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Psychomotor therapy and aggression regulation in eating disorders

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Chapter 7

General discussion

This thesis presents a new aggression regulation intervention by psychomotor therapy (PMT) for individuals with eating disorders (ED). To evaluate the effectiveness of the intervention we conducted two randomized controlled trials (RCT): one trial in an outpatient setting and a two-centre trial in a day hospital setting for ED treatment. Building on years of clinical experience and developing a theoretically and practically sound intervention, these trials were intended to shed more light on both the effectiveness of this approach for this group, and to provide more evidence for the added value of PMT in general.

Furthermore, this thesis introduces a new performance-based measuring method for anger and aggression based on physical force production called the Method of Stamp Strike Shout (MSSS). The MSSS originates from PMT and measures the standardized impact of stamping on a force plate, hitting a punching bag, and the amplitude of shouting in a microphone at various force levels. The premise is that these body behaviours stand for the ‘urge to act or shout’ that belongs to anger-related emotions.

The current chapter recaps and discusses the main findings of the thesis. The discussion focusses on the following topics: significance of the main findings; reappraisal of anger and aggression in PMT; self-report measurement and performance-based measurement of anger and aggression regulation. Before the closing statement a more basic question, underlying the work here presented, is addressed: do we need to treat aggression?

Main findings

The PMT aggression regulation intervention

PMT has a history of addressing anger and aggression issues in various patient categories in Dutch health care.¹ This thesis presents a new PMT intervention for application in the field of ED. Anger and aggression issues have been found to contribute largely to the psychopathology of ED.² Aggressiveness in ED appears to be mostly self-directed in an attempt to control the body and regulate emotions, and as a means to confirm one’s own fragile identity.³ Distorted eating behaviours and compensatory behaviours that belong to ED can be considered as destructive aggressive behaviours with severe consequences for one’s health. Following this line of reasoning **Chapter 2** describes the body and movement-oriented approach of the PMT aggression regulation intervention to address self-destructive cognitions and behaviours. The target is not only to cope with aggression in a functional way, but also to constructively use aggression as an effective coping strategy in stressful situations, that is with proper timing and with appropriate intensity in interaction with others. In PMT learning-by-doing offers a chance to experience a sense of mastery in overcoming fear, guilt, and shame, and defend personal terri-

tory. The body-felt ‘urge to act or shout’ inherent in anger and aggression finds an outlet in non-verbal exercises. Importantly, within the relational approach of body expression in PMT, patients do not just hit a bag, but learn to situate the experience of anger in a meaningful way in the context of coping with their pathology. The challenge is to fight against the destructive influences of the eating disorder in order to de-identify with the disorder. As an experiential therapy, PMT triggers body experiences on the spot in order to facilitate and accelerate the therapy process. Patients try to reestablish anger as a resource for body-felt empowerment and to use it positively in goal-directed actions, instead of internalizing anger as a threatening emotion.

Randomized controlled research

Leading up to this thesis, a pilot study (**Chapter 1**) to the effectiveness of the PMT aggression regulation intervention showed promising results in treating anger internalization in patients with ED,⁴ measured by the Self-Expression and Control Scale (SECS).⁵ The results supported the positive clinical experiences with the intervention and gave a first indication that anger issues may rapidly be tackled by a body and movement-oriented approach, based on a reappraisal of anger and aggression. To explore the effectiveness and so prove the value of PMT as a potential evidence-based therapy for this target group, we tested the aggression regulation intervention in two RCTs.

Chapter 3 reports on a first RCT conducted in a sample of patients at the start of their outpatient treatment. Consecutive referrals were allocated to either the aggression regulation intervention plus individual supportive contact (n=20), or a control condition of supportive contact only (n=20), leading to two comparable groups. Results showed that the PMT intervention in combination with supportive contact led to a larger decrease of anger internalization compared to supportive treatment only (d=0.78). Furthermore, the intervention resulted in a greater reduction in ED-related psychopathology compared to supportive therapy only (d=0.76).

