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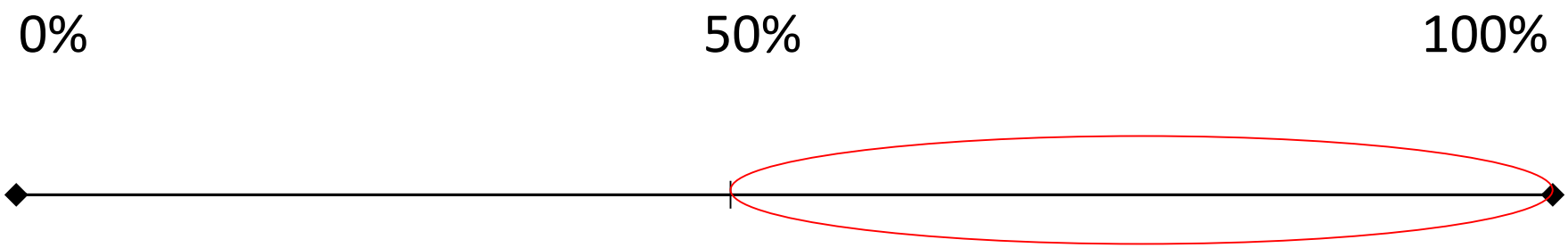
Why, when and how do patients change? Identifying and predicting progress and outcome in psychotherapy

Wolfgang Lutz
(University of Trier)
http://www.kpplutz.uni-trier.de

Better-than-average Effect (BTA)

- Therapists estimate themself on the 80th percentil.
- Nobody saw himself/herself below the 50th percentile.

An average engineer rated his performance to be at the 78th percentile (Meyer, 1980)



Walfish, McAlister, O'Donnell and Lambert (2012)
Hannan, Lambert, Harmon, Nielsen, Smart, Shimokawa, *et al.* (2005)

Statement

- Psychotherapy Research could/should become part of clinical practice in order to support the delivery of psychotherapy. (Treatment tracking)
- Modern tools developed in the context of eMental Health/Feedback research can help to realize this.
- But the decision about the clinical validity of the so delivered additional information has to stay in the hands of a scientifically well-trained therapist.
- Replication: Several datasets could be used for validation – we have to deal with large patient and setting variation.

When, how and why do people change through psychological interventions -- Human Change Through Psychotherapy Program (HCTPP)

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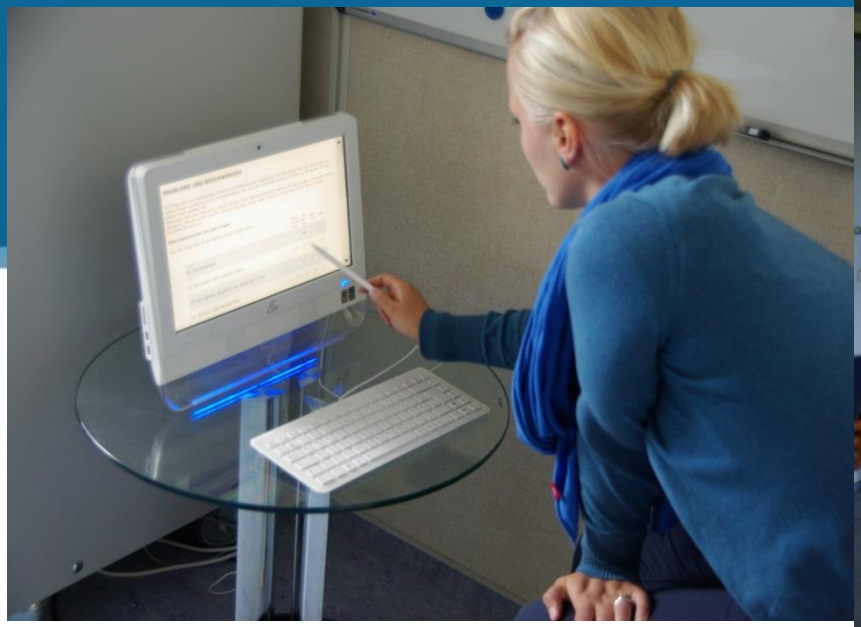
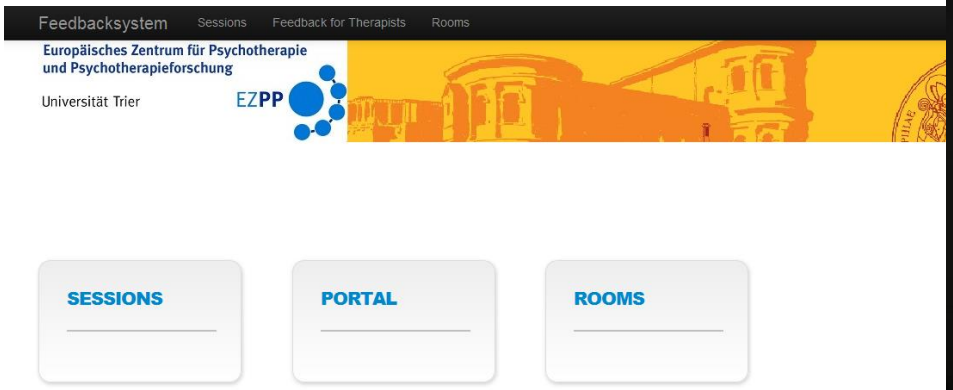
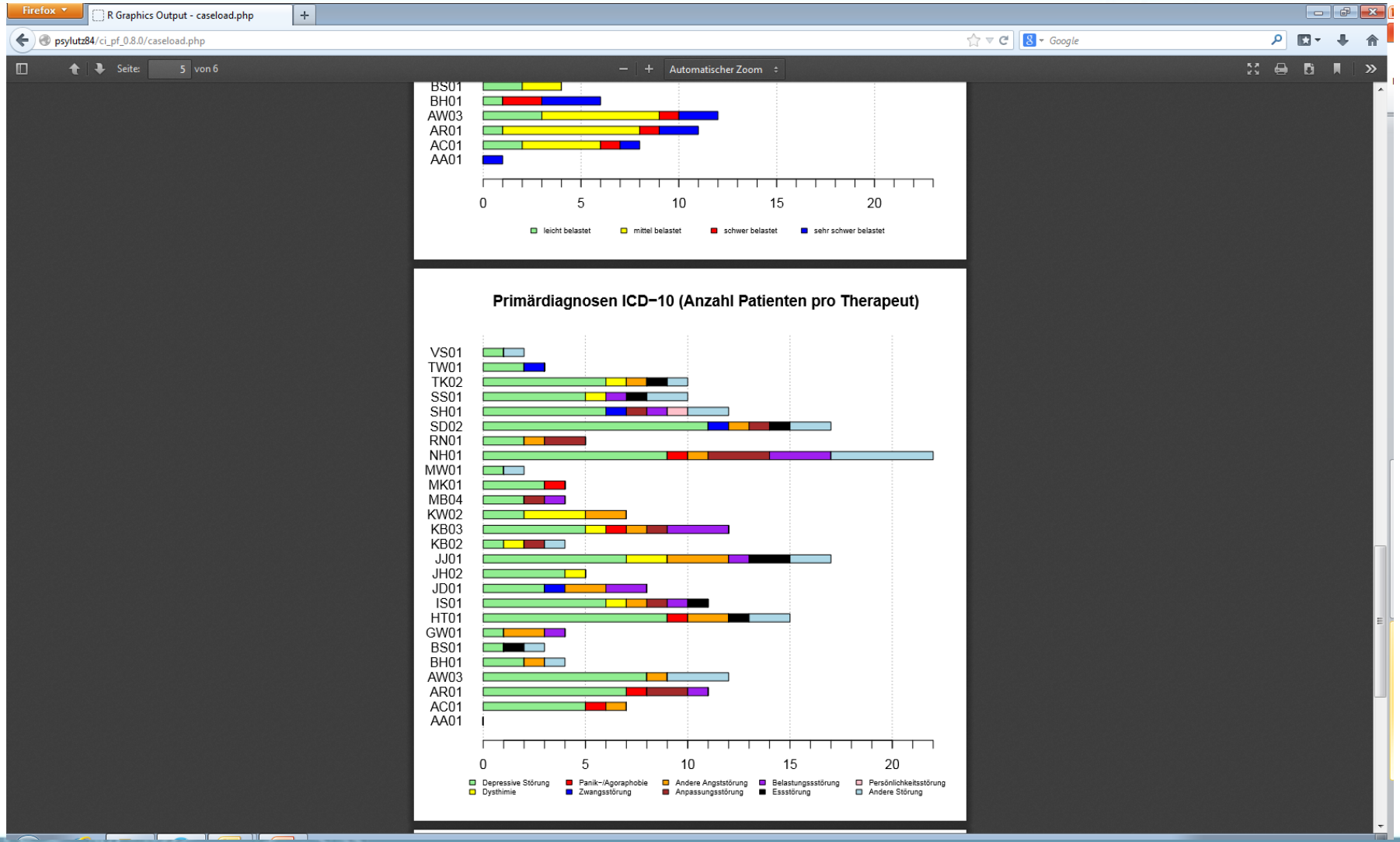
- Research topics within the Clinical Psychology and Psychotherapy Section at the University of Trier /European Center for Psychotherapy and Psychotherapy Research
- From the macro- to the micro-level of change in psychotherapy
  - 1. macro-level:
    - Patient or client-focused psychotherapy research/prediction of change/feedback
  - 2. meso-level:
    - Discontinous treatment courses and underlying processes/factors
  - 3. micro-level:
    - Therapeutic micro-strategies
- Outpatient center and clinical training program, PhD program „Psychotherapy Research“ and research oriented focus in the master program „Clinical Psychology“



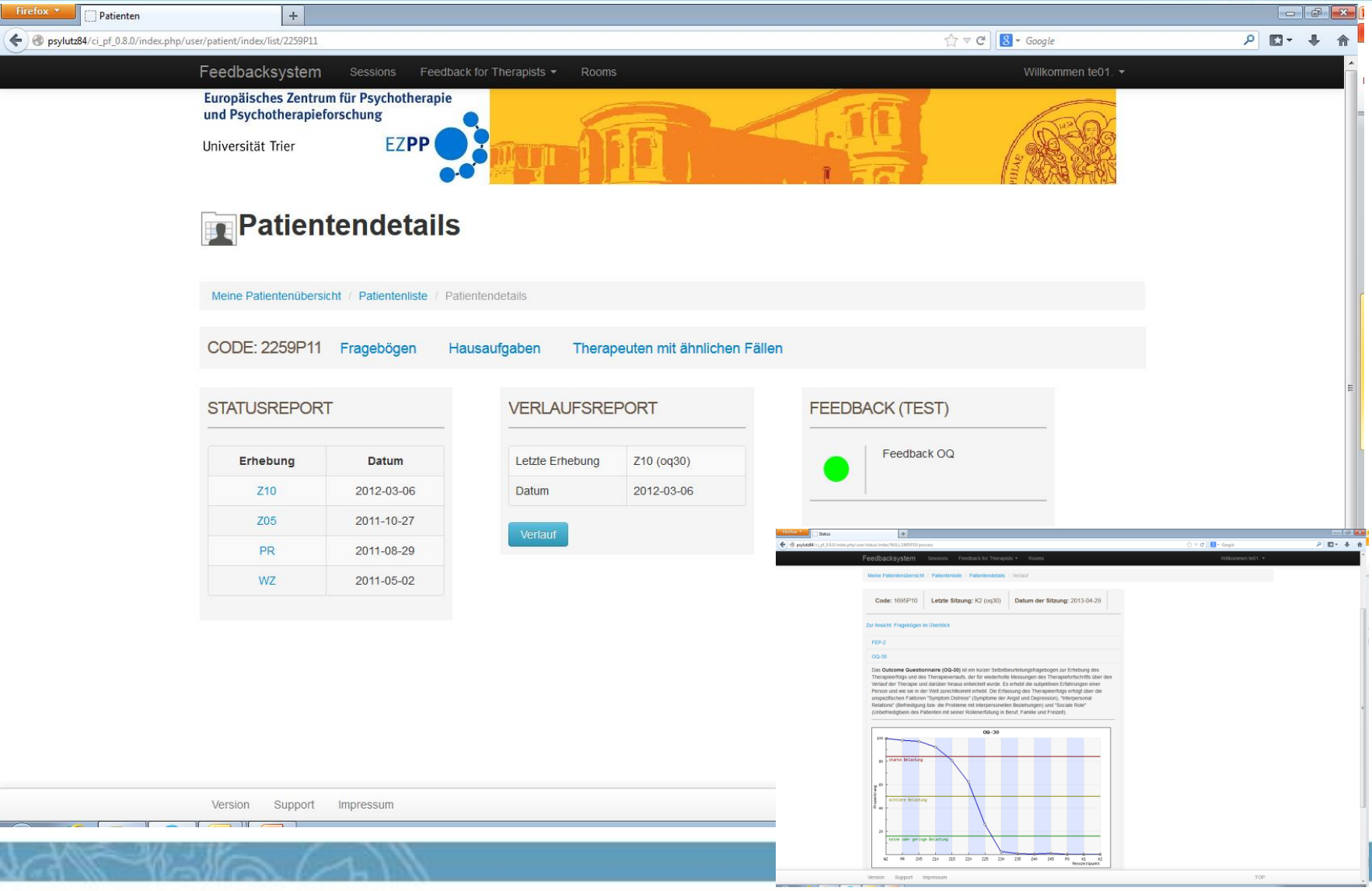

Feedbacksystem
Sessions
Feedback for Therapists
Rooms
Europäisches Zentrum für Psychotherapie
und Psychotherapieforschung
Universität Trier
EZPP
SESSIONS
PORTAL
ROOMS


PHILIPS

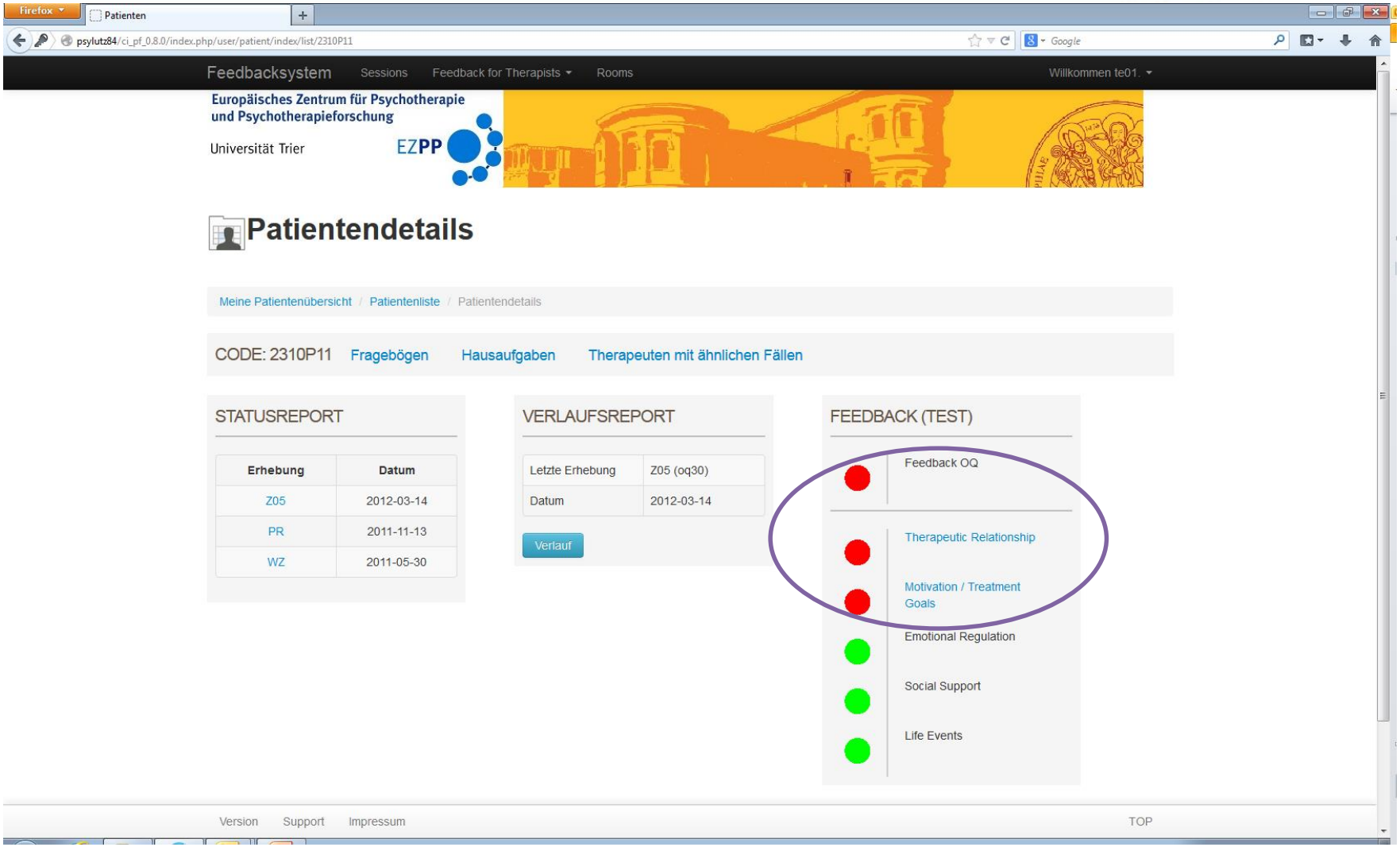
Caseloads per Therapist



Therapieverlauf



Feedback Portal (signal client)



Outline

1. A 3-level research project on individual patient change and patient - focused research
2. Therapist effects, Disaggregation
3. Macro-level: New projects and applications, NN
4. Meso-level: Shapes of change and sudden gains and losses
5. Discussion

What does it mean?

