Running head: EFFECTIVENESS OF SINGLE SESSION NLP TREATMENT

Words: 3215

The effectiveness of NLP:

Interrupted time series analysis of single subject

data for one session of NLP coaching.

Jaap Hollander
Oliver Malinowski

Institute for Eclectic Psychology
Nijmegen, The Netherlands

Abstract

The main goal of this study was to evaluate the effectiveness of Neuro Linguistic Programming (NLP) in the treatment of individuals with mild psychological and/or social problems. Multiple N=1 studies were used to examine behaviour changes in individuals receiving NLP-coaching. In this design, NLP treatment consisted of only a single NLP coaching session given by an NLP trainee*. 25 participants were asked to score their chosen problem behaviour on a 10 point rating scale at least 20 days prior and 20 days after the intervention. In addition, changes in perceived well-being were observed using the Outcome rating scale (ORS). Through visual inspection and statistical analysis of the interrupted time series using SPSS ARIMA, the effectiveness of the intervention was examined. Results show that 16 individuals (64%) improved concerning their mild psychological and/or social problems through the NLP treatment. Repeated measures ANOVA show that on average overall well being of the participants increased after treatment. We conclude that NLP-coaching can be effective in treating mild psychological and/or social problems and is able to increase perceived overall well being after one coaching session. Based on our findings and the limitations of this design, further scientific investigation of NLP is recommended.

Since the early theoretical concepts Neuro linguistic programming (NLP) has evolved from a cognitive, language oriented treatment method into an eclectic form of experiential coaching. Originally developed by Bandler and Grinder in the late '70's (Bandler & Grinder, 1975a, , 1975b; Bandler, Grinder, & Stevens, 1979; Grinder, Bandler, & Andreas, 1981), NLP was intended to help therapists acquire treatment skills comparable to those of three famous therapists of that era: Gestalt therapist Perls (1973), hypnotherapist Erickson (Erickson, 1976; Erickson & Rossi, 1980) and family therapist Satir (1964). The formulation of treatment skills was based on the modelling and specification of the language patterns and behaviours of these three therapists. In the NLP formulation of these skills, concepts from general semantics (Korzybski & Meyers, 1958), generative grammar (Chomsky, 1957) and systems theory (Bateson, 1980) were utilized. From these observations generalisations were formulated to describe mechanisms by which people maintain a world view as well as strategies ('change techniques') to change this world view and the resulting behaviour. The term 'neuro linguistic' in this context refers to the idea of mind and language being interwoven and should not be confused with the scientific endeavour to discover neural mechanisms connected to the comprehension, production and acquisition of language. From the '80's until the present day, NLP has been practiced and taught by a large number of people in various countries. A quantitative impression of the number of people actively involved in NLP can be gleaned from the number of references in Google for the search term 'nlp': 19.200.000 references, as compared with 7.470.000 references for 'cognitive behaviour therapy' and 7.070.000 references for 'psychotherapy', as shown in table 1. However, hardly any formal reporting, let alone scientific study on NLP has been generated since the '80's.

In the 30 years since 1980, NLP was transformed gradually, based on treatment and consultancy practices of thousands of practitioners of NLP. Emphasis in NLP shifted from sensory modalities to inner psychological resources, from skills to beliefs and identity (more

general attitudes) and from cognition to first person physical-sensory experience. This newly evolved type of NLP might be termed 'experiential eclectic NLP' (Hollander 2010).

Using language to manipulate thought processes in clients is a primary goal in NLP as it is in several widely accepted psychological treatment forms like Cognitive-Behavioural therapy (Dryden & Golden, 1986), Rational Emotive Therapy (Ellis & Grieger, 1977) and Acceptance and Commitment therapy (Hayes & Strosahl, 2004). In addition to this common factor, NLP has distinguished itself from these forms of therapy by a) putting a stronger emphasis on directly manipulating inner sensory representations (internal images, sounds and feeling states) to influence thought processes, by b) a more structured approach to building 'rapport' (a therapeutic relationship) and by c) protocols for the treatment of conflicting goals. Unfortunately, little research has been done on the effectiveness of NLP as a treatment method for psychological and social problems. One reason why NLP has been neglected by effectiveness research might lie in some scientific findings of over 20 years ago. Grinder and Bandler (1975) had claimed that people have a preferred ('primary') representational system (PRS) which is either visual, auditory or kinaesthetic. Back then, experimenters investigating the assumption of PRS were unable to find supportive evidence for the hypothesis that a person's PRS can be revealed by observing eye movements and their use of sensory predicates in language. After performing a literature review on existing studies regarding this topic, Sharpley concluded that little to no research supports PRS and its underlying theoretical concept (1984). Although possible methodological errors of the reviewed studies in Sharpley's article were debated in the scientific community, other researchers agreed that research findings at that time negated the theoretical formulations of PRS (Einspruch & Forman, 1985; Sharpley, 1987). The year Sharpley published his second article on PRS, namely 1987, Buckner and colleagues once more tried to experimentally evaluate this concept. They succeeded in finding statistically significant support for the visual and auditory

components but no effects for the kinesthestic part (Buckner, Meara, Reese, & Reese, 1987). Thus the rejection of NLP by the scientific community seems to be based mainly on some 20 year old studies that focused exclusively on a what was even then only a small part of the conceptual structure of NLP. More recently, a specialized form of NLP that shares most of the basic principles of NLP, and which is called Neuro Linguistic Psychotherapy (NLPt) has shown to be effective in reducing psychological difficulties and enhancing the overall experienced quality of life of participants compared to a control group (Stipancic, Renner, Schütz, & Dond, 2009). Based on these findings, it is assumed that the more recently developed, experiential eclectic approach to NLP will also be effective in treating psychological and social difficulties in clients. This study will use a single subject design to test this assumption and to close part of the gap between science and NLP (Hollander, 1999). The hypotheses in this study are that one session NLP treatment will result in a reduction of the psychological or social problem behaviour and in an increase in perceived overall well being of the participants.

A structured NLP protocol written by Drs. Jaap Hollander will be used to test these hypotheses. A global description of the content of this protocol can be found in the method section.

Method

Participants

This study was conducted in collaboration with the Institute for Eclectic Psychology in the Netherlands (IEP, "Instituut voor Eclectische Psychologie"). 25 clients, treated by NLP trainees who were at the time enrolled in an NLP training course, participated in this study. Participants were between the age of 22 and 70 (*M*= 41, *SD*=12,8). All participants were Dutch native speakers. More men than women participated in this study (14 male and 11

female). The participants in this study underwent NLP-coaching for mild psychological or social difficulties, e.g. one participant reported the problematic relationship with his parents as psychological stressor. Descriptive information for all 25 participants is shown in table two.

Material

Problem behaviour: Participants were asked to rate their psychological or social problem, which they sought solutions for on a 10 point rating scale, with ten meaning the highest possible perceived intensity of the psychological or social problem and zero representing no or almost no perception of that problem during the day. Problem behaviour as described above was measured for 20 consecutive days before and after the NLP coaching session.

Well being: Changes in participants' overall well being were assessed by the Outcome rating scale (ORS, Miller & Duncan, 2004). The ORS measures the perceived well being on an individual, interpersonal and social level. The measured levels can then be combined to form a score for overall well being. Scores can vary between zero and ten. A high score on this questionnaire is associated with a positive perceived overall feeling of well being. Participants were asked to fill in the well being scale three times, namely at the intake meeting, right before the NLP session and during the evaluation session after the 40th daily measurement.

Additionally, emotional cognitive and behavioural changes were discussed with the participants at the end of their participation, in the evaluation session. Answers to these questions were included in the dataset.

