TREATING EATING DISORDERS

- The feasibility, acceptability, and clinical outcomes of a computer-assisted intervention based on Acceptance and Commitment Therapy

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Psychology's Master's Thesis

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August 2010

ABSTRACT

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KOSKINEN, MARJA: Treating eating disorders – The feasibility, acceptability, and clinical outcomes of a computer-assisted intervention based on Acceptance and Commitment Therapy
Master's Thesis, 55 p., 13 appendix p.
Supervisor: Raimo Lappalainen
Psychology
August 2010

The present study investigated the feasibility, acceptability, and clinical outcomes of a computer-assisted intervention for eating disorders based on Acceptance and Commitment Therapy (ACT). The six-week intervention program was delivered through Internet, and it consisted of a webpage including information and exercises, and a personal e-mail contact. The aim was to study whether this kind of treatment method could be applicable in treatment of eating disorders and whether it would yield clinically significant outcomes in participants' psychopathology and quality of life. Another matter of interest was how the participants would accept a computer-assisted intervention, what kind of experiences they would have after the treatment, and how the program could be developed in the future.

According to this study computer-assisted intervention can be an effective form of treatment for patients, whose motivational level and stage of the disorder are suitable for self-reliant working. Some personal support is however needed, and the participants of this study shared the opinion that the e-mail contact was a very essential part of the treatment. The best results were attained together with a contact ACT-therapy. The results showed that the participants, who had the most active contact with the therapist and who spent the most time doing the exercises, benefited the most from the program. Altogether the program was found to be feasible and easy to deliver for patients across the country.

Keywords: cognitive behavioural therapy, Acceptance and Commitment Therapy, eating disorders, computer-assisted treatment

TIIVISTELMÄ

JYVÄSKYLÄN YLIOPISTO
Psykologian laitos

KOSKINEN, MARJA: Hyväksymis- ja omistautumisterapiaan perustuvan, tietokoneavusteisen syömishäiriöhoidon soveltuvuus, hyväksyttävyys sekä kliininen tuloksellisuus
Pro gradu –tutkielma, 55 s., 13 liites.
Ohjaaja: Raimo Lappalainen
Psykologia
Elokuu 2010

Tässä tutkimuksessa selvitettiin hyväksymis- ja omistautumisterapiaan perustuvan, tietokoneavusteisen syömishäiriöhoitomallin soveltuvuutta, hyväksyttävyyttä sekä kliinisiä tuloksia. Kuuden viikon interventio toimitettiin Internetin välityksellä, ja se koostui verkkosivustolla sijaitsevista tehtävistä ja tietopaketeista sekä henkilökohtaisesta sähköpostikontaktista. Tutkimuksen tarkoituksena oli selvittää, soveltuuko tällainen hoitomuoto syömishäiriöiden hoitoon ja onko sillä kliinisesti merkittävää vaikutusta koehenkilöiden psykopatologiaan sekä elämänlaatuun. Tutkimuksessa haluttiin myös selvittää, miten tietokoneavusteinen hoito otetaan vastaan, millaisia kokemuksia koehenkilöillä on hoidon jälkeen ja miten ohjelmaa voitaisiin kehittää tulevaisuudessa.

Tämän tutkimuksen perusteella tietokoneavusteinen interventio on tehokas hoitomenetelmä potilaille, joiden motivaatiotaso sekä syömishäiriön vaihe sopivat itsenäiseen työskentelyyn. Henkilökohtaista tukea kuitenkin tarvitaan, ja tutkimuksen koehenkilöt kokivatkin sähköpostikontaktin oleellisena osana hoitoa. Parhaat tulokset saavutettiin yhdessä HOTiin perustuvan kontaktiterapian kanssa.. Tulokset osoittivat, että aktiivisimmin sähköpostikontaktia hyödyntäneet sekä eniten aikaa tehtävien tekemiseen käyttäneet koehenkilöt hyötyivät ohjelmasta eniten. Kaiken kaikkiaan ohjelma havaittiin käyttökelpoiseksi ja helposti toimitettavaksi syömishäiriöön sairastuneille ympäri maata.

Avainsanat: kognitiivinen käyttäytymisterapia, hyväksymis- ja omistautumisterapia, syömishäiriöt, tietokoneavusteinen hoito

CONTENTS

1. INTRODUCTION

1.1 Eating disorders

1.1.1 Diagnosis and epidemiology

Eating disorders (ED) are one of the most common mental health disorders especially among young women, and they constitute a significant source of psychiatric morbidity. In the Diagnostic and Statistical Manual of Mental Disorders, DSM-IV (American Psychiatric Association, 1994), eating disorders are divided in three main categories: Anorexia Nervosa (AN), Bulimia Nervosa (BN), and Eating Disorders Not Otherwise Specified (EDNOS). They all share some common features although they can be clearly distinguished as separate syndromes. The diagnostic criteria for AN are shown in table 1, for BN in table 2, and for EDNOS in table 3.

TABLE 1. Diagnostic criteria for AN

Diagnostic criteria for anorexia nervosa (307.1.) according to DSM-IV
A. Refusal to maintain body weight at or above a minimally normal weight for age and height (e.g. weight loss leading to maintenance of body weight less than 85% of that expected, or failure to make expected weight gain during period of growth, leading to body weight less than 85% of that expected).
B. Intense fear of gaining weight or becoming fat, even though underweight.
C. Disturbance in the way in which one's body weight or shape is experienced, undue influence of body weight or shape on self-evaluation, or denial of the seriousness of the current low body weight.
D. In postmenarcheal females, amenorrhea, i.e. the absence of at least three consecutive menstrual cycles. (A woman is considered to have amenorrhea if her periods occur only following hormone, e.g., oestrogen administration.)
Specify type:
(continues)

TABLE 1. (continues)

Restricting Type (type 1): during the current episode of Anorexia Nervosa, the person has not regularly engaged in binge-eating or purging behaviour (i.e., self-induced vomiting or the misuse of laxatives, diuretics, or enemas)

Binge-eating/Purging Type (type 2): during the current episode of Anorexia Nervosa, the person has regularly engaged in binge-eating or purging behaviour (i.e., self-induced vomiting or the misuse of laxatives, diuretics, or enemas).

Notes
a Source: American Psychiatric Association. 1994. DSM-IV.

TABLE 2. Diagnostic criteria for BN

Diagnostic criteria for bulimia nervosa (307.51) according to DSM-IV

A. Recurrent episodes of binge eating. An episode of binge eating is characterized by both of the following:
    1. eating, in a discrete period of time (e.g., within any 2-hour period), an amount of food that is definitely larger than what most people would eat during a similar period of time and under similar circumstances.
    2. a sense of lack of control over eating during the episode (i.e., a feeling that one cannot stop eating or control what or how much one is eating)

B. Recurrent inappropriate compensatory behaviour in order to prevent weight gain, such as self-induced vomiting; misuse of laxatives, diuretics, enemas, or other medications; fasting; or excessive exercise.

C. The binge eating and inappropriate compensatory behaviour both occur, on average, at least twice a week for 3 months.

D. Self-evaluation is unduly influenced by body shape and weight.

E. The disturbance does not occur exclusively during episodes of Anorexia Nervosa.

Specify type:

Purging Type (type 1): during the current episode of Bulimia Nervosa, the person has regularly engaged in self-induced vomiting or misuse of laxatives, diuretics, or enemas.

Non-purging Type (type 2): during the current episode of Bulimia Nervosa, the person has used other inappropriate compensatory behaviours, such as fasting or excessive exercise, but has not regularly engaged in self-induced vomiting or the misuse of laxatives, diuretics, or enemas.

Notes
a Source: American Psychiatric Association. 1994. DSM-IV.

TABLE 3. Diagnostic criteria for EDNOS

Diagnostic criteria for eating disorder not otherwise specified (307.50) according to DSM-IV

The Eating Disorder Not Otherwise Specified category is for disorders of eating that do not meet criteria for any specific Eating Disorder. Examples include

1. For females, all of the criteria for Anorexia Nervosa are met except that the individual has regular menses.

2. All f the criteria for Anorexia Nervosa are met except that, despite significant weight loss, the individual's current weight is in the normal range.

3. All of the criteria for Bulimia Nervosa are met except that the binge eating and inappropriate compensatory mechanisms occur at a frequency of less than twice a week or for duration of less than 3 months.

4. The regular use of inappropriate compensatory behaviours by an individual of normal body weight after eating small amounts of food (e.g., self-induced vomiting after the consumption of two cookies).

5. Repeatedly chewing and spitting out, but not swallowing, large amounts of food.

6. Binge eating disorder: recurrent episodes of binge eating in the absence of the regular use of inappropriate compensatory behaviours characteristic of Bulimia Nervosa.