How to improve it?

How to extend it?

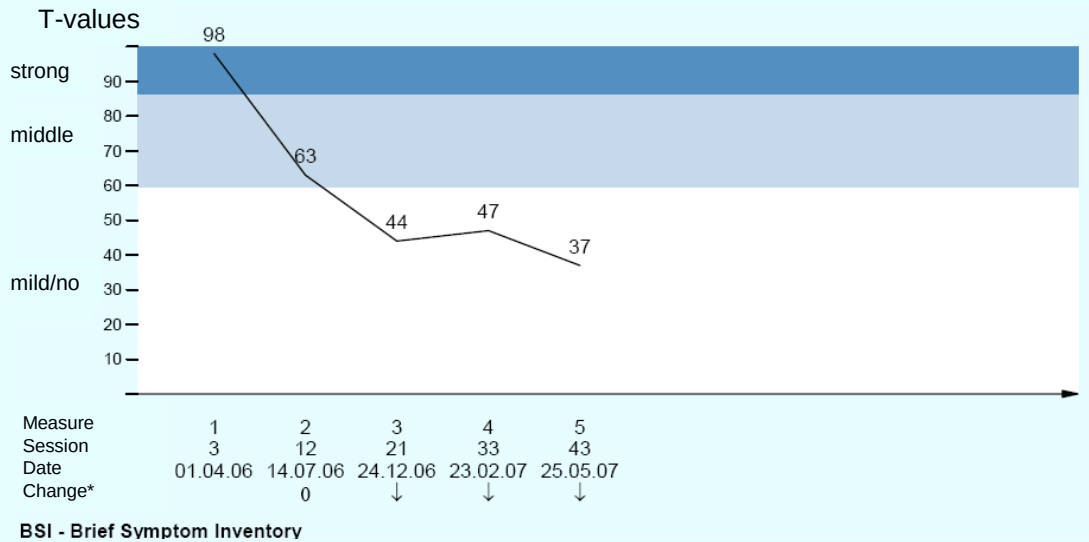
How to deal with different shapes and discontinuity?

What makes a difference?

Evaluation of the TK-Project

- Pilot project „Quality monitoring in outpatient psychotherapy“ of the Techniker Krankenkasse
- Three regions of Germany: Hessen, Westfalen-Lippe and Südbaden.

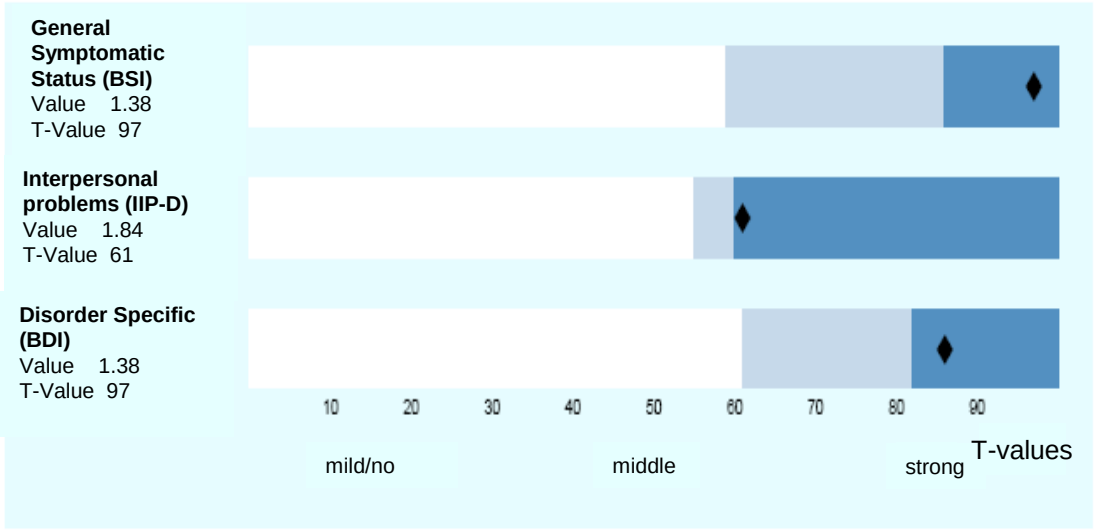
How does your patient asses his/her global psychological distress?



BSI - Brief Symptom Inventory

The GSI (Global Severity Index) measures the general symptomatic status. It merges the itensity of perceived burden in all of the 53 symptoms.

How stressful does your patient experience the problem?



> Duration 2005-2010 (IG: modified review system, Feedback, Long-term, structured diagnostic IDCL)

> Evaluation by WGs Trier (Lutz) and Mannheim (Wittmann)

> Full report see website of the TK

Description of the sample

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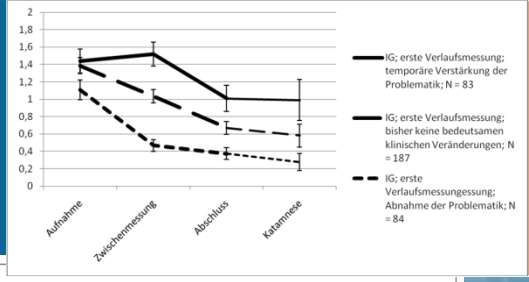
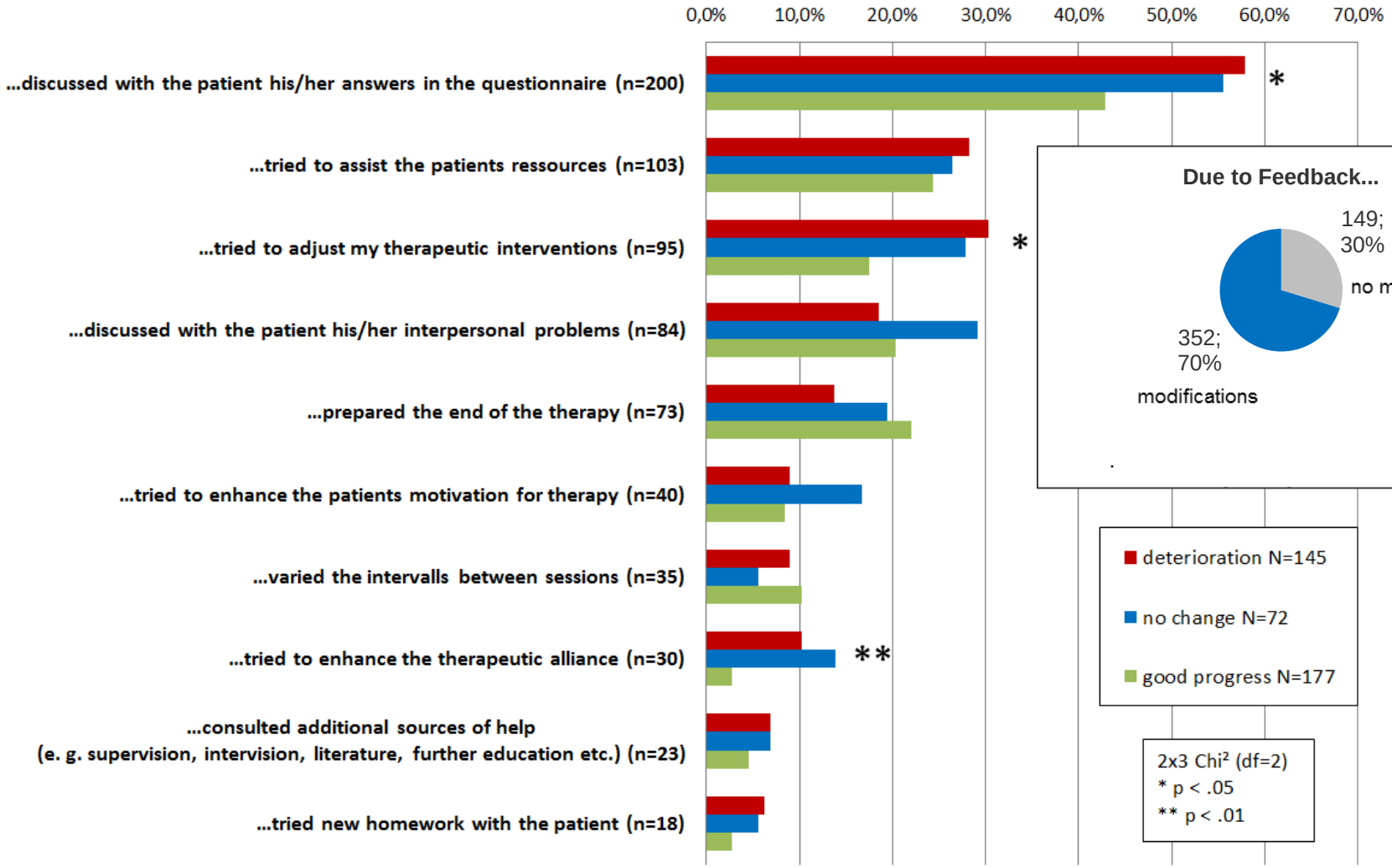
	N	age *M (SD)*	female *N (%)*	male *N (%)*
IG	1060	40,2 (11,3)	716 (67,5%)	344 (32,5%)
CG 1	614	41,5 (11,0)	432 (70,4%)	182 (29,6%)
CG 2	33210	41,2 (11,6)	23592 (71,0%)	9618 (29,0%)
CG 3	27563	40,6 (11,2)	19852 (72,0%)	7711 (28,0%)
NP	2778	42,4 (11,6)	1937 (69,7%)	841 (30,3%)

	IG	CG	NP	CG2	CG3
CBT	716 67,5%	413 67,3%	1599 57,6%	16350 49,2%	11166 40,5%
PD	329 31,0%	197 32,1%	1145 41,2%	15763 47,5%	14586 52,9%
PA	15 1,4%	4 0,7%	34 1,2%	1097 3,3%	1811 6,6%
Total	1060 100,0%	614 100,0%	2778 100,0%	33210 100,0%	27563 100,0%

What do therapists do with feedback? - depending on feedback type



Due to the feedback, I... (multiple choices possible; 701 responses on N = 394 patients)



Patients´ evaluations of outcome monitoring

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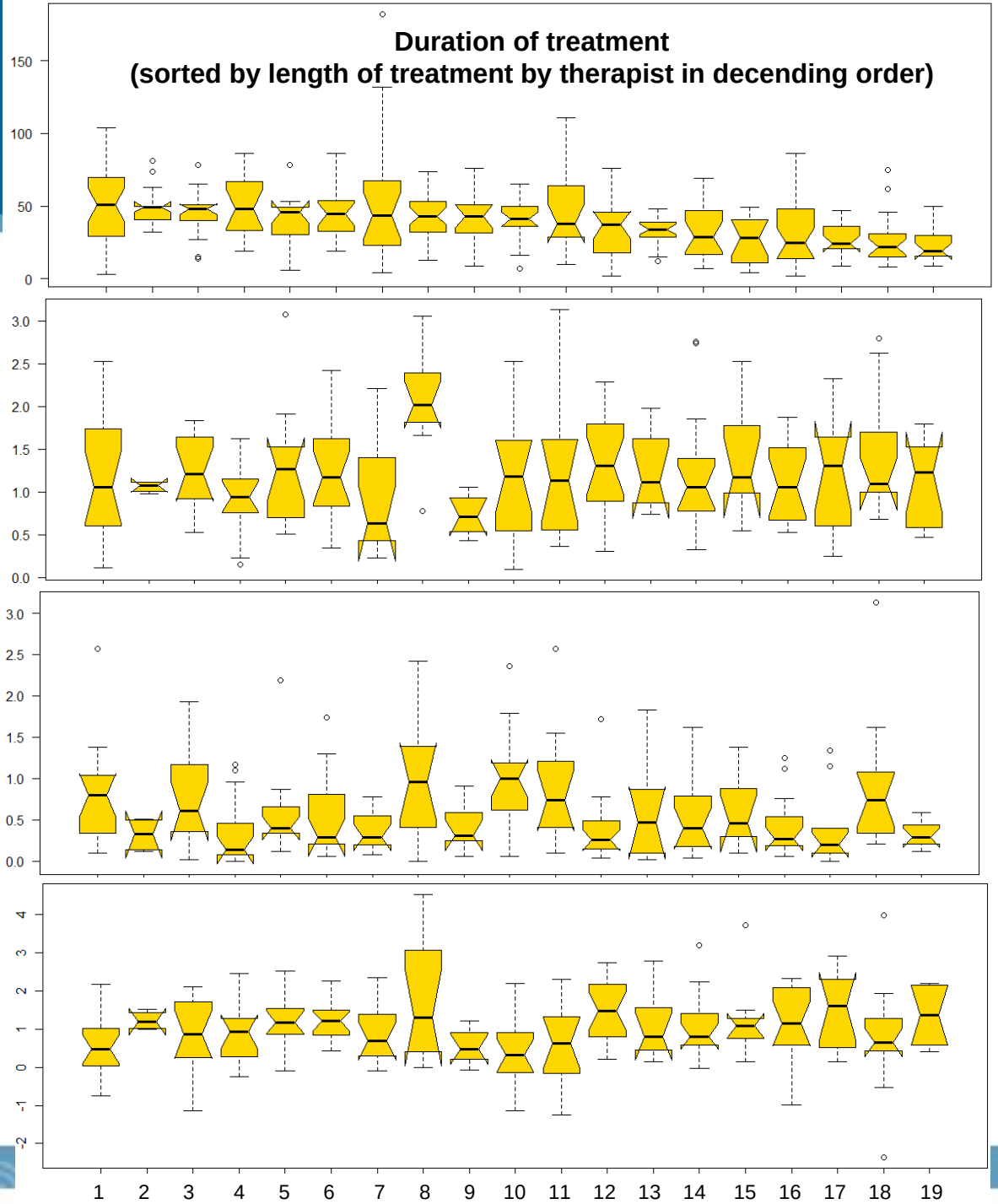
Question	*n*	Completely right	Rather right	neither / nor	Rather wrong	Completely wrong
I like the idea of having a project monitoring the quality of outpatient psychotherapy.	597	374 (62,6%)	177 (29,6%)	41 (6,9%)	3 (0,5%)	2 (0,3%)
		92.2%			**0.8%**	
I find it important to monitor the results of psychotherapeutic treatments.	597	399 (66,8%)	156 (26,1%)	30 (5,0%)	8 (1,3%)	4 (0,7%)
		92.9%			**2.0%**	
The time I needed to answer the questions was appropriate.	597	389 (65,2%)	181 (30,3%)	14 (2,3%)	12 (2,0%)	1 (0,2%)
		95.5%			**2.2%**	