Procedure

The single subject design in this study consisted of an intake session, an NLP coaching session and a session used to evaluate the participants' psychological and social development. Participants in this study were treated by NLP trainees as part of their NLP-training. The intake session was used to collect demographic information about the participants, the purpose and structure of the study were introduced and participants were asked to fill in the well being questionnaire during the intake session. Participants' psychological difficulties were discussed and one problem was chosen by the participant as the basis of the time series measurement. Participants were asked to rate their chosen psychological or social problem every day for 20 consecutive days on the 10 point rating scale. The measurements of the first 20 days formed the data for the baseline phase. Approximately 20 days after the intake meeting, the one session NLP coaching was administered. Immediately before the session started, participants were asked to fill in the well being questionnaire for the second time. The structure of the NLP coaching session was based on a treatment protocol developed by Drs. Jaap Hollander. Although the chosen psychological or social problem could differ among participants, the composition of elements used in treatment was the same for all participants. The NLP coaching session used as treatment in this study was organized as follows:

First, participants were asked to reformulate the chosen psychological or social problem into a goal for treatment. Participants were asked to translate what they did *not* want into what they *did* want. This treatment goal was checked by the NLP trainee against 5 conditions. Condition 1 was: positive formulation. A goal such as "I want to feel less lonely" would have been rejected by the NLP trainee, whereas "I want to feel connected to other people" would have been acceptable. Condition 2 was control: the goal needed to lie within direct personal control of the participant. A goal like "I want my father to change" would be rejected by the NLP trainee, whereas a goal like "I want to be more assertive towards my

father" would be accepted. Condition 3 was testability: the goal should be testable, i.e. the participant should be able to specify in sensory terms (seeing, hearing and/or feeling) how they would know that the goal had been achieved. Condition 4 was contextualization: the context in which the participant wanted to achieve the goal needed to be specific (when, where and with whom). Condition 5 was goal ecology: secondary effects of achieving the goal should be neutral or positive in the estimation of the participant. If any of these 5 conditions were not met by a participants formulation of the goal, the NLP trainee would ask them a question or a series of questions designed to change the formulation, until it did meet the 5 conditions. All 25 participants were able to formulate a treatment goal that fulfilled these 5 conditions. Participants were then asked to visualize achieving their formulated goal as lively as possible from first person experiential position and concentrate on the associated feelings. After that, an analogy was presented by the NLP trainee, describing positive experiences the trainee had had with other clients, or in their own lives, with the NLP protocol used in this study. This was done to motivate the participant as well as to once more clarify the purpose and structure of the procedure. The next step consisted of defining the obstacle that had kept the participant from reaching his goal in the past. After that, the participant was asked to visualize himself or herself in the future as a healthy 70- 80- or 90 year old person (the participant chose the exact age). The participant was then asked to experientially step into this life phase and from this point of view imagine seeing their present self and formulate advice to overcome the present obstacle and achieve the goal formulated earlier. This procedure was adapted from Erickson's 'pseudo-orientation in time'(1980). This step was added to experientially validate the chosen obstacle. Following this, the participant was asked which psychological resource (thoughts, mental images and/or feeling states) they would need to overcome the obstacle and achieve the goal. The participant was then invited to remember and relive a moment in their life when they had experienced the chosen psychological

resource. Once the participant re-experienced the chosen psychological resource, they were invited to imagine activating this resource in themselves on several future occasions. The NLP coaching session was concluded by giving the participant the assignment to think of two things they could look forward to regarding the formulated treatment goal, every morning. The duration of this coaching session was not measured but was estimated to take between 50 and 70 minutes. No time limits set on the NLP coaching session. For more detailed information regarding the protocol used, feel free to contact Drs. Jaap Hollander (mail@iepdoc.nl). Participants were then reminded that they would have to rate their chosen psychological or social problem for the next 20 days until they would be invited for the evaluative meeting. This last get-together was used to ask participants about emotional, cognitive and behavioural changes due to the treatment and to dismiss them properly from this study.

Results

The assumption that NLP treatment would have a positive effect on the problem behaviour of the participants was tested by analysing the daily problem behaviour scores. Changes in client's daily score on their psychological or social difficulties were analysed by means of visual inspection and statistical significance testing with the help of SPSS ARIMA. ARIMA models were used because of the autocorrelation of the data points. For every client separately ARIMA (1,0,0) models were analysed, based on the suggestion made by Harrop and Velicer (1985). Figure one to four show the change in daily problem score of the first four participants before and after treatment with NLP. Graphs for the remaining 21 participants can be found in appendix A.

Based on visual inspection it can be assumed that for client 1,2,5,9,10,13,14,15,16, 17, 19, 20, 21, 22, 23, 24 and 25 there is a change in reported severity of the mild psychological

or social problem. For the remaining eight participants no observable change can be detected through visual inspection. To test whether the observed changes are statistically significant SPSS ARIMA (1,0,0) analyses, with day as independent variable and problem score as dependent variable were conducted. No transformation on the raw data was done. The results of the statistical analyses are presented in table three. The conclusions from the visual inspection are supported by SPSS ARIMA (1,0,0) for nearly all participants. The identified change of participant 9 by visual inspection did not yield a statistical significant result. As shown in table two, fifteen p-values are below the significance level of .05. Data of the interrupted time series of participants 1, 2, 5, 10, 13, 14, 15, 16, 17, 19, 20, 21, 22, 23 and 25 show a statistically significant effect of the intervention as already assumed by visual inspection. The analysis regarding participant 24 reveal a marginally significant result with p=0,054. Based on both the visual inspection and the statistical analysis it can be assumed that, the NLP intervention had a positive influence on the perceived strength of the chosen psychological or social problem for these participants. Summarizing it can be stated that for the majority of participants a reduction of psychological and social difficulties was present after the one session treatment with Neuro Linguistic Programming.

To examine changes in overall well being independent of the perceived intensity of the psychological or social problem and to test the hypothesis, that overall well being would improve after treatment with NLP, a one way repeated-measures ANOVA was conducted. The assumption of sphericity was not violated. Statistical analysis revealed a significant change in overall well being for the participants $F(1, 24) = 15$ $p < .01$ over time. Post hoc tests revealed a significant difference between measurement point one and three (p<.01) and two and three (p<.01) and a non-significant difference between measurement point one and three (p>.1). Consulting the means presented in table four, it can be concluded that the overall

well being score of the participants improved significantly after treatment, but did not differ between the two pre-treatment measurement points.

Discussion

Concerning the hypothesis that treatment with NLP will result in a reduction of the perceived intensity of the mild psychological or social problem, it can be concluded that for the majority of participants NLP treatment had in fact a positive effect on the perception of their chosen psychological or social problem. This conclusion is based on a combination of visual inspection and statistical analysis with SPSS ARIMA. In fact, of the 25 participants participating in this study, 16 showed a positive change, which translates into more than 60%. Furthermore, it can be concluded that on average participants in this study improved concerning their overall well being. They reported being better off after NLP treatment compared to two pre-treatment moments. Another important finding is that nearly every participant reported that they would recommend this type of coaching to other people with similar problems. This implies that participants were satisfied with the one session NLP treatment. All in all, the results show that even one single session of NLP coaching can help people overcome their psychological or social problems and that such a treatment method ultimately leads to a more positive feeling of well being.

In spite of these positive conclusions, we acknowledge the shortcomings of this research design. First of all, we did not use a control group. In fact, in this study participants are only treated with NLP. Therefore we are unable to show how NLP relates to other psychological treatment methods. Secondly, participants in this study were treated by NLP trainees. It might therefore have been the lack of expertise of the NLP coaches administering the treatment that resulted in the ineffectiveness of NLP for some participants in this study. Participants who showed no significant positive change in their behaviour, might have

changed if treated by a fully qualified NLP practitioner. Third, the NLP treatment in this design consisted of only one session. It is possible that an increase in the number of NLP coaching sessions might lead to a positive change in more participants. But these shortcomings should not distract however, from the fact that our results support the use of NLP as treatment method for mild psychological and social problems. Hopefully this study will help to increase the attention of the scientific community, especially of clinical psychologists seeking for innovative treatment techniques as it shows that even one single session of NLP coaching can lead to significant changes in clients' behaviour.