Notes
a Source: American Psychiatric Association. 1994. DSM-IV.

Anorexia is the first diagnosed eating disorder and also the best known of them, but it is not the most common one (Nevonen, 2000). According to Fairburn (2008), 50 to 60 % of adult outpatients have a diagnosis of EDNOS, followed by 30 % of cases with diagnosis of BN, and 10-15 % of cases with AN. There is no clear consensus of the prevalence of ED due to methodological problems and shortcomings in many of the conducted studies. Nonetheless, AN has been estimated to affect about 0.5 % and BN about 1-2 % of women in Western cultures. Some form of ED has been estimated to affect 10-20 % of the population. The prevalence of ED among males has been estimated to be about one tenth of that among females. It is probable that eating disorders are much more common than the aforementioned figures suggest because only a small number of patients with eating disorders seek their way to treatment. (Ghaderi, 2001; Keski-Rahkonen, Hoek, & Treasure, 2001.)

In addition to patients who meet the diagnostic criteria for eating disorders, there are a significant proportion of people with excessive weight concerns, body image dissatisfaction, and disordered eating behaviours which cause them distress and impairment in multiple areas of functioning (Winzelberg, Luce, & Taylor, 2008).

1.1.2 Etiology and psychopathology of eating disorders

The exact etiological mechanisms of ED are unknown but researchers have hypothesized several risk factors, of which dietary restraints and excessive weight and shape concerns (i.e. body dissatisfaction) are most consistently associated with eating disorders (Fairburn, 2008; Manwaring et al., 2008). Other factors affecting the development, course, and maintenance of ED include socio cultural factors and the emphasis on thinness, poor self-esteem, lack of social support, dysfunctional coping mechanisms, difficulties in family interaction and environment, major negative life events, and a childhood history of being teased for one's appearance (Ghaderi, 2001; Keski-Rahkonen et al., 2001). The knowledge of risk factors is important because it can be used when developing prevention interventions for ED, but at least as important is the knowledge of possible maintaining mechanisms behind ED in order to develop more effective treatment methods.

The classification of eating disorders encourages the view that there are a number of distinctive conditions which each requires its own form of treatment. Fairburn (2008) questions this by proposing a new way of viewing ED, which he calls the transdiagnostic view. He suggests that there are transdiagnostic mechanisms that are the same for all eating disorders and play a major role in maintaining ED psychopathology. Thus it would be possible to treat all ED patients with the same method if it would address these mechanisms.

The transdiagnostic theory of Fairburn (Fairburn, 2008; Fairburn, Cooper, & Shafran, 2003) is based on the extended version of the cognitive behavioural theory of bulimia nervosa (CBT-BN). In addition to the core psychopathology considered in the original CBT-BN, i.e. the over-evaluation of shape and weight and their control, the new theory considers four other maintaining mechanisms that interact with the core psychopathology. These include clinical perfectionism, core low self-esteem, mood intolerance and interpersonal difficulties. Fairburn bases his transdiagnostic theory and treatment on this cognitive behavioural theory, the cross-diagnostic commonalities between AN, BN and EDNOS, and the common migration between these diagnostic states.

1.1.3 Treatment of eating disorders

Eating disorders can be treated in many ways in inpatient and outpatient settings. From psychotherapeutic interventions the most often used are cognitive-behavioural therapy (CBT), family therapy, and interpersonal psychotherapy. In some cases also psychodynamic therapy, feminist therapies, and pharmacotherapy have been used. Nowadays CBT is the treatment of choice, especially for patients with bulimia nervosa, and it has been recommended largely on clinical grounds also for patients with anorexia nervosa (Garner & Garfinkel, 1997.). Also nutritional therapy and psychoeducation play a significant role in treatment of EDs. Pharmacotherapy has shown to be effective only in some cases, more often in treatment of BN than AN. The results of previous studies are however ambiguous. Normally medication is used to treat symptoms associated with ED, like depression, anxiety, and psychotic symptoms. (Keski-Rahkonen & Palmer, 2001; Muhonen & Ruuska, 2001; Suokas & Rissanen, 2007.)

Because of the lack of educated psychotherapists specialized in EDs and limited resources, it is not possible to treat all eating disorder patients with traditional forms of psychotherapy. Different kinds of stepped-care approaches have been developed where interventions are derived into graded levels according to their intensity, cost, and probability to success. Patient begins with the lowest step and proceeds to more intensive levels of treatment if necessary until he/she responds to the treatment. (Garner & Garfinkel, 1997; Wilson, Vitousek, & Loeb, 2000.) Computer-assisted forms of treatment could serve as a first step in these kinds of stepped-care approaches because they are cost-effective and easy to deliver.

1.2 Acceptance and commitment therapy

1.2.1 Core principles of ACT

Considering the need to develop more effective and specialized treatment methods for eating disorders, it is well-founded to take a look at new therapy forms. Acceptance and Commitment Therapy (ACT) could be a potential way to develop a new, effective ED treatment and is thus worth studying. ACT is one of the third wave cognitive-behavioural therapy (CBT) interventions. Other examples of these interventions are dialectical behaviour therapy (DBT), mindfulness-based cognitive therapy (MBCT), functional analytic psychotherapy (FAP), and integrative behavioural couples therapy (IBCT). Although the third wave CBT interventions differ from each other in many ways, they all share some common factors like the emphasis of acceptance, mindfulness, cognitive defusion, dialectics, values, spirituality, and relationship. (Hayes, 2004; Hayes, Luoma, Bond, Masuda, & Lillis, 2006.)

The philosophical and theoretical backgrounds of ACT are in functional contextualism and relational frame theory (RFT). RFT concentrates on human language and cognition, and the ability of human beings to relate events under arbitrary contextual control, which often causes them suffering. According to RFT, there are three main properties of the so-called relational learning: mutual entailment or "bidirectionality", combinatorial entailment, and a transformation of stimulus functions among related stimuli. Due to these processes, functions given to one member of related events can alter the functions of other members, what sometimes leads to suffering. This fact makes relational framing clinically relevant. (Fletcher & Hayes, 2005; Hayes, 2004; Hayes et al., 2006.)

According to RFT psychological suffering is part of human life and largely caused by language. Other reason for this kind of suffering is psychological inflexibility, which results from experiential avoidance, cognitive entanglement, attachment of a conceptualized self, loss of contact with the present, and a failure to act in accord with personal values. All of these are considered in treatment approaches within ACT. (Hayes, 2004.)

ACT has six core processes, which are seen essential in attaining more psychological flexibility (figure 1). These are 1) acceptance, which is taught as an alternative to experiential avoidance; 2) cognitive defusion, through which it is possible to alter the undesirable functions of thoughts, feelings etc. rather than trying to alter their form, frequency or situational sensitivity; 3)

being present; 4) self as context, which is fostered by mindfulness techniques and metaphors, and which helps people be aware of their experiences without attachment to them; 5) values, according to which people can direct their lives instead of taking actions based on avoidance or social compliance; and 6) committed actions, which are in accord with personal values (Hayes et al., 2006).