Lutz, Böhnke, Köck, Rubel, 2011,2012,2013



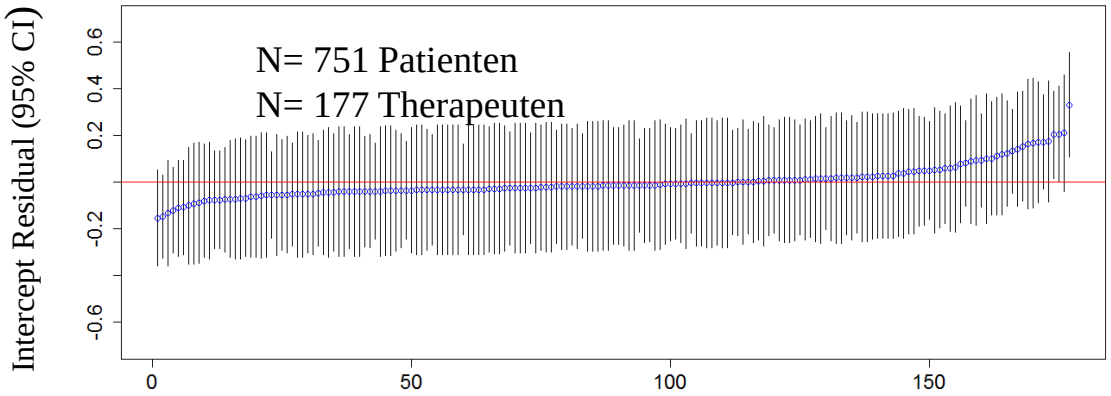
BSI: Symptoms at the beginning

BSI Symptoms after therapy

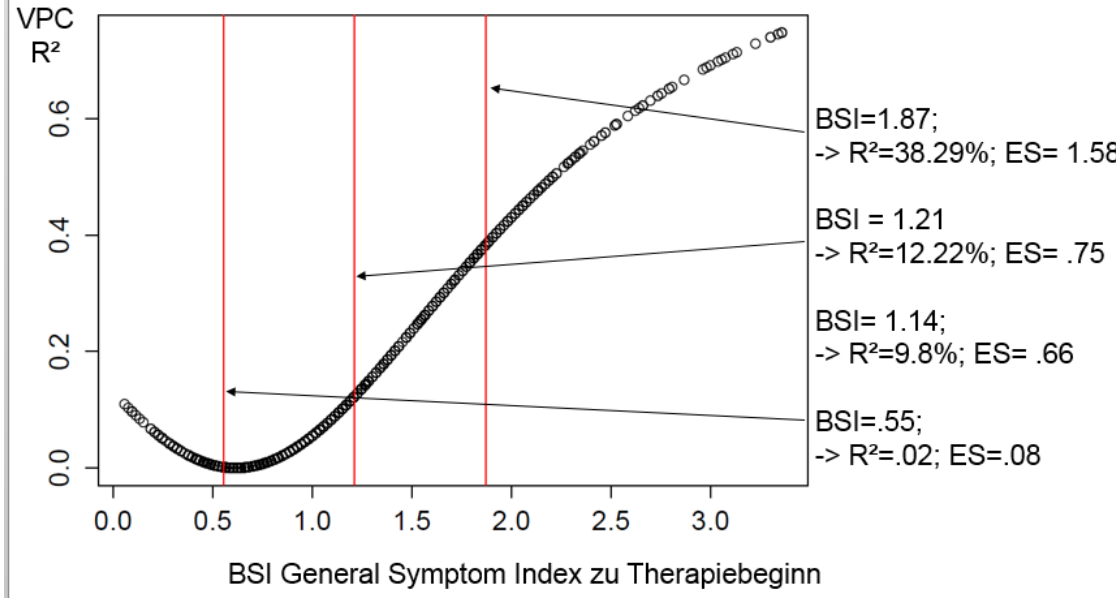
Effect size Pre-Post

Therapist Effects on Treatment Length

Therapist effect on outcome (corrected after initrial impairment); 9.8%, d=.66



Therapist ranked from most to least effective



Multilevel-Model
Saxon & Barkham , 2012, JCCP.;
Baldwin & Imel, 2013

Level 1:$Symptoms_{ij} = \beta_{0i} + \beta_{1i}*Symptoms\_pre_{ij} + e_{ij}$

Level 2:$\beta_{0i} = \gamma_{00} + r_{0i'}$; $\beta_{1i} = \gamma_{10} + r_{1i}$

Completer and Study Sample

Completer Sample

$N_{patients}$ = 751

$N_{therapists}$ = 177

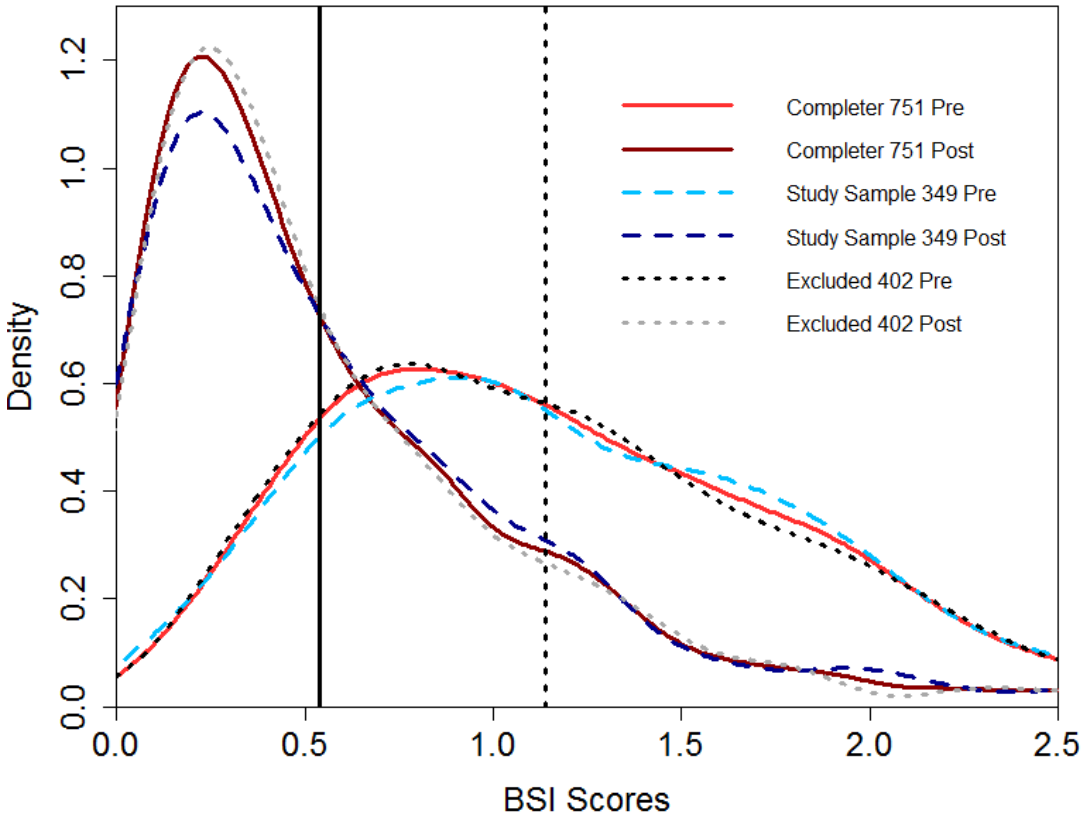
Study Sample requirement

- Diagnoses
- Early alliance
- Early feedback
- 5 patients per therapist

Study Sample

$N_{patients}$ = 349

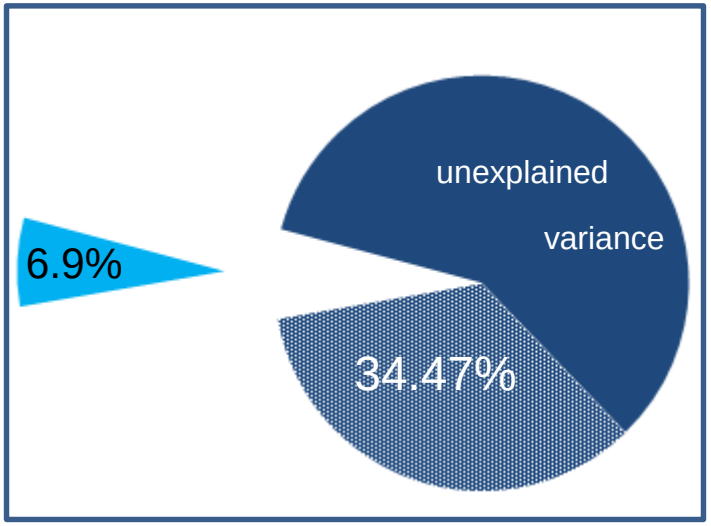
$N_{therapists}$ = 44



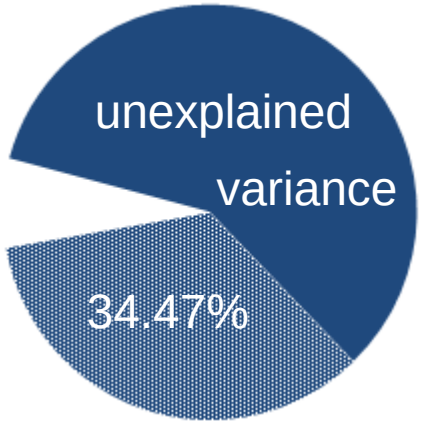
Therapist effect on treatment outcome
Study Sample: N = 349

Therapist effect
Level 2

Total Variance



Patient variance
Level 1



Level 1 predictors:

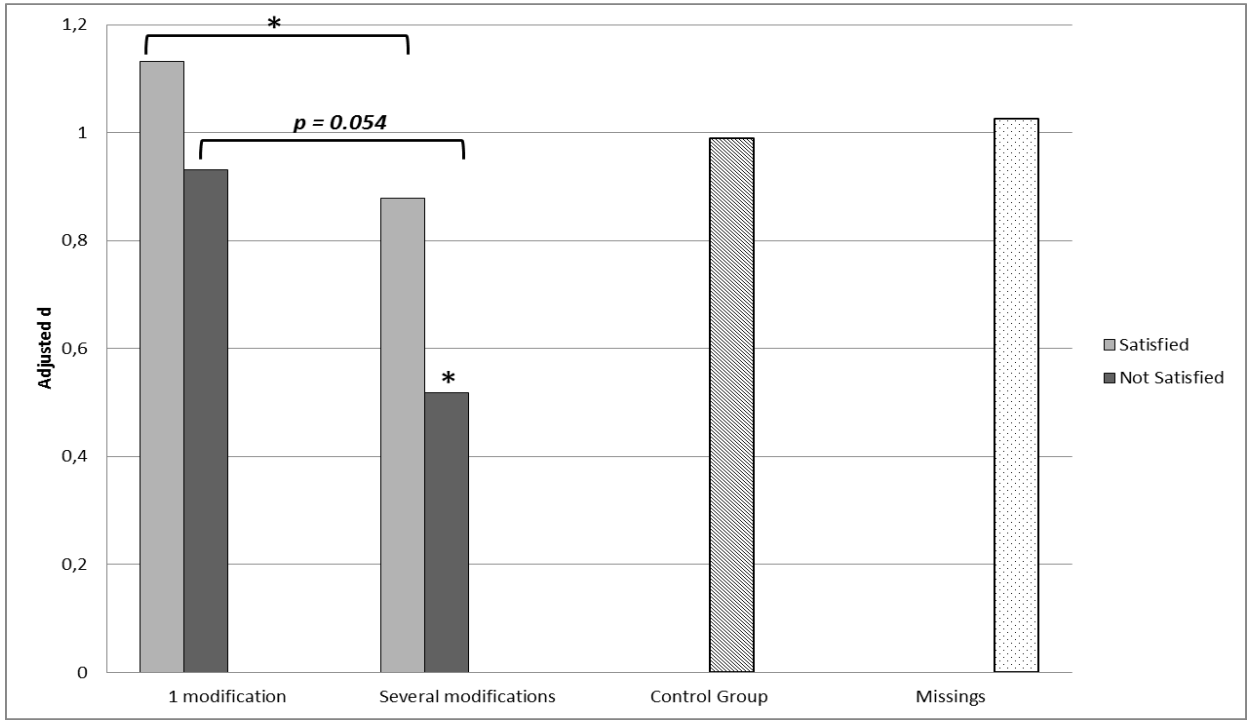
- Initial impairment (BSI_{pre})
- Early alliance (HAQ_{pre})
- Number of diagnoses
- Early feedback

Therapist and patient attitude towards and usage of feedback

Amount of modifications due to Feedback

Attitude towards feedback

How satisfied are you with the QM project?



Therapist effects on treatment outcome
Study Sample: N = 349

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Explained variance on level 1

- Initial impairment (BSI_{pre})
- Early alliance (HAQ_{pre})
- Number of diagnoses
- Early feedback

Model A: 34.47%

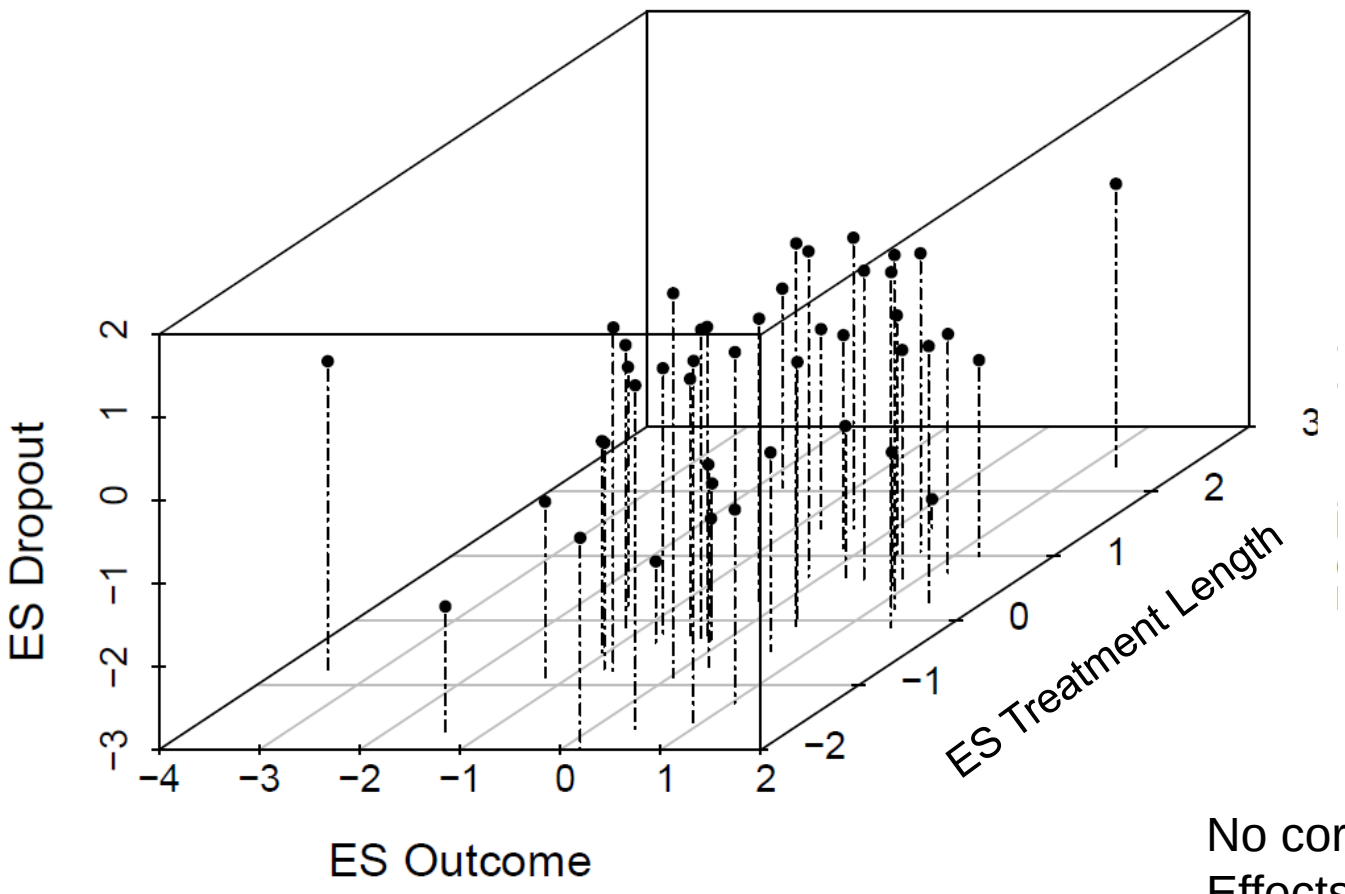
Therapist attitude towards feedback

Model B: 37.88%

Patient attitude towards feedback

Model C: 35.95%

Therapist effects on Outcome, Treatment Length, Drop-out (TK-Study) in ES



larger ES =
better outcome, less drop-out, shorter treatments

No correlation between therapist Effects in outcome and length

What do therapists do with feedback?