We advise further research to reveal the mechanisms of how and why NLP affects thinking and behaviour in certain individuals but not others.

Appendix A

Client 1

NLP Session

Client 2

NLP Session

Client 3

NLP Session

Client 4

Client 5

Client 6

Client 7
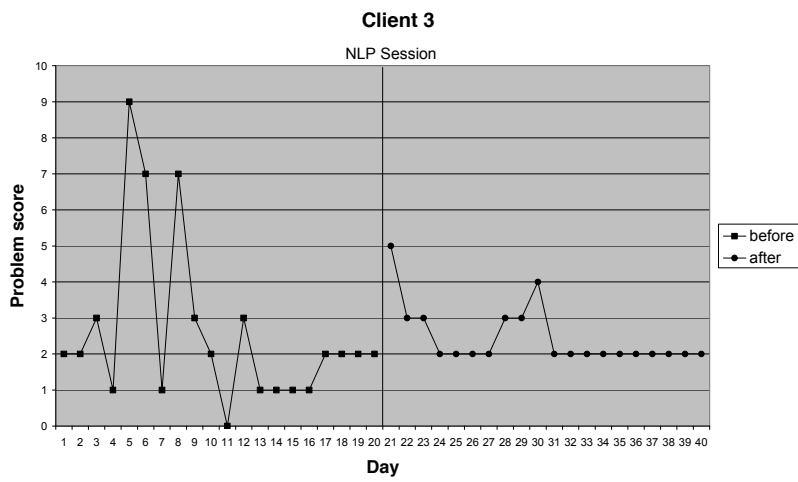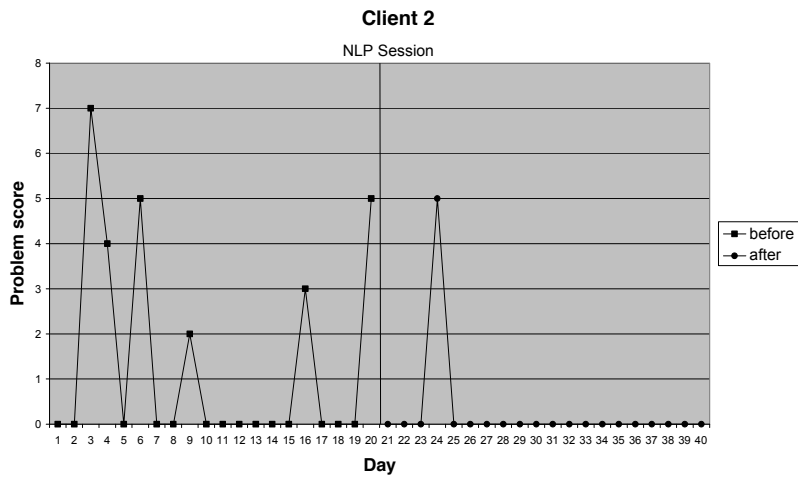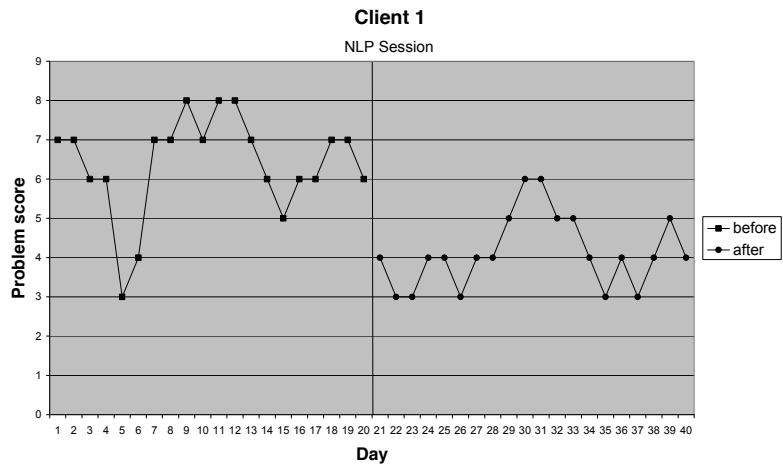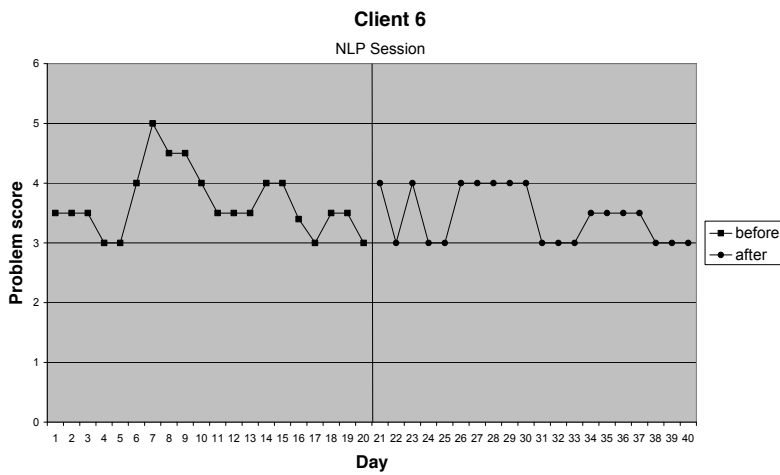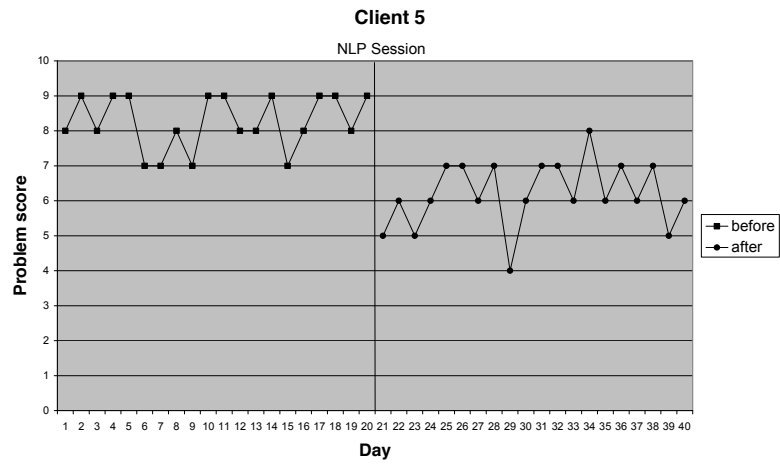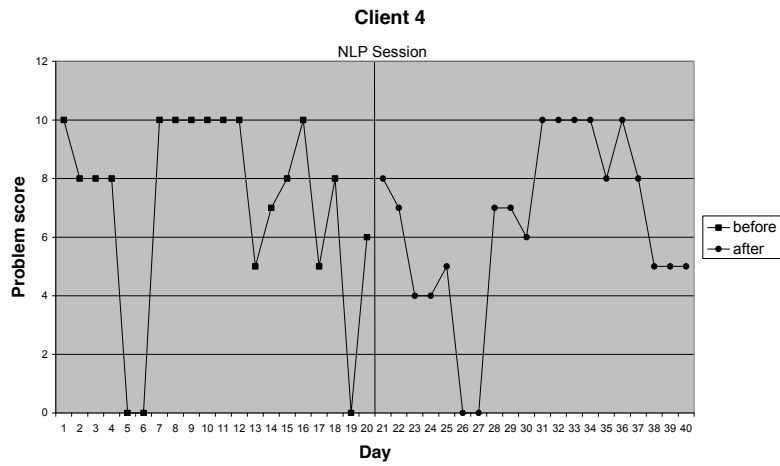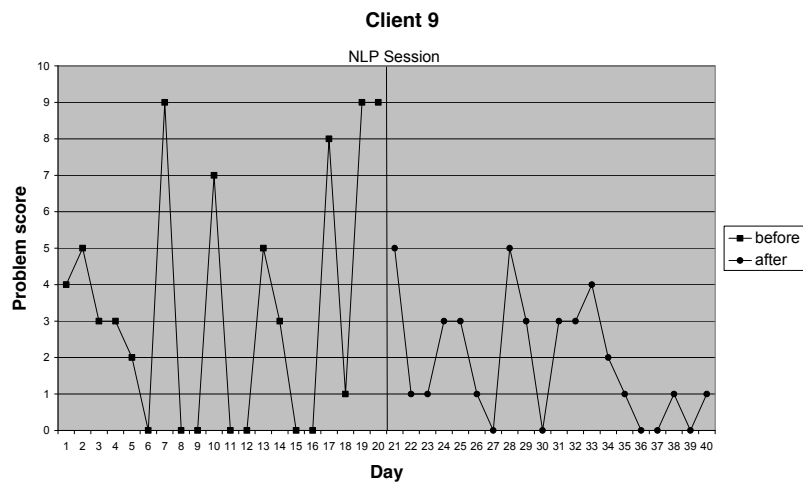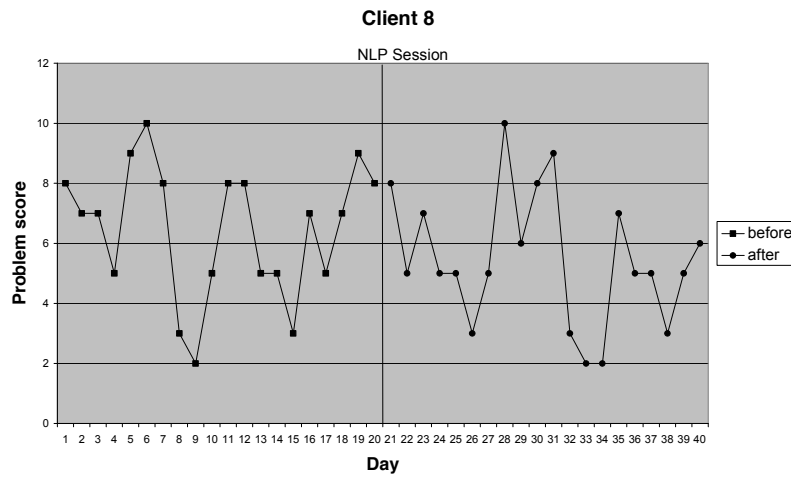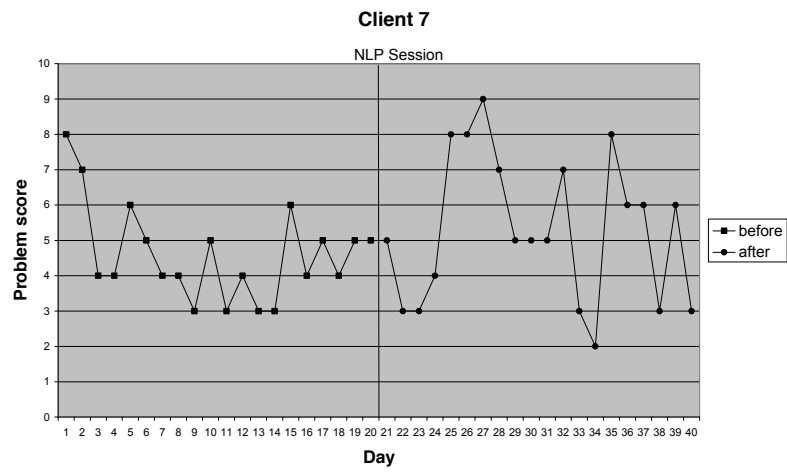
Client 8
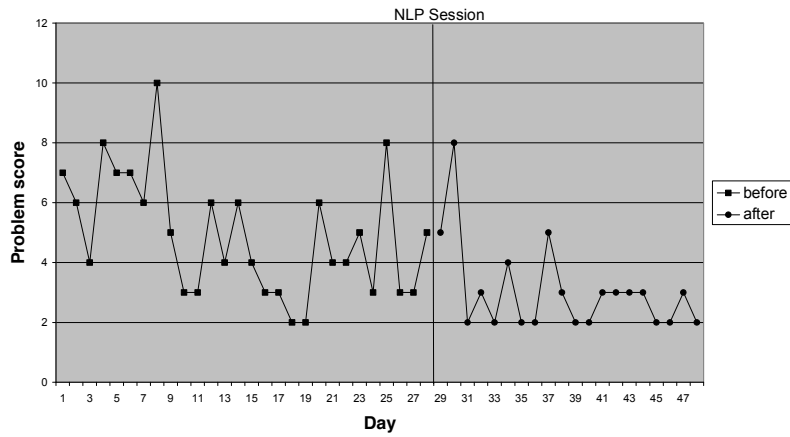
Client 9