Chapter 4 presents the findings of a two-centre day treatment RCT including patients with ED receiving an intensive multidisciplinary programme (3–5 days per week during 3–9 months). Participants were randomized to the usual programme plus the intervention (n=38) or to the usual programme only (n=32), leading to two comparable groups. As in the first trial, the intervention group showed a significantly larger decrease of anger internalization than the control group ($\eta^2 = 0.16$). In the day treatment trial both groups showed a significant reduction in eating pathology with no extra effect of the intervention. At this point, the absence of a significant difference between the groups may be due to the extensive therapeutic schedule for both groups in the day hospital trial, including the interaction

between participants. In the outpatient trial a decrease in ED pathology was exclusively found in the intervention group, with both groups receiving a limited schedule of individual supportive contact once a week.

In both trials, treatment adherence and patient satisfaction with the intervention were high. Participants appreciated the relational qualities of the therapists, the support of the co-participants, the exercises to practise body awareness, and the exercises to practise recognition and expression of anger. The patients found the structure of the intervention appropriate, but many of them found the intervention too short.

The encouraging findings of both trials provide first evidence that PMT may prove useful in the treatment of ED. The brief intervention, six sessions, seems to rapidly reduce persistent anger internalization. How anger internalization and ED pathology are interrelated requires further investigation.

The Method of Stamp Strike Shout

To meet the criticism that anger and aggression may not be properly assessed by subjective self-report measures as used in the PMT trials, **Chapter 5 and 6** introduce a new custom-made performance-based measuring method, also originating from PMT, called the Method of Stamp Strike Shout (MSSS). The MSSS is a body behaviour measure that records the impulse of stamping on a force plate, striking a punching bag, and the amplitude of shouting in a microphone. The given task was to increase force production in steps from 25%, 50%, 75% to 100% peak force and then step by step back to 25% force production. The result approximates the figure of a 'force pyramid'. The outcomes of an explorative study to the test performance of the MSSS in a student sample ($n=104$) are presented in two papers: Part I and II.

Part I (**Chapter 5**) provides a study into the internal structure and reliability of the MSSS. Most participants were able to increase force gradually to 100% and decrease force gradually to 25% again. High correlations exist between the force parameters. The Stamp subtest showed greatest coherence. Cronbach's alpha indicates that the internal consistency of the MSSS was excellent for all three subtests. The test-retest reliability was high. The inter-correlations between the subtests were moderate, indicating that the combined outcomes may be complementary.

Part II (**Chapter 6**) investigated the test validity of the MSSS in the same student sample according to an 'emotion follows action' design, that is exploring whether and how levels of physical force production match levels of reported anger expression, anger inhibition and anger control, without offering anger provoking stimuli prior to the performance. The question was whether the MSSS itself would trigger body-felt anger coping styles. The SECS⁵ was used as a frame of reference for anger regulation. A comparison between internalizing versus externalizing participants resulted in a consistent trend for men as well as women: externalizing participants

produced more force than internalizing participants, although in the Strike subtest performed by men this was only the case in the last step towards 100%. Further, the correlation patterns with the SECS differed between the subtests of the MSSS. The Shout test was the most sensitive indicator for anger coping style in the student sample, showing moderate strong negative correlations with anger internalization for women as well as men. The women, having a high mean score on anger control, showed a more complete pattern: their performance also displayed a moderate positive relation with anger externalization – those more externalizing shouted louder – and moderate negative associations with anger control. In women performing the Stamp subtest, inhibition of force production correlated moderately with an internalizing style of anger coping. In the Stamp subtest performed by men there was only a small negative association with the anger control scales. In the Strike subtest no correlation patterns could be detected, neither for women nor for men. Overall, the trend in these first test results points towards associations between performing the MSSS and anger regulation style.

