias due to selection. Fourth, information on auxiliary treatment and use of national health register data concerning all patients was gathered and acknowledged in the AT analyses which complemented the basic ITT analyses. Fifth, both LPP and PA were carried out as in normal clinical practice, with no manualization, allowing greater external validity and generalizability due to flexible use of psychoanalytic and -dynamic techniques.

There are several factors which may complicate the interpretation of the results and thus need to be taken into consideration. First, as there was no adherence monitoring of the therapies, it is not known to what extent the treatments were carried out as intended (apart from external criteria which were monitored) and competently by the therapists. However, all the therapists were trained according to the method they practiced in the study, had a long clinical experience, and, in a study on therapist characteristics, were found to be generally comparable in their self-rated work involvement (Heinonen et al., 2014). Second, in the LPP group about a fifth of the patients withdrew before being assigned to therapy, in comparison to only one patient in the PA group. This fact, in addition to that only PA patients were selected on the basis of being suitable for the treatment, reflect differences in the referral practices and in personal commitment to therapy which may have an influence on the results. However, the differences in the pre-treatment characteristics of the patients were rather small and were accounted for in the statistical models (Knekt et al., 2011a). Third, due to the exceptionally long follow-up, dropout from measurements increased from the 7-year to the 10-year follow-up and thus the missing observations also inevitably increased the uncertainty of the results. Fourth, the small sample size in the PA group limits the ability to detect true differences even if there are those. Fifth, some of the outcome measures were not available at the 10-year follow-up, e.g. the interview measure LPO, which might have given additional information on the relatively stable 'structural change' of personality at the final follow-up. However, the primary indicator DSQ was available and also covered trait-like aspects of personality (Bond, 2004). The fact that the differences in DSQ remained unchanged after controlling for co-occurring changes in psychiatric symptoms, suggests that they were not only due to improved state of mental wellbeing. Sixth, although the patients at baseline had relatively persistent depressive or anxiety disorders, the rate of personality disorders was low. This limits the generalizability of the findings on the effectiveness of psychoanalytic treatments in more complex psychiatric disorders. However, it also highlights the importance of the several statistically significant findings observed.

4.3. Conclusions

PA may be considered as a viable treatment option for patients when long-term aims related to personality and social functioning are essential and when shorter and less intensive treatments are not considered to be sufficient. Greater direct costs of PA limit its feasibility in a public health setting. For developing more sophisticated selection criteria for PA, additional research on the impact of individual patient and alliance factors on outcome is needed, extended with comparative qualitative analysis of successful and unsuccessful treatments.

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Conflict of interest

None.

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