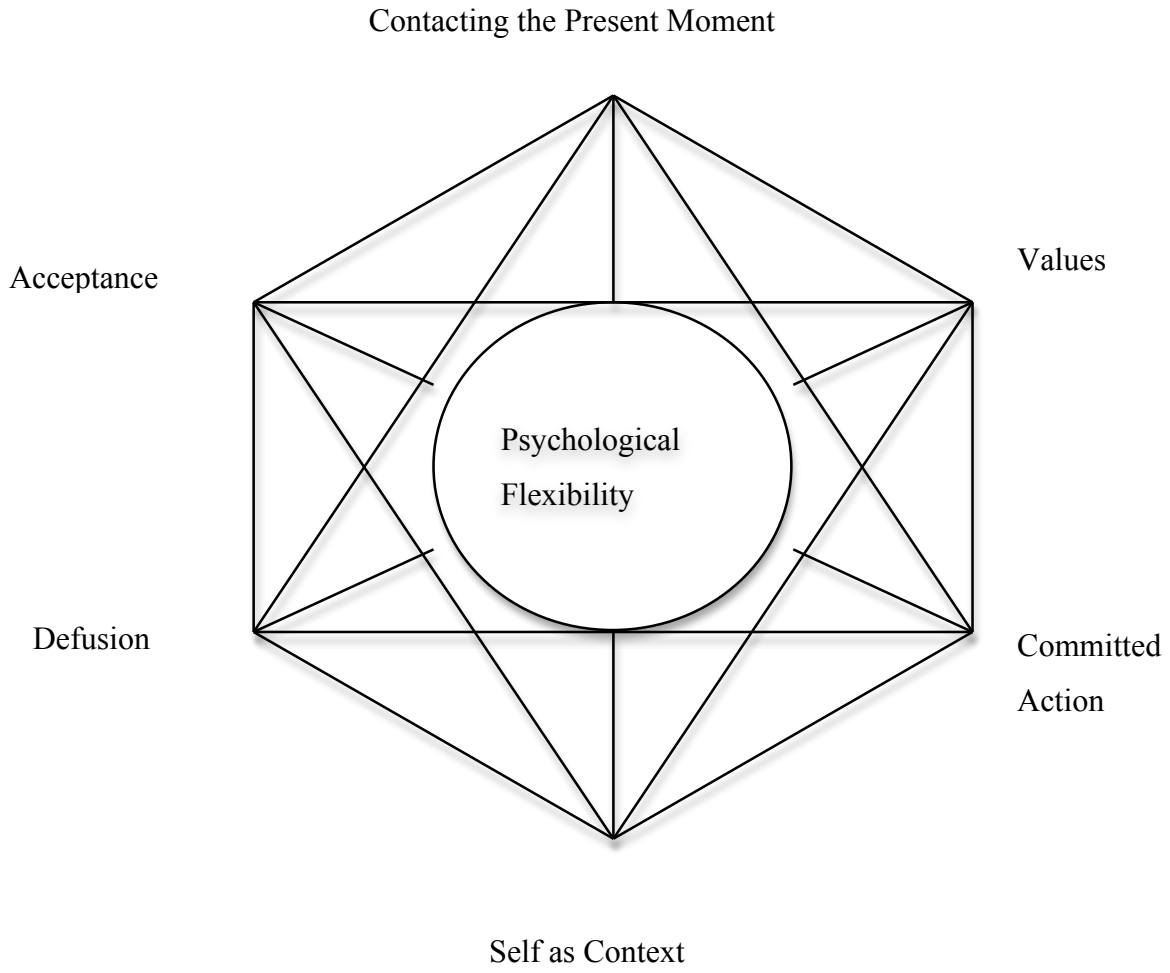

FIGURE 1. Six core processes of ACT: The Hexaflex Model
(Hayes et al., 2006.)

ACT aims at increasing psychological flexibility through following principles: **A**ccept all your thoughts and feelings, **C**hoose your personal values, and **T**ake action according to your values

(Hayes, 2004; Hayes et al., 2006; Lappalainen et al., 2004). The general goal of ACT is to weaken the effect of the literal verbal content of cognition and to construct an alternative context where behaviour is in alignment with one's personal values. In ACT the client's thoughts, feelings, memories or experiences are never assumed to be harmful, but it is the tendency to take these personal experiences literally and to fight against them that is viewed as the core difficulty. Thus, ACT encourages clients to feel and think what they already are feeling and thinking, as it is, not as what it says it is, and to move in a valued direction with all of their history. (Blackledge & Hayes, 2001; Hayes, 2004.)

1.2.2 Efficacy of ACT

The resent outcome reviews about the efficacy of ACT (Gaudiano, 2009; Powers, Zum Vörde Sive Vörding, & Emmelkamp, 2009; Öst, 2008) have yielded somewhat contradictory results, and the researchers are still discussing it. However, the preliminary results propose that ACT could be an effective treatment method in many cases (Powers & al., 2009). The early data also indicates that ACT may result in clinically significant changes through different processes than traditional CBT (Hayes et al., 2006). It has been stated that ACT produces a rapid decrease in the believability of negative thoughts, contrary to traditional CBT where the aim is to alter the frequency of negative thoughts. ACT also enhances willingness to experience negative private events. Through cognitive defusion and acceptance the aim is to alter the functions of pathogenic thoughts and feelings, to attain more flexible and effective response functions related to them, and to remove all forms of "safety behaviour" or avoidance. (Hayes, 2004.)

Some studies have yielded promising results for ACT as a form of treatment e.g. for anxiety and depression (Forman, Herbert, Moitra, Yeomans, & Geller, 2007), chronic pain (Vowles & McCracken, 2008), social anxiety (Kocovski, Fleming, & Rector, 2009), substance abuse (Twohig, Shoenberger, & Hayes, 2007), and posttraumatic stress disorder (Twohig, 2009). In a outcome review by Hayes, Masuda, Bissett, Luoma, and Guerrero (2004) eight RCTs on ACT showed good results for ACT as a form of treatment for depression, work place stress management, psychotic symptoms, mathematics anxiety, substance abuse, smoking cessation, and social anxiety. Thus ACT seems to be working across a broad range of problems in different levels of severity. This breadth of effectiveness can be explained by RFT, which suggest that language has created the problems that should be solved in therapy. Thus all verbal human beings are confronting these problematic

processes every day. If ACT targets them effectively, its clinical outcomes are probable to cover a broad range of problems. (Hayes, 2004; Hayes et al., 2004; Hayes et al., 2006.)

1.2.3 ACT as treatment for eating disorders

Although CBT has resulted in significant improvement with many eating disorder patients, it seems to be successful only in some cases. Thus a large population of people with eating disorders do not benefit from CBT. According to Vanderlinden (2008) the traditional CBT focuses too much on the content of the cognition, and the third generation of CBT, including ACT, could be a solution to this problem.

Until now research addressing ACT and eating disorders has however been limited. There are only a few studies over ACT as a treatment method for overweight (Forman, Butryn, Hoffman, & Herbert, 2009), and anorexia (Hayes, 2002; Heffner, 2002; Orsillo & Batten, 2002). The quality of life of obese individuals has been improved by teaching them acceptance and mindfulness skills (Lillis, Hayes, Bunting, & Masuda, 2009). Interventions applying acceptance and mindfulness have also been successful with BED (Baer, Fischer, & Huss, 2005a; Baer, Fischer, & Huss, 2005b).

Considering the growing database for the effectiveness of ACT, it can be assumed to be an effective form of treatment also for eating disorders. According to an ACT model of psychopathology (figure 2), clinically relevant behaviour can be described in terms of the following processes: 1) weak self-knowledge, dominating concept of the past and feared future, 2) lack of values clarity, dominance of pliance, avoidant tracking, and problematic augmenting, 3) persistent inaction, impulsivity, or avoidance, 4) attachment to the conceptualized self, 5) cognitive fusion, and 6) experiential avoidance (Bach & Moran, 2008). All of these processes can be seen relevant in relation to eating disorders. The primary goals of ACT, which are to promote clients' willingness to experience and accept naturally occurring private events, and to reduce experiential avoidance, are a potential way to help the clients focus rather on values than eating, and find a more satisfying way of life (Eifert, Greco, Heffner, & Louis, 2007).

Due to the fact that many patients with eating disorders do not seek help because of the shame caused by the illness or they live outside of the reach of specialized ED treatment, new methods for delivering professional help are needed. Self-help programs are one potential option for offering help to as many patients as possible. CBT based self-help interventions have already been

developed, and they have yielded in promising results (Carter et al., 2003; Furber, Steele, & Wade, 2004; Ghaderi & Scott, 2003; Ghaderi, 2006). Because ACT is based on teaching new skills for patients, it can be assumed that ACT would also be a suitable therapy form to be delivered in self-help format. However, this has not been under study until now.