General discussion

Significance of the main findings

The PMT intervention studied in this thesis contributes to the need to treat anger and aggression problems in patients with ED, particularly targeted at tackling excessive anger internalization. We investigated a new aggression regulation intervention in two RCTs. The findings provide first evidence for the added value of PMT as a body and movement-oriented approach to deal with persistent internalizing problems. Furthermore, the outpatient trial showed a reduction in ED psychopathology in the intervention group only. Based on the findings, we recommend the PMT approach to be implemented in clinical practice. The intervention has recently been included in the new official Dutch practice guideline for the treatment of ED (<http://www.kwaliteitsontwikkelingggz.nl/>). Our research contributes to the evidence-based status of PMT in mental health care, as required by the Ministry of Health, Welfare and Sport in the Netherlands. It fits into the nation-wide research programme of the ‘Professorship of Human Movement, Health and Well-being’,⁶ with its focus on improving physical awareness, regulation of feelings and behaviour, and expression and relaxation.^d

Further, we introduced a new performance-based measuring method for aggression regulation and tested it in a student sample. The MSSS aims to contribute to the need for behavioural measures of emotion. First explorative test find-

^d This programme is streamlining research to support the profession in corporation with the National Health Care Institute, which advises the minister on the content of the basic health care package.

ings indicate that associations exist between physical force production and anger coping style. The MSSS will be further investigated in various target groups, including patients with ED, to explore the added value for clinical and research purposes.

Reappraisal of anger and aggression in PMT

There is a huge body of literature on anger and aggression. In popular language, anger and aggression are often used interchangeably. In fact, both concepts are interconnected but differ categorically. We typify aggression as the verbal and non-verbal behaviour resulting from anger-related feelings, cognitions, images, and impulses. ‘Aggression regulation’ is chosen as an overarching and concise title of this thesis, including the regulation of its underlying motives, feelings and cognitions.

Aggression can be explained in various ways and has various forms and functions. The form of aggression refers to the way it is expressed: physically versus verbally, directly versus indirectly, actively versus passively. The function of aggression refers to the different motives. In clinical practice, psycho-education on the meaning of aggression is essential in order to work towards a shared goal with patients and also to reach consensus within the staff. Relevant for the intervention under study is the constructive value of anger and aggression: well-regulated body-felt anger expression can be a liberating and empowering experience.

Regrettably, anger and aggression are generally defined as negative concepts, related to harm, violence, and hostility. In accordance with its negative status, anger enhances avoidance behaviours.⁷ Garfinkel et al. describe that anger nevertheless possesses motivating properties which facilitate behaviour.⁸ As such, anger is also viewed as an approach emotion.⁹ Anger is linked to high optimism, positive expectations and experiences of high coping potential.¹⁰ Furthermore, anger is associated with perceived task ease.¹¹ This thesis emphasizes that the important question is not whether emotions are good or bad, but whether the ways they are expressed are helpful or unhelpful in a particular context.¹² Aggression per se is not adaptive or maladaptive. Competent aggressors employ aggression in a measured and planned way with the intent to protect or increase personal power, not necessarily to harm others. Research even reveals a ‘bright side to bad behaviour’.¹³ It is an underreported aspect of human behaviour that aggression in certain contexts can be associated with positive outcomes and desirable traits. In forensic psychiatry, the Good Lives Model promotes a positive strength-based approach to equip offenders with resources to obtain primary goods in socially acceptable ways.¹⁴ Prosocial anger behaviour seems to be an effective coping strategy in stressful situations¹⁵ and may even strengthen relationships.¹⁶

For patients with ED, aggression often has a negative connotation, which may hinder verbal and non-verbal expression. The name of the PMT intervention,

aggression regulation, already helps to break a taboo and focuses attention on issues that patients tend to be not aware of, or even deny. At first, many of them react surprised: 'What has aggression to do with my ED?' The counter-question of the therapist is usually convincing enough: 'Can I call the way you treat yourself and your body destructive aggression?' The therapist continues by explaining various aspects of anger and aggression, including the link between anger suppression and aspects of ED pathology: self-sacrifice, self-disgust, bulimic behaviour, and destructive evaluation of the body.¹⁷ Certain expressions in colloquial speech also highlight the relationship between anger and eating behaviour: 'feeling fed up', 'he makes me puke', 'I can't digest this', 'I am going to hurl', 'I am sick to my stomach', 'I will have you for breakfast', and 'I just don't want you to eat your heart out!'.^e

