Research on Mentalization-Supporting Therapy (MST)
Attachment, mentalization, development and personality strengths
Lars Theßen, Serge K. D. Sulz, Kurt Wedlich, Pia Keim, Lukas Hofherr, Rebecca Leiner, Paulina Schick, Katharina Wöhrle, Anna Bohn, Janina Rose & Isabelle Cozzi

ABSTRACT

We report on a series of studies to validate the theoretical constructs of mentalization-supporting therapy (MST). Independent variables are developmental stage, attachment security in the strict sense, and overly frustrating parental behavior in childhood. Dependent variables are personality deficits *(VDS30)*, personality strengths *(VDS19+)*, mental resources *(VDS38 RDR)*, and mentalization ability *(VDS48)*. We find numerous highly significant correlations that support the validity of Sulz's affective-cognitive development theory (1994, 2017a,b). First results of outcome studies are reported.

Keywords

Affective-cognitive development theory, developmental stage, dysfunctional personality, personality strengths, mental resources, RDR resource deficit rating, mentalization ability, emotion recognition test, frustrating parental behavior *(VDS24)*, attachment security

Mentalization-supporting therapy MST (Sulz 2021, 2022a, 2023, Barth (2024), Sulz & Schreiner (2024), Theßen & Sulz (2024a,b), Theßen et. al (2024a,b,c), Richter-Benedikt & Sulz (2024)) is an integrative psychotherapy. Its foundation is cognitive-behavioral therapy and strategic-behavioral therapy (SBT) (Sulz 1994, Sulz & Hauke 2009). In both cases, as in almost all previous forms of therapy, attachment and mentalization were neglected. That is why Albert Pesso's emotion tracking (see Bachg & Sulz 2022) and the mentalization development of Fonagy and his working group (Fonagy et al. 2008, see also Schultz-Venrath (2021), Schultz-Venrath & Rottländer (2020), Schultz- Venrath, Diez Grieser & Müller

(2019), Schultz-Venrath, Staun (2017), Schultz-Venrath & Felsberger (2016)) were taken up, integrating them into the therapy concept consisting of seven modules (see Theßen 2012, 2016).

Now it is time to take a closer look at the constructs representing the scientific basis for mentalization support. Comanns & Wedlich (2018) had already found in a study with 216 test subjects that the frustration of central needs in childhood can lead to dysfunctional personality traits and impairs the development of personality strengths. If the parents frustrate the child's needs too much, the children no longer feel comfortable and safe with them and have to develop compensatory emotional survival strategies, which are reflected in dysfunctional personality traits. Individuals who worked after completing their course of studies seem to stabilize their personality.

We examined the correlation between attachment, mentalization, development and personality with several hundred test subjects, finding very interesting results. First, I would like to present the five studies and then summarize the new findings.

The studies took place in the context of bachelor's and master's theses at the Fresenius University. I will therefore call them after the name of the graduate (although the conception of the studies was entirely in the hands of Lars Theßen and Serge Sulz, and the on-site supervision was assumed by Kurt Wedlich, Pia Keim and Lukas Hofherr).

Leiner study
(*ADE* stages, *VDS31*, *VDS19+*, resources *VDS38 RDR*, mentalization *VDS48*)
The focus of this study is cognitive-affective development. In addition to the *VDS31* development questionnaire (Sulz & Theßen 1999), for the first time three scales describing the experiences and actions of persons who, in their cognitive-affective development, are at the cognitive-affective stage, the thinking stage or the empathy stage were used. In contrast to previous stages, it was not the *VDS30* with its ten dysfunctional personality traits that was used, but the *VDS19+*, whose scales were intended to reflect the exact opposite of the respective *VDS30* scale as precisely as possible (Sulz & Maier 2009), as lastly this study is not about disturbed development.
Sample: The sample consists of n=49 female participants (65%) and n=27 male participants (36%) (a total of 76 subjects). The average age is 31 years (M=31.08, SD=11.477). The youngest participant is 18 years old, the oldest subject is 81 years

old. 28 subjects (37%; n=28) are single, 32 participants (42%; n=32) are currently in a relationship, 13 subjects (17%, n=13) are married and live together, two participants (2.60%, n=2) are married but live separately. Only one subject (1%, n=1) is widowed. 24 of the 76 participants (32%, n=24) have children, the number being between one and three children (M=1.17, SD=0.963).

Developmental stages A, D and E – correlations
We can apply three standards:
a) Mental resources in the resource deficit rating RDR *(VDS38)*
b) Personality traits representing personal strengths *(VDS19+)*
c) Mentalization ability and theory of mind (TOM) *(VDS48)*
It can be observed how mental resources, personality strengths and the ability to mentalize (Tables 1 and 2) grow with the development from stage to stage.
On a) Mental resources in the resource deficit rating *RDR VDS38*
The mental resources criteria of the *VDS38 RDR* are an important indicator of the development of mentalization skills.
Table 1: Mental resources at the three developmental stages (VDS38 RDR) – only significant variables listed

Correlations of *VDS38 RDR*	Affect stage	Thinking stage	Empathy stage
Functionality of emotion regulation	-0.04	0.249*	0.20
Self-awareness skills	-0.1	0.234*	0.351**
Self-control skills	-0.26*	0.269*	0.19
Social perception ability	0.04	0.15	0.287*
Ability to communicate	-0.06	0.365**	0.329**

Ability to differentiate	-0.04	0.15	0.276*
Ability to manage relationships	-0.01	0,17	0.334**
Utilization of resources	-0.06	0.20	0.266*
Dealing with crisis situations	-0.21	0.316**	0.21

While there are no mental resources yet at the affect stage (Table 2), at the thinking stage we find the ability to regulate emotions as well as self-awareness, self-control and crisis management skills and the ability to communicate.

At the empathy stage, social perception, delimitation, ability to manage relationships and utilization of resources come into play.

On b) Personality strengths *(VDS19+)*

Table 2 Correlation of developmental stage (D and E) with personality strengths *(VDS19+)*

Personality strengths are...	
At the thinking stage	**At the empathy stage**
Self-aware	Balanced
Confident	Community-oriented
Conflict-proof	Emotionally stable
Balanced	Impartial
Emotionally stable	
Entire personality	

On c) Mentalization ability and theory of mind *(VDS48)*

The third criterion for successful development is the ability to mentalize, which we capture by means of the *VDS48*. A distinction is made between understanding others (the world) and understanding oneself (Table 3).

Table 3 Means of "Total mentalization ability", "Mentalizing the world" and "Mentalizing the self"

VDS48 Mentalization	Mentalizing the world	Mentalizing the self	Total mentalization ability
Mean	0.78	1.09	1.87
Standard deviation	0.40	0.42	0.68
Minimum	0.09	0.05	0.14
Maximum	1.91	2.05	3.49

Overall, mentalization of the world (understanding others) was more pronounced than mentalization of the self (understanding oneself). The range of scores was from 0 (not) to 3 (very good).

In Table 4, we see that there does not yet seem to exist any ability to mentalize at the affect stage. However, this is clearly found at both the thinking and empathy stages.

Table 4 Correlation of developmental stages A, D and E with mentalization ability *(VDS48)* or theory of mind

Spearman's correlation of *VDS48* with *ADE* scales	Affect stage	Thinking stage	Empathy stage

Mentalizing the world (understand others)	-0.06 p=0.619	-0.34 p=0.003	-0.30 p=0.01
Mentalizing the self (understand me)	0.18 p=0.113	-0.45 p<0.001	-0.38 p<0.001
Total mentalization ability (theory of mind)	0.06 p=0.593	-0.50 p<0.001	-0.36 p=0.002

Thus, the question regarding a correlation between the ability to mentalize and personality strengths remains. Table 5 shows clear correlations between personal strengths and the ability to mentalize.

Table 5 Correlation of total mentalization ability *(VDS48)* with functional personality styles *(VDS19+)*

Self-aware	r=-0.40, p<0.001
Confident	r=-0.34, p<0.003
Flexible	r=-0.43, p<0.001
Conflict-proof	r=-0.31, p<0.006
Balanced	r=-0.42, p<0.001
Relational	r=-0.18, p<0.127
Community-oriented	r=-0.25, p<0.028
Emotionally stable	r=-0.56, p<0.001
Impartial	r=-0.44, p<0.001

Entire personality	r=-0.56, p<0.001

Thus, it could already be shown in this first study how closely development, mentalization ability, mental resources and personality strengths are connected.

The higher the developmental stage, the more pronounced are the ability to mentalize *(VDS48)*, mental resources *(VDS38)* and personal strengths *(VDS19+)*. In addition, the latter correlates with the ability to mentalize.

A therapy whose goal is to support the ability to mentalize could, in addition to this gain, also support the personal strengths necessary for managing life in general and thus reduce the tendency to develop symptoms and dysfunctional interaction patterns taking a toll on relationships.

Schick study

(*KADE* stages, dysfunctional emotion management (*VDS32 II*), mentalization *(VDS48)*)

This study also primarily deals with the developmental stages. In addition to the three stages of affect, thinking and empathy (ADE) from the Leiner study, the body stage K is added, especially because research has found that mentalization already takes place at the physical stage (see Schultz-Venrath, 2021). Our research is expanded by this study in two ways: attachment security and dysfunctional emotion management are added as an expression of lack of emotion regulation. Personality scales, however, are not used.

Sample: Of the 104 subjects, 74 (71.2%, n=74) were female, 30 (28.8%, n=30) were male. The age range of the sample is from 18 to 84 years (min=18, max=84). The average age is M=31.98 years with a standard deviation of SD=15.92. Most of the participants, 41.3% (n=43), were single. With regard to educational qualifications, 59% (n=62) had a general or subject-specific university entrance qualification.

