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## Psychomotor therapy and aggression regulation in eating disorders

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# Chapter 1

## **Introduction**

This thesis presents the findings of randomized controlled research into the effectiveness of a new aggression regulation intervention for patients with eating disorders (ED). Also presented are the first test results of a new body behaviour measuring method for anger and aggression, called the Method of Stamp Strike Shout (MSSS). The intervention as well as the measuring method originate from a body and movement-oriented therapy in the Netherlands, called psychomotor therapy (PMT).

Source of the aggression regulation intervention is the Lentis Psychiatric Institute in the Netherlands at the beginning of the millennium. The institute had just started to specialize in ED. PMT was part of the multidisciplinary treatment program to address issues in body experience and movement behaviour. The clinical programme of PMT revealed a prominent role of excessive anger internalization in ED psychopathology. ED literature confirmed the need for targeted treatment of dysfunctional anger and aggression regulation.

At the same time, the Lentis Psychiatric Institute needed to switch to a market-oriented health care system. New health care policies in the Netherlands demanded more transparency and evidence for the quality, safety, and efficacy of therapeutic interventions. Having the ambition to deliver innovative high-quality specialized care and to contribute to evidence based practice, we took the opportunity to conduct research into the effectiveness of the new aggression regulation intervention for patients with ED. A non-controlled pilot study showed promising findings. Then, as start-up of the PhD, randomized controlled research was implemented in cooperation with the Rob Giel Research Center, part of the University Center of Psychiatry of the University Medical Center Groningen in the Netherlands. Furthermore, to contribute to more ecologically valid measuring methods for anger and aggression regulation, the MSSS was developed in cooperation with the Center for Human Movement Sciences of the University of Groningen in the Netherlands. The MSSS is meant to be used in addition to self-report questionnaires to quantify anger-related body behaviour, and can also be applied as a therapeutic tool in learning to regulate anger expression safely. It was tested in a first, non-clinical explorative study.

## **Psychomotor therapy: moving towards evidence-based practice**

PMT is a body and movement-oriented therapy well established in mental health care in the Netherlands and Belgium since 1965.<sup>1</sup> PMT uses body awareness and physical activities to help patients improve their body experience, their understanding of emotions and cognitions and try out new behaviours. A distinction is made between body-oriented, movement-oriented and symbolic methods.<sup>2</sup> The *body-oriented* methods in PMT incorporate relaxation techniques, and body awareness exercises using body language and touch, for example according to the pro-

toocol of *SensoRelaxation*.<sup>3</sup> PMT utilizes elements of specific body-oriented models such as the *Pesso Boyden System Psychomotor*, for example, to experience a sense of boundary in interpersonal distance and proximity.<sup>4</sup> The *movement-oriented* methods in PMT consist of activities originating from sports and physical education. Exercise in itself has been found to have positive effects on psychological disorders.<sup>5,6</sup> Furthermore, PMT uses the context of sports and play to enable patients to deal with disorder-related issues. For example, a game of basketball offers a playground for dealing with emotions, cognitions, (body) behaviours, impulse regulation, and social interactions that can be therapeutically addressed on the spot. The *symbolic* methods in PMT make use of the potential symbolic meaning of movement and props such as balls, ropes, sticks, pillows, and boxing gloves, to work on therapeutic targets. For example, patients can practise expression skills while projecting burdens of life onto a boxing bag. In PMT, the participants are experiencing and learning 'by doing'.

As a profession, the challenge of PMT is to expand its research tradition to prove its effectiveness. Recently, the Ministry of Health, Welfare and Sport in the Netherlands has required scientific evidence for the efficacy of body and arts-oriented therapy in order to guarantee implementation in future health financing and insurance policy.<sup>7</sup> The focus in the research agenda of Dutch mental health care lies on early detection, personalized medicine, and research to the effectiveness of innovative interventions.<sup>8</sup> This agenda is in line with the international Roadmap to Mental Health Research (ROAMER), emphasizing prevention strategies, insight in working mechanisms of treatment, developing new interventions, and empowerment of patients and their relatives.<sup>9</sup> Consistent with this agenda, the aim of this thesis is to investigate the effects of a new intervention that is meant to empower patients with ED. The experimental design of an RCT has been chosen to meet the standard of evidence-based practice in official treatment guidelines.

In international perspective, research into the effectiveness of body psychotherapy indicates that the evidence base has become more prominent over the last decade.<sup>10</sup> PMT is integrated within this field. Body psychotherapy has been found to be particularly relevant for those disorders with body image distortion and other body-related psychopathology, and also for mental disorders with limited treatment response, like anorexia nervosa.<sup>11</sup> With this thesis, PMT contributes to this field of research.