To acknowledge anger being a part of oneself is required to allow oneself to engage in the core activity of the intervention, that is to openly reveal oneself in body expression. In the PMT aggression regulation intervention, it is crucial to learn to reappraise anger and aggression and redirect destructive intentions away from the self and the body. Aggression needs to be used in the right direction: against the destructive influence of the eating disorder. The emotion regulation model of John and Gross¹⁸ supports this goal of reappraisal. They distinguish two strategies: antecedent-focused strategies, which are applied before the action tendencies have become fully activated, and response-focused strategies, which are applied once an emotion is already underway. Reappraisal of an emotion is a form of antecedent-focused strategy, whereas suppression is a form of response-focused emotion regulation. To reappraise aggression appears to be healthier than to suppress behavioural responses.¹⁸

Emotion regulation strategies vary in effectiveness.¹⁹ The learning-by-doing approach of PMT helps patients to recognize their usual regulation strategies. The next step is to formulate new goals and to discuss implementation intentions.²⁰ PMT can provide an arena to practise reappraisal and anger expression skills with a view to active implementation in daily life.

^e There is a relationship on the neurobiological level as well. Hunger and aggression are interconnected, particularly due to low levels of serotonin (5-HT).³⁹ Serotonin has been implicated in promoting self-control, regulation of hunger, caloric intake, and food choice, which is relevant for treating health conditions such as ED.⁴⁰ So besides research on the behavioural level, we also recommend to study the association between aggression and ED on the neurobiological level.

Self-report measurement of anger and aggression regulation: the SECS and the STAXI

This thesis uses the SECS as self-report questionnaire to examine anger internalization, externalization and control. Other coping responses, which we did not directly measure, also contribute to anger and aggression regulation, such as avoidance, distant or indirect anger, assertive behaviour, social sharing, tend-and-befriend (next to fight-or-flight), and reconciliation.¹⁶ Generally, research into anger coping has shifted from descriptions of mechanisms within the individual towards dynamic explanations within the interpersonal context.²¹

The subscales of the SECS are allied with the anger coping part of the widely used State Trait Anger Expression Inventory (STAXI).^{22,23} The SECS does not include the part of the STAXI that measures anger experience (trait and state anger). In a recent article on a Dutch translation of the STAXI-2,²⁴ the authors do not refer to the SECS. The item description and total number of items of the expression and control scales of the STAXI-2 differ from the SECS. Still, the meaning of the content of both scales is comparable. Below we briefly discuss the SECS scales and we pay attention to the anger experience scale of the STAXI.

Anger In (AI) – This subscale refers to the extent to which people suppress anger or replace it with guilt and, ultimately, with feelings of anxiety or depression as patients blame themselves for the problems surrounding the anger-provoking situation and ‘forget’ their anger.²⁵ Only the AI subscale of the SECS was sensitive to change in the trials we conducted. Also, this scale was the most congruent with force production in performing the MSSS. In a validity study of the SECS in a Dutch community sample, AI was positively correlated with cynicism, cynical distrust, and indirect aggression.²⁶ In case of ED, the feeling of disgust may hide and regulate the more ego-dystonic feeling of anger.²⁷ In a non-clinical sample of female university students, AI was found to be as highly correlated with ED symptoms as depression, explaining 10% of the eating disturbance variance.²⁸

In the context of clinical practice, there is a risk that suppressed anger may go unnoticed and unaddressed within the therapeutic context. Without realizing, therapists may share preferences or taboos that restrict them from according anger the importance it merits.²⁸ Therapists need to be aware of their own anger and aggression regulation within the working alliance with patients.

Anger Out (AO) – AO refers to the verbal and physical expression of anger towards other individuals or objects. Low scores on the AO items may reflect a silencing of outer expression. The aim in the trials presented in this thesis was to encourage anger expression. However, no apparent change was found on the AO subscale. In a validity study of the SECS in a Dutch community sample, AO correlated positively with aggressive responding and direct aggression.²⁶ Most commonly, men with

mental health problems score higher on AO, whereas women with mental health problems score lower on AO.²⁹

For internalizing ED patients, it could well be that the negative content of most AO items, for example: 'I say nasty things', 'I make sarcastic remarks to others', 'I'm a nuisance to others', 'I say hateful things', increased the threshold for a higher score. In fact, there is a general hostility factor underlying all SECS subscales.²⁶ Importantly, these items do not represent positive aggression as pursued in the PMT intervention. An alternative self-report measure may be needed to register enhancement of constructive AO, instead of the AO subscale of the SECS that seems to be more set to reduction of destructive AO.