The new developmental stages *KADE*

The evaluation algorithm runs over three cascades: First, it is determined whether the test subjects have checked enough items for this developmental stage to be significant for them. This is presumed if they have at least 30 out of 60 possible

points. Then, they are asked (in a more cognitive way) whether the stage in question describes them quite accurately. In the third step they are asked whether they also feel being emotionally affiliated with this stage.

At the K stage, the test subjects have an average total score of M=35.35, with a standard deviation of SD=9.58. A maximum total score of Max=59.0 and a minimum total score of Min=10 (of 60 possible points) was found. For 72.1% (n=75) of the test subjects, stage K is included in the developmental stage profile because they achieved at least 30 points in the total score. This did not apply to 29 participants (27.9%, n=29). Of the N=104 subjects, 67.3% (n=70) clicked the "I have at least 30 points on the K scale" field, while 32.7% (n=34) did not. "The scale K category describes me fairly well" field was selected by 32 (30.8%) subjects, while 72 (69.2%) did not check this statement. 97 (93.3%) of the participants did not select "I feel like being more of the K type", while 7 (6.7%) did.

For the A stage, the summed-up items resulted in a mean of M=24.3, with a standard deviation of SD=9.78. The lowest total score achieved by the participants is Min=10, the highest Max=56. 73. 1% (n=76) of the test subjects have a calculated total score of under 30 points, while 26.6% (n=28) exceeded this score. The "I have at least 30 points on scale A" category was selected by 22.1% (n=23), while 81 (77.9%, n=81) of the participants did not select this field. In addition, 86% (n=90) did not select "Scale A describes me quite well", while 13.5% (n=14) clicked this field. 11.5% of the test subjects (n=12) selected "I feel like being more of the A type", whereas 88.5% (n=92) did not.

On average, the total score of the D stage is M=37.45 (SD=8.91), ranging from Min=16 to Max=56. Of the test subjects, 79.8% (n=83) achieved at least 30 points, 20.2% (n=21) were below this score. In this sample, 68.3% (n=71) participants selected the "I have at least 30 points on the D scale" field, while 31% (n=33) did not. "Scale D describes me quite well" was not clicked by 59.6% of the subjects (n=62), while 42 (40.4%, n=42) selected this category. "I feel like being more of the D type" was selected by 15.4% (n=16), while 84.6% (n=88) did not click this statement.

The descriptive key figures for the E stage amount to an average total score of M=40.59, with a standard deviation of SD=7.99. The scores range from Min=16 to Max= 56. 90. 4% (n=94) of the participants achieved at least 30 points, 9.6% (n=10) were below this score. 76.9% (n=80) of the subjects clicked "I have at least 30 points on the E scale", while 24 (32.1%, n=24) did not select this field. Furthermore, "Scale E describes me quite well" was not clicked by 62.5% (n=65),

while 37.5% (n=39) selected this field. 18 of the test subjects (17.3%, n=18) selected "I feel like being more of the E type", whereas 82.7% (n=86) of the total of N=104 did not.

Since you can decide in favor of or against each stage, regardless of the evaluation of the other stages, there are numerous simultaneous affiliations, as shown in Table 10. In these intermediate stages two stages are present, e.g. K+A or A+D or D+E.

15 questions about attachment disorder

The 15 questions about attachment disorders now add a completely new aspect. The question is how much insecure attachment causes development to stagnate and how much it blocks the development of the ability to mentalize.

1) Were you separated from your mother in the first two years of your life?

2) In the first two years of my life I was…

3) In the first two years of my life my mother was…

4) How did she react when she was stressed?

5) How did she react when she was angry with you?

6) What did she threaten to do when she was angry?

7) How was the physical contact?

8) What brought security?

9) How important was safety, protection and reliability?

10) Are you afraid of separation?

11) What would you like to do most if you are extremely angry with someone?

12) Are you more of an affectionate person?

13) How well can you be alone?

14) Do you prefer being up close or at a distance?

15) Would you rather be pampered or pamper others?

The descriptive evaluation of the 15 attachment disorder questions resulted in a mean total score of M=7.62, with a standard deviation of SD=5.58. The summed-up points ranged from Min=0 to Max=26, with a maximum of 41 possible points if you include all 15 questions, and a maximum of 34 points if you leave out only the last two items. Of course, we cannot answer the above question with correlative studies. But if necessary, further research can be carried out here.

Mentalization ability *VDS48*

The average total mentalization score of the sample is M=2.06, with a standard deviation of SD=0.42. The total mentalization score achieved by the test subjects in the present work ranges from Min=0.21 to Max=2.97. For mentalizing the self, there was a mean of M=1.96 (SD=0.47). For this scale, the scores ranged from Min=0.21 to Max=2.95. For mentalizing the world, the mean is M=2.24, with a standard deviation of SD=0.47. Here, the range was from Min=0.64 to Max=3.0. When also considering the different stages of the *VDS48*, the result for the stage of perception and feeling is a mean of M=2.0, with a standard deviation of SD=0.055. Here, the scores range from Min=0.38 to Max=3.0. For the stage of recognizing mentalization, the average score was M=1.96 (SD=0.44), ranging from Min=0.83 to Max=2.92. A mean of M=2.21 (SD=0.54) could be determined for the stage of understanding. The range was from Min=0.75 to Max=3.0. For the fourth stage of acceptance, the mean was M=2.24, with a standard deviation of SD=0.52. Here, the scores ranged from Min=0.83 to Max=3.0.

Correlation of attachment insecurity with total mentalization ability (*VDS48*)
A negative correlation was found between the severity of a person's attachment disorder (total score of the first 13 items of the 15 questions) and the total mentalization ability (r=-0.326, p<0.001). This means that the lower the security of attachment, the lower the ability to mentalize. We can differentiate the mentalization ability into perceiving, recognizing, understanding and accepting.
Again, we find high negative correlations in three out of four areas. This means that insecure attachment is associated with a poorer ability to mentalize (Table 6).

Table 6 Correlation of insecure attachment with mentalization stages

Spearman's correlation of insecure attachment with mentalization stages	Mental_w perceive	Mental_w recognize	Mental_v understand	Mental_a accept
Insecure attachment	-0.45 p<0.001	-0.016 P=0,874	-0.401 p<0.001	-0.473 p<0.001

Correlation of attachment insecurity with dysfunctional emotion management *(VDS32 II)*

The assumption that there is a correlation between dysfunctional emotion management and (total) mentalization ability is confirmed: (r (Pearson) = -0.189, p=0.027). The more pronounced attachment insecurity, the more dysfunctional is emotion management, i.e. the worse is emotion regulation.

In the present sample, the total score for dysfunctional emotion management is M=1.16 (SD=0.65), ranging from Min=0 to Max=2.92. The subjects rated number 1 as the most common emotion coping pattern (26%, n=27). The second most common coping pattern was number 2 (17.3%, n=18), the third most common type number 3 (15.4%, n=16).

The correlation (Spearman) between dysfunctional emotion management *(VDS32 II)* and the "insecure attachment" total score is 0.415 (p<0.001). There is a relatively close correlation here stating that insecure attachment is associated with a lack of emotion regulation and thus with dysfunctional emotion management. Here, a causal interpretation is more probable than with other variables.

Correlation of more dysfunctional emotion management with the *ADE* developmental stages

We expect that emotion regulation is not yet possible at the affect stage and therefore a dysfunctional emotion management prevails. The correlation (Spearman) is 0.291 (p=0.003). On the other hand, there is no correlation with the thinking and empathy stages (Table 7a).

Table 7a Correlation of developmental stages with dysfunctional emotion management in the *VDS32 II*

Correlation of *VDS32* dysfunctional emotion management with *ADE* developmental stages	Affect stage	Thinking stage	Empathy stage
Spearman's rho	0.29	-0,01	0.10
p (2-sided)	0.00	0.93	0.33

What does the Schick study tell us?

On the one hand, in this study the developmental stage concept is expanded by one stage: the body stage. On the other hand, attachment insecurity is now added as a new independent variable in the form of the 15-question questionnaire. The test subjects also completed the *VDS32 II*, indicating their dysfunctional emotion management.

We can now explore the characteristics of the developmental stages, such as the degree of mentalization at each stage, and we can examine how insecure attachment affects the ability to mentalize. Conclusion: The higher the developmental stage, the more pronounced are mentalizing ability and emotion regulation. The ability to mentalize and the availability of mental resources grow with attachment security. This result confirms the findings of previous research. It also shows that our measuring instruments capture the facts very well and are therefore suitable for research and practice.

Wöhrle study

(10 attachment questions, *VDS30*, mentalization *(VDS48)*)

The Wöhrle study is our second study (prior to the Schick study). In comparison to the Leiner study, it omits the developmental stages and instead includes the attachment questions, but not yet 15 multiple choice questions, but only 10 questions to tick – the first version of this questionnaire. What is also exciting is that it uses the *VDS30* dysfunctional personality questionnaire instead of the *VDS19+* personality strengths questionnaire. In addition, the four adult attachment types are examined.

Sample: This sample included 126 subjects. 72% (n=91) of the them were female, 27% were male (n=34). One person (1%, n=1) selected "diverse" as gender. The age of the test subjects ranged from 18 to 65 years. The average age was 30

years (M=30.20, SD=14.04). 37% (n=46) reported being single. 76% (n=96) reported having no children. The question about the highest educational degree was answered by 2% (n=3) with "lower secondary school leaving certificate/qualifying lower secondary school leaving certificate". 13% (n=16) had a secondary school diploma, 12% (n=15) a technical college entrance qualification or a technical college diploma. 51% (n=64) stated having a general university entrance qualification.