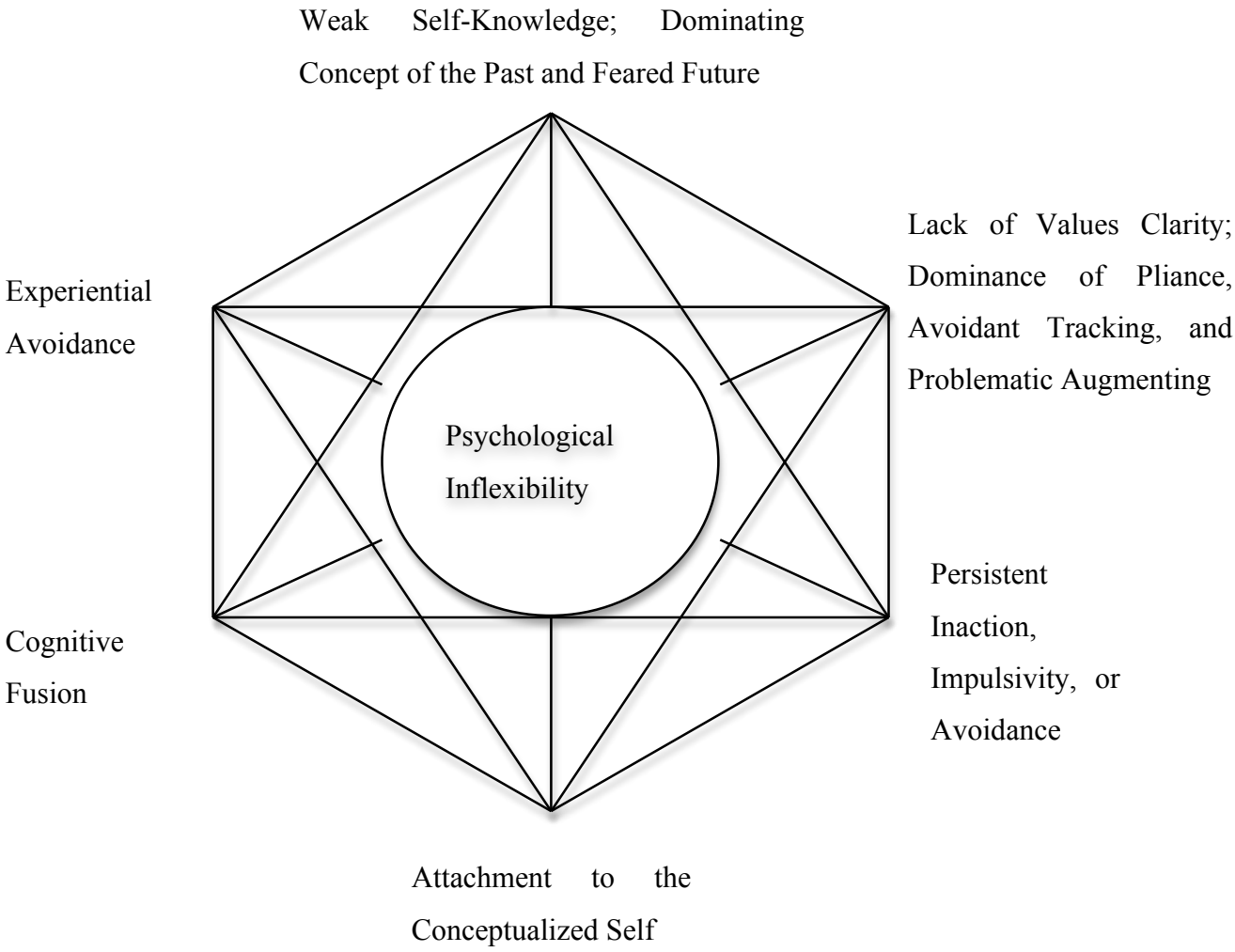

FIGURE 2. The ACT model of psychopathology: The Inflexahex model (Hayes et al., 2006.)

1.3 Self-help approaches

1.3.1 Advantages of self-help programs

In the past few years self-help approaches have received a lot of interest because of the promising results considering their efficacy (Carter et al., 2003; Sysko & Walsh, 2008; Winzelberg et al., 2008). The recovery rates are found to be similar in professional and self-help treatments, and for example in the treatment of BN and BED self-help has resulted in significant improvements (Bailer et al., 2004; Peterson et al., 2001; Winzelberg et al., 2008).

Self-help approaches have some potential advantages over traditional forms of treatment, and they are often recommended as the initial treatment in stepped-care models (Nevonen, Mark, Levin, Lindström, & Paulson-Karlsson, 2006; Winzelberg et al., 2008). The advantages of self-help approaches include their empowering nature, cost effectiveness, accessibility, and anonymity. One of the reasons, why a significant proportion of people with eating disorders are not in treatment, is the shame and fear of stigmatisation. Self-help approaches could also offer a solution to this problem (Garner & Garfinkel, 1997).

1.3.2 Types of self-help programs

Self-help can be delivered in many formats, the most common of which is bibliotherapy. Hundreds of self-help books also on eating disorders have been published, and many women with eating disorders have reported reading them. Self-help is thus often an accepted form of treatment although some patients have negative expectations of this kind of services and fail to engage in them (Bell & Newns, 2004).

Support groups are also widely used and often delivered using Internet technology (Finfgeld, 2000). The possibility to share one's experiences with others, who have gone through the same kind of life events, is often very empowering and an essential addition to vocational support. In some cases a peer support group can even be enough alone to help an individual find motivation and

strength to recover. Self-help is also available in a hybrid form with limited professional guidance. (Winzelberg et al., 2008.)

There are contradictory results about the benefits of guided versus pure self-help. Some researchers claim that some kind of guidance or support is useful but the differences have not always been statistically significant. (Ghaderi & Scott, 2003; Ghaderi, 2006; Winzelberg et al., 2008.) However it can be assumed that in severe cases personal contact and support is needed.

1.3.3 Compliance with self-help approaches

Many patients with eating disorders accept various self-help interventions, and the dropout rates of these interventions appear to be comparable to the ones found in professional interventions (Winzelberg et al., 2008). Some adherence variables, e.g. the amount of exercises completed and the duration of participation, have been related to outcome (Manwaring et al., 2008; Thiels, Schmidt, Troop, Treasure, & Garthe, 2001; Winzelberg et al., 1998). Also the pre-treatment levels of the ED symptoms and other personality disorders have been shown to affect the outcome of self-help interventions (Masheb & Grilo, 2008).

Compliance with self-help interventions has proven to be better if the patient receives help as soon as possible after seeking it, and if the program period is made shorter (e.g. 12 weeks instead of 16) (Ghaderi, 2006). According to Schimdt et al. (2006) personalized feedback does not have an effect on treatment uptake and drop-out but it does have some beneficial effect on eating disorder symptoms, i.e. dieting and self-induced vomiting. In an evaluation of a computer-mediated eating disorders intervention program, Student Bodies, it was hypothesized that participants would benefit from a specific structure and guidance while using the program (Winzelberg et al., 1998).

1.3.4 Computer-assisted self-help treatment for eating disorders

Over the past years the use of computers and Internet has become more and more common, and researchers have started to investigate possibilities to use this technology in treatment of mental

disorders. Computerized interventions have numerous advantages, including anonymity, availability, cost-efficacy, possibility to offer prevention interventions for large populations, ease of monitoring compliance, ease of sharing information, and social support in the form of support groups (Zabinski, Celio, Jacobs, Manwaring, & Wilfley, 2003). Some problems still exist. Although computer-assisted forms of treatment are often well accepted, some patients might have prejudice against this kind of alternative forms of treatment. Negative attitudes to self-help interventions or computer-assisted forms of treatment may lead some individuals to reject these alternative treatment methods (Murray et al., 2003). Special attention must also be paid to the data security.

Some research has already been made targeting computer-assisted interventions for eating disorders, mainly bulimia nervosa and binge eating disorder (Andrewes, O'Connor, Mulder, & McLennan, 1996; Bauer et al., 2009; Jacobi et al., 2007; Jones et al. 2008; Ljotsson et al., 2007; Nevonen et al., 2006; Newton, & Chiliska, 2006; Pretorius & al., 2009; Robinson, & Serfaty, 2008; Winzelberg et al., 1998; Zabinski, Celio, Jacobs, Manwaring, & Wilfley, 2003; Zabinski & al. 2001). In our knowledge there are no studies addressing computer-assisted interventions based on ACT. In a study by Pretorius et al. (2009) CBT delivered through Internet resulted in significant decrease in ED symptoms when participants completed more than four sessions. Participants' views of the intervention were also positive. CD-ROM-based self-help interventions have also yielded promising results (Bara-Carril et al., 2004; Shapiro et al., 2007), and they have the benefit that patients can continue to use the CD-ROM after the actual treatment time.

Existing prevention and early intervention programs for EDs include e.g. ES[S]PRIT (Bauer, Moessner, Wolf, Haug, & Kordy, 2009) and Student Bodies (Winzelberg et al., 1998), and they have proven to be beneficial in treating or preventing ED. Studies addressing email therapy or intervention programs supported by email have also resulted in promising outcomes, and participants have been positive about this kind of experiences (Ljotsson et al., 2007; Robinson & Serfaty, 2008; Yager, 2003). Based on these earlier studies, computer-assisted or Internet-based interventions are worth to develop further, and they offer a potential solution to many problems confronted in traditional forms of treatment.

1.4 Research questions

The aim of this master's thesis was to develop a computer-assisted eating disorder intervention based on the principles of ACT. The matter of interest was whether a computer-assisted intervention could be feasible in the treatment of eating disorders, and whether individuals with ED would accept this kind of treatment. Based on previous studies it could be hypothesized that computer-assisted interventions have many advantages over traditional forms of treatment, and that they could offer a solution to many problems confronted in traditional psychotherapy.

Another goal of this paper was to determine whether ACT is a suitable form of treatment for eating disorders. Thus, the aim was to investigate whether this intervention has an effect on the eating disorder symptoms and the quality of life of the participants. The opinions of the participants considering ACT and its suitability for treatment of EDs were also a matter of interest.