Control Anger In and Control Anger Out (CAI and CAO) – CAI measures how often a person attempts to calm down and reduce angry feelings before they get out of control, whereas CAO measures the expenditure of energy to monitor and control physical or verbal expressions of anger.²⁵ The pilot study which was conducted previous to the trials did not reveal changes on CAI and CAO.⁴ Therefore the outcomes of these subscales were not included in the trials of this thesis.

In our day hospital study for patients with ED, baseline scores on the control scales were one decile above the standard mean for CAI and two deciles for CAO, indicating increased levels of control. In PMT practice, paradoxically, the therapist helps to expand functional control skills by practising relaxation and distraction techniques, precisely to support patients to feel safe and to give up anger inhibition with less fear of losing control. In fact, this points towards coping with anger arousal as well as with anger expression.

An Italian uncontrolled study in a day hospital setting for ED treatment revealed a decrease of CAO on the STAXI, which was interpreted as clinically desirable.³⁰ The authors suggested that the relational approach reduced the fear of criticism and rejection, thereby mitigating the control over anger expression. Indeed, fear needs to be reduced in patients with ED and replaced by constructive anger.

In the Dutch translation of the STAXI-2 the CAO was associated with physical aggression and motor impulsiveness in a psychiatric patient sample, whereas CAI was not.²⁴ Further, the factor analysis of the Dutch scale extracted one general anger control scale instead of two distinct control scales. Still, for clinical reasons and international comparisons the authors adhered to the original division.

State & Trait Anger – The part of the STAXI that measures anger experience distinguishes two dimensions: state anger refers to the intensity of the emotion at a particular time, and trait anger indicates how often angry feelings are experienced over time. State anger measures the propensity to express anger verbally (yelling, screaming) and physically (hitting, breaking things), whereas trait anger evaluates an angry temperament and the tendency to feel anger when experi-

encing criticism. Literature suggests positive associations with ED behaviour, for example, bingeing and vomiting with trait anger, excessive exercise with state anger.³¹

This thesis did not measure anger experience since anger coping (regulation) was the main clinical objective in the trials and in testing the MSSS. However, we recommend to add the state and trait scales in follow-up research to explore the interaction between anger experience, anger coping, and task performance. Such information may be of clinical use, for example to detect intense anger feelings that may represent a potential health danger.

Performance-based measurement of anger and aggression regulation: the MSSS

When patients minimize or even deny their symptoms, as can be seen in patients with ED, it may affect self-report measurement of difficult and often forbidden emotions like anger.³² Indeed, social desirability has been found to be associated with lower reported anger expression and higher reported anger control in using the STAXI.³³ Therefore, behavioural measures are needed as a supplement to the use of self-report scales or in combination with observational methods.

The MSSS is a performance-based measuring method using force parameters to quantify real-time body behaviour related to the tendency to express, inhibit, or control anger and aggression. The idea of the MSSS matches observations in clinical practice, indicating that hidden appraisals, feelings, or urges belonging to anger and aggression can be triggered by a body and movement-oriented approach. Besides functioning as an assessment tool the MSSS can also function as a measurement tool integrated in the treatment of aggression regulation. A 'digital thermometer' can be displayed on a computer screen to indicate the level of force production, serving as a feedback-loop for learning to regulate aggression by gradually increasing and decreasing body expression. The increasing and decreasing levels of force production serve as parameters for the ability to estimate and regulate expression. The MSSS fits into the wide repertoire of PMT to practise healthy expression skills. Hitting a punching bag can be combined with shouting and can be alternated with stamping exercises, including the use of symbolic representations of therapeutic goals as a target. The presence of other participants provides a relational context which appeals to patients to be more transparent. The therapist invites patients to overcome fear, guilt, or shame, and to try out alternative anger regulation styles. As such, the MSSS can be incorporated in the intervention.