TYPES OF ATTACHMENT

The total sample of 126 subjects was divided into attachment autonomy types (anxious-clingy, anxious-distant, secure-autonomous and secure-cared for). Since the first two types were only represented by one or two test subjects in the sample, this topic is omitted here.

QUESTIONS ON ATTACHMENT SECURITY (first version)

The questionnaire used here consists of 10 items to be ticked when appropriate (simple yes-no answer):

1. Parents lacked protection, security, reliability
2. Parents threatened to leave or send me away
3. I was very affectionate to clingy
4. I was separated from my mother for too long (clinic, home)
5. My central fear is fear of separation and loss
6. My central need is protection, security and comfort
7. My central anger is about separation
8. I cannot break up
9. I cannot stand disharmony
10. I am not good at being alone

The mean of the total score for the attachment questions questionnaire was 1.73 checked statements (M=1.73, SD=1.53). The number of checked statements varied between no checked statements and a maximum of six checked statements. One of the statements was checked most often. 28% (n=35) agreed with one statement, while 25% (n=31) agreed with none of the statements. Two of the statements presented in the questionnaire were ticked by 20% (n=25) and three

statements were ticked by 14% (n=17). 8% (n=10) agreed with four statements in the questionnaire, while 5% (n=6) agreed with five of the statements. 2% (n=2) considered six statements in the questionnaire to be correct. Thus, 72% (n=91) were classified as not insecurely attached, while 28% (n=35) were classified as insecurely attached. Many studies estimate that 35% of the general population are insecurely attached.

DYSFUNCTIONAL PERSONALITY QUESTIONNAIRE (*VDS30*)
This questionnaire is a standard tool for the diagnosis of outpatient psychotherapy patients. However, as it also shows great variability in non-clinical samples, it can be viewed as a helpful instrument for assessing general competence in relationship management.
The following correlations emerged:

a) between insecure attachment and personality (VDS30)
A positive, average correlation of 0.38 was found between insecure attachment and the "self-insecure/anxious" scale of the *VDS30*, with a significance value of $p<0.001$ (r=0.38, $p<0.001$).
The Pearson correlation also revealed a significant mean positive correlation of 0.48 between insecure attachment and the "dependent" scale (r=0.48, $p<0.001$).
With a value of 0.19, the "obsessive" scale correlated, to a small extent, significantly and positively with insecure attachment (r=0.19, p=0.030).
There was a significant median positive correlation between insecure attachment and the "histrionic" scale.
The results of the Pearson correlations for hypotheses H21 to H29 will also be discussed. A positive mean correlation of 0.38 was found between insecure attachment and the "self-insecure/anxious" scale of the *VDS30*, with a significance value of $p<0.001$ (r=0.38, $p<0.001$). The Pearson correlation also revealed a significant mean positive correlation of 0.48 between insecure attachment and the "dependent" scale (r=0.48, $p<0.001$). With a value of 0.19, the "obsessive" scale correlated, to a small extent, significantly and positively with insecure attachment (r=0.19, p=0.030). There was a significant mean positive correlation between insecure attachment and the "histrionic" scale of 0.35 (r=0.35, $p<0.001$). The results of the significant correlations between insecure attachment and the *VDS30* scales are shown in Table 7b.

Table 7b Correlations between insecure attachment and dysfunctional personality traits (Pearson coefficient)

	Insecure attachment
Self-insecure/anxious (SU)	0.38**
Dependent (DE)	0.48**
Obsessive (ZW)	0.19*
Passive-aggressive (PA)	n.s.
Histrionic (HI)	0.35**
Schizoid (SC)	n.s.
Narcissistic (NA)	0.28**
Borderline (BO)	0.31**
Paranoid (PR)	0.31**
$*$ = The correlation is significant at the 0.05 level (2-sided). $**$ = The correlation is significant at the 0.01 level (2-sided)	

With the exception of "passive-aggressive" and "schizoid", all dysfunctional personality traits are associated with insecure attachment. "dependent" is associated to a very large extent, "self-insecure", "anxious" and "histrionic" to a large extent. Maybe the dysfunctional personality traits are individual ways of dealing with attachment insecurity – the answer to the parental inadequate offer of attachment, so to speak. Dependency is the clearest and most common result of insecure attachment.

b) between insecure attachment and total mentalization score

Attachment theory postulates that secure attachment is the prerequisite for the development of the ability to mentalize. Conversely, this means that insecure attachment impairs this development. As expected, a negative connection was found between the total score of insecure attachment and the total mentalization score (r (Pearson) = -0.19, p=0.032).

c) between mentalization ability and personality (VDS30)
If, with a realistic theory of mind, no sufficient mentalization ability can be developed, the experience and behavior in interpersonal situations cannot be sufficiently functional. This is reflected in dysfunctional personality traits *(VDS30)* (Table 8).

Table 8 Correlations between mentalization ability and dysfunctional personality traits (Pearson coefficient)

Spearman's correlation of *VDS30* with *VDS48*	Mentalization ability
Self-insecure/anxious (SU)	-0.33**
Dependent (DE)	-0.29**
Obsessive (ZW)	-0.24**
Passive-aggressive (PA)	-0.27**
Histrionic (HI)	-0.10 n.s.
Schizoid (SC)	-0.18*
Narcissistic (NA)	0.07 n.s.
Borderline (BO)	-0.26**
Paranoid (PR)	-0.28**

∗ The correlation is significant at the 0.05 level (2-sided). ∗∗ The correlation is significant at the 0.01 level (2-sided).

In the non-mentalized equivalence mode (Fonagy et al. 2008), projective identifications occur (cf. Sulz 2022a), leading to dysfunctional ways of reacting, which burden relationships and can be identified as an expression of dysfunctional personality traits. It is striking that the two personality traits that are associated with a comparatively pronounced self-efficacy (histrionic and narcissistic) do not seem to be associated with a lack of mentalization.

Conclusion of the Wöhrle study

The results suggest a correlation between attachment security, mentalization ability and dysfunctional personality. The more insecure the attachment or the more pronounced seven of the nine dysfunctional personality traits, the lower the ability to mentalize. Likewise, the more pronounced the ability to mentalize, the lower insecure attachment and the dysfunctional personality traits "self-insecure/anxious", "dependent", "obsessive", "passive-aggressive", "schizoid", "borderline" and "paranoid".

Bohn study

(*VDS19+SHORT*, 15 attachment questions, mentalization *VDS48*)

A special feature of the Bohn study is the very large sample size (N=269) allowing for much more reliable statements. The sample consists of n=225 female participants (84%) and n=44 male participants (16%). The data set covers an age range from 18 up to and including 27 years, with the average age being approximately 22 years (M=21.99, SD=2.24). The information on the socio-economic status of the test subject shows that 251 participants had a general or subject-specific university entrance qualification (93%, n=251). Another 6 participants (2%, n=6) achieved a secondary school diploma. One participant had a lower secondary school leaving certificate, one had not achieved any qualification at all (1%, n=2). 29% of the study participants stated that they attended a daycare center in early childhood (29%, n=77). Accordingly, 71% of the subjects did not attend a daycare center in early childhood (71%, n=192). In addition, 40% of the 269 participants stated that they come from a family in which the parents are divorced (40%, n=107). Accordingly, the parents of another 163 subjects were not divorced (60%, n=163). It was also shown that the quality of the parents' relationship is largely

harmonious (32%, n=85) or very harmonious (15%, n=40). 60 participants stated that harmony and conflict balance each other out in the parents' relationship (22%, n=60), and the remaining test subjects stated that the parents' relationship was conflict-ridden (17%, n=46) or very conflict-ridden (14%, n=38). When it comes to children of divorced parents, it is noticeable that the more conflictual a parental relationship is, the more likely it is that the parents are divorced.

Our considerations are based on the personality strengths as recorded by means of the *VDS19+*. In this study, a short version of the questionnaire was to be completed.

VDS48 Mentalization ability – theory of mind

For the "Total mentalization ability" dimension, scores between 1.17 and 3 are achieved. The mean is M=2.02, the median 2.03 (Mdn=2.03).

For the "Ability to mentalize the world" dimension, scores in the range of 0.91 to 3 can be determined. The mean is M=2.23, the median 2.27 (Mdn=2.27).

Again, the "Ability to mentalize the self" characteristic shows scores ranging from 0.79 to 3 points. Both mean and median are 1.89 (M=1.89, Mdn=1.89).

Connections – Correlations

A) Correlation of attachment insecurity with personality *VDS19+SHORT*

When examining the correlation between attachment insecurity and personality traits, significant results could be identified for 7 out of 9 personality traits (see Table 9a).

Table 9a Correlation of attachment insecurity with functional personality traits (Pearson coefficient)

	Ss	Sst	Fl	Ks	Au	Bb	Go	eS	Uv
Insecure attachment	-0.11	-0.13*	-0.03*	-0.19*	-0.25*	-0.19*	-0.21*	-0.39*	-0.16*

Mentalization ability	-0.39*	-0.35*	0.17*	0.15*	0.35*	0.26*	0.26*	0.32*	0.25*
* The correlation is significant at a significance level of 0.05.									

A negative significant correlation was found for the personality traits independent, conflict-proof, balanced, relational, community-oriented, emotionally stable and impartial (p<0.05).