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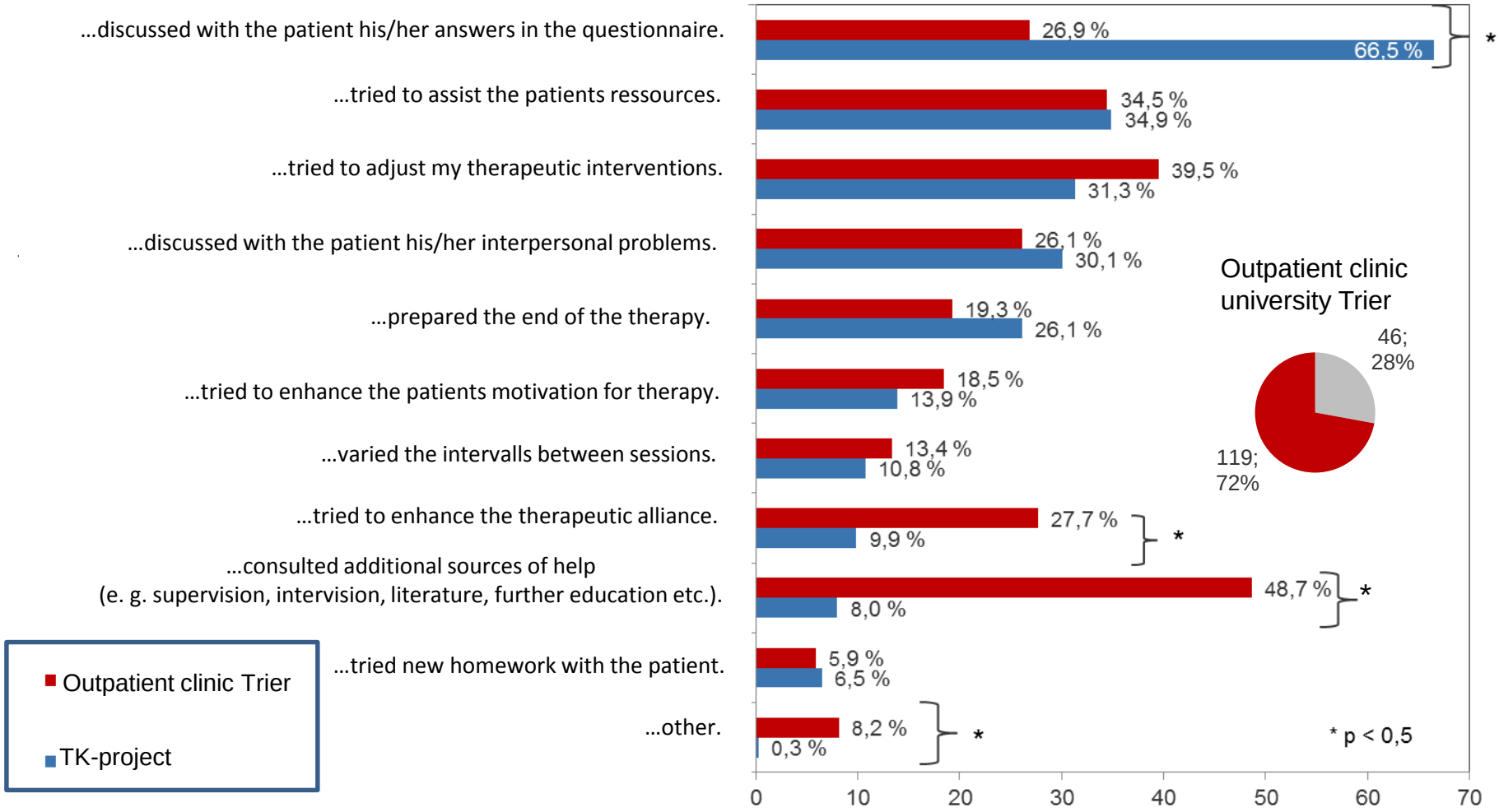
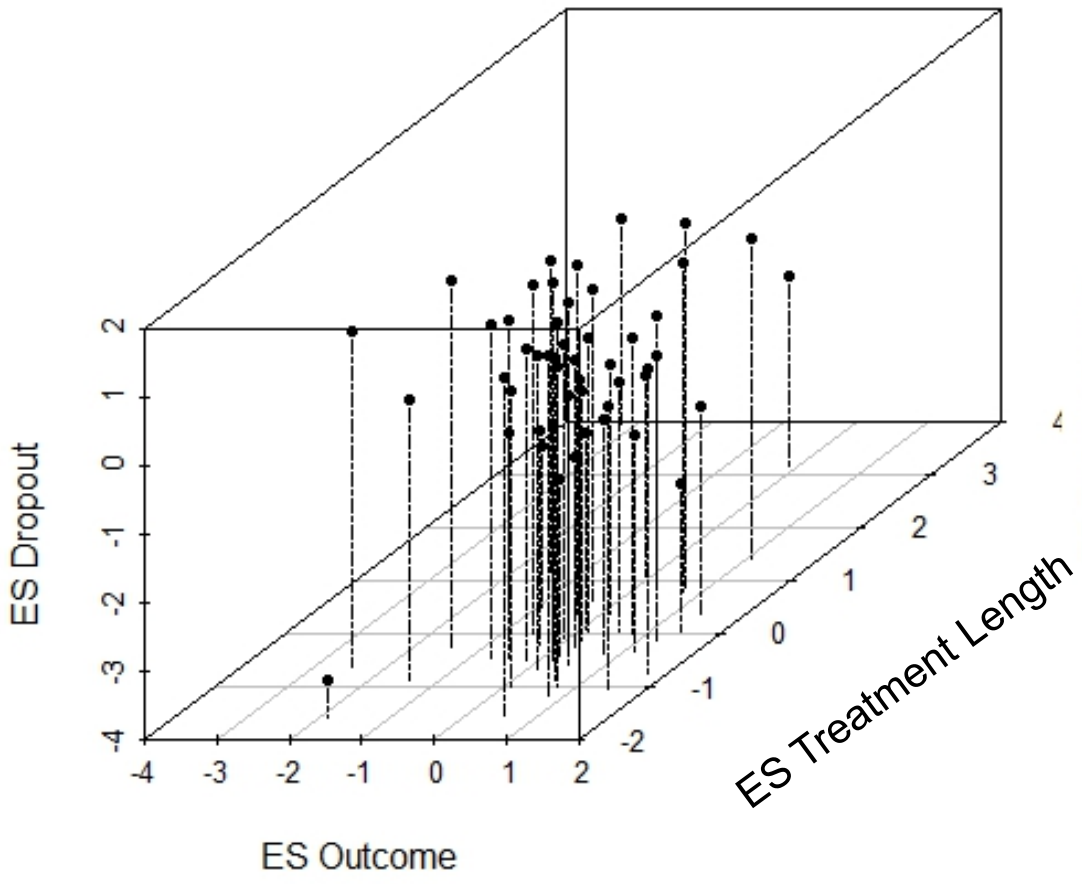
If modifications were made: Duo to the feedback, I…

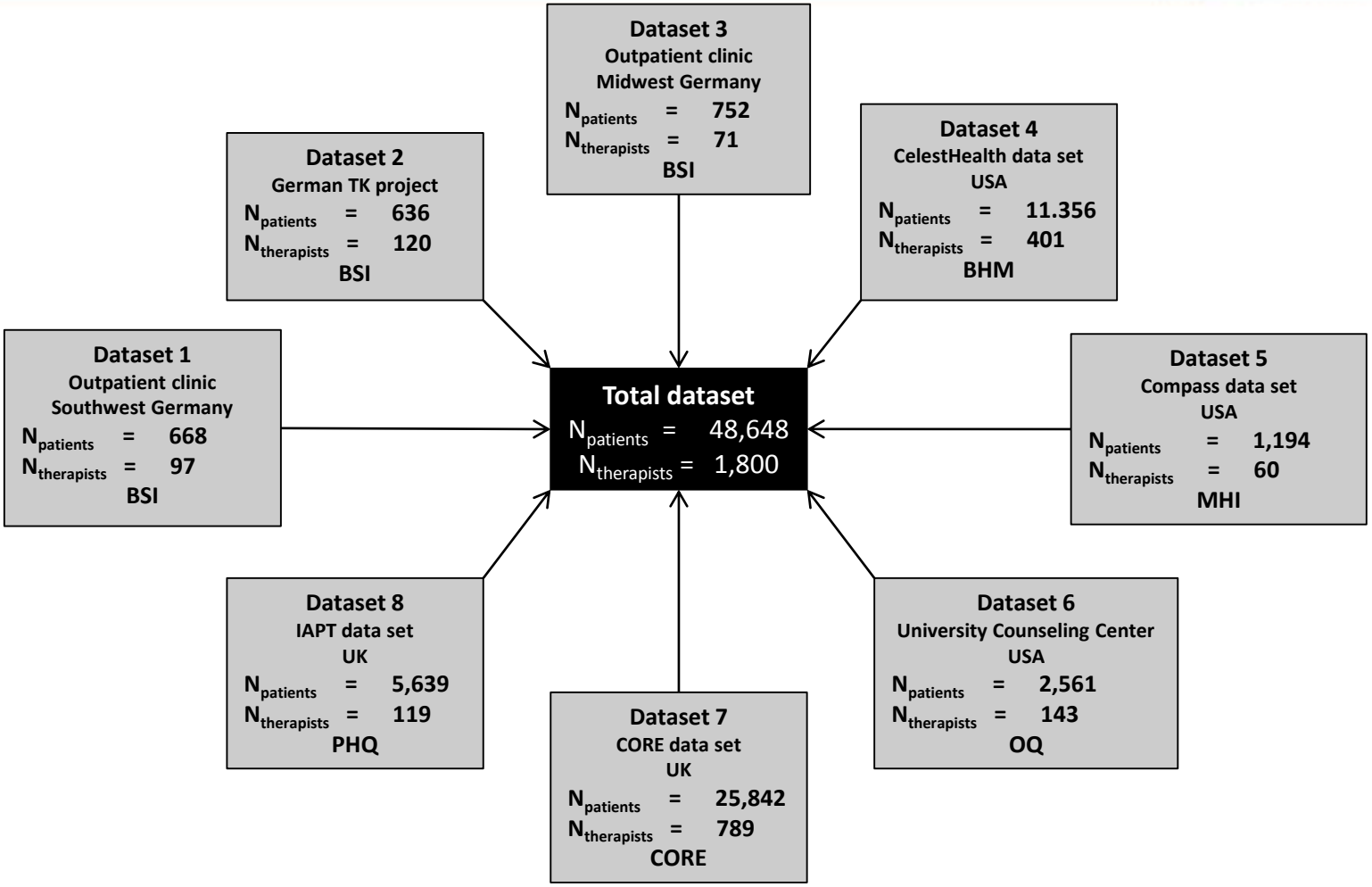


Therapist effects on Outcome, Treatment Length, Drop-out (Outpatient Center Trier) in ES



larger ES =
better outcome, less drop-out, shorter treatments

Outlook: Aggregated Dataset
N= 48,648 (patients); N=1800 (therapisits)



Many thanks to Michael Barkham, Jaime Delgadillo, Michael Lambert, Dietmar Schulte, Ken Howard, & Mark Kopta

Aggegated Dataset
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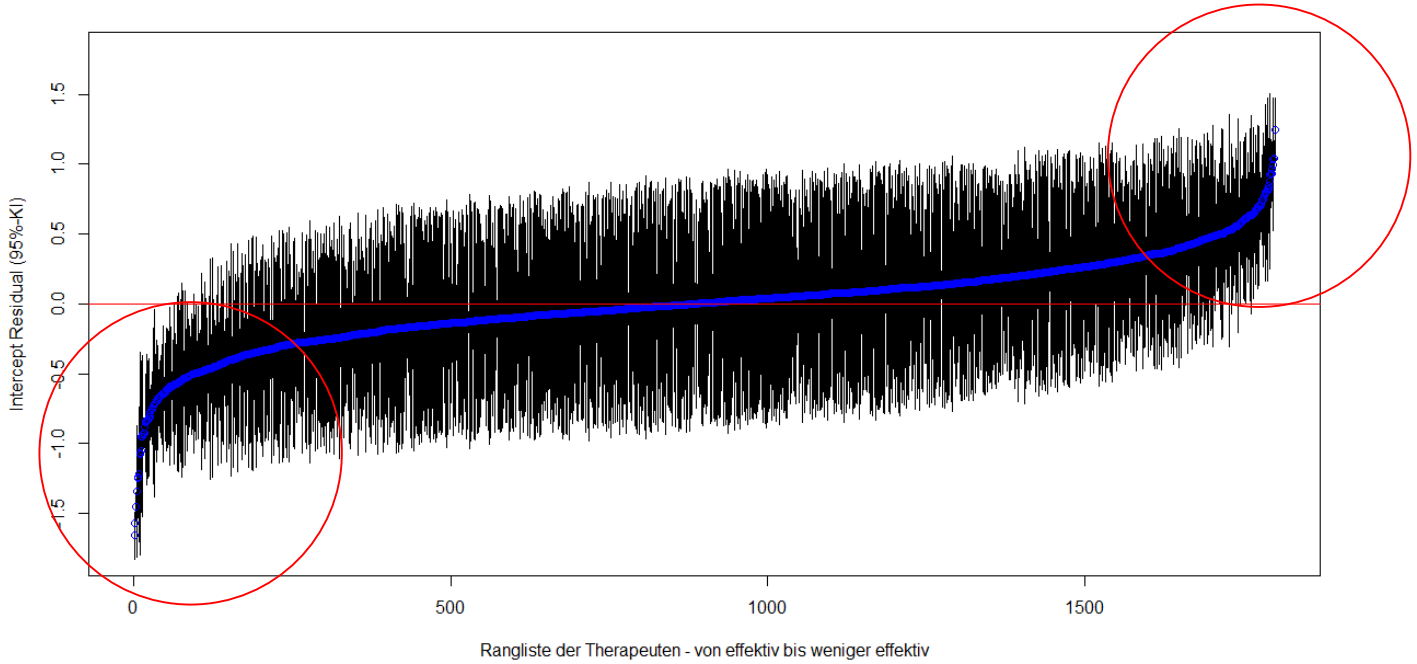
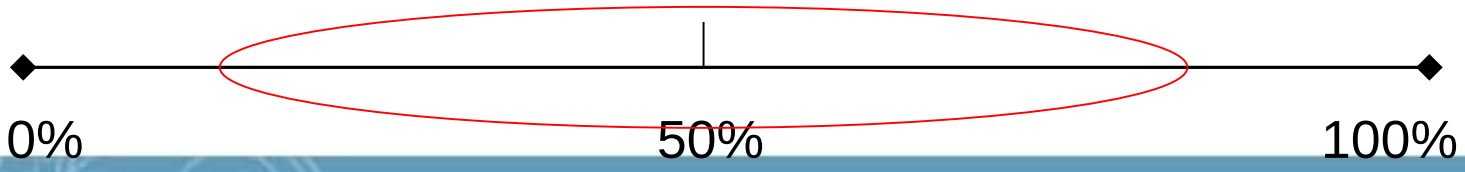
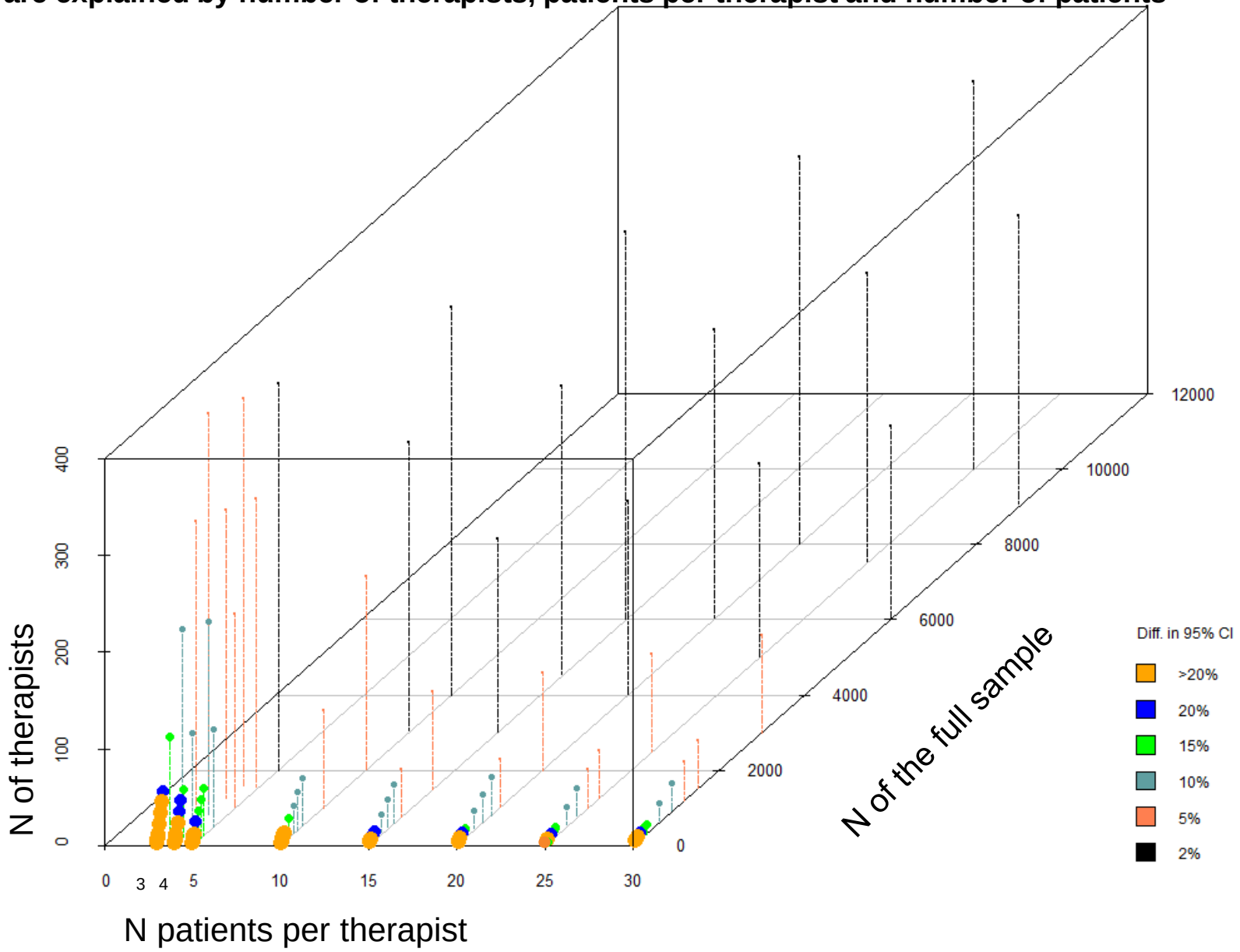