The MSSS is meant for clinical practice and research. The Faculty of Science and Engineering, in cooperation with the Center for Human Movement Sciences, University of Groningen, built the Labview software programme. A manual of

instruction has been written to handle the instrumentation and software of the MSSS. However, the instrument itself is still under construction and not yet available for general use. A usability team of Human Technology students of the Institute for Engineering at the Hanze University of Applied Sciences in the Netherlands has written an internal advisory report with suggestions for instrumental improvements of the MSSS. One suggestion based on interviews of participants was to adapt the force plate and to improve the balance position of the performing participant. A cultural probe concluded that the use of wood and metal colour would contribute to an optimal design of the force plate (Figure 7.1).

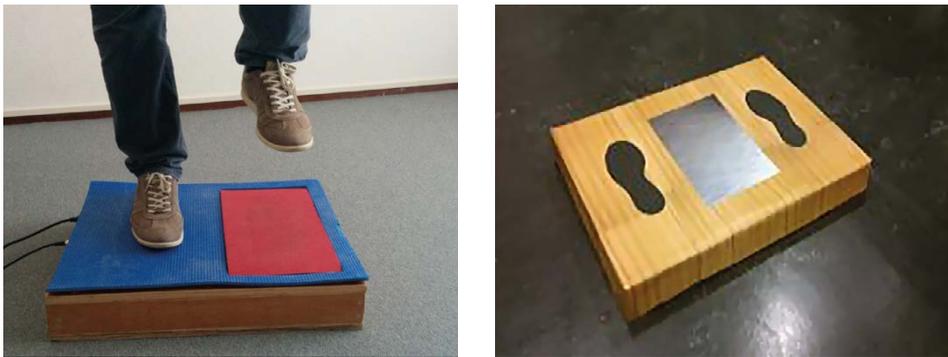


Figure 7.1. The stamp plate in the present version versus the advised prototype

To address control problems of the swaying punching bag the report suggested a fixed position of a punching target against the wall that could be placed on varying heights depending on the length of the participant. Another option would be to substitute the boxing bag by a free-standing bag on a base filled with water or sand. Perhaps the performance of the Strike subtest would then be stable enough to reveal correlations with anger coping. Such correlations were lacking in the present study, despite the appeal of a punching bag to trigger physical and symbolic expression of anger.

For the Shout subtest, one advice was to place a screen between the participant and the researcher to prevent an observer bias, in line with our finding that the voice may have the most relational impact. However, the validity of the MSSS is precisely depending on its relational impact: it is meant to trigger anger-related cognitions, images, and emotions, including inhibiting emotions like shame or fear. Besides, behind a screen the participants would still be aware of the presence of others and, moreover, without being able to control the researcher's reaction. Although the test situation needs to be standardized for research purposes, the performance should not be isolated from the environment.

Do we need to treat aggression?

This final section of the discussion addresses a basic question. During the execution of the trials of this thesis a debate arose in the British Journal of Psychiatry on the question whether or not aggression should be treated in mental health care. This debate offered an opportunity for PMT to make a statement. The 'raison d'être' of this thesis was at stake here. The journal published our reaction online:³⁴

Jones et al³⁵ review literature on the efficacy of mood stabilizers in the treatment of impulsive or repetitive aggression. In response to this review, Mushtaq³⁶ poses the question why we should need to treat aggression and medicalize bad behaviour, whereas people should take responsibility for their actions. Jones³⁷ argues in reply that aggression is not synonymous to bad behaviour: individuals can be extremely distressed by the impact of their own propensity to extreme anger or aggression, whether you call it a medical illness or not. Many seek help, but often little is available. Jones argues for research into the efficacy and safety of potential interventions, be they medical, psychological, or social.