This means that functional personality traits, i.e. personal strengths, are closely related to the attachment security experienced or existing. The more secure the attachment, the more developed are the personal strengths.

B) Correlation of mentalization with personality *VDS19+SHORT*

When examining the correlation between the functional personality characteristics and the ability to mentalize, all significant correlations were identified (see Table 9a All functional personality characteristics show a positive significant result (p<0.05), confirming hypothesis 3. Across personality dimensions, the results can be interpreted as follows: the higher the ability to mentalize, the higher the functional personality trait in question. Conversely, this means that a lower ability to mentalize is also associated with less pronounced functional personality traits.

All correlations between mentalization ability and personal strengths *(VDS19+SHORT)* are significant, i.e. these strengths go hand in hand with the ability to mentalize.

Interpretation of the correlation between mentalization and personality

A high score for "independence" is associated with secure attachment (i.e. a low total score on the attachment security scale) or a higher mentalization ability. The study provides initial insights into the correlation of the personality trait "independence" with "attachment security" or mentalization ability. The correlation can be explained by the results of the NICHD Study of Early Child Care (2004, see also NICHD (1997, 2002, 2019)), which emphasize, among other things, the relevance of supporting children's autonomy on the part of the parents. According to the results of the NICHD study (2004), children who were able to form a secure bond with their parents probably also received much support with regard to autonomous behavior in their childhood.

Individuals who, according to the results of the present study, have secure attachments tend to be considered as conflict-proof. Findings according to Vanza (2005) illustrated that the individual ability of a person to deal with conflicts arises from the personal awareness of his/her own emotions, i.e. mentalization. According to the present result, which postulates that the ability to mentalize is positively influenced by attachment security, there is probably an indirect or multifactorial correlation between attachment security and the personality trait of "conflict resistance". The correlation between mentalization ability and conflict resistance can be directly confirmed based on Vanza's (2005) findings.

With regard to the characteristics "balanced" and "relational" it was found that persons with secure attachments tend to be more balanced and relational than those with insecure attachments. Kissgen's (2008) findings, which emphasized the relevance of affect regulation on the part of the parents, are thereby confirmed.

No scientifically based results with regard to attachment security or the ability to mentalize could be identified for the characteristics "community-oriented" and "impartial". However, the present results demonstrate both a negative correlation between community-orientation and the scale for attachment security or mentalization ability, and a positive correlation between impartiality and the scale for attachment security or mentalization ability. The results of the personality trait "community-oriented" could have come about because the participants were able to gain many positive experiences in the social community, for experiences of secure or insecure attachment contribute to the development of attachment security (Rutter & Sroufe, 2000).

Furthermore, emotional stability is positively related to secure attachment. This result confirms findings by Rollett and colleagues (2009), who, based on a study, were able to determine the positive influence of the child's attachment security on emotional stability: in relation to the children's emotional stability differences in attachment security could be demonstrated. The correlation between emotional stability and attachment security can be explained as follows: assuming that emotional stability based, among other things, on a healthy internal working model, which in turn is formed on the basis of the average total attachment-related experiences with parents (Frischenschlager, 2007), a healthy internal working model usually results in a secure attachment. Emotional stability and a higher ability to mentalize also suggest a positive correlation. This is probably due to the fact that in the context of the social situations through which attachment security may form, the individual learns to mentalize (see Brockmann & Kirsch, 2010). Secure attachments are

formed on the basis of predominantly positive attachment, and therefore also on the basis of predominantly positive emotions. According to the results of Fonagy and colleagues (1997), Main (1991) and the present study, a secure attachment also has an impact on the ability to mentalize, which means that emotional stability could possibly be affected by the indirect influence of attachment security on the ability to mentalize.

Once again, this study confirms the results of our previous studies: Leiner had shown the correlation between personal strengths and the ability to mentalize. Wöhrle and Schick were able to show the correlation between attachment security and the ability to mentalize.

Rose study

(*VDS19+SHORT*, 15 attachment questions, *VDS24* frustrating parental behavior, *VDS48*)

The Rose study focuses on the effects of parental frustration on attachment security, the development of a stable personality or personal strengths and on the ability to mentalize.

It is based on the same data set (N=279) as the Bohn study.

The sample consists of n=231 females (82.8%) and n=48 males (17.2%). The average age of the test subjects is 22 years (M=22.23, SD=2.54), with the minimum age being 18 years and the maximum age being 31 years.

The majority of participants (92.8%, n=279) had a general or subject-specific university entrance qualification, n=8 (2.9%) achieved a secondary school diploma and n=1 (0.4%) had a lower secondary school leaving certificate (including a qualifying lower secondary school leaving certificate). The majority of the test subjects (90.7%, n=253) are students. Most students (68.5%, n=191) major in psychology. More than a third of those surveyed (39.4%, n=110) stated that they were a child of divorce or separation, which did not apply to 169 subjects (60.6%, n=169). On average, the quality of the parental relationship is rated as neutral (M=3.16, SD=1.29).

Almost one third of the test subjects (29%, n=81) stated that they had attended a daycare center as a child, with a mean starting age of 15 months (M=15.05, SD=9.66)). According to the test subjects, the minimum age when attending the daycare center for the first time was one month and the maximum age 38 months. Two thirds (71%, n=198) of the participants did not attend a daycare center as a child.

The measuring instruments used

Short form of the personality questionnaire *VDS19+KURZ*

This was already described in the report on the Bohn study.

15 questions about attachment insecurity

Again, this questionnaire had already been described in the Bohn study. A high score means attachment insecurity. For 13 items included in the evaluation, a maximum of 34 points can be achieved.

Questionnaire on frustrating parental behavior *(VDS24)*

When measuring frustrating experiences in childhood and adolescence due to insufficient or lacking satisfaction of central needs by the parents using the *VDS24*, the test subjects achieved a mean score of 1.06 (M=1.06, SD=1.25) out of five possible points for frustration of affiliation needs caused by the mother. With regard to the frustration of self-needs caused by the mother, there is a mean score of 0.91 (M=0.91, SD=0.95) out of five possible points. The test subjects rated the frustration of homeostasis needs caused by the mother as 0.95 (M=0.95, SD=1). The test subjects rated frustrating experiences in childhood and adolescence in the sense of a lack of satisfaction of affiliation needs on the part of the father as 1.78 (M=1.78, SD=1.56) out of five possible points on average. The average score for the frustration of self-needs caused by the father was 1.91 (M=1.91, SD=1.23), that for the frustration of homeostasis needs caused by the father 0.90 (M=0.90, SD=0.91). The subjects reported far more frustration of both the affiliation need and self- or autonomy needs caused by the father.

VDSD24: Children of separation and divorce, t-test

The expectation was that children of divorce or separation would differ from children of non-divorce or non-separation in terms of frustration caused by their parents in childhood and adolescence. A separate analysis is carried out based on the frustration caused by the mother and the father. An independent sample t-test is used to test the assumptions.

110 test subjects (n=110) stated that they were a child of divorce or separation, 169 test subjects (n=169) stated that they were not. In the sample examined, the frustration caused by the mother is higher among children of divorce or separation (M=1.33, SD=1.11) than among children of non-divorce or non-separation (M=0.74, SD=0.83). At a significance

level of a<0.05 as defined by Cohen (1988), this difference is significant, with the level of frustration caused by the mother of children with divorced or separated parents being higher by 0.59 units on average than that of children with non-divorced or non-separated parents, and the difference in the comparative population, with 95% certainty, being between 0 and 1 (t(186.9)=4.8, p<0.01, d=0.71, 95% CI [0.35, 0.83]). The effect size according to Cohen (1988) corresponds to a medium effect.

In the sample examined, the frustration caused by the father is on average higher among children of divorce or separation (M=1.96, SD=1.17) than among children whose parents are not divorced or not separated (M=0.86, SD=0.86). The level of frustration caused by the father is by 1.10 units lower for non-divorce or non-separation children. At a significance level of a<0.05 as defined by Cohen (1988), this difference is also significant, being 1 point in the comparative population, with 95% certainty (t(185)=8.52, p<0.01, d=0.94, 95% CI [0.85, 1.36]). The effect size according to Cohen (1988) corresponds to a high effect. Hypothesis 1A can therefore be presumed.

Attachment security of children of separation and divorce: t-test

Hypothesis 1B assumes that children of divorce or separation differ from children of non-divorce or non-separation in terms of attachment security in adulthood. To test this assumption, an independent sample t-test is performed. Within the sample, former children of divorce or separation are more insecure in attachment (M=10.56, SD=5.63) than individuals who did not experience parental divorce or separation in childhood (M=6.87, SD=3.93). At a significance level of a<0.05 as defined by Cohen (1988), this difference proves to be significant. The difference in the comparative population, with 95% certainty, is between 3 and 5 points (t(177.6)=6.0, p<0.01, d=0.94, 95% CI [2.47, 4.91]). According to Cohen (1988), the effect size corresponds to a high effect. Hypothesis 1B can therefore be presumed.

VDS24: Correlation with personality *VDS19+SHORT*

To test the hypothesis that there is a correlation between frustrating parental behavior and the respective functional personality traits, a Pearson correlation is carried out. One analysis is performed for the mother, one for the father. The relevant prerequisite tests have been checked (see above). The results are shown in Table 10.

At a significance level of a<0.05 as defined by Cohen (1988), the degree of frustrating parental behavior caused by the mother correlates significantly with the manifestations of self-confident, conflict-proof, relational, community-oriented and emotionally stable personality traits, with the correlations being negative and linear. The higher the mother's frustrating parental behavior, the lower the manifestation of the corresponding personality traits. According to Cohen (1988), the correlations correspond to weak to medium effects. There are no significant correlations (p>0.05) of the independent, flexible, balanced and impartial personality traits with the mother's frustrating parental behavior.