Client 10

Client 11

Client 12

Client 13

Client 14

Client 15

Client 16

Client 17

Client 18
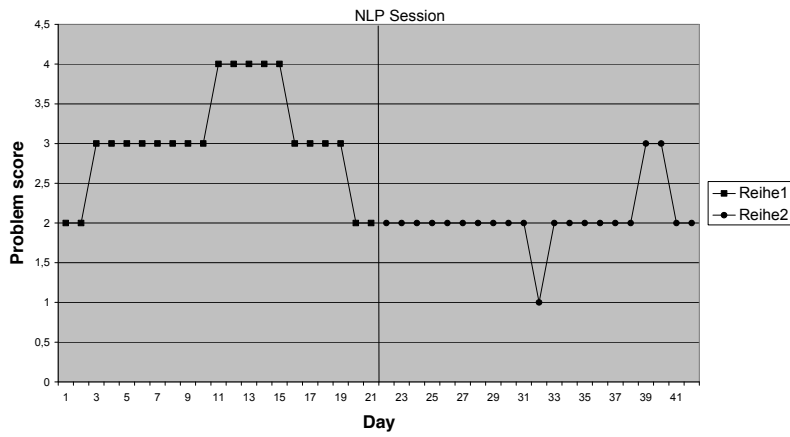
Client 19
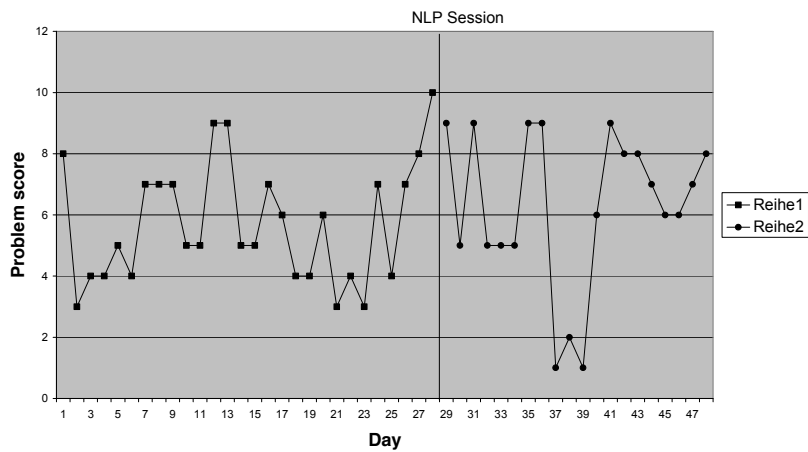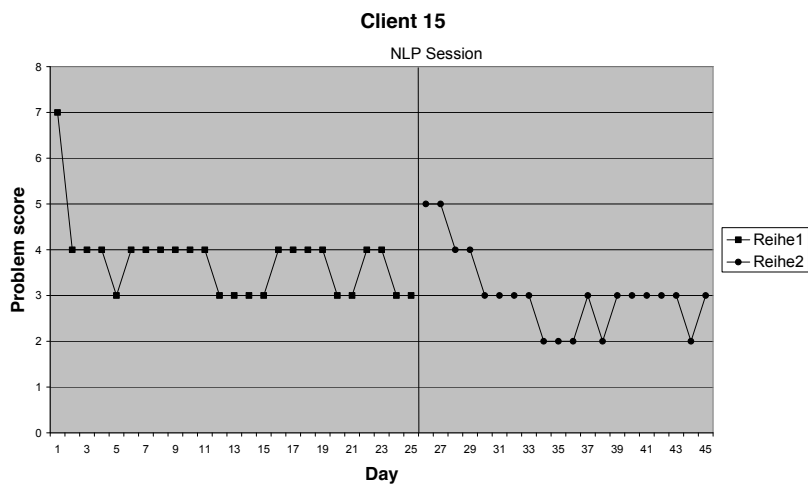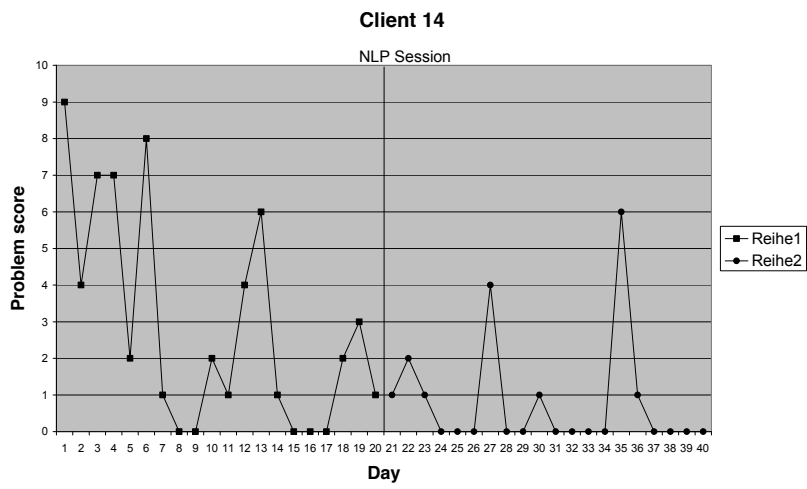