2 METHOD

2.1 Participants

The participants were recruited via an announcement in the newsletters of the local organisations of the Finnish eating disorder association Syömishäiriöliitto – SYLI ry. The announcement stated that a university research project studying the feasibility and efficacy of a computer-assisted eating disorder intervention was seeking individuals with eating disorder. No diagnosis was required. Participants were asked to contact the supervisor of the study via e-mail or telephone. Nine participants were interested in the project, and six of them finished the entire intervention. Two participants dropped out before pre measurement and one during the first intervention week. One-month follow-up measurements were received from five participants.

The complete analyzed data for pre- and post-measurements was from six participants, and for follow-up measurements from five participants. All of the participants were female. The mean age of the participants was 35.3 years (SD = 12.1, range = 24-58). 4/6 of them were unmarried and

2/6 were married or living with their partner. 4/6 of the participants were working, 1/6 was unemployed and 1/6 was on maternity leave. 2/6 of the participants had second-degree education and 4/6 had higher-level education.

According to the information received in the beginning of the study (questionnaires and anamneses), the participants can be held as severe mental health cases. 1/6 of the participants had a diagnosis of anorexia nervosa and 5/6 of them a diagnosis of eating disorder not otherwise specified. The ED history of the participants ranged from 5 to 50 years, signifying severe ED pathology. All participants had at least one other mental health diagnosis in addition to an ED diagnosis, most common diagnoses being depression (3/6) and social phobia (2/6). 5/6 of the participants were using some kind of psychiatric medication during the intervention, and 5/6 were having some other conversational support at the same time, which will be explained more closely in the case descriptions. The mean BMI (body mass index) in the beginning of the intervention was 32.9 (SD = 12.9, range = 21.1-50.8).

2.2 Measures

Pre-, post-, and one-month follow-up measurements were carried out using the following questionnaires. Eating disorder symptoms were assessed with the Eating Disorder Inventory (EDI), which is a widely used self-report questionnaire consisting of 64 items measuring eight subscales (drive for thinness, bulimia, body dissatisfaction, ineffectiveness, perfectionism, interpersonal distrust, interoceptive awareness, and maturity fears) (Garner, Olmstead, & Polivy, 1983). Another eating disorder questionnaire used in this study was the Three Factor Eating Questionnaire – Revised 18 (TFEQ R-18) (de Lauzon et al., 2004), which is a self-report questionnaire with 18 items measuring cognitive restraint, uncontrolled eating, and emotional eating. The scores of TFEQ R-18 refer to the percentage value of the maximum ED symptoms (100). Depression symptoms were measured with Beck Depression Inventory - II (BDI-II) (Sprinkle et al., 2002), which is a self-report questionnaire with 21 items measuring the severity of depression. The Beck Anxiety Inventory (BAI), which is a self-report questionnaire consisting of 21 items was used to measure physiological and cognitive aspects of anxiety (Beck & Others, 1988). Experiential avoidance and psychological flexibility were evaluated with Acceptance and Action Questionnaire – 2 (AAQ-2), which is a 10-item self-report questionnaire (Hayes et al., 2006). The Symptom Checklist-90 (SCL-

90) (Holi, 1998) was used to assess psychopathological symptoms. In this study the scores of SCL-90 are reported as General Severity Index (GSI). The GSI index is calculated by dividing the participant's score by the number of questions (90).

2.3 Development of the intervention program

Four ACT handbooks were used in the development of the intervention program. A Finnish clinical manual, Applying Acceptance and Commitment therapy (ACT) (Hyväksymis- ja omistautumisterapia käytännön terapiatyössä) (Lappalainen et al., 2004), a Finnish translation of a self-help book, Get out of your mind & in to your life: the new acceptance & commitment therapy (Vapaudu mielesi vallasta ja ala elää) (Hayes & Smith, 2008), a Finnish clinical manual Käyttäytymisanalyysi käytännön terapiatyössä (Lappalainen, Miettinen, & Lehtonen, 2007), and an English self-help book, The Anorexia Workbook: How to Accept Yourself, Heal Your Suffering, and Reclaim Your Life (Heffner & Eifert, 2004).

While developing this intervention the aim was to offer the participants information about eating disorders and ACT, self-help exercises to deal with ED relevant questions, and email contact to motivate and help them complete the intervention. A webpage containing text material, metaphors, and exercises was used in the treatment, and it was designed to meet the specific needs of individuals with eating disorders. Thus, some minor changes were made to the exercises of the above-mentioned non-eating disorder specific handbooks to make them suit better the treatment of EDs. Experiential knowledge of EDs was also utilized in the development of the intervention program.

2.4 Intervention

The duration of the intervention was six weeks. During each week participants were working with a different theme based on ACT processes. During the first week participants got to know the principles of ACT, and they read some basic information about eating disorders. In addition they

made their own problem list, based on which they would be working during the intervention. Over the second week, participants read about values and made their personal value analysis. Third week was reserved for value consistent actions. The theme for the fourth week was control and letting go of the control of one's mind. Over the fifth week participants were encouraged to practise mindfulness skills, and during the sixth week they worked on acceptance (table 4).

TABLE 4. Content of the intervention

Week	*Theme*	*Goal*	*Exercises*
1	Information about eating disorders and ACT	Conception of one's ED Get to know ACT	Problem list Behaviour analyses (things related to ED and other personal problems)
2	Values	Find out personal values	Personal values ("things I would like to be remembered of"/the most important personal values)
3	Values	Engage in value consistent actions	Goals and potential obstacles
4	Control	Let go of the verbal control	Old coping strategies and how well they have been working Diary of mental distress Cognitive defusion strategies
5	Mindfulness	Enhance mindfulness skills	Mindfulness exercises
6	Acceptance	Accept all private events	What should I accept? Gradual exposure to difficult situations

During the first weeks of the intervention the content of the program was more structured and the exercises were exactly the same for all participants. Towards the end of the intervention the content of each week became less structured, and the participants had more freedom to choose the exercises best suitable for them from a pool of alternative exercises. Thus it was made possible to fit the intervention meet the individual needs of each participant.

In the beginning of each week participants received an email (appendix 1), which contained a metaphor related to the week's theme, and instructions for the following week. They were asked to go to the webpage, read the introduction text for the week's theme, and do the related exercises during the week (appendix 2). After each week participants returned their exercises for the therapist

via email, and they were sent a short feedback (see below). Participants were given the possibility to be in contact with the therapist whenever they felt like it via email or telephone.

Examples of feedbacks sent to the participants:

-- I find it important that while doing the exercises you notice that you avoid unpleasant thoughts and feelings and that eating disorder is one of these avoiding strategies or coping mechanisms. Your exercise points out clearly that this kind of avoidance doesn't work in the long run. I hope that this observation motivates you to give up the avoidance and to confront unpleasant thoughts and feelings. Only through personal experiences you can notice that the stories your mind is telling you don't always correspond with the truth and that the truth is much richer than the verbal descriptions. --

-- I'm glad that you have used the methods for weakening the verbal control and that you already had some new experiences through them. These methods aren't easy and it takes repeated rehearsing to make them part of your everyday life. Thus I encourage you to keep practicing them. Find out, which methods seem to be the best for you, and try to add them into your life according your resources and possibilities. These methods have many things in common with the mindfulness exercises so you can let your creativity bloom and shape them to fit better your personal needs. --

After the intervention participants were asked if they would be willing to take part in an interview either by email, telephone, or face-to-face. All participants agreed to an interview. Two interviews were carried out face-to-face, two via email, and two by telephone. The interviews were semi-structured and consisted of following questions:

1. What are your experiences about the treatment delivered through Internet? (usability, security, advantages/disadvantages)
2. What was the most important/useful aspect of the treatment for you? (information, exercises, e-mail contact; mindfulness skills, values, acceptance, control)
3. Would you have needed something more?
4. Was the length of the intervention adequate?
5. How did you find ACT as a therapy form?

6. How much time did you spend per week with the program?
7. Did you find the exercises too hard, too easy, or suitable for this kind of intervention?
8. How could this kind of computer-assisted intervention be further developed?
9. If you have received simultaneously some other form of treatment, how did they co-ordinate? Did you experience any advantages or disadvantages of multiple treatments?

In the end of the study the participants received a brief summary of the intervention including the scores of the pre-, post-, and follow-up measurements. All of the emails and exercises received from the participants were saved on a personal hard disc behind a password to make sure that the privacy protection could be ensured. The research material was handled using each participant's personal case number, and it did not include any personal information to assure the protection of anonymity.