At a significance level of a<0.05 as defined by Cohen (1988), the degree of frustrating parental behavior on the part of the father correlates significantly with the manifestations of conflict-proof, relational, community-oriented, emotionally stable and impartial personality traits (Table 11). These are also negative linear correlations. The higher the father's frustrating parental behavior, the lower the manifestation of the corresponding personality traits. According to Cohen (1988), the correlations correspond to weak to medium effects. There are no significant correlations (p>0.05) of the self-confident, independent, flexible and balanced personality traits with the father's frustrating parental behavior. Hypothesis 2 can therefore still be partially presumed.

Table 9b Correlation between functional personality traits and frustrating parental behavior caused by the mother and the father (Pearson coefficient)

	Ss	Sb	Fl	Ks	Au	Bz	Gm	Es	Uv
FEV M	-0.13*	-0.08	0.01	-0.17**	-0.09	-0.21**	-0.14*	-0.31**	-0.08
FEV V	-0.05	-0.06	-0.10	-0.13*	-0.10	-0.21**	-0.13*	-0.23**	-0.20**
** The correlation is significant at the 0.01 level (2-sided). * The correlation is significant at the 0.05 level (2-sided).									

Correlation of attachment security with personality *VDS19+ short*

Our hypothesis was that there is a correlation between attachment security and the respective functional personality traits. To test this assumption, the correlation is checked according to Pearson, with the corresponding prerequisite tests having already been checked (see Chapter 5.3.1). The results are shown in Table 9c. At a significance level of a<0.05 as defined by Cohen (1988), the degree of attachment security correlates significantly with the manifestations of independent, conflict-proof, balanced, relational, community-oriented, emotionally stable and unbiased personality traits, with the correlations being negative and linear. The higher the degree of attachment insecurity, the lower the manifestations of the respective personality traits. According to Cohen (1988), the correlations correspond to weak to medium effects. There are no significant correlations of confident and flexible personality traits with attachment security.

Table 9c Correlation between attachment security and functional personality traits (Pearson coefficient)

	Ss	Sb	Fl	Ks	Au	Bz	Gm	Es	Uv
BS	-0.10	-0.17**	0.07	-0.21**	-0.25**	-0.22**	-0.24**	-0.40**	-0.14*

** The correlation is significant at the 0.01 level (2-sided). * The correlation is significant at the 0.05 level (2-sided).

At last, we take a look at the connection between the total frustrations in childhood and the ability to mentalize in adulthood. The more the participants were globally frustrated as a child with regard to their central needs, the lower is their ability to mentalize in adulthood (Table 20).

Table 10 Correlation between frustration of the child's needs and the ability to mentalize

Spearman's rho		Mentalization
Frustrations as a child	Correlation coefficient	-0.384
	Sig. (2-sided)	<0.001
	N	319

Interpretation

While most covariates do not yield significant results, there is a significant impact of frustration of affiliation and homeostasis needs caused by the mother on attachment security. The higher the frustration of affiliation and homeostasis needs in childhood, the more insecure the attachment from childhood into adulthood.

The first child is more insecure in attachment than the second.

Divorced or separated parents pose a higher risk of insecure attachment than parents who are not divorced or separated. The frustration of needs caused by the mother is higher among children of divorce or separation than among children who have not experienced parental divorce or separation. The frustration of children of divorce or separation caused by the father is even higher.

Children who have experienced a divorce or separation of their parents are later more insecure in attachment than children who have not experienced a divorce or separation.

There are negative correlations between self-confident, conflict-proof, relational, community-oriented and emotionally stable personality traits and the frustration of needs caused by the mother, i.e. the more a child's needs are frustrated by the mother, the weaker are the functional personality traits mentioned.

The frustration of needs caused by the father is negatively related to conflict-proof, relational, community-oriented, emotionally stable and impartial personality traits. It can therefore be said that these personality traits become weaker with the frustration caused by the father.

In summary, the Rose study provides us with insight or confirmation of previous findings:

— Fathers frustrate their children's affiliation needs far more than mothers. They also frustrate the child's needs for self or autonomy more.

— Children of separation and divorce have their central needs satisfied significantly less than children whose parents stay together.

— The more children's central needs are frustrated by their parents, the less they developed personal strengths in adulthood.

— The more insecure the attachment, the fewer personal strengths are present in adulthood.

— Finally, the frustration of central needs in childhood impairs the ability to mentalize in adulthood.

The previous studies showed that there is a positive correlation between personal strengths and the ability to mentalize. Since personal strengths correspond to self-efficacy in shaping life and relationships, training the ability to mentalize can help to reduce existing deficits and develop more life skills.

Cozzi study

This study focused entirely on the ability to mentalize and examined whether this has an impact on recognizing emotions on a person's face.

161 subjects were included in the study. Originally, at least 20 test subjects were supposed to come from each country. In fact, 67% came from Italy, 8% from Germany and 4% from the USA. All other countries were represented by only one test person each or not at all. The age ranged from 18 to 69 years. 103 subjects were female.

VDS48: Questionnaire to assess the ability to mentalize

The test subjects were asked to complete the *VDS48* mentalization ability questionnaire. The distribution of moderate, good and very good mentalization ability is shown in Table 11a.

When examining the two aspects of "mentalizing (perceiving, recognizing, understanding and accepting) the self" and "mentalizing the world", there were no significant differences between children with siblings and only children with regard to mentalizing the self, while the only children performed significantly better in mentalizing the world.

Significance tests: Within the s-item category, both groups did not differ significantly from each other (only children: M=2.28, Mdn=2.0, SD=0.56; children with siblings: M=2.23, Mdn=2.0, SD=0.49). However, there was a significant difference in the item category w (only children: M=2.13, Mdn=2.0, SD=0.52; children with siblings: M=2.1, Mdn=2.0, SD=0.37).

Table 11a: VDS48: Frequencies of moderate, good and very good mentalization ability in mentalizing the world, mentalizing the self and total mentalization score

	Very good (3)	Good (2)	Moderate (1)
S = Mentalizing the self	45 (28%)	110 (68.3%)	6 (3.7%)
W = Mentalizing the world	23 (14.3%)	132 (82%)	6 (3.7%)

No gender differences were found with regard to the ability to mentalize.

Emotion recognition test – recognizing emotions on a person's face

The emotion recognition test presented the subject with a picture and various emotions from the four main emotion groups of happiness, sadness, fear and anger. The first 15 emotions listed belong to the first group of emotions (joy). In contrast, the eight emotions from sadness to sympathy belong to the second group of emotions (sadness). The eleven emotions from anxiety and fear to terror belong to the third main group of emotions, and the last nine from anger to jealousy were part of the fourth main group of emotions (anger) (for reference, see Fig. 2).

Each picture showed a different emotion, and only one of the answers listed was the correct emotion. As the test comprised 43 different image-emotion pairs, the scoring system was X correct answers out of 43. Each answer was marked either 1 for a correct answer or 0 for an incorrect answer. The final score was converted into a total emotion recognition score and percentage.

The general results of the emotion recognition test are shown in Fig. 1.
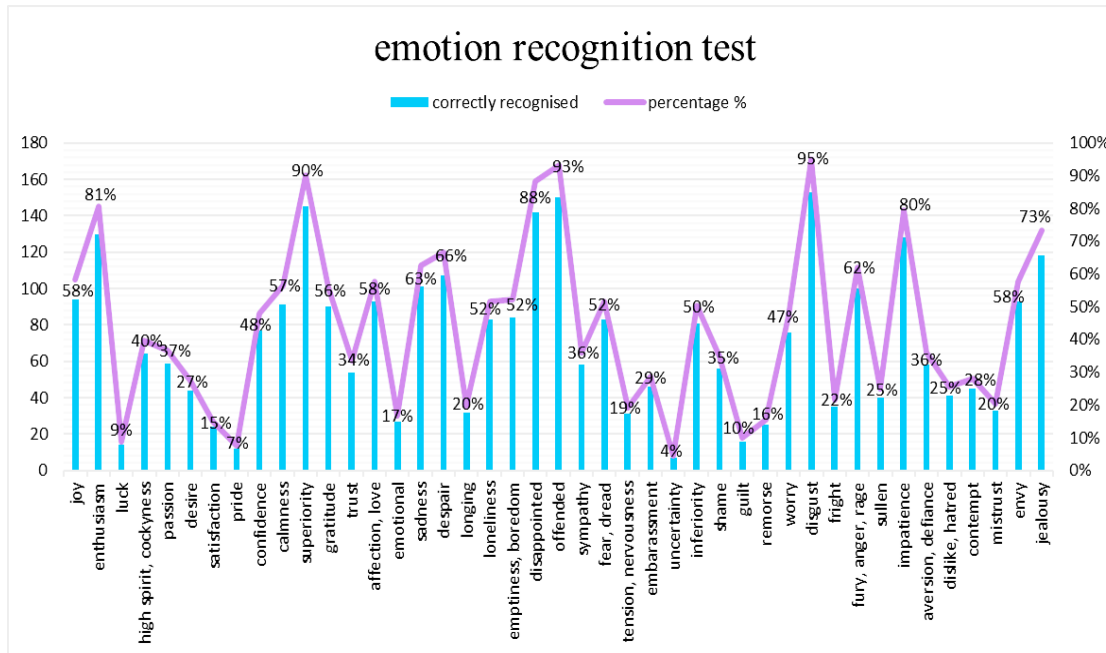

Figure 1 Distribution of correct answers in the emotion recognition test

The graphic shows how many individuals selected a correct answer (1) for each of the 43 emotions presented in the test. This data includes the entire sample of 161 participants and does not exclude individuals who chose not to disclose their gender. The five best identified emotions were disgust (95%), offended (93%), superiority (90%), disappointed (88%) and impatience (80%). The five least correctly identified emotions were uncertainty (4%), pride (7%), happiness (9%), guilt (10%) and contentment (15%).