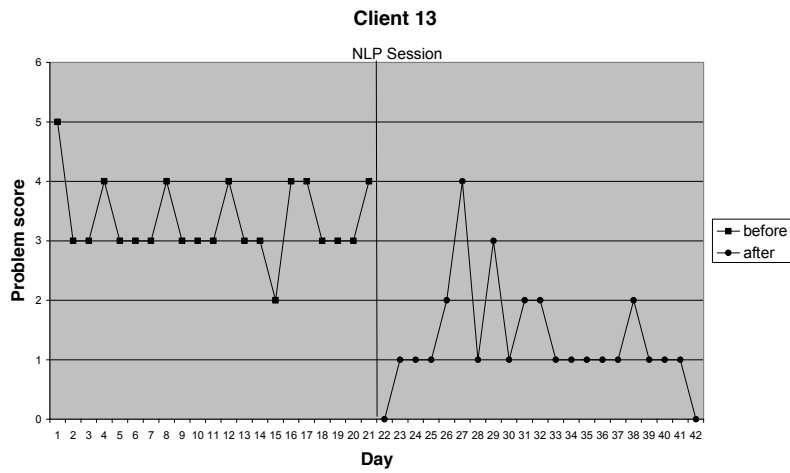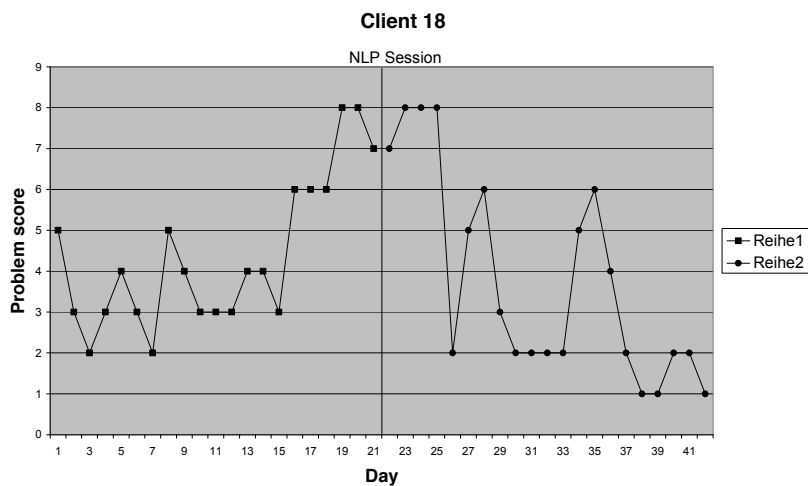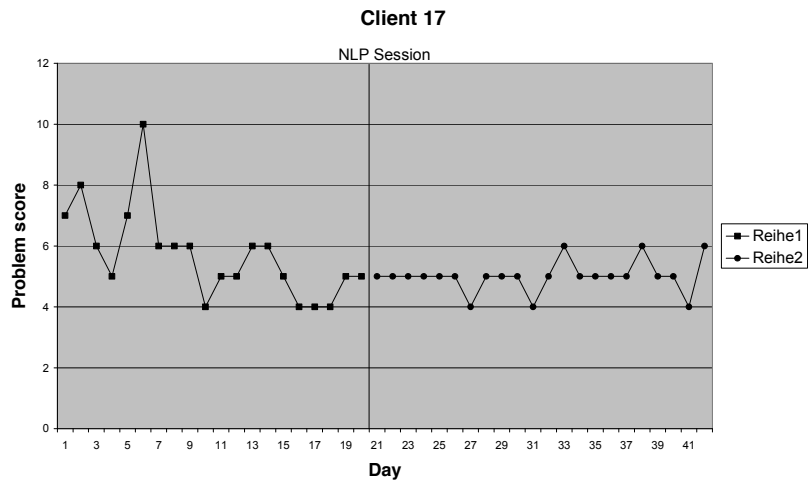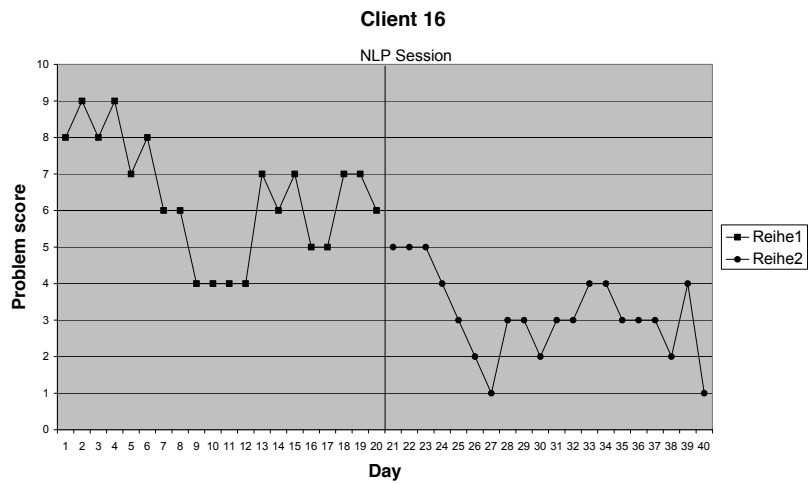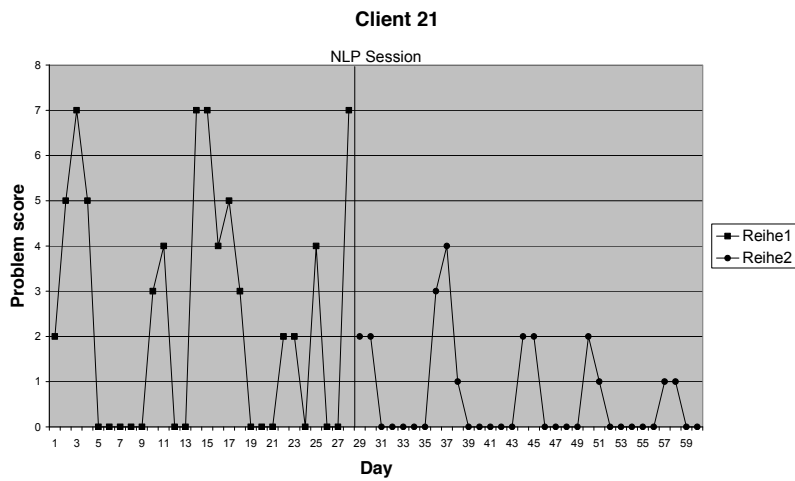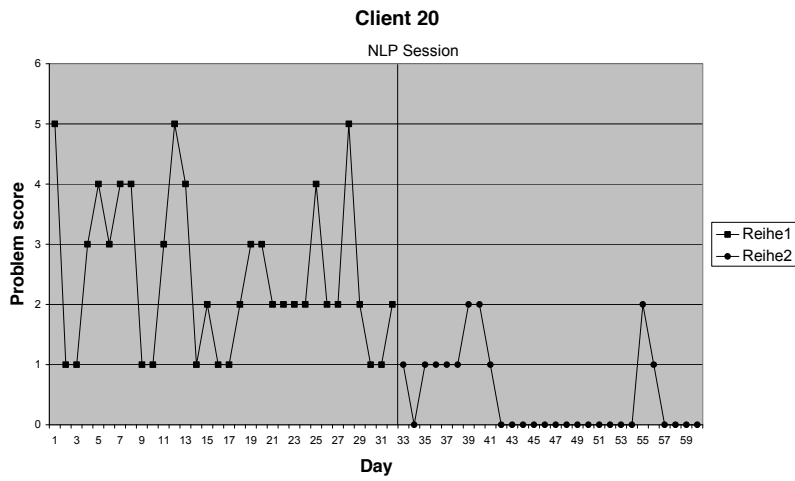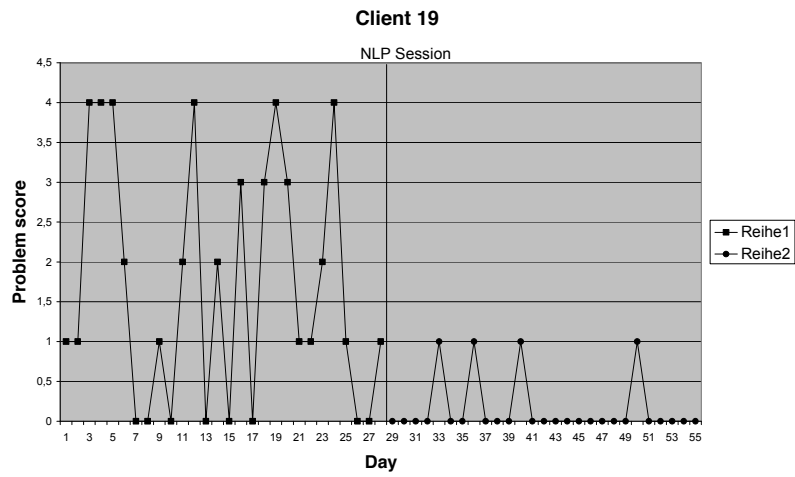
Client 20