2.5 Data analyses

Mean values, standard deviations, and ranges were calculated for each outcome questionnaire. All statistical methods used in the data analyses were non-parametric because of the small sample size, and they were conducted with SPSS version 18.0 for Mac (PASWStatistics 18.0). The mean values were compared using the Wilcoxon Matched pairs test (Metsämuuronen, 2006). In the pre-post comparison all the six cases were included, and in the post-follow-up comparison data from 5/6 of the cases was used because of the fact that one participant didn't return the follow-up questionnaires.

Functional analyses or Functional Analytic Clinical Case Formulations (FACCD) (Lappalainen, Timonen, & Haynes, 2009) were drawn for each case based on the information received from the first week's exercises. FACCD is a vector diagram that presents functional relations among behaviour problems and other variables. The FACCDs of this study focused only on the problems related directly to eating. The main problems of each case were placed inside rectangles, and the causes or explanatory factors inside ellipses. Past events, which have had an effect on the problem but which can't be changed anymore, were placed inside diamonds. One- and two-way arrows were used to signify causal relationships.

Each case was reported individually because of the great variation in the outcomes. The results concerning the feasibility and acceptability of the intervention were based on the interviews and the personal experiences of the therapist. The interviews were analyzed using data based analysis. The main points were collected from each interview, and the amount of similar answers was summarised.

3 RESULTS

3.1 Sample characteristics

3.1.1 Overview

The clinical outcomes of this study varied widely among the participants. Some of them benefited clearly from the intervention but some did not show any notable changes. It was also seen that the six-week intervention was not long enough for most participants to yield long-lasting effects. The main changes were attained on BDI-II, AAQ-2, and EDI, especially on the subscales measuring Interpersonal distrust and Interoceptive awareness (table 5). According to the other eating disorder scale, TFEQ R-18, the mean score of the ED symptoms appeared to increase during the intervention. The subscales of TFEQ R-18 show that especially uncontrolled eating increased but cognitive restraints decreased. These results are consistent with the processes and aims of ACT. The intervention didn't have any significant effects on BMI, BAI, and SCL-90. The results were not statistically significant for any questionnaires used due to the small amount of cases. However, the overall trend can be seen, that is, the scores on some questionnaires (EDI, BDI-II, AAQ-2, SCL-90) get better during the intervention but weaken again during the follow-up period.

The individual profiles of the participants (charts 1-6) show the changes in the used measurements (TFEQ R-18, EDI, BDI-II, BAI, AAQ-2, SCL-90) for each participant. The great variation among the participants can be clearly seen from these charts. In many charts it is also

shown that the changes attained during the intervention did not last over the one-month follow-up period. Although an overall trend is hard to distinguish because of the great variation among the participants, BDI-II and BAI show the most consistent changes by decrease in symptoms after the 6-week intervention period. It can also be seen that the participants, who benefited the most from the intervention (case 5 and 6), showed increase in the psychological flexibility (AAQ-2) during the intervention. These results speak for the assumption that psychological flexibility is essential for mental health and wellbeing. However long-term effects of this intervention can't be estimated based on these results.

TABLE 5. Mean scores, ranges and standard deviations of pre-, post- and follow-up measurements

Measure	*Pre-measurement (n=6)*		*Post-measurement (n=6)*		*Follow-up (n=5)*	
	Mean/Range	*Sd*	*Mean/Range*	*Sd*	*Mean/Range*	*Sd*
BMI	32.93/ 21.1-50.8	12.92	33.58/ 22.7-51.6	12.25	36.14/ 22.9-51.9	12.67
EDI	78.17/ 46-119	24.70	67.83/ 46-85	14.44	75.40/ 56-90	12.83
-Drive for thinness	13.88/ 7-20	5.27	13.17/ 7-17	3.55	12.00/ 8-16	3.39
-Bulimia	8.33/ 3-16	4.89	7.67/ 2-15	4.32	6.60/ 3-14	4.34
-Body dissatisfaction	21.33/ 4-30	9.61	19.00/ 4-27	9.98	19.80/ 8-27	8.38
-Ineffectiveness	9.17/ 3-16	4.83	8.00/ 4-12	3.29	9.00/ 4-11	3.08
-Perfectionism	4.83/ 0-13	4.79	4.83/ 0-9	2.99	6.40/ 0-13	5.46
-Interpersonal distrust	5.33/ 0-12	4.41	3.50/ 0-7	2.74	5.60/ 4-8	1.82
-Interoceptive awareness	10.83/ 4-25	7.57	7.50/ 2-11	3.39	11.20/ 7-17	3.90
-Maturity fears	4.83/ 0-16	5.78	4.17/ 0-15	5.56	4.80/ 1-13	4.92
TFEQ R-18	70.83/ 65-78	4.92	77.17/ 65-86	7.76	79.80/ 74-88	5.68
-Cognitive restraint	54.67/ 6-94	34.51	48.00/ 22-72	18.58	51.00/ 22-83	22.02
-Uncontrolled eating	71.00/ 37-89	19.76	81.33/ 48-96	17.44	83.80/ 70-93	9.52
-Emotional eating	63.17/ 22-89	23.08	70.67/ 56-100	19.26	84.60/ 56-100	21.44
BDI-II	28.33/ 17-36	7.26	18.83/ 10-37	9.37	25.00/ 11-37	10.70
BAI	20.00/ 13-29	5.66	18.00/ 10-27	6.93	17.00/ 7-26	7.65
AAQ-2	32.33/ 23-41	7.26	41.50/ 31-60	9.96	36.40/ 25-56	12.34
SCL-90	1.20/ 0.67-1.90	0.54	1.07/ 0.18-1.82	0.67	1.16/ 0.31-1.16	0.67

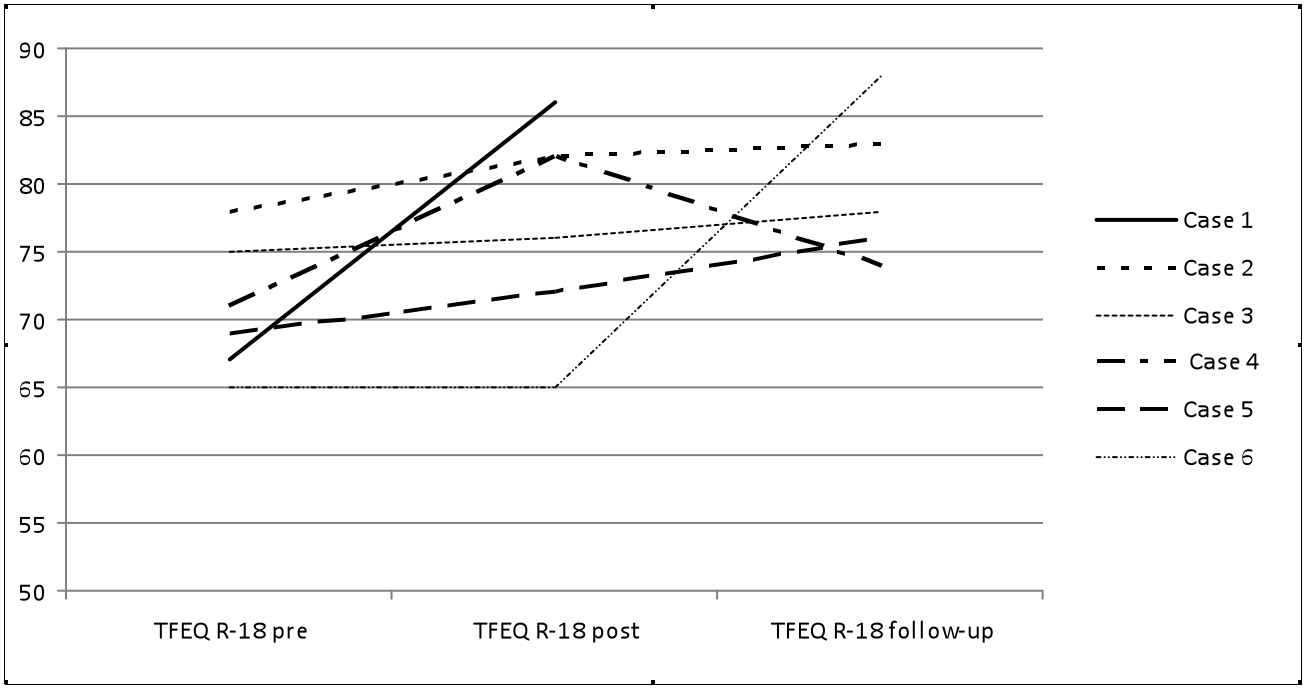

CHART 1. Individual profiles on TFEQ R-18 scale at pre-, post-, and follow-up measurements