Then, the results of the emotion recognition test were calculated for each participant, and total prevalence was calculated based on the number of correct answers (M=18.8, Mdn=19, SD=3.88). There was no significant difference (ANOVA) when testing group results by gender (female: M=19.02, Mdn=19, SD=4.11; male: M=18.75, Mdn=19, SD=3.5). Only about 15% of the test subjects recognized more than half of the emotions. In many cases there were 15 to 22 recognized emotions.

One question was whether a higher ability to mentalize facilitates emotion recognition. A chi-square test was performed using the results of the *VDS48* and the results of the emotion recognition test as variables. In the Pearson chi-square test, the score for mentalizing the self was 20.348. 44 (77.2%) cells showed an expected number of less than 5. The expected minimum number is 0.04. The score for the item "mentalizing the world" was 36.849. The expected minimum number is 0.04. Therefore, the numbers observed and the numbers expected did not differ significantly with regard to the s or w items and the results of the emotion recognition test (s items: p=0.983; w items: p=0.429). The data suggests that the variables "mentalization" and "emotion recognition" are not associated with each other.

This is also shown by Spearman's correlations (Table 11b).

Table 11b: Correlation of emotion recognition with mentalization

	(Spearman's coefficient)		**N = 161**
Correlation between emotion recognition and mentalization	**Mentalization_total**	**Mentalization of the self**	**Mentalization of the world**
Correctly recognized emotions	0.054	0.049	0.004

	n.s.	n.s.	n.s.
Mentalization_total		0.895	0.704
		<0.001	<0.001
Mentalization of the self			0.366
			<0.001

Accordingly, the hypothesis that a higher mentalization ability facilitates emotion recognition can be rejected.
Research into emotion recognition, empathy and theory of mind has grown in recent years. It is known that these three topics are congruent, and successful studies measuring the brain regions activated during such processes have been performed. The aim of this work was to investigate whether theory of mind and empathy, also known as mentalization ability, have an impact on emotion recognition. Specifically, it was examined using statistical analysis whether cultural differences could be determined. In this context, theory of mind and empathy were viewed as multidimensional constructs and associated with each other. They represented the ability to sense the other person's emotions and understand that the other person's perspective may differ from your own, which has an effect on your actions and feelings. However, this study could not prove that the ability to mentalize has any influence on facial emotion recognition. Perhaps this is a pre-mental ability, and mentalizing is just the metacognitive processing of these perceptions.

Conclusion of the five studies – evaluation of the basic constructs of MST
These five studies were carried out in the context of MST development (Sulz 2021, 2022a, 2023, see also Sulz 2017a-d). They served the empirical evaluation of important constructs that, on the one hand, form the theoretical basis of MS and, on the other hand, are used in MST.
It is about
a) Attachment security (attachment in the narrower sense: not being without parents)

b) Satisfaction of needs in childhood (attachment in the broader sense: being in good hands)

c) Mentalization: metacognition and mental resources

d) Personality strengths as life and relationship skills

The following measuring instruments were used for this purpose:

1. Frustrating parental behavior in childhood *(VDS24)*

2. Attachment security (15 attachment questions)

3. Personality strengths *(VDS19+)*

4. Dysfunctional personality traits *(VDS30)*

5. Developmental stages *VDS31* and *KADE*

6. Mental resources *(VDS38 RDR)*

7. Mentalization ability *(VDS48)*

8. Empathy: recognizing emotions on a person's face *(emotion recognition test)*

Even if correlation studies cannot make any causal statements and the results above were reported accordingly, we can definitely say that they do not speak against our therapeutic theory. We can express it like this:

In childhood, central affiliation needs and self-needs and often also homeostasis needs are persistently frustrated by parents. As a result, the child does not feel securely attached. The total score of the *VDS24* corresponds to the extent of attachment insecurity.

As early as in their first year of life, children form an internal working model (according to Bowlby 1975) and soon afterwards a survival rule, which later leads to the development of dysfunctional personality traits. As, at the same time, it prevents the development of mental developmental stages, the individual remains, for example, at the body or affect stage. A sufficient mental grasp of the self and the world is not yet possible there. Projective identifications occur, leading to unsatisfactory transactions in important relationships.

MST positions the lever (efficient interventions) at several points:

— New experience of attachment security in the therapeutic relationship

— Replacing the dysfunctional rule of survival by a rule of life that gives permission
— Making previously suppressed emotions accessible and learning successful emotion regulation
— Supporting the development of mentalization and a realistic theory of mind
— Forming personal strengths with the experience of self-efficacy
— Supporting the development to the empathy stage

Outcome studies on the efficacy of mentalization-supporting therapy

Sulz (2022b,c) reports on two studies on the efficacy of emotion tracking as a derivative of Albert Pesso's microtracking, on the one hand (see Bach & Sulz 2022), and as a fourth module of mentalization-supporting therapy (MST) on the other hand.

Let us continue the series of study reports with these two studies.

Emotion tracking study 1

Implementation of the MST intervention "Emotion tracking" (Module 4)

Four 8-hour days of self-awareness training were offered. A group consisted of 9 participants. After an introduction and preparatory exercises, each participant was given individual work lasting 90 minutes. Group discussions supplemented the individual work.

Sample: A relatively small non-clinical sample (N=36) was chosen for this pilot study including a total of four self-awareness workshops (19 students studying pedagogy in the 5th to 8th semester and 17 psychotherapists in training (depth psychology and behavioral therapy)).

The average age was 24 years (21 to 41 years). There were 23 female participants and 8 male participants.

Pre-measurement:

– *VDS24*: Frustrating parental behavior

– *VDS27*: Central needs

– *VDS28*: My central fear

– *VDS29*: My central anger

– *VDS30*: Personality

– *VDS32*: Emotion analysis I and II

– *VDS48*: Mentalization ability and TOM

Post-measurement:

– *VDS30*: Personality

– *VDS32*: Emotion analysis I and II

– *VDS48*: Questionnaire on mentalization ability and TOM

Table 12 *VDS48* questionnaire, means of dimensional scales

VDS48	Self-perception	Recognizing how childhood shapes me	Self-acceptance	Acceptance of others	Sensing childhood injuries	Acceptance of parents
Pre	1.54	1.44	1.43	1.3	1.78	1.11
Post	3	2.94	2,85	2.56	3.52	2.22

The highest score can be found in the "Ability to sense childhood injuries" scale (Table 15). At the same time, the ability to reflect on this topic improved most as a result of the interventions. The lowest score is found in the "Acceptance of parents" scale. This is also where the least improvement was achieved. Table 13 shows the individual stages of mentalization ability in the *VDS48*.

Table 13 Correlation of the *VDS48* questionnaire with emotions and needs

VDS48 scales AFTER resulting from factor analysis	Improved self-perception	Improved ability to recognize how childhood shapes me	Improved self-acceptance	Improved acceptance of others	Improved sensing of childhood injuries	Improved acceptance of parents
VDS48 total Change after	0.90	0.46	0.76	0.59	0.67	0.68

Summary and conclusion of the emotion tracking study 1

There were significant improvements in the ability to mentalize and the theory of mind.

Overall, it can be stated that there were consistently positive, significant correlations of the *VDS48* questionnaire on relationship, emotion and body perception with frustrating parental behavior, central needs and emotion analysis. This means that subjects who previously reported negative starting situations, such as much anxiety or more frustration of the needs for affiliation, autonomy and homeostasis, were able to improve their awareness of personality development, emotions, relationships and their body.

In the subjects' statements about the quality of the structure only a few positive and negative significant correlations can be identified (in the questionnaire on how to approach the goal). No clear change in cognitive and emotional attitudes can be determined, since a high score for the criteria for structural quality improves the approach to the second goal (= feeling empathy for others), but at the same time improves the approach to the fourth goal (= experience antidote in role play).

Emotion tracking study 2

The aim of this study was to include the biographical determinants (*VDS24*: frustrating parental behavior). When it comes to personal experience and behavioral tendencies in adulthood, we were interested in dysfunctional personality styles

(VDS30) and the type of dysfunctional emotion regulation (*VDS32*: emotion analysis). Finally, the changing impact of the dysfunctional rule of survival on experience and behavior (*VDS35*: impact of the rule of survival) and personal gain through increasing metacognitive skills (*VDS48*: theory of mind and metacognition/mentalization) were examined again. *Sample and implementation:* The sample consisted of 50 participants from several groups. Doctors completed 140 hours and psychologists 120 hours of group self-awareness training distributed over a period of one year. These were multi-day blocks of 2.5 to 4 days.

Results

VDS24: Frustrating parental behavior was very common in the participants' childhood; above all, there was a lack of appreciation and a counterpart. Often feelings of guilt were induced, having an impact on today's needs.

With regard to affiliation needs (dependency needs), lack of understanding and appreciation from parents was most common. Lack of attention and security was also frequently mentioned (Fig. 12). With regard to autonomy needs (or self-needs/differentiation needs), there is a counterpart missing for discussion and self-determination. Parents also provided too little physical contact and were too rarely a helpful role model.