Client 21

Client 22

Client 23

Client 24

Client 25

References

Bandler, R. and Grinder, J. (1975). The Structure of Magic. A Book about Language and Therapy. Science and Behavior Books, Palo Alto.

Bandler, R.; Grinder, J. and Erickson, M. H. (1975) Patterns of the Hypnotic Techniques of Milton H. Erickson, M.D, Grinder, DeLozier & Associates.
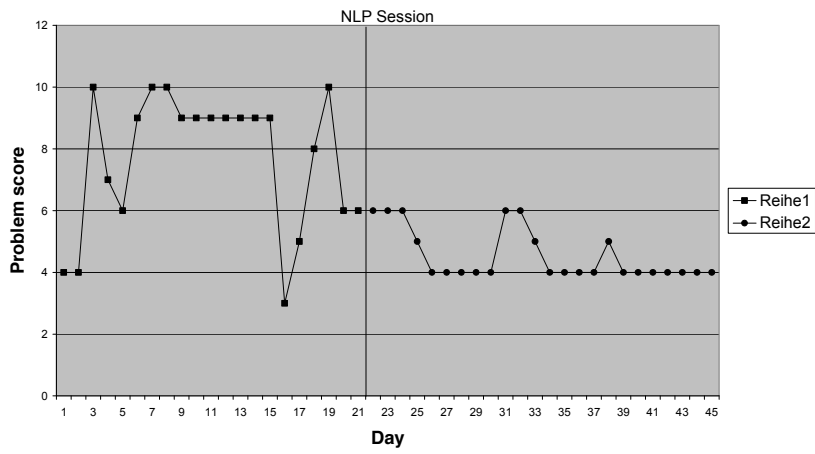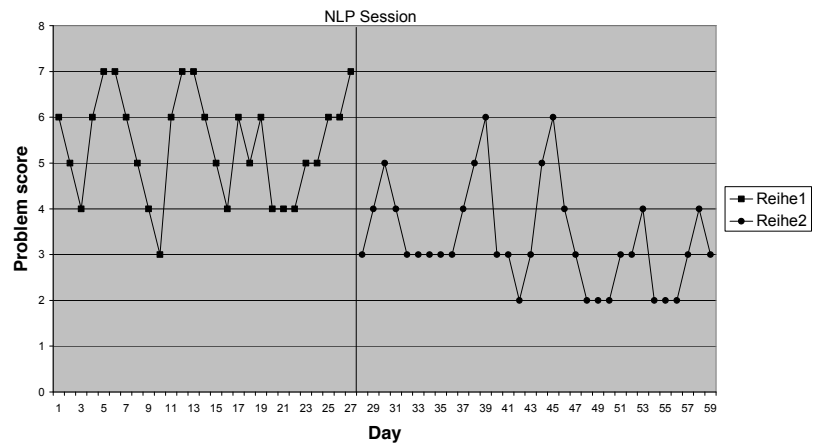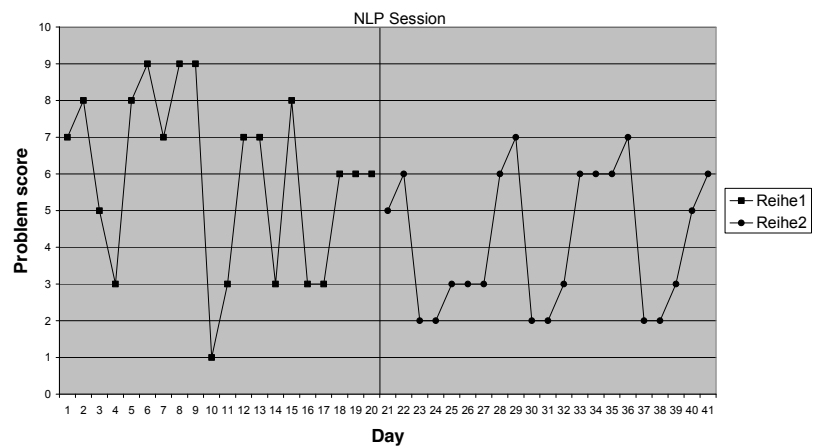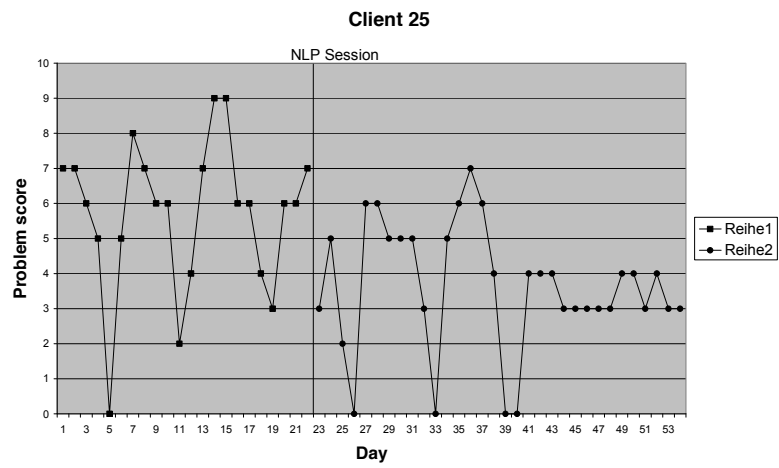
Bandler, R. and Grinder, J. (1977). Frogs into princes: Neuro Linguistic Programming, Real People Press.