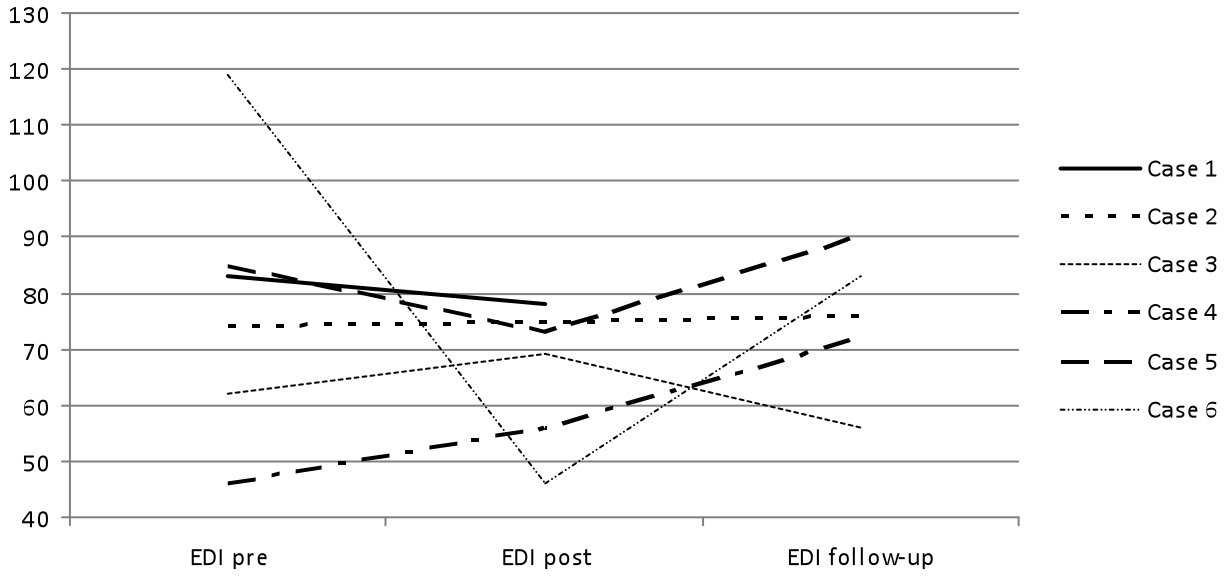

CHART 2. Individual profiles on EDI scale at pre-, post-, and follow-up measurements

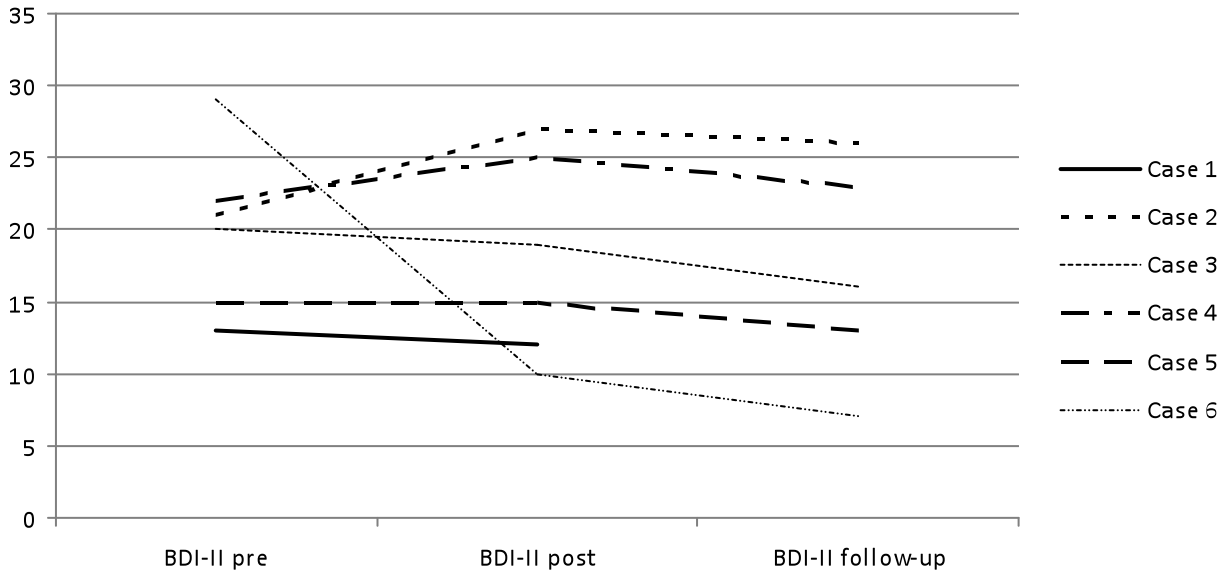

CHART 3. Individual profiles on BDI-II scale at pre-, post-, and follow-up measurements

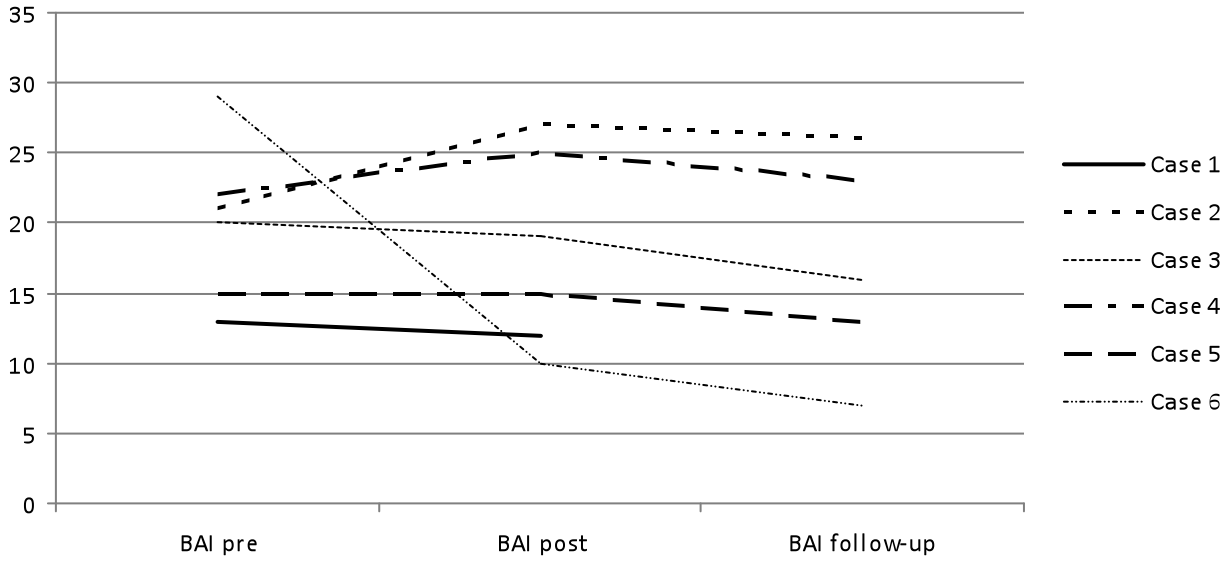

CHART 4. Individual profiles on BAI scale at pre-, post-, and follow-up measurements

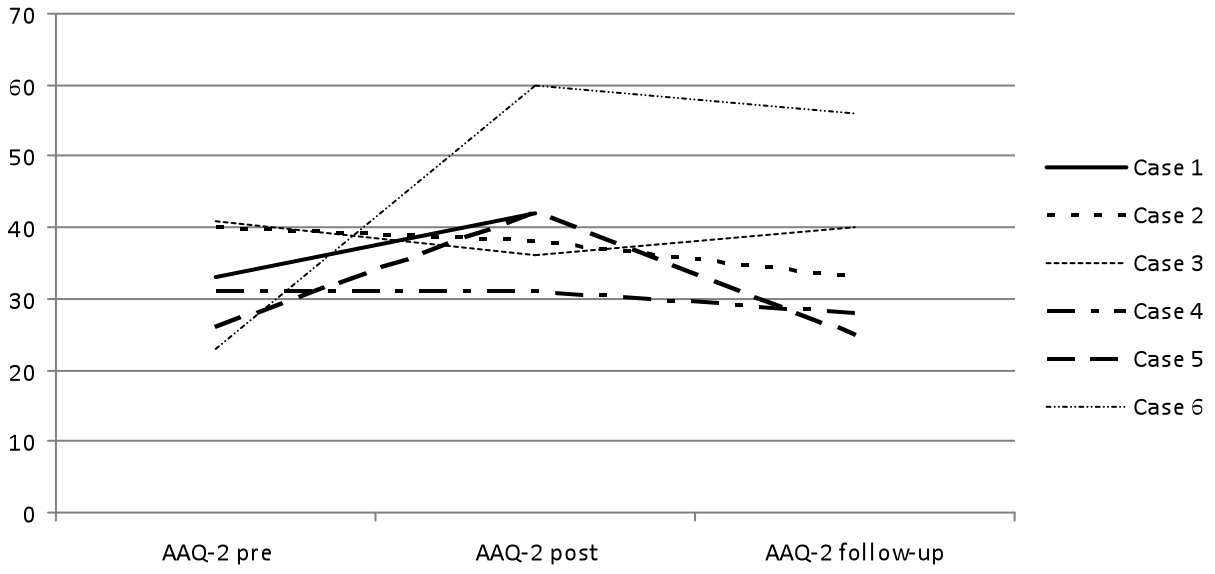

CHART 5. Individual profiles on AAQ-2 scale at pre-, post-, and follow-up measurements