With regard to homeostasis needs, a parent made some individuals too angry or too often angry or was too fearful, so that their fear became contagious. Other parents made them feel guilty too often.

The dysfunctional personality styles were also of interest. The *VDS30* scales of self-insecure, obsessive and histrionic are the most pronounced, and there is a high neuroticism score (Fig. 15). The degree of dysfunctionality decreased in the following personality traits: self-insecurity, obsessiveness, emotional instability. In addition, the neuroticism score (total score) was significantly lower afterwards (t-values 5% level).

When examining the dysfunctionality of emotion regulation *(VDS32)* the following was found: There are numerous forms of emotional dysregulation – most commonly emotion avoidance (I don't let on, I make sure I don't get into a situation like that, I distract myself, I just feel the emotion very weakly, my emotion turns into a mood).

In the t-test for dependent samples, the difference in means just missed the 5% significance threshold, i.e. the improvement in emotion regulation was only just insignificant (Table 14).

Table 14 Differences in means of dysfunctional emotion regulation before and after self-awareness training

	Mean	**Mean**	**95% Confidence interval**		**T**	**df**	**Sig. (2-sided)**
N = 38	Pre	Post	Lower	Upper			
*VDS32*EmoMan	12.8684	11.2105	-0.0428	3.35859	1.975	37	0.056

The influence of the dysfunctional rule of survival showed similar trends as in study 2.
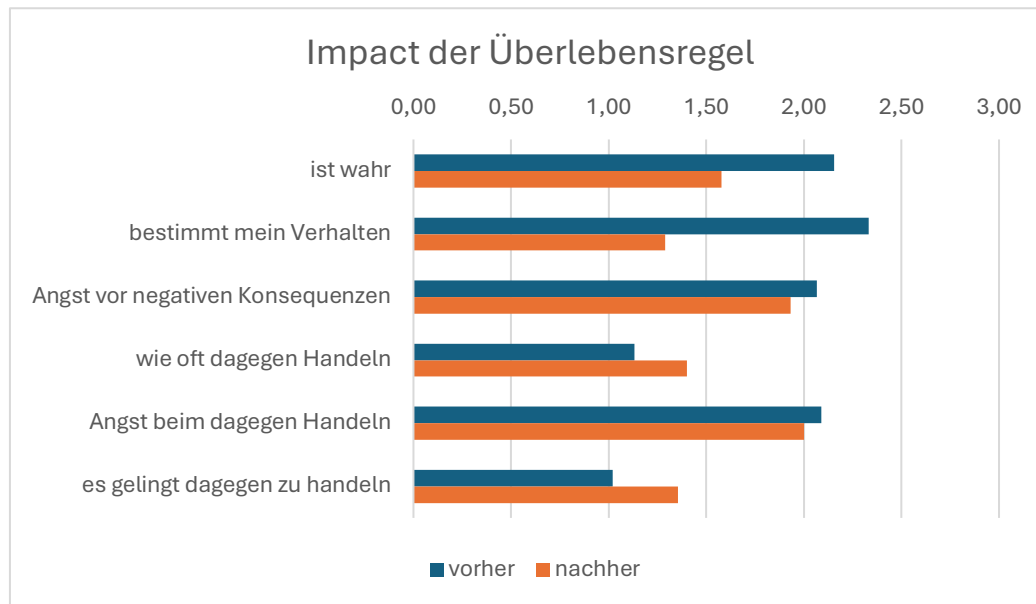

Figure 2 The dysfunctional rule of survival affects experience and behavior (from Sulz 2022c, p. 482).
Impact of the rule of survival

Is true

Determines my behavior

Fear of negative consequences

How often acted against

Anxious when acting against

Successful in acting against

<u>pre – post</u>

At the beginning of the self-awareness training, the rule of survival was largely believed to be true and determined behavior in difficult situations towards important individuals (Fig. 1). It was difficult to act against it. This changed significantly over the course of the self-awareness training (t-test for dependent samples).

The characteristics of a functional theory of mind were approximately captured using the *VDS48* questionnaire: metacognitive development and mentalization. The conscious perception of the body, emotions and needs, the recognition of the commandments and prohibitions of the child's rule of survival, the understanding of the biographical conditions and the acceptance of oneself and the caregivers (including parents) increased. Since the questionnaire directly enquired about the changes, there was no pre/post comparison.

Although significant changes occurred here as well (Table 15), psychological and psychosomatic symptoms were mild (very mild anxiety symptoms, depression symptoms).

Table 15 Psychological symptoms and their changes

N = 45	Mean	Mean	95% Confidence interval		T	df	Sig. (2-sided)
	Pre	Post	Lower	Upper			
VDS90 total	0.1877	0.1402	0.0135	0.08132	2.817	44	0.007

VDS90 anxiety	0.2644	0.1822	0.03086	0.13358	3.227	44	0.002
VDS90 depression	0.306	0.2444	-0.01148	0.13455	1.699	44	0.096

Conclusion and outlook

What the five diagnostic studies tell us:

– Leiner study: During the transition from a pre-mental stage (affect stage) to the mental stage (thinking or empathy stage), mental resources, mentalization ability and personal strengths arise, which in turn are closely related to each other.

– Schick study: Before the affect stage comes the body stage. At these two pre-mental stages there is still no functioning emotion regulation and no mentalization. Both are only possible at the mental stages (thinking and empathy) where mental resources are also available. Insecure attachment impairs these developmental steps.

– Wöhrle study: Dysfunctional personality traits can be seen as a result of insecure attachment and developmental stagnation. As, when remaining at the pre-mental affect stage, mentalization is missing, projective identification must be relied upon, which is an implicit component of dysfunctional personality.

– Bohn study: Personality strengths and the ability to mentalize are closely related. The greater the security of attachment, the sooner these two characteristics that are necessary for successfully shaping life and relationships can develop.

– Rose study: Lack of satisfaction of central needs in childhood and especially attachment insecurity impairs the development of mentalization skills and personal strengths.

– Cozzi study: Mentalization ability as a result of metacognitive development can be divided into mentalizing the self and mentalizing the world. Only children do better in the latter. There are no gender differences. Contrary to expectations, it was not found that good mentalization skills lead to more successful recognition of emotions on a person's face. It is possible that this ability is not a pure expression of empathy, but rather an ability that emerges earlier in development.

This means that behavioral therapy supporting mentalization already has a scientific basis. However, it needs to be continually expanded, especially by means of outcome studies.

– Emotion tracking study 1 (outcome): It can be seen that the use of emotion tracking has at least partially changed the cognitive and emotional attitudes of the test subjects – as much as can be expected from a single four-day workshop. If the therapy is continued over a longer period of time, it can be assumed that these results may become even more pronounced in terms of changes in cognitive and emotional attitudes and mentalization.
– Emotion tracking study 2 (outcome): Frustrating parental behavior has an impact on today's needs (*VDS27*: homeostasis needs). Self-insecurity, obsessiveness, emotional instability and neuroticism decreased. Emotional dysregulation tended to decrease. The dysfunctional rule of survival has less of an impact on experience and behavior. The commandments and prohibitions are more often violated. Improvement of mentalization, theory of mind, empathy and awareness (perceiving, recognizing, understanding, accepting, communicating) increases. Anxiety symptoms and depression symptoms tend to decrease.

– This also includes the first MST evaluation study (Sulz, Brejcha & Koch, unpublished), which examined the effect of seven MST training sessions on the ability to mentalize and strengthen the person's personality. There was a highly significant increase in the ability to mentalize and a reduction in dysfunctional personality traits as well as an improved management of central anxiety. In the MST training, an improved awareness of the extent of frustration of children's needs was created, enabling the participants to reflect on the emergence of the dysfunctional rule of survival and the dysfunctional personality traits and making it easier for them to develop a new, permissive rule of life. Perceiving and expressing anger was part of this permission.

Finally, we can basically summarize our procedural understanding of the mind and its options for development as follows, based on Albert Pesso (see Bachg & Sulz 2022):

We assume
– that behavior arises from a *basic need*

– that behavior is always *interaction in relationship*

– that development always comes from and with *relationships*

– that *every emotion expects an answer*

– that emotions only gain *meaning* through a counterpart

– that automatic thoughts *become a voice that comes from outside*

– that automatic thoughts *become an interaction in a relationship*

– that this in turn provokes *a response that comes from within* (instead of being rationally functional)

– that what is central, however, is the *metacognition (mentalization)* of the "pilot": thoughts about thoughts (as well as emotions and needs)

– and that its development *leads to effective emotion regulation and empathy*

Literature

Bachg, M., Sulz, S.K.D. (2022) (Ed.). Bühnen des Bewusstseins – Die Pesso-Therapie. Gießen: Psychosozial-Verlag

Bowlby, J. (1975). Bindung. Eine Analyse der Mutter-Kind-Beziehung. München: Kindler.

Barth, D. (2024). Affect Regulation and Mentalization. *European Psychotherapy 2024*

Brockmann, J. & Kirsch, H. (2010). Konzept der Mentalisierung. Relevanz für die psychotherapeutische Behandlung. Psychotherapeut

Cohen, J. (1988). Statistical power analysis for the behavioral sciences, 2nd edition. Hillsdale: Lawrence Erlbaum.

Comanns P.-M., Wedlich, K. (2018). Was bestimmt den Menschen? Persönlichkeitsmerkmale, Bedürfnisse und deren entwicklungspsychologische Einflüsse. München. CIP-Medien

Fonagy, P., Redfern S., & Charman, T. (1997). The relationship between belief-desire reasoning and a projective measure of attachment security (SAT). British Journal of Developmental Psychology, 15, 51–61.