Bateson, G. (1980). Mind and Nature - A Necessary Unity. Bantam Books.

Bandler, R., & Grinder, J. T., Jr. (1975a). Patterns of the hypnotic techniques of Milton H. Erickson, M.D (pp. .. dl). Cupertino, Calif: Meta Publications.

Bandler, R., & Grinder, J. T., Jr. (1975b). The structure of magic (Vol. Vol. 1: A book about language and therapy / by Richard Bandler and John Grinder. - 1975 - ISBN 08314-0044-7. Vol. 2 / by John Grinder and Richard Bandler. - 1976 - ISBN 008314-0049-8, pp. 2 dl). Palo Alto, Calif.: Science and Behavior Books.

Bandler, R., Grinder, J. T., Jr., & Stevens, J. O. (1979). Frogs into princes : neuro linguistic programming (pp. iv, 194). Moab, Utah: Real People Press.

Bateson, G. (1980). Mind and nature : a necessary unity (pp. 251). London: Fontana etc.

Buckner, M., Meara, N. M., Reese, E. J., & Reese, M. (1987). Eye movement as an indicator of sensory components in thought. *Journal of Counseling Psychology, 34*, 283-287.

Chomsky, N. A. (1957). Syntactic structures, *Janua linguarum ; 4* (5th printing Aanvraaginfo: beschikbaar Aanvraagnummer: Tz c 5163 nr.4 Locatie: Magazijn CB, Erasmuslaan 36 4th printing Aanvraaginfo: beschikbaar Aanvraagnummer: Ph.In 9746 Locatie: De Verdieping CB, Erasmuslaan 36 Plaatsingscode: 396 Repr Aanvraaginfo: Beschikbaar, De Verdieping Aanvraagnummer: IAT 3 Locatie: De Verdieping CB, Erasmuslaan 36 Plaatsingscode: G Aanvraaginfo: uitgeleend ed., pp. 116). The Hague: Mouton.

Dryden, W., & Golden, W. L. (1986). Cognitive-behavioural approaches to psychotherapy (pp. XII, 392). London: Harper & Row.

Einspruch, E. L., & Forman, B. D. (1985). Observations concerning research literature on neuro-linguistic programming. *Journal of Counseling Psychology, 32*, 589-596.

Ellis, A., & Grieger, R. M. (1977). Handbook of rational-emotive therapy (pp. ... dl). New York: Springer.

Erickson, M. H. (1976). *Hypnotic Realities: the Induction of Clinical Hypnosis and Forms of Indirect Suggestion*: Irvington Publishers.

Erickson, M. H., & Rossi, E. L. (1980). The collected papers of Milton H. Erickson on hypnosis (pp. 4 dl). New York, N.Y.: Irvington.

Grinder, J. T., Jr., Bandler, R., & Andreas, C. (1981). Trance-formations : neuro-linguistic programming and the structure of hypnosis (pp. 255). Moab, Utah: Real People Press.

Harrop, J. W., & Velicer, W. F. (1985). A comparison of alternative approaches to the analysis of interrupted time-series. Jan 1985. *Multivariate Behavioral Research, 20*, 27-44.

Hayes, S. C., & Strosahl, K. D. (2004). A practical guide to acceptance and commitment therapy (pp. XVI, 395). New York, NY: Springer.

Hollander, J. (1999). NLP and Science: Six recommendations for a better relationship. *NLP World, 6*, 45-76.

Instituut voor Eclectische Psychologie [Electronic Version] from http://www.iepdoc.nl/.

Korzybski, A., & Meyers, R. (1958). Science and sanity : an introduction to non-aristotelian systems and general semantics, *International non-aristotelian library* (4th / with new preface by Russel Meyers

Repr Aanvraaginfo: beschikbaar ed., pp. xc, 798). Lakeville, CT: International Non-Aristotelian Library Publishing Company.

Miller, S. D., & Duncan, B. L. (2004). The Outcome and session Rating Scales.   Retrieved 1

    January, 2008, from http://124.254.10.21/scott/node/6

Perls, F. S. (1973). The Gestalt approach and Eye witness to therapy (pp. xv, 206). Palo Alto,

    CA: Science and Behavior Books.

Satir, V. M. (1964). Conjoint family therapy : a guide to theory and technique (pp. XII, 196).

    Palo Alto, Calif.: Science and Behavior Books.

Sharpley, C. F. (1984). Predicate matching in NLP: A review of research on the preferred

    representational system. *Journal of Counseling Psychology, 31*, 238-248.

Sharpley, C. F. (1987). Research findings on neurolinguistic programming: Nonsupportive

    data or an untestable theory? *Journal of Counseling Psychology, .34*, pp.

Stipancic, M., Renner, W., Schütz, P., & Dond, R. (2009). Effects of Neuro-Linguistic

    Psychotherapy on psychological difficulties and perceived quality of life. *Counselling

    and Psychotherapy Research, 10*, 39 - 49.

Table 1

Approximate Number of References in Google for NLP and other search terms

Search Term	Approximate Number of References in Google*
"nlp"	19.200.000
"psychotherapy"	7.470.000
"cognitive behaviour therapy**"	7.070.000
"rational emotive therapy"	184.000

Note 1: Generated on May 7th, 2010

Note 2: Results for American spelling (cognitive behavior therapy) were added to results for

English spelling (cognitive behaviour therapy).

Table 2.

Descriptive information for each participant

Participant number	Level of education*	Gender	Age
1	University	male	27
2	Higher professional education (HBO)	male	22
3	Higher professional education (HBO)	female	22
4	Higher professional education (HBO)	male	53
5	Higher professional education (HBO)	male	25
6	Higher professional education (HBO)	male	48
7	Higher professional education (HBO)	male	33
8	Intermediate professional education (MBO)	female	30
9	Higher professional education (HBO)	female	43
10	University	male	37
11	Higher professional education (HBO)	male	.
12	Higher professional education (HBO)	male	65
13	Intermediate professional education (MBO)	female	70
14	Higher professional education (HBO)	male	44
15	Higher professional education (HBO)	male	48
16	University	female	58
17	Higher professional education (HBO)	female	52
18	University	male	42
19	University	female	34
20	Higher professional education (HBO)	male	36
21	Higher professional education (HBO)	male	49
22	Intermediate professional education (MBO)	female	35
23	Higher professional education (HBO)	female	40
24	Higher professional education (HBO)	female	32
25	Higher professional education (HBO)	female	37

Note. Level of education (MBO, HBO, University) is based on the Dutch education system.

Table 3.

Results of the ARIMA (1,0,0) analyses.

Participant number	t	p-value
1	-2,315	0,026
2	-2,487	0,018
3	-1,204	0,236
4	-0,26	0,796
5	-4,665	0,000
6	-1,563	0,127
7	0,023	0,982
8	-1,354	0,184
9	-1,592	0,120
10	-4,78	0,000
11	-1,128	0,266
12	0,771	0,445
13	-6,774	0,000
14	-3,436	0,001
15	-3,313	0,002
16	-5,092	0,000
17	-2,117	0,041
18	-0,87	0,389
19	-3,768	0,000
20	-5,484	0,000
21	-2,330	0,023
22	-3,909	0,000
23	-4,441	0,000
24	-1,985	0,054
25	-2,311	0,025

Table 4.

Mean scores and standard deviation of well being scores.