Most effective	Ø	Least effective
16.8% (302)	66.9% (1204)	16.3% (294)



Bootstrap Analysis on differences between studies:
About 47% of the in variation in CI for therapist effects
are explained by number of therapists, patients per therapist and number of patients



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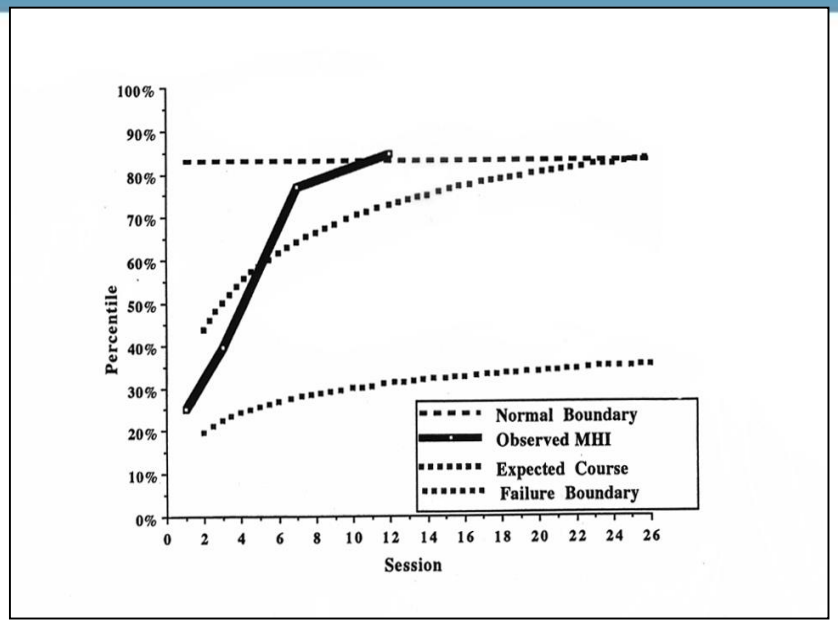
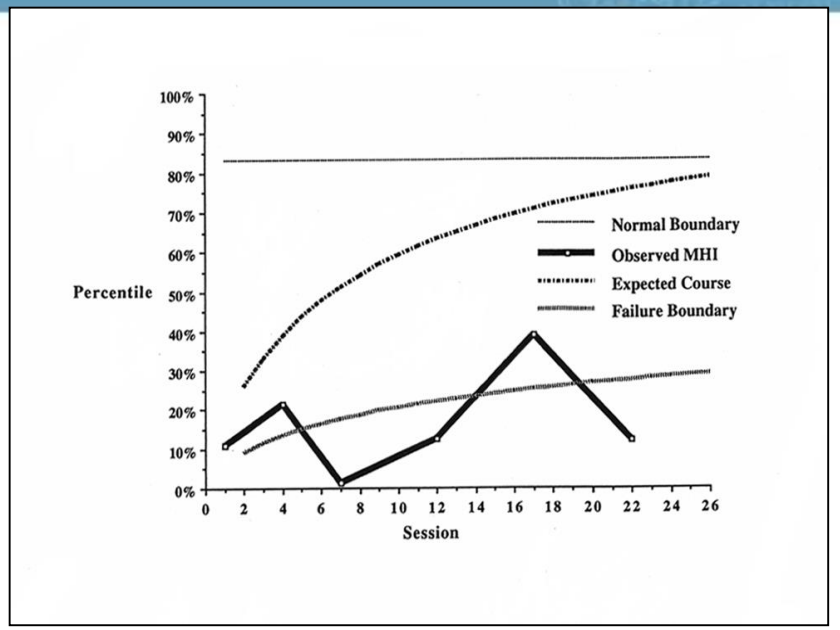
Expected Treatment Response





Predictor Variables:

Current Well-Being, Current Symptoms, Current Life Functioning, Psychotherapy in the past, Duration of Problem, Treatment Expectations, Global Assessment of Functioning

Lutz, W., Martinovich, Z., & Howard, K.I. (1999). Journal of Consulting and Clinical Psychology, 67, 571-577.

Nearest Neighbors in Avalanche Research

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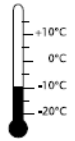
Das Wetter heute auf dem Schilthorn auf 2970 müM.:
(Quelle: MeteoSchweiz)

Vormittag

Wind und Lufttemperatur am Mittag

starker Wind aus SW

-9 °C



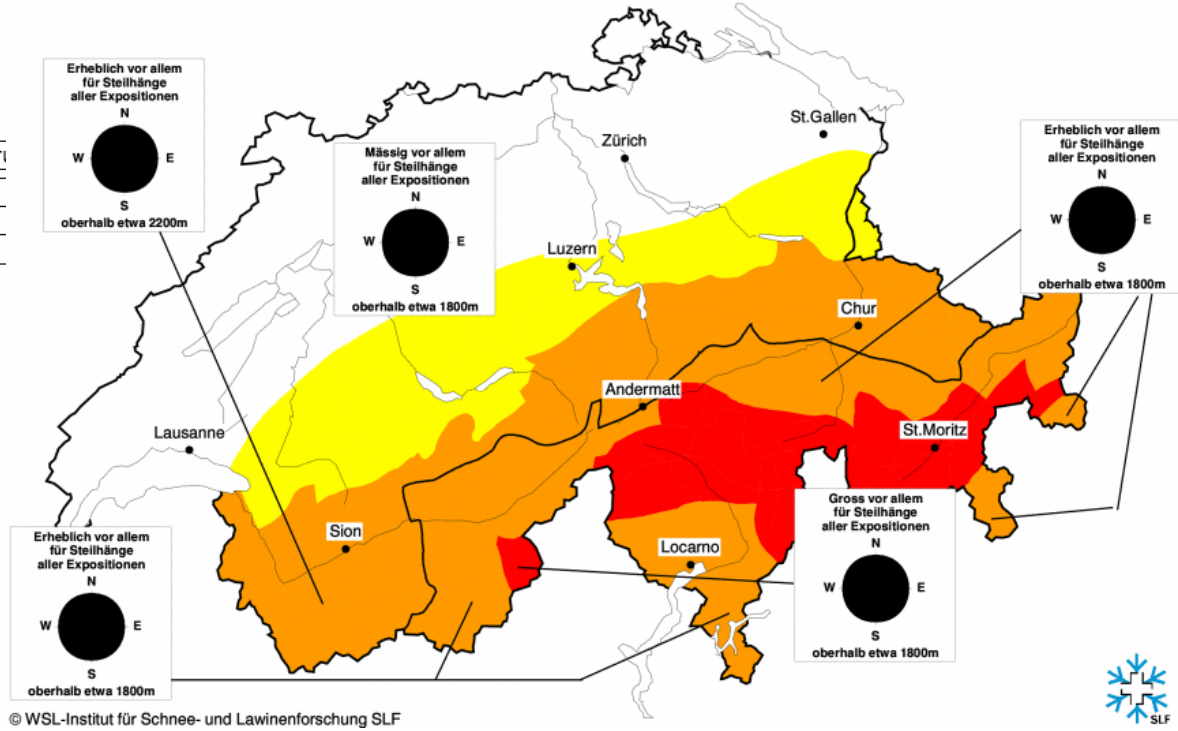
Nachmittag

Aktuelle Schnee- und Wetterdaten von heute (06:00 h):

Schneestation	Schneehöhe	Neuschnee 24h
Allieres 1716m	32 cm	ca. 5 cm
Färmel 1970m	59 cm	0 cm
Fisi 2160m	69 cm	0 cm

Windstation	Lufttemperatur	Temperaturänder
Allieres 1992m	-5 °C	-1 °C
Schilthorn 2970m	-9 °C	-4 °C
Guttannen 2530m	-7 °C	-1 °C

WSL-Institut für Schnee- und Lawinenforschung SLF



1	2	3	4	5
gering	mässig	erheblich	gross	sehr gross

http://www.slf.ch/lawineninfo/lawinenbulletin/regionale_lawinenbulletins/rbbob/rbbob_c_DE

Disaggregation and Nearest Neighbors

- Problem: Sample specificity
- New: Individual predictions based on their nearest neighbors
- Two homogeneous subsamples of the 30 nearest patients were selected for a CBT oriented treatment group and an integrative interpersonal and CBT oriented treatment group and Growth Curve Modeling was conducted on those two groups for each patient

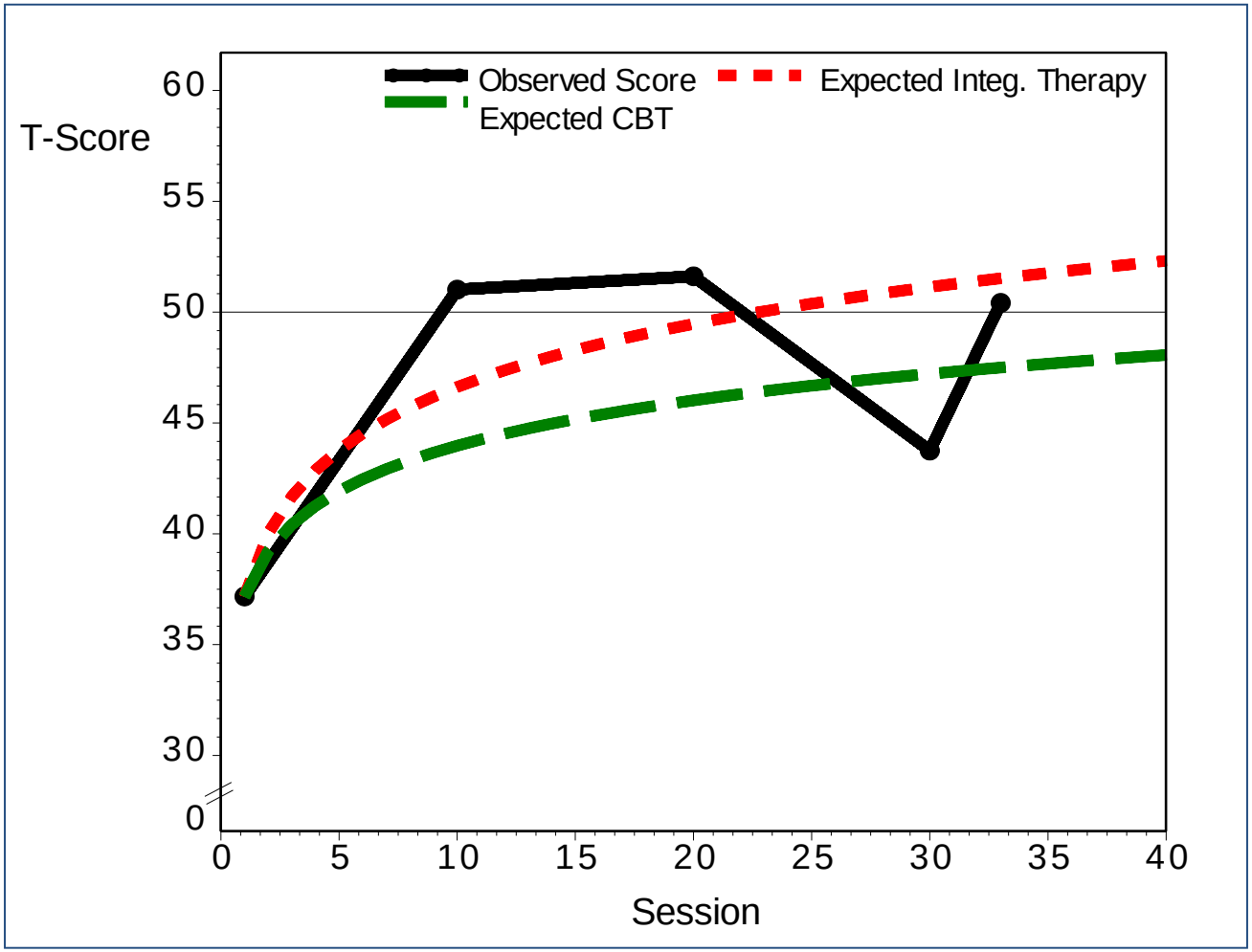
N=619 (Inventory of Emotional Distress (EMI)

Site 1: N= 359 Outpatient Clinic at the University of Berne (Integrative Cognitive-Behavioral and Interpersonal Focus)

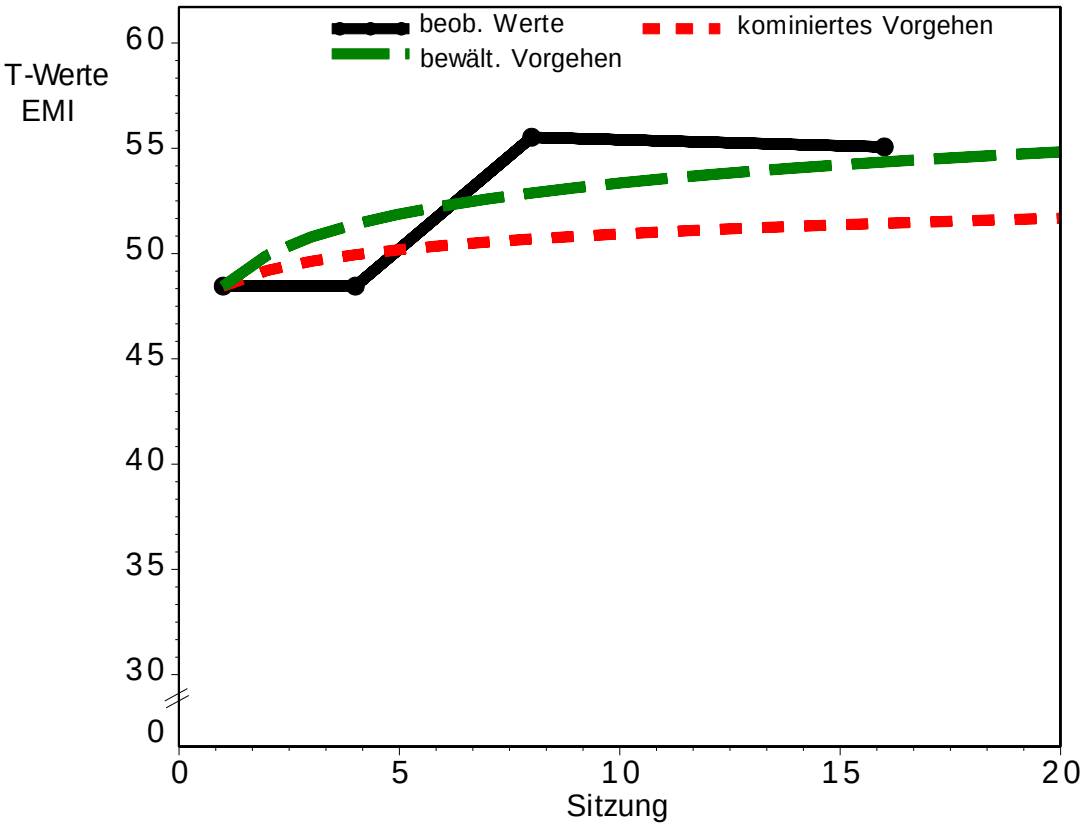
Site 2: N=260 Outpatient Clinic at the University of Bochum (Cognitive-Behavioral Focus)