Fonagy, P., Gergely, G., Jurist, E. L. & Target, M. (2008). Affektregulierung, Mentalisierung und die Entwicklung des Selbst. Stuttgart: Klett-Cotta.

Frischenschlager, O. (2007). Inneres Arbeitsmodell. In G. Stumm & A. Pritz (Hrsg.). Wörterbuch der Psychotherapie (S.312). Wien: Springer.

Kissgen, R. (2008). Diagnostik der Bindungsqualität in der frühen Kindheit – Die Fremde Situation. In H. Julius, B. Gasteiger-Klicpera & R. Kissgen (Ed.). Bindung im Kindesalter. Diagnostik und Interventionen (91-105). Göttingen: Hoegrefe.

Main, M. (1991). Metacognitive Knowledge, Metacognitive Monitoring, and Singular (Coherent) vs. Multiple (Incoherent) Models of Attachment: Findings and Directions for Future Research. In P. Harris, J. Stevenson-Hinde & C. Parkes (Ed.): Attachment across the Life Cycle (127-159). New York: Routledge.

NICHD Early Child Care Research Network. (1997). The Effects of Infant Child Care on Infant -Mother Attachment Security: Results of the NICHD Study of Early Child Care. Child Development, 68, 860-879.

NICHD Early Child Care Research Network. (1999). Child care and mother–child interaction in the first three years of life. Developmental Psychology, 35, 1399–1413.

 NICHD Early Child Care Research Network. (2001). Nonmaternal Care and Family Factors in Early Development: An Overview of the NICHD Study of Early Child Care. Journal of Applied Developmental Psychology, 22, 457–492.

NICHD Early Child Care Research Network. (2004). Fathers' and mothers' parenting behavior and beliefs as predictors of children's social adjustment in the transition to school. Journal of Family Psychology, 18, 628-638.

NICHD Early Child Care Research Network. (2019). Study of Early Child Care and Youth Development (SECCYD) Overview (Historical/For Reference Only). Available at: https://www.nichd.nih.gov/research/supported/seccyd/overview (26.04.2022).

Rollett, B., Werneck, H. & Hanfstingl, B. (2009). Elterliche Partnerschaftsqualität und die Entwicklung der Neigung zum Neurotizismus bei den Kindern: Ergebnisse eines Längsschnittsprojekts. Psychologie in Erziehung und Unterricht, 56, 85-94.

Rutter, M. & Sroufe, L. A. (2000). Developmental psychopathology: concepts and challenges. Development and Psychopathology, 12, 265-296.

Schultz-Venrath, U. (2021). Mentalisieren des Körpers. Stuttgart: Klett-Cotta

Schultz-Venrath, U., Felsberger, H. (2016). Mentalisieren in Gruppen. Stuttgart: Klett-Cotta

Schultz-Venrath, U., Rottländer, P. (2020). Mentalisieren mit Paaren. Stuttgart: Klett-Cotta

Schultz-Venrath, U., Diez Grieser, T., Müller, R. (2019). Mentalisieren mit Kindern und Jugendlichen. Stuttgart: Klett-Cotta

Schultz-Venrath, U., Staun, L. (2017). Mentalisieren bei Depressionen. Stuttgart: Klett-Cotta

Sulz, S. K. D. (1994). Strategische Kurzzeittherapie. Wege zur effizienten Psychotherapie. München: CIP-Medien.

Sulz, S.K.D. (2014). Wissenschaftliche Untersuchungen der Konstrukte und Interventionen des Strategischen Therapieansatzes. Psychotherapie, 19(2), 339-373

Sulz S. K. D. (2017a). Gute Kurzzeittherapie in 12 plus 12 Stunden. Für PsychotherapeutInnen, die sich in Kurzzeittherapie einarbeiten wollen. Gießen: CIP-Medien im Psychosozialverlag

Sulz S. K. D. (2017b). Gute Verhaltenstherapie lernen und beherrschen – vol. 1: Verhaltenstherapie-Wissen: So gelangen Sie zu einem tiefen Verständnis des Menschen und seiner Symptome. Gießen: CIP-Medien im Psychosozialverlag

Sulz S. K. D. (2017c). Gute Verhaltenstherapie lernen und beherrschen – vol. 2: Verhaltenstherapie-Praxis: Alles was Sie für eine gute Therapie brauchen. Gießen: CIP-Medien im Psychosozialverlag

Sulz S. K. D. (2017d). Verhaltensdiagnostik und Fallkonzeption. Bericht an den Gutachter. Gießen: CIP-Medien im Psychosozialverlag

Sulz, S.K.D. (2020). Kurz-Psychotherapie mit Sprechstundenkarten. Gießen: Psychosozial-Verlag

Sulz S. K. D. (2021a). Mit Gefühlen umgehen - Praxis der Emotionsregulation in der Psychotherapie. Gießen: CIP-Medien im Psychosozial-Verlag

Sulz, S.K.D. (2021b). Mentalisierungsfördernde Verhaltenstherapie. Gießen: Psychosozialverlag.

Sulz, S.K.D. (2022a). Heilung und Wachstum der verletzten Seele. Praxisleitfaden Mentalisierungsfördernde Verhaltenstherapie. Gießen: Psychosozial-Verlag

Sulz, S.K.D. (2022b). Die Emotion Tracking-Studie zur Wirksamkeit von PBSP®-Interventionen (Study 1). In Bachg, M. & Sulz, S.K.D. (Ed.). Bühnen des Bewusstseins – Die Pesso-Therapie. Gießen: Psychosozial-Verlag, p. 421-452

Sulz, S.K.D. (2022c). Zur Effektivität von. PBSP®-Interventionen in der Verhaltenstherapie (Studie 2 und 3). In Bachg, M. & Sulz, S.K.D. (Ed.). Bühnen des Bewusstseins – Die Pesso-Therapie. Gießen: Psychosozial-Verlag, p. 453-484

Sulz, S.K.D. (2023). Praxismanual Mentalisierungsfördernde Verhaltenstherapie - Anleitung zur Therapiedurchführung. Gießen: Psychosozial-Verlag

Sulz, S. & Hauke, G. (Ed.) (2009). Strategisch-Behaviorale Therapie SBT. Theorie und Praxis eines innovativen Ansatzes. München: CIP-Medien.

Sulz, S. & Maier, N. (2009). Ressourcen- versus defizitorientierte Persönlichkeitsdiagnostik - Implikationen für die Therapie von Persönlichkeitsstörungen? Psychotherapie in Psychiatrie, Psychotherapeutischer Medizin und Klinischer Psychologie, 14(1), 38-49.

Sulz, S. & Theßen, L. (1999). Entwicklung und Persönlichkeit. Die VDS-Entwicklungsskalen zur Diagnose der emotionalen und Beziehungsentwicklung. Psychotherapie in Psychiatrie, Psychotherapeutischer Medizin und Klinischer Psychologie, 4(1), 32-45.

Theßen, L. (2012). Emotion und Atmung – Emotionale Ausdrucksmuster durch kontrollierte Atmungsänderung in der psychotherapeutischen Arbeit. Psychotherapie 17 (2), 63-74

Theßen L. (2016). Mit Atemübungen zum Gefühlsausdruck: Wahrnehmung und Regulation der Emotionen in der Psychotherapie. Berlin: Springer

Theßen, L., & Sulz, S. K. D. (2024a). What is mentalization supporting therapy (MST)? A metacognitive-psychotherapeutic approach based on developmental psychology. *European Psychotherapy 2024*

Theßen, L., Sulz, S.K.D. (2024b) What is mentalization supporting therapy (MST)? A metacognitive-psychotherapeutic approach based on developmental psychology. European Psychotherapy 2024 → in this book

Sulz, S.K.D. & Schreiner, M. (2024). Emotion Tracking - Healing and Growth of the Wounded Soul. *Psychotherapy 2024*

Theßen, L., Sulz, S.K.D., Wedlich, K., Keim, P., Hofherr, L., Leiner, R., Schick, P., Wöhrle, K, Bohn, A., Rose, J. & Cozzi, I. *(2024a).* Research on mentalization-supporting therapy MST - Attachment, mentalization, development and personality strengths. European Psychotherapy 2024

Theßen, L., Sulz, S.K.D., Birzer, S., Hiltrop, C., Lukas Feder, L. (2024b). MST evaluation study 2 on the effectiveness of mentalization-supporting therapy. *European Psychotherapy 2024*

Theßen, L., Sulz, S.K.D., Maria Patsiaoura, Lukas Feder (2024c). AACES MST evaluation study 3 on the effectiveness of mentalization-promoting behavioral therapy. *European Psychotherapy 2024*

Richter-Benedikt, A. J. & Sulz, S.K.D. (2024). Mentalization Supporting Therapy for Adolescents MST-J – a further development of the Strategic Adolescent Therapy SJT®. *European Psychotherapy 2024*

Vanza, M. (2005). Emotionen als Schlüssel für eine höhere Konfliktfähigkeit. In A. Bartz, M. Dammann, S. G. Huber, Klieme, T., Kloft, C. & Schreiner, M.: PraxisWissen Schulleitung. Loose-leaf edition. Kronach; Köln: Carl Link.

Correspondence Address

Dr. Lars Theßen

SBT-in-Berlin, Institut für Strategisch Behaviorale Therapie

Germanenstraße 93a, 12524 Berlin

thessen@sbt-in-berlin.de   https://sbt-in-berlin.de