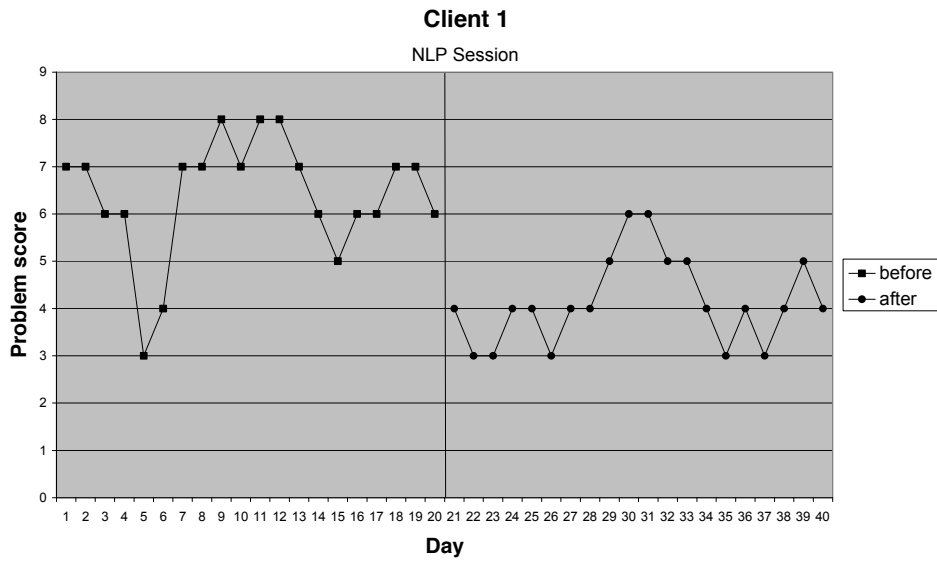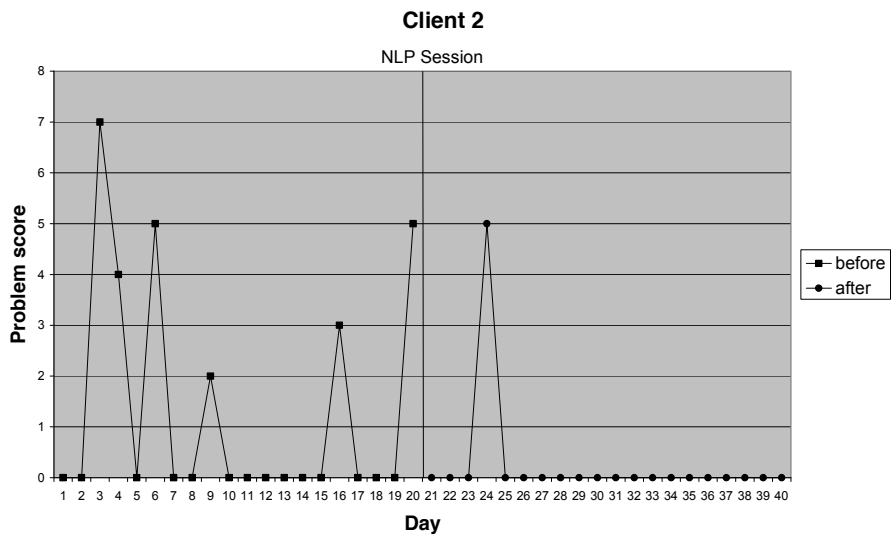| Measurement point	Mean	Std. Error
Intake	6,112	1,52
Before treatment	6,316	1,41
20 days after treatment	7,162	1,40

Figure 1. Daily problem score of client 1 before
and after NLP treatment.

Figure 2. Daily problem score of client 2 before
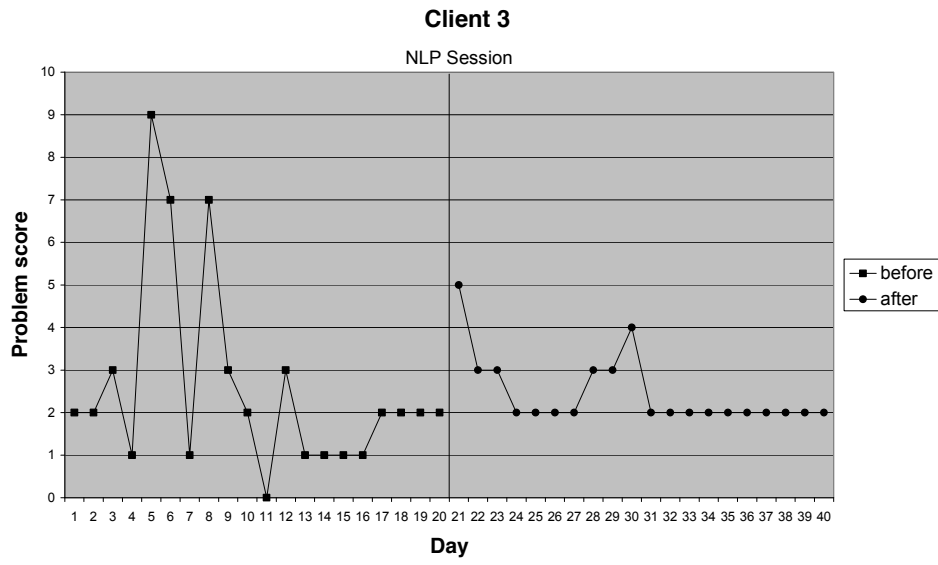and after NLP treatment.

Client 3

Figure 3. Daily problem score of client 3 before
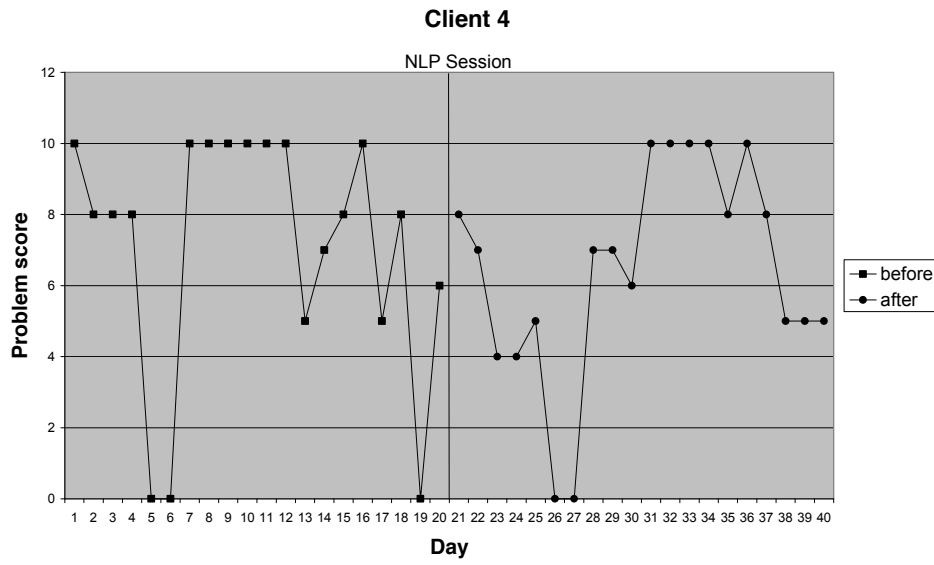and after NLP treatment.

Figure41. Daily problem score of client 4 before
and after NLP treatment.

Jaap Hollander is a psychologist working for the Institute for Eclectic Psychology (IEP). He graduated in clinical psychology from the University of Groningen in 1976. He works as a trainer, coach and is the head of the IEP research department.

Oliver Malinowski is a BSc in clinical psychology. At the moment he is finishing the research master of behavioural science and the master clinical psychology at the Radboud University Nijmegen, the Netherlands. Furthermore, he is working as a research assistant at the Institute of Eclectic Psychology (IEP) in order to evaluate effectiveness and efficacy of NLP coaching.