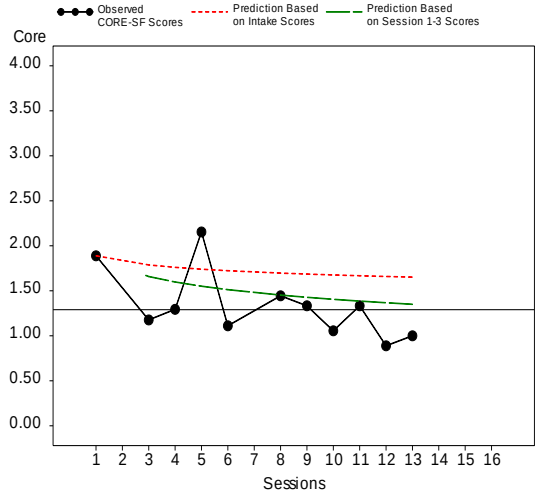
Lutz, W., Saunders, S., Leon, S. C.et al. (2006). *Psychological Assessment*.
Lutz, W., et al. (2005). *Journal of Consulting and Clinical Psychology. 73*, 904-913

A Patient with a Diagnoses of Anxiety & Depression – Treated with Integrative Therapy



A Patient with a Diagnoses of Anxiety & Depression – Treated with CBT



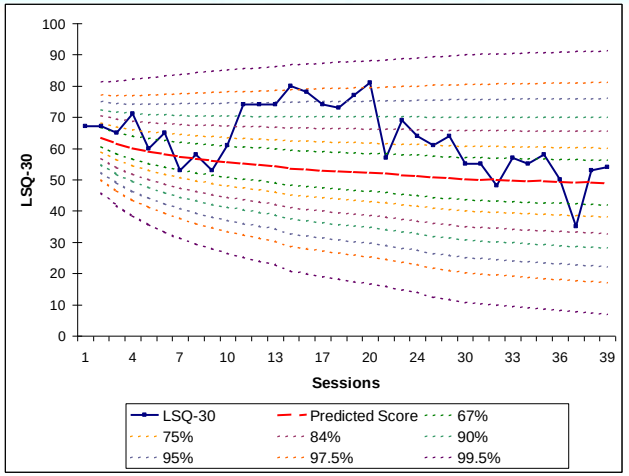


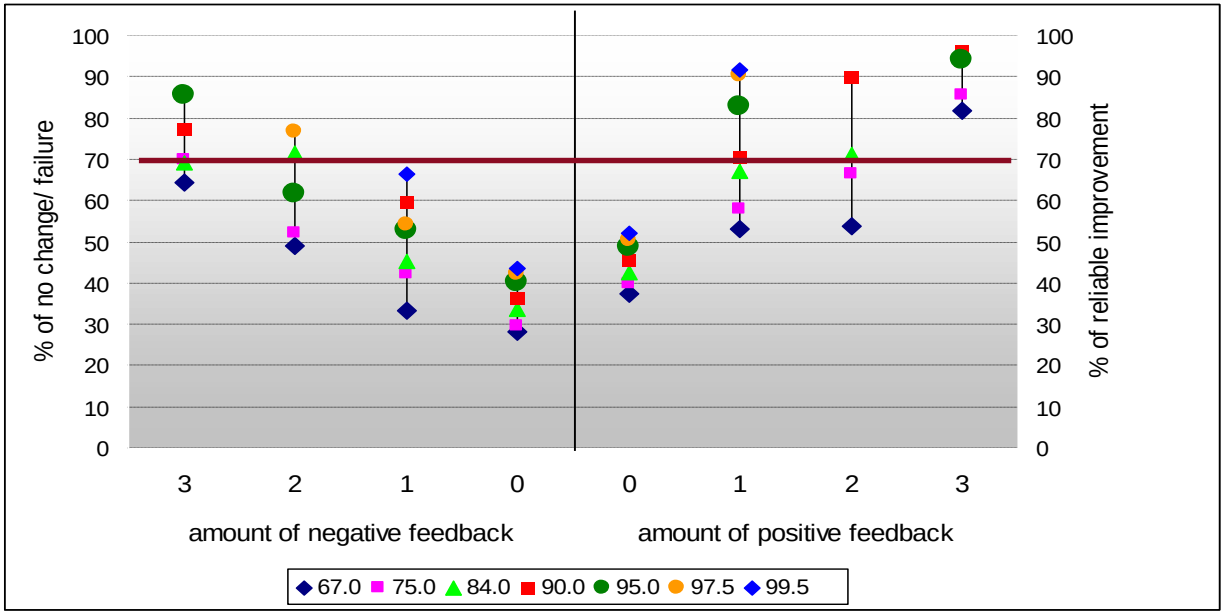
Wakefield Metropolitan District (UK)

204 clients,session-by-session with the CORE-SF (18 items)

Lutz, Leach, Barkham,Lucock, Stiles, Evans, Noble, Iveson *(2005). JCCP. 73*,904-913

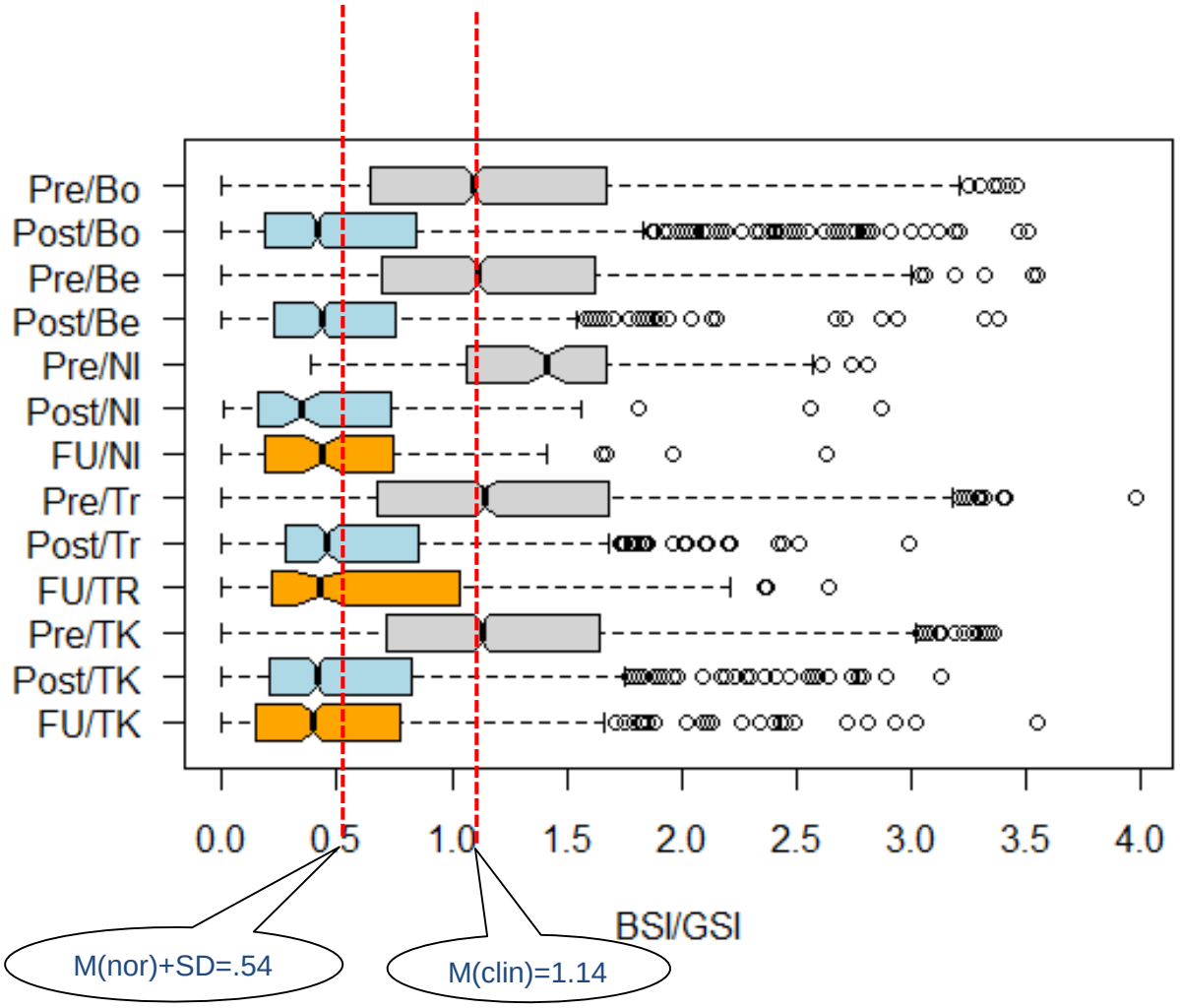
Decision rules and Outcome (Feedback between session 2-8 & Outcome between session 17-28, N=389)





Lutz, W., Lambert, M.J., et al.. (2006). The probability of treatment success, failure and duration.*Clinical Psychology & Psychotherapy, 13,* 223-232.

BSI Comparison different sites Naturalistic and RCT datasets-all



N´s (all pre= 5627;
all post=2838: all FU=711)

Bochum
Pre=1572
Post=1089

Bern
Pre=1181
Post=545

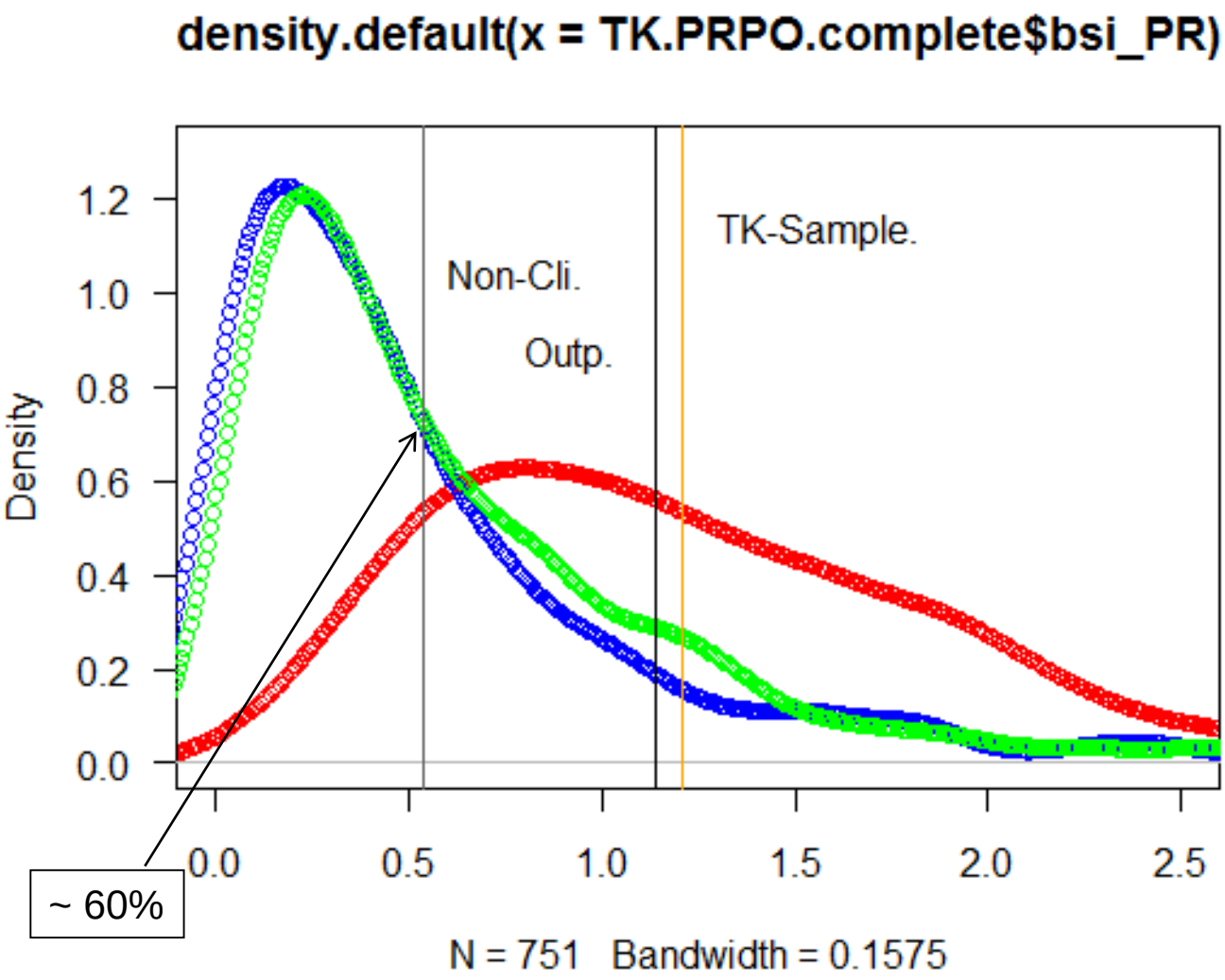
Trier: ES=.85
Pre=1175
Post=348,
FU(1/2-1y)=129

NIMH: ES=.1.56
Pre=122
Post=106
FU(1y)=98

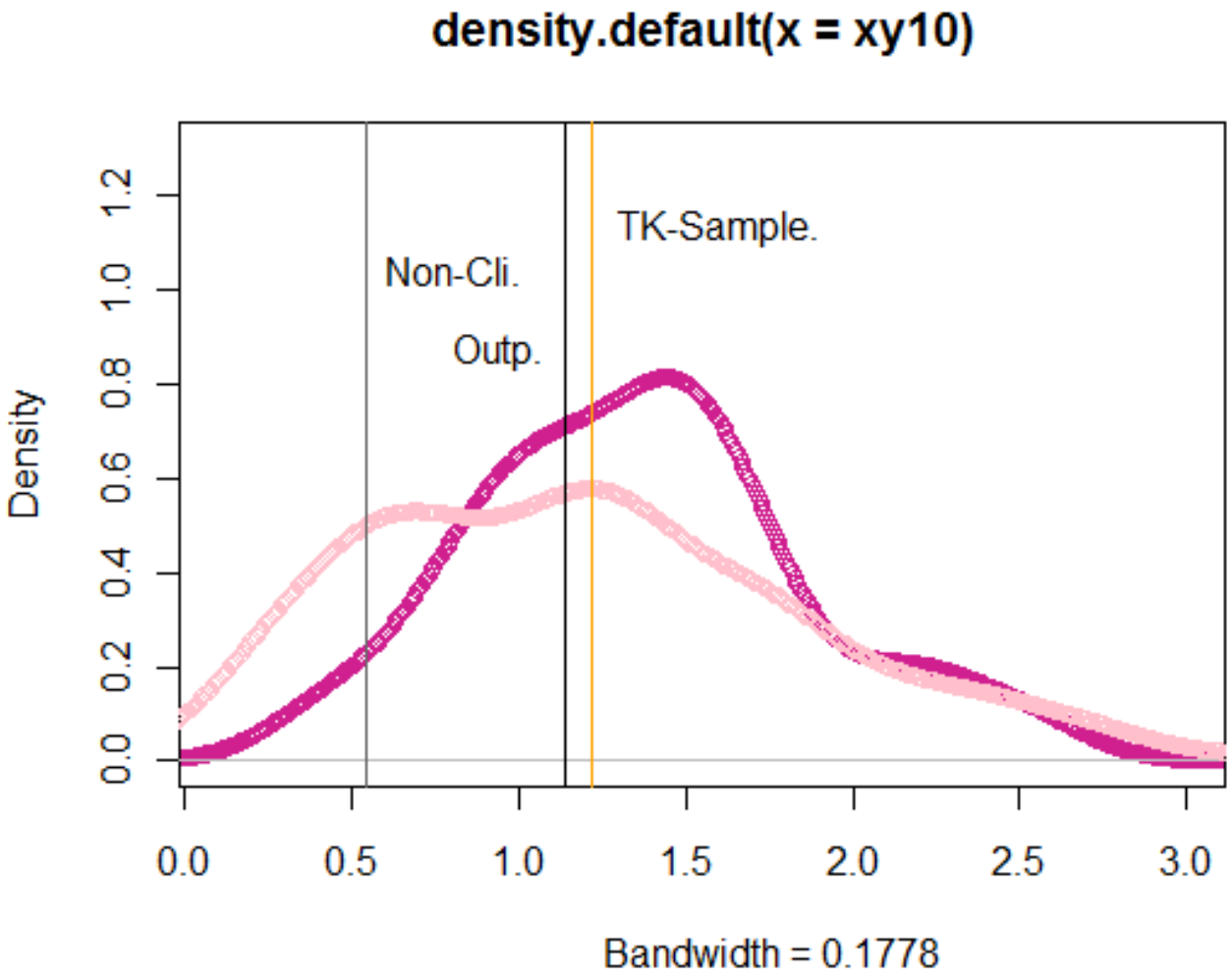
TK:
Pre=1577
Post=760
FU(1y)=485

Many thanks to Dietmar Schulte, Klaus Grawe, Irene Elkin for providing their data