Indeed, it is about time to address anger and aggression in targeted evidence based treatment for different patient categories. In the field of eating disorders, for example, it is sheer violence towards the own body that makes it the most deadly of all psychiatric disorders. Anger and aggressiveness are found to be associated with eating disorder subtype, severity of eating disorder symptoms, co-morbidity, altered biochemical functioning, endocrinologic dysfunction, and poorer treatment outcome.² No question we need to treat aggression. But how?

Starting point is to revalue aggression. Aggression is the behavioural outcome of anger related feelings, cognitions, and impulses. In general, anger and aggression are considered as negative concepts related to violence and hostility. Consequently, anger is often inhibited by shame, guilt, fear or taboo, at risk of anger attacks or self-injurious behaviours. Anger, however, is also a positive resource in building up strong identity and defending personal territory. Prosocial aggression is an effective coping strategy in stressful situations. Aggression is an in-relation-to-phenomenon and should not be objectified as a disease-to-get-rid-off. To revalue anger as a resource for empowerment, a meaningful connection should be made to body awareness, life experiences, and present interaction with others. Most importantly, anger and aggression need to be contained and channelled in a bodily-felt way to be able to overcome shame and develop emotion recognition and expression skills. On this point, body-oriented psychotherapy rises to the challenge of its potentials. In the Netherlands, a body therapy called psychomotor therapy (PMT) has a clinical tradition in aggression regulation. A pilot study to the effectiveness of a brief treatment protocol indicates that PMT accelerates the process of de-inhibiting aggression in patients with personality disorders and patients with eating disorders who internalize anger excessively.⁴ By practicing verbal and non-verbal expression with proper timing and intensity, patients learn alternative forms of action

that are not violent or abusive. We conclude that we do need to treat aggression. Our pilot data indicate that treatment is beneficial at least for patients with personality disorders and eating disorders. More evidence is needed and it is our responsibility to plea for innovation and research in this area, if we want patients to take their own responsibility.

So yes, we do need to treat aggression. Anger and aggression are transdiagnostic issues across a wide range of diagnostic categories, like disruptive, impulse-control, and conduct disorders, personality disorders, trauma, and mood disorders. There is an increased interest in medical research into anger coping strategies, due to their impact on health problems, like coronary heart disease, cancer, depression, and internalizing disorders.²¹ Turning one's anger inwards instead of expressing it is found to have severe consequences for one's health.³⁸ So the question is not whether, but how aggression needs to be treated. Evidence presented in this thesis indicates that a body and movement-oriented approach like PMT can be of added value to target anger inhibition in patients with ED.

Conclusion and future PMT research

The introduction of this thesis stated that PMT, though well established in mental health care in the Netherlands, needs to expand its research tradition to support evidence-based practice. The positive findings of both RCTs presented in this thesis deliver first evidence for the added value of a new PMT intervention targeted on persistent anger inhibition in patients with ED. Furthermore, the outpatient trial showed a reduction in ED psychopathology in the intervention group only. Future research is required to repeat the trials in various treatment settings to enhance generalizability of the findings. The question remains how anger internalization and ED pathology are interrelated. To understand this relationship better, more diverse outcome measures are needed as well as research into long-term effects and underlying working mechanisms of the intervention. Studies with different yet homogeneous patient populations are necessary to shed light on possible differences between diagnostic groups.

The second part of this thesis introduced the MSSS: a new custom-made body-oriented performance-based measuring method for anger and aggression. The first explorative test results show a trend towards associations between test performance and anger regulation style, particularly anger inhibition, most completely in the Shout test performed by women. An overall comparison indicates that externalizing participants produced more force than internalizing participants. Follow-up research is required to explore the feasibility of the MSSS. In the present explorative set-up the question was whether 'emotion follows action'. A next line of research is to test an 'action follows emotion' design, that is performing the

MSSS after exposure to anger versus neutral triggers. Supplemental research needs to explore the role of anger regulation strategies in movement behaviour and voice expression. Future experiments will target on application of the MSSS in clinical populations with marked problems in aggression regulation.

Overall, this thesis wants to encourage PMT clinicians to further study the effectiveness of PMT in clinical practice in order to firmly establish their profession in health care.

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