## **Psychomotor therapy and eating disorders**

EDs are severe mental disorders that are hard to treat. The mortality rates are high, particularly in anorexia nervosa, a type of ED characterized by self-induced starvation and excessive weight loss.<sup>12-14</sup> In the 5th edition of the Diagnostic and Statis-

tical Manual of Mental Disorders (DSM-5) three EDs are recognized: anorexia nervosa (AN), bulimia nervosa (BN), and, added as an official diagnosis, binge eating disorder (BED). The two remaining ED categories are: other specified feeding or eating disorder (OSFED) and unspecified feeding or eating disorder (USFED).<sup>15</sup> Feeding and eating disorders are characterized by a persistent disturbance of eating or eating-related behaviour, which results in the altered consumption or absorption of food, and which significantly impairs physical health or psychosocial functioning.

In the treatment of ED, most evidence is for the efficacy of cognitive behavioural therapy. Nonetheless, an ongoing search is required for new developments in treatment.<sup>16</sup> Over the past decades, PMT has contributed to innovation by focusing on dysregulated body experience and movement behaviour.<sup>17,18</sup> Although ED psychopathology is unmistakably body-related – characterized by an overvaluation of weight and shape in AN and BN – RCTs on body and movement-oriented interventions are sparse in this field. There are two recent systematic reviews of 11 RCTs on the effectiveness of physical therapy interventions, such as exercise, yoga, and massage, for patients with AN, BN or BED.<sup>19,20</sup> Such interventions can have a diverse range of benefits on physical, mental, and ED-specific factors.<sup>21</sup> Research findings are promising, however more evidence is required. The PMT Special Interest Group (SIG) on ED, embedded in the Dutch Association for Psychomotor Therapy and the Dutch Academy for Eating Disorders, is promoting three interrelated research targets: [1] dysregulated movement behaviour with a focus on hypo- or hyperactivity; [2] negative body experience, using mirror and video exposure,<sup>22</sup> [3] emotion dysregulation, particularly paying attention to body related anger and aggression issues.

## **Eating disorders and aggression regulation**

Anger and aggressiveness are known to be salient psychopathologic features in ED, receiving growing scientific attention.<sup>23-25</sup> Bulimic behaviours like bingeing, vomiting, excessive exercise, use of laxantia or diuretics can be considered as aggressive behaviours which are mostly self-directed as an attempt to control the body, to regulate emotions and to have a confirmation of one's identity which often is fragile.<sup>26</sup> Anger and aggressiveness are found to be associated with ED subtype, severity of ED symptoms, altered biochemical functioning, endocrinologic dysfunction, and poorer treatment outcome.<sup>27</sup> In difficulties with emotional expression, anger seems to play a significant role.<sup>28</sup> Self-silencing and dysfunctional anger regulation are suggested to be predictors of ED.<sup>29</sup> Self-sacrifice seems to be related to dissatisfaction with one's body, which notion supports the hypothesis that unexpressed feelings may be redirected to the body.<sup>30</sup> Taken these psychopathological features into account, an evidence-based treatment targeted on self-destructive anger and aggression is much needed.

## **Psychomotor therapy and aggression regulation in eating disorders**

There are many strategies to address emotion regulation issues.<sup>31,32</sup> In the Netherlands, PMT has become well established in various fields of health care as a body and movement-oriented strategy for emotion regulation, including the regulation of aggressive impulses.<sup>33</sup> Building on this tradition, this thesis intends to offer new opportunities to deal with anger-related emotions, cognitions and behaviour that are part of ED psychopathology. In the PMT intervention under study a range of body and movement-oriented techniques are applied to de-inhibit functional anger expression, to deal with old frustrations and to empower the patient. Patients practise anger-related body expression openly and directly with appropriate timing and intensity in interaction with others. The basic strategy is to reappraise anger and use it positively in goal-directed actions against the destructive influence of the eating disorder. The first section of this thesis will describe the content of the intervention.

### **Pilot study**

The PMT intervention under study was developed in a centre for clinical psychotherapy, part of Lentis Psychiatric Institute in the Netherlands, with one unit for patients with ED and one for patients with a personality disorder. This centre offered a 9-12 months multidisciplinary programme for inpatients as well as for patients in day care. PMT offered the aggression regulation intervention as a referral on top of the usual group therapy.