Density Plot of Treatment Effects



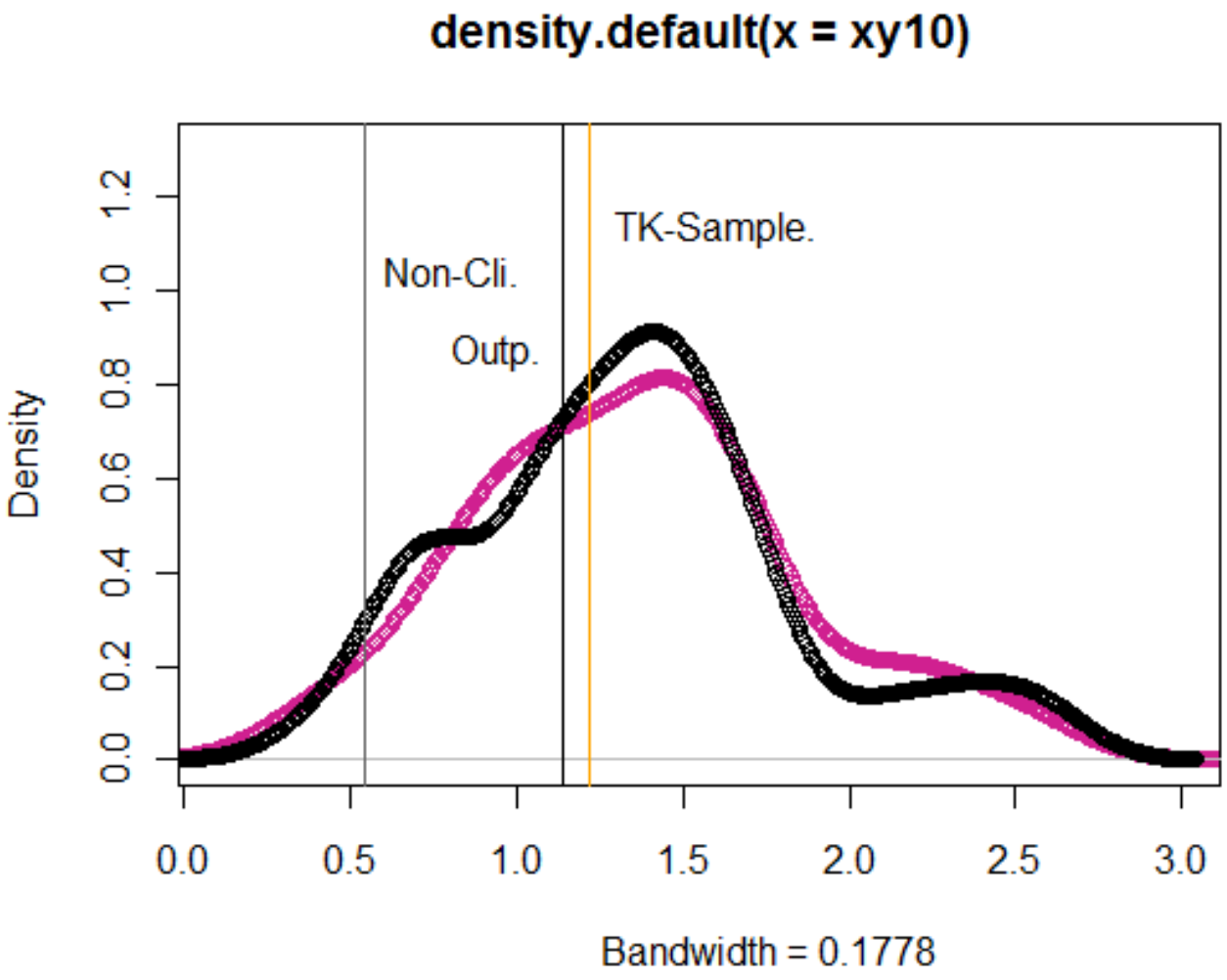
Propensity Score Matching (PSM)



NIMH Pre- -BSI Scores (Trier Outpatient Center N=335, AM=1.2)

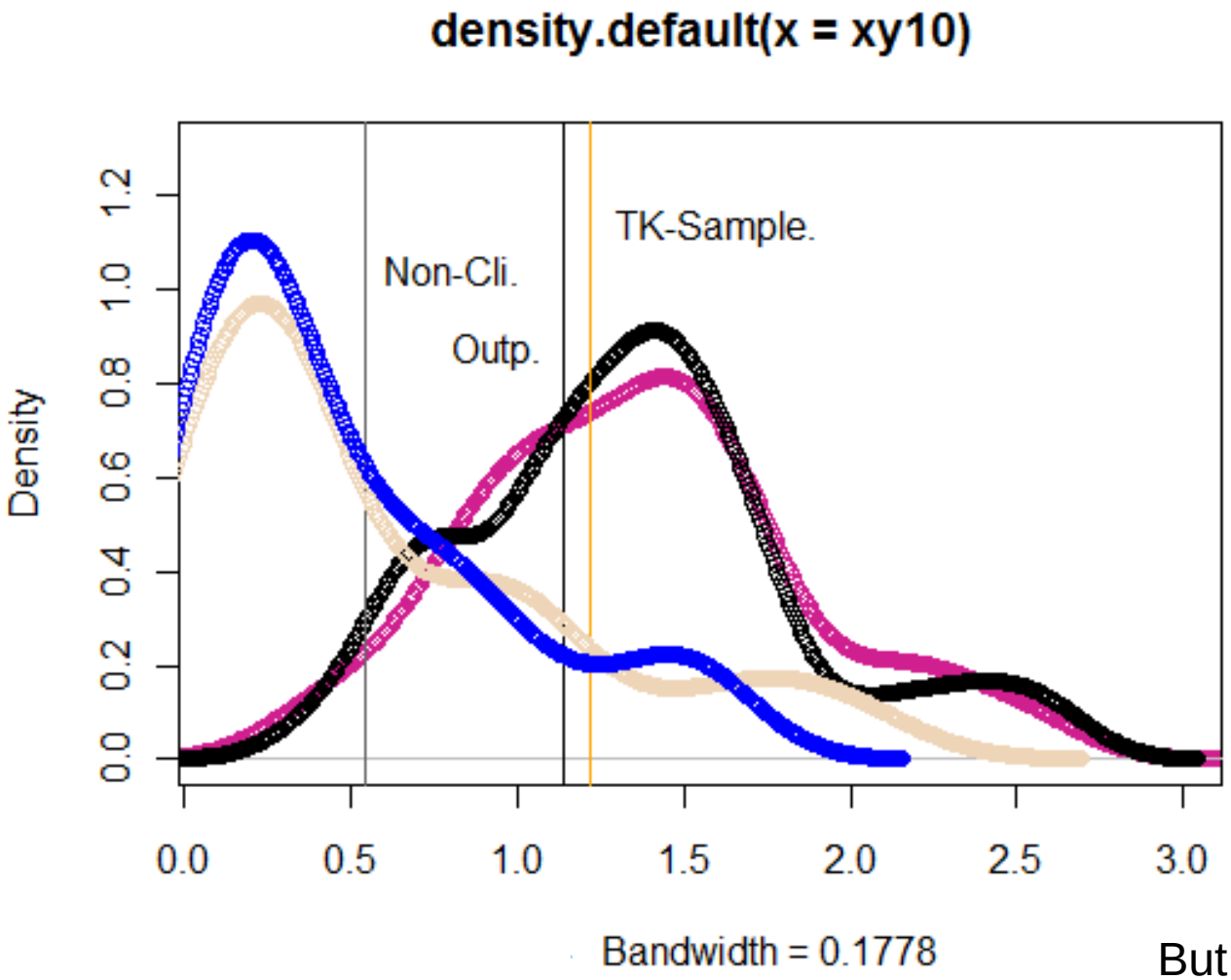
NIMH: AM=1.35
Trier: AM=1.21

Propensity Score Matching (PSM)



NIMH and Pre- - BSI Scores PSM (Trier Outpatient Center N=228, AM=1.4)

Comparable ES and Distributions Pre- and FU



NIMH and Pre- -BSI Scores PSM (Trier Outpatient Center N=228, AM=1.4)

NIMH (CBT) and Trier PSM Scores at 1-year FU

NIMH:AM=.57,ES=1.56

Trier: AM=.59, ES=1.68, ES(FU)=1.72

But different treatment length!

Outline

1. A 3-level research project on individual patient change and patient - focused research
2. Therapist effects and Disaggregation
3. Macro-level: New projects and applications, NN
4. Meso-level: Shapes of change and sudden gains and losses
5. Discussion

What does it mean?

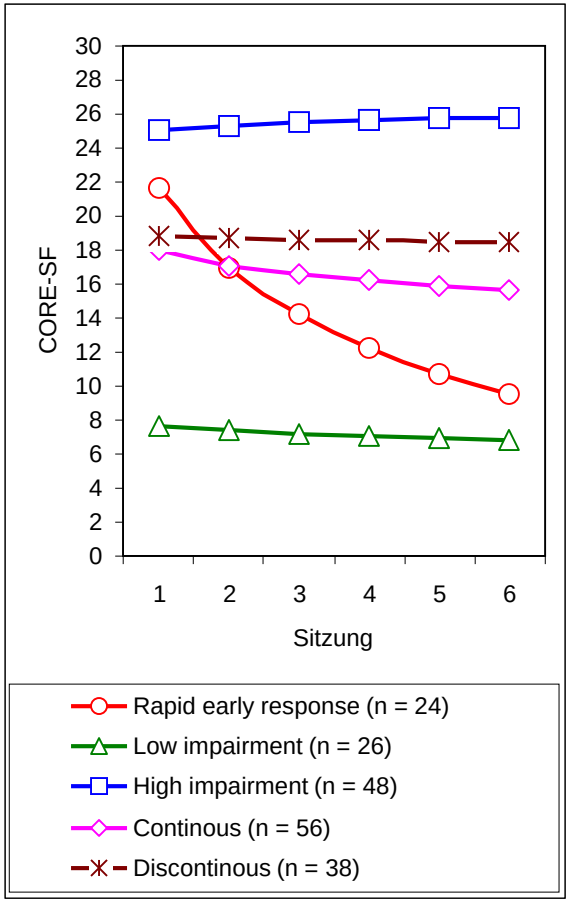
How to improve it?

How to extend it?

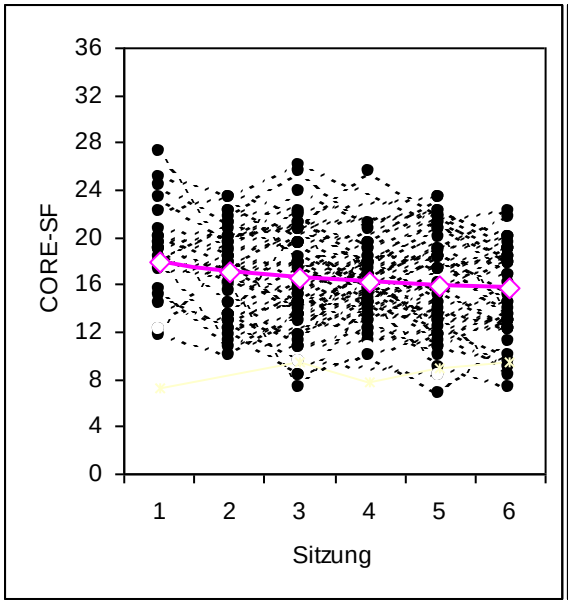
How to deal with different shapes and discontinuity?

What makes a difference?

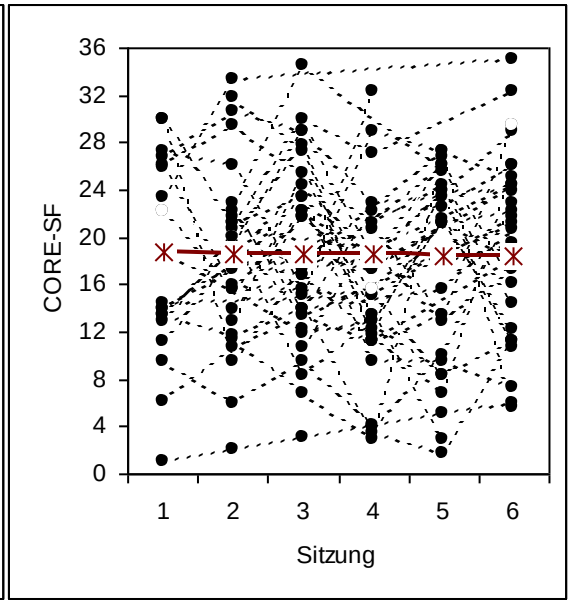
Patterns of early change in efficacy and effectiveness studies



Continous



Discontinous



Lutz, W., Stulz, N., & Köck, K. (2009). Journal of Affective Disorders.

Stulz, N., Lutz, W., Leach, C., Lucock, M., Barkham, M. (2007). *Journal of Consulting and Clinical Psychology,* 75, 864-874

Treatment Outcome and Treatment Length

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	Outcome (reliable change)			Treatment Length (sessions)		
Subgroups	-	0	+	7-13	14-30	>30
Rapid early response	4%	0%	96%	47%	34%	19%
Low impairment	4%	96%	0%	31%	57%	12%
High impairment	20%	58%	22%	2%	28%	70%
Continous	0%	81%	19%	42%	27%	31%
Discontinous	13%	43%	44%	43%	33%	24%

What do we know about change patterns in psychotherapy?