Based on promising clinical experiences, we conducted a pilot study to investigate the effect of the intervention in a sample of patients ( $n=19$ ) who internalized their anger excessively. The study, published in a Dutch journal, showed a large reduction in anger internalization during the intervention period (Cohens  $d=1.5$ ,  $p<0.05$ ), with no effect during the preintervention waiting period.<sup>34</sup> On anger externalization, a medium effect was found in the intervention period (Cohens  $d=0.6$ ,  $p<0.05$ ) and no effect during the pretreatment waiting period. These results supported the notion that body and movement-oriented therapy may rapidly reduce anger suppression. The action-oriented approach triggered anger-related emotions, cognitions, and behaviour more than words alone and thus may have accelerated the therapy process. Colleagues of the multidisciplinary team recognized this in their clinical practice. The pilot study indicated that PMT may well be a viable add-on for enhancing the patients' responsiveness to further psychotherapeutic treatment.

## Randomized controlled research

Following the encouraging results of the pilot study, we conducted two RCTs in cooperation with the Rob Giel Research Center of the University Medical Center Groningen: one trial in the outpatient treatment setting of PsyQ Center for Eating Disorders of Lentis Psychiatric Institute Groningen, and a two-centre trial in the multidisciplinary day treatment settings of PsyQ Center for Eating Disorders Groningen and Amarum Center for Eating Disorders of GGNet Mental Health Care Zutphen. Main outcome variables were anger expression and eating pathology. The findings of both trials are reported and discussed in chapters 3 and 4 of this thesis.

## Performance-based measurement of anger and aggression

The second part of this thesis deals with the criticism that anger and aggression may not be properly assessed by subjective self-report measures, which has also been noticed in the field of ED.<sup>35</sup> The reported level of anger expression may be influenced by social desirability, negative self-image, lack of body awareness, or other psychiatric symptomatology.<sup>36,37</sup> Furthermore, questionnaires reflect one's retrospective perception of intensity and control over emotional responding rather than the emotional response itself.

Therefore, additional performance-based measures are needed to estimate real-time behaviour, including body behaviour. Research on body behaviour as measure of emotion is relatively sparse.<sup>38</sup> In case of anger and aggression regulation this is a great lack considering the body-felt 'urge to act or shout' related to anger and aggression: physical responses like clenched fists, tense muscles, and swallow breathing belong to the trigger stage of the anger assault circle.<sup>39</sup> For that reason, the MSSS is developed as a behavioural measure of emotional responding based on force production, in cooperation with the Center for Human Movement Sciences of the University of Groningen. Recorded are the momentum of stamping on a force plate and striking a punching bag, and the amplitude of shouting in a microphone.

The reliability and validity of the MSSS were tested in a first explorative study in a student sample. The study explored whether and how increasing and decreasing levels of force production are associated with reported levels of anger expression, anger inhibition, and anger control. Studies within this field apply an 'action follows emotion' approach to observe the influence of anger regulation on physical performance: participants receive an anger-provoking stimulus prior to the performance task.<sup>40,41</sup> In contrast, we examined whether the task itself would match anger coping styles, partly beyond someone's ability to manipulate. This may be called an 'emotion follows action' design, with no anger-provoking stimuli offered prior to the performance. First explorative findings suggest an association between

anger coping and the performance on the MSSS subtest, especially apparent in the Shout test performed by women. The general objective is to find out whether the three measures of anger and aggression, Stamp, Strike and Shout, converge into a coherent response system that can be used for clinical and research purposes.

## **Outline of the thesis**

**Chapter 2** provides a description of the PMT intervention under study as a body and movement-oriented method to help patients with ED cope with anger and aggression. The article discusses PMT principles of aggression regulation and the theoretical and practical base and procedures followed in the intervention.

**Chapter 3** presents the results of a first RCT on the effectiveness of the PMT aggression regulation intervention for patients with ED in outpatient treatment. Main outcome variables were anger internalization, externalization, and eating pathology.

**Chapter 4** reports on the results of a two-centre RCT on the effect of the PMT aggression regulation intervention for patients with ED in multidisciplinary day treatment setting. Main outcome variables were anger internalization, externalization, and eating pathology.

**Chapter 5** describes a new performance-based measuring method for anger and aggression, originating from PMT, called the Method of Stamp Strike Shout (MSSS). This chapter is Part I of a first explorative study in a student sample, focusing on the internal structure and reliability of the force parameters.

**Chapter 6** presents Part II of the MSSS study, focusing on the test validity. This chapter explores correlation patterns between the force parameters of the MSSS and a self-report measure of anger internalization, externalization, and anger control.

**Chapter 7** reflects on the main findings in a general discussion.

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