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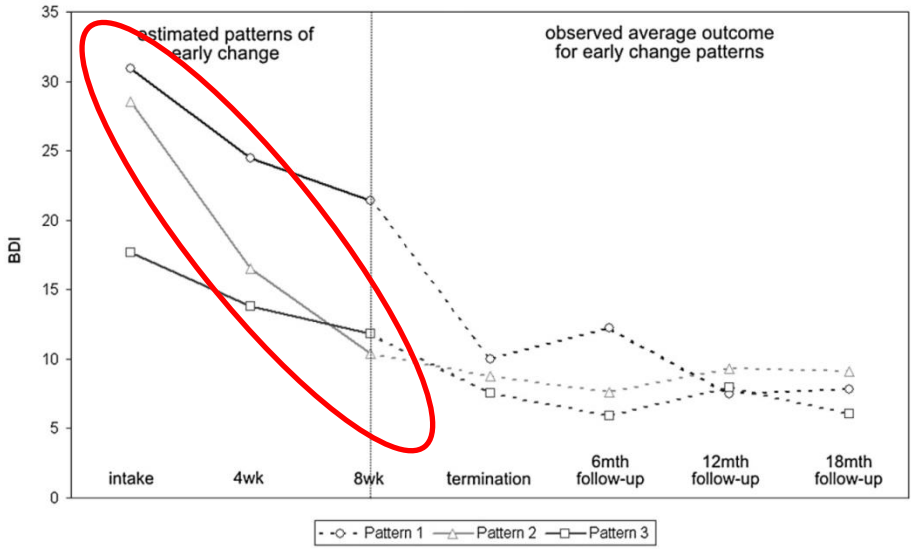
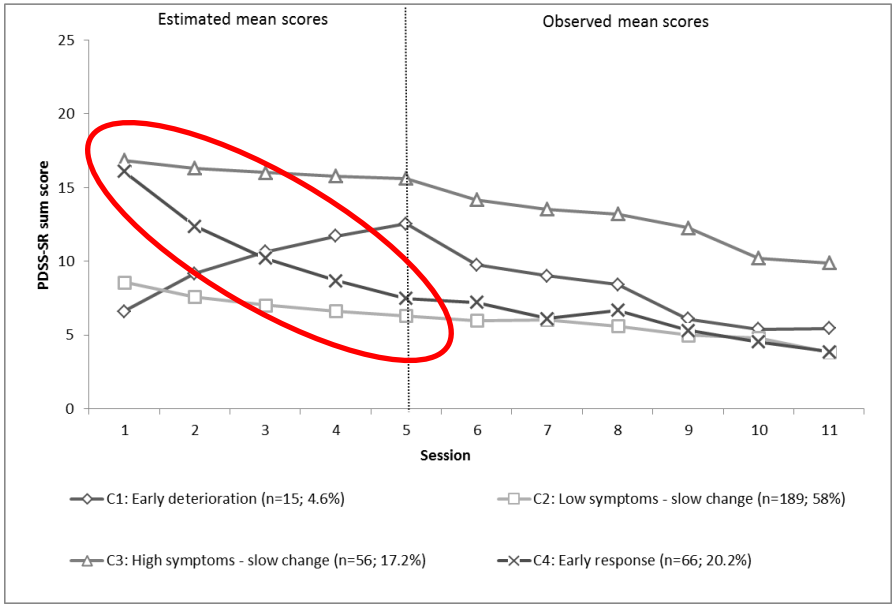
Disorder specific controlled settings



Depression: 61.1% „Early responder“



Panic disorder: 20.2% „Early Responder“

Lutz, W., Stulz, N., & Köck, K. (2009). Journal of Affective Disorders.
Lutz, W., Hoffmann, S. et al. (2014). JCCP.

Treatment outcome and length of the different early change groups

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Variable	*n*	Final treatment outcome: Reliable improvement (%)	Final treatment outcome: ES change in PDSS-SR during treatment (*d*) [95% CI]	Treatment completion status (number of sessions attended): 3–5 (%)	6–10 (%)	11 (%)	Mean number
All patients	326	48.8	1.02 [0.85, 1.19]	10.1	13.2	76.7	9.87
Class 1	15	0*	−0.49 [−1.22, 0.26]	20	20	60	9.2
Class 2	189	37.6*	0.73 [0.51, 0.94]	6.9	14.3	78.8	10.04
Class 3	56	46.4	1.00 [0.58, 1.41]	19.6*	17.9	62.5	9.02
Class 4	66	93.3*	2.11 [1.61, 2.60]	9.1	4.5	86.4	10.29
p		<.001[a]	<.001[b]		<.001[a]		.007[b]

Class 1: Early deterioration
Class 2: Medium symptoms – slow change
Class 3: High symptoms – no change
Class 4: Early response

Early responder show the **highest pre-post effect sizes** and the **highest probability to complete the treatment**. ***Nonresponder*** (class 3) and ***deteriorater*** (class 1) show **high probabilities for drop-out**.

Lutz, W., Hoffmann, S. et al. (2014). JCCP.

What do we know about early response?

- ER seems to be consistent via different settings, diagnosis, treatments and instruments

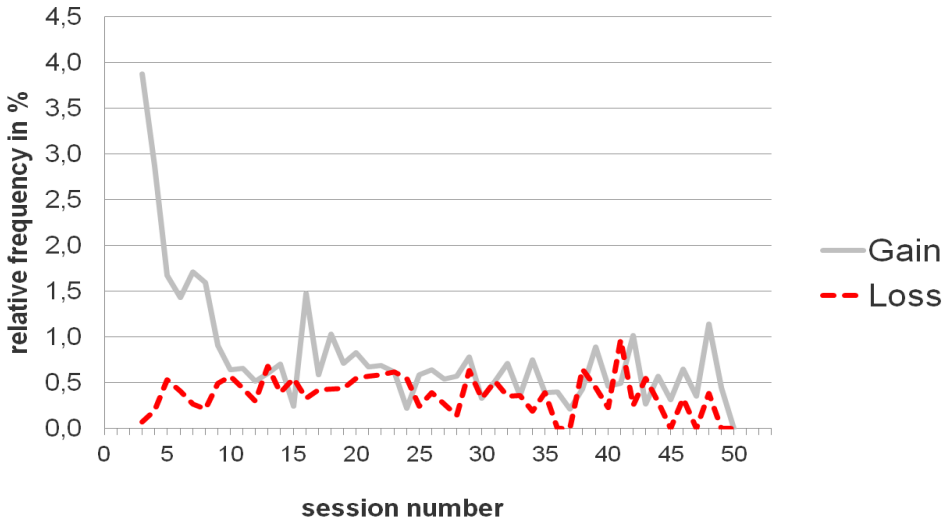
- The ER group has high treatment effects.

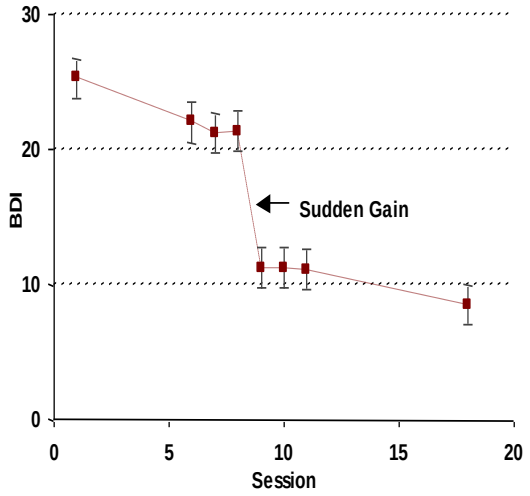
- Rates seem higher in RCT`s than in naturalistic samples.

- in naturalistic studies those also with shorter treatments / in RCT`s those which finish the manual.

- Differential rates related to diagnosis (heterogeneous)

Frequency of gains and losses by sessions (N=1500 outpatients, Trier, Bern, Bochum)



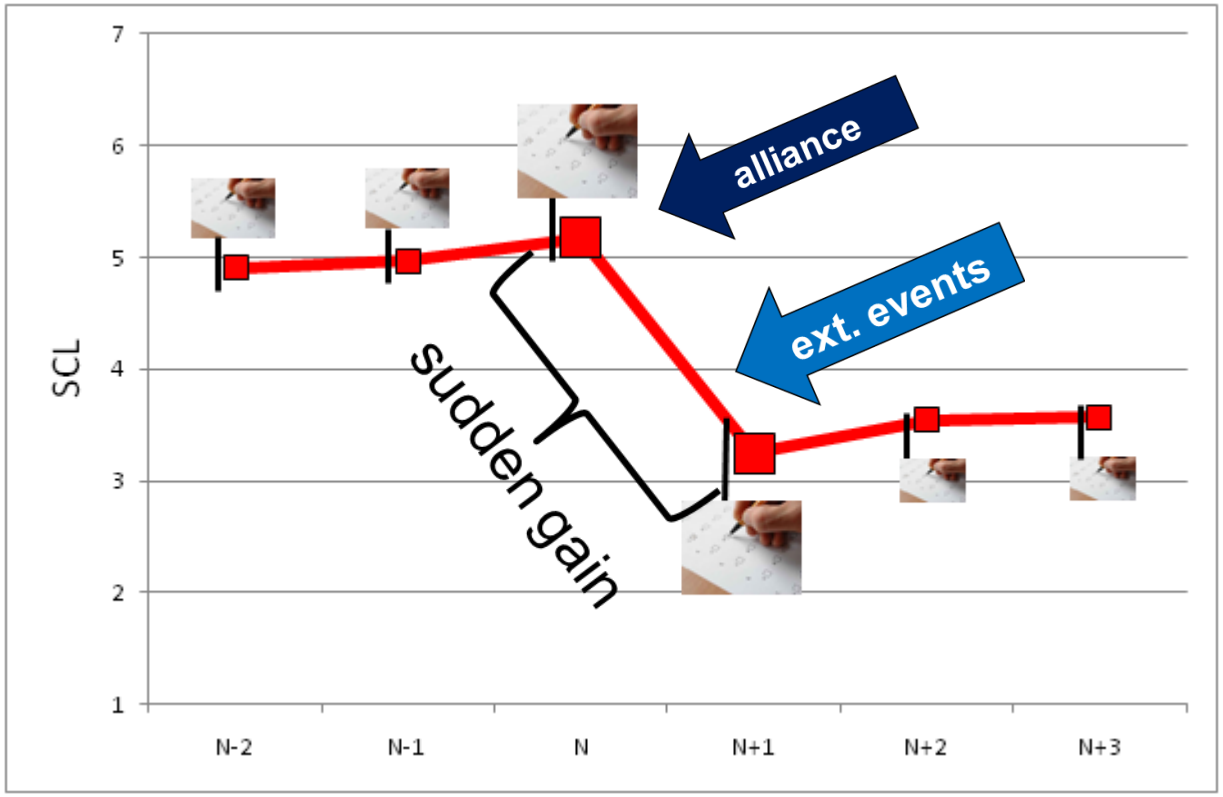


About 40% of patients experience a gain, which makes about 51% of overall change
Change rate witht sudden gain: 79%, without: 41%
Follow-up scores (at 6 or 18 Mt.) are significantly better *(Tang & DeRubeis, 1999; 2005)*
Sudden gains occur in CBT & supportive therapy and under routine clinic conditions (*Hardy,* 2005*; Stiles et al., 2004).*
Sudden losses have been rarley investigated.

Lutz, W. & Tschitsaz, A. (2007).
Tschitsaz, A. & Lutz, W. (2009).
Lutz, et al., (2013)

44

Sudden gains and losses
Analysis of video tapes, N=25 patients, 38 sessions– an example: Alliance ruptures



Sudden gains and losses defined according to HSCL-11 scores before each session.

Alliance ruptures rated according to the 3RS coding system by Eubanks-Carter et al. (2009)

with Torsten Ehrlich

Percentage of sessions with alliance ruptures among gain/loss/neutral sessions

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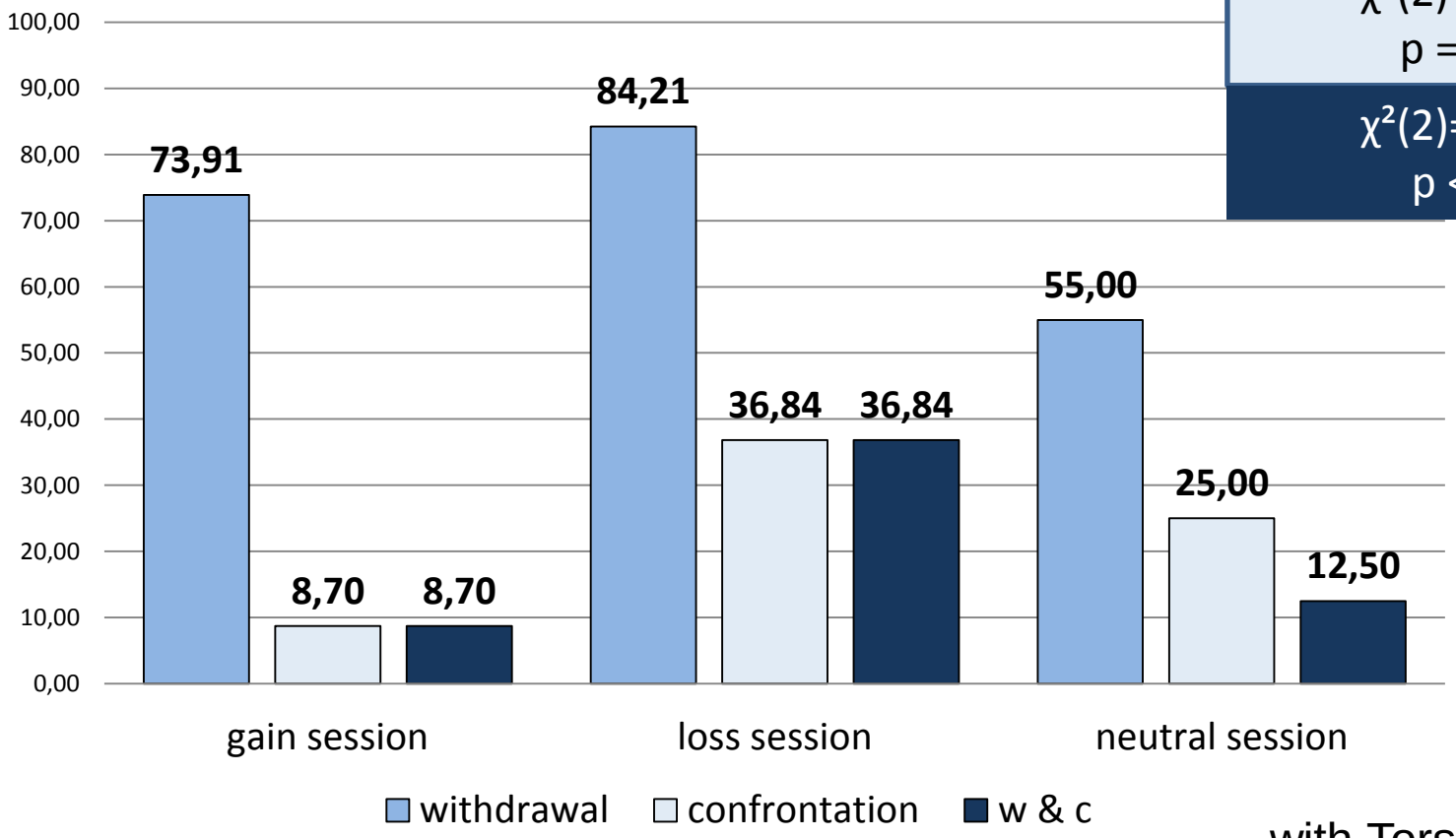
$\chi^2(2)=5.654$; $p = .059$

$\chi^2(2)=4.777$; $p = .092$

$\chi^2(2)=6.976$; $p < .05$



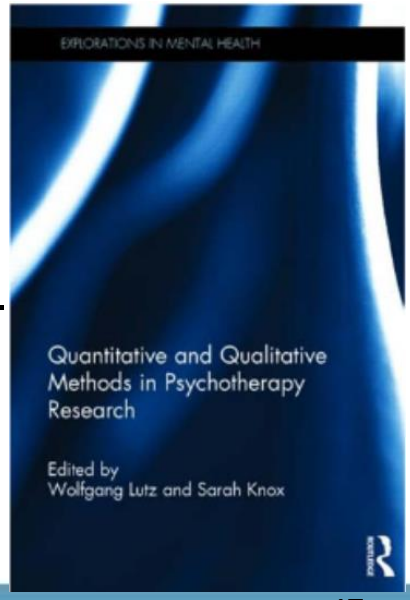
with Torsten Ehrlich

Discussion - What does this mean for research and practice?

- Therapist effects exist in clinical practice for treatment outcome, treatment length and drop-out. The influence of the therapists seems to be more important as more impaired patients are.

- Psychotherapy Research could become part of clinical practice and support the delivery of psychotherapy (Treatment tracking). Feedback on treatment progress on a patient level seems to improve therapy, especially for those with an early negative development. It also seems to have an impact on treatment length. More research and implementation, e.g. what do therapists do with feedback?

- Patients have a positive attitude to the evaluation of treat-results/feedback. The active and self-organised handling of problems is supported. Therapist and patient attitude towards feedback seem to influence results.



Discussion - What does this mean for research and practice?

- Early response: It seems there are patients, which are coming at the right time to the right place and those respond very fast to therapy. Responsible here is probably a specific patient X life event interaction. More research on inter-individual differences over the course of treatment would be helpful. The goal would be a typology of change patterns with influential process factors (mechanisms of change) and a theoretical backup.

- Differential effects and differential patient progress: It seems a subgroup responds to specific treatment manuals another maybe to extended clinical programs. Extended clinical programs, including combined CBT with a broader focus on e.g. emotion regulation issues/ mindfulness/interpersonal issues – they might be better suited for patients with more problems around comorbidity and depression issues, but this needs further investigation.