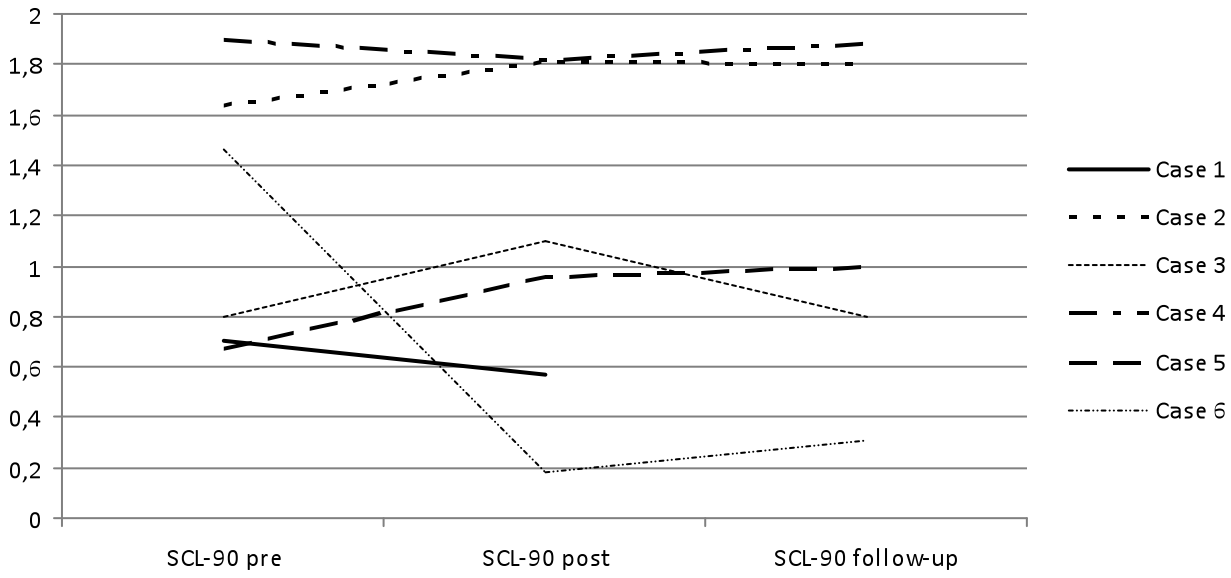

CHART 6. Individual profiles on SCL-90 scale at pre-, post-, and follow-up measurements

3.1.2 Case descriptions

Case 1.

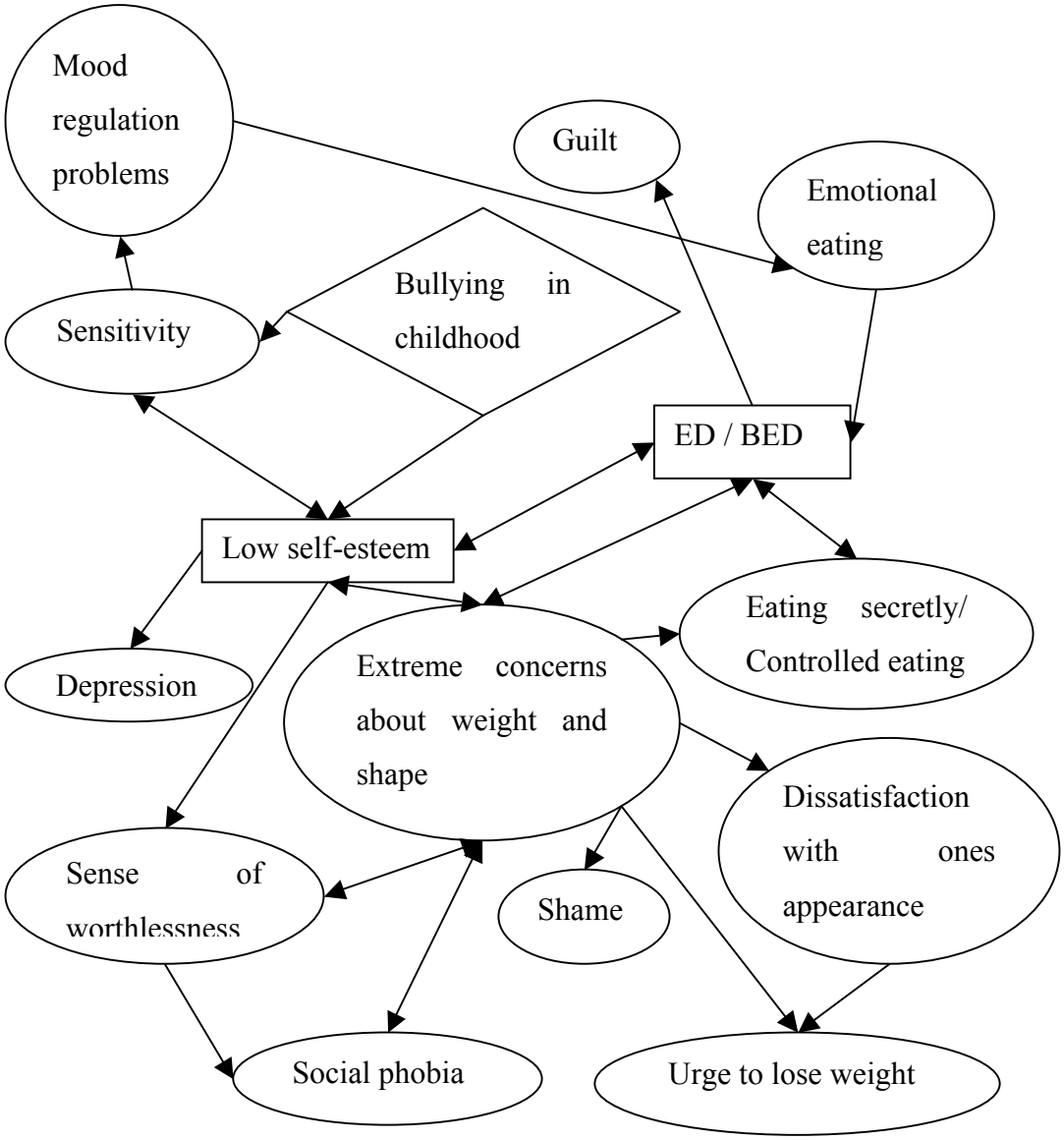

FIGURE 3. Behavioural analysis of case 1

Case 1 was a 24-years old woman with the diagnosis of EDNOS. She had suffered from eating disorder for 10 years. Her BMI in the beginning of the study was 21.1, and it did not show any significant changes during the intervention. She had also a diagnosis of panic disorder, and she was using antidepressants. During the intervention she did not have any other vocational support.

Case 1 (figure 3) had a low self-esteem stemming from her childhood when she was bullied in school. She was not satisfied with her own appearance, she was ashamed of herself, and she had extreme concerns about weight and shape, which made her want to lose weight. Eating and binging served her the function of mood regulation. She also tried to control her eating in fear of gaining weight.

TABLE 6. The pre-, post-, and follow-up scores of case 1

	Pre-treatment	*Post-treatment*	*1 month follow-up*
EDI	83	78	-
TFEQ R-18	67	86	-
BDI-II	22	16	-
BAI	13	12	-
AAQ-2	33	42	-
SCL-90	0.70	0.57	-

During the intervention the depression symptoms of case 1 degreased and her psychological flexibility increased. The changes on EDI were seen most clearly on subscale measuring interoceptive awareness. At the same time her ED symptoms measured on TFEQ R-18 increased due to the fact that her restricted and controlled eating degreased (table 6). These results are congruent with the aims of ACT. However, it can't be estimated how these results evolved, because case 1 didn't return the follow-up questionnaires.

Case 1 spent approximately 30-60 minutes per week doing the exercises. She had hard time completing them and getting in touch with her thoughts and feelings. She also did not engage actively in changing her old behaviour habits and wasn't very motivated to get better, according to the supervisor of the study. She might have needed more personal support to benefit from the exercises as much as possible.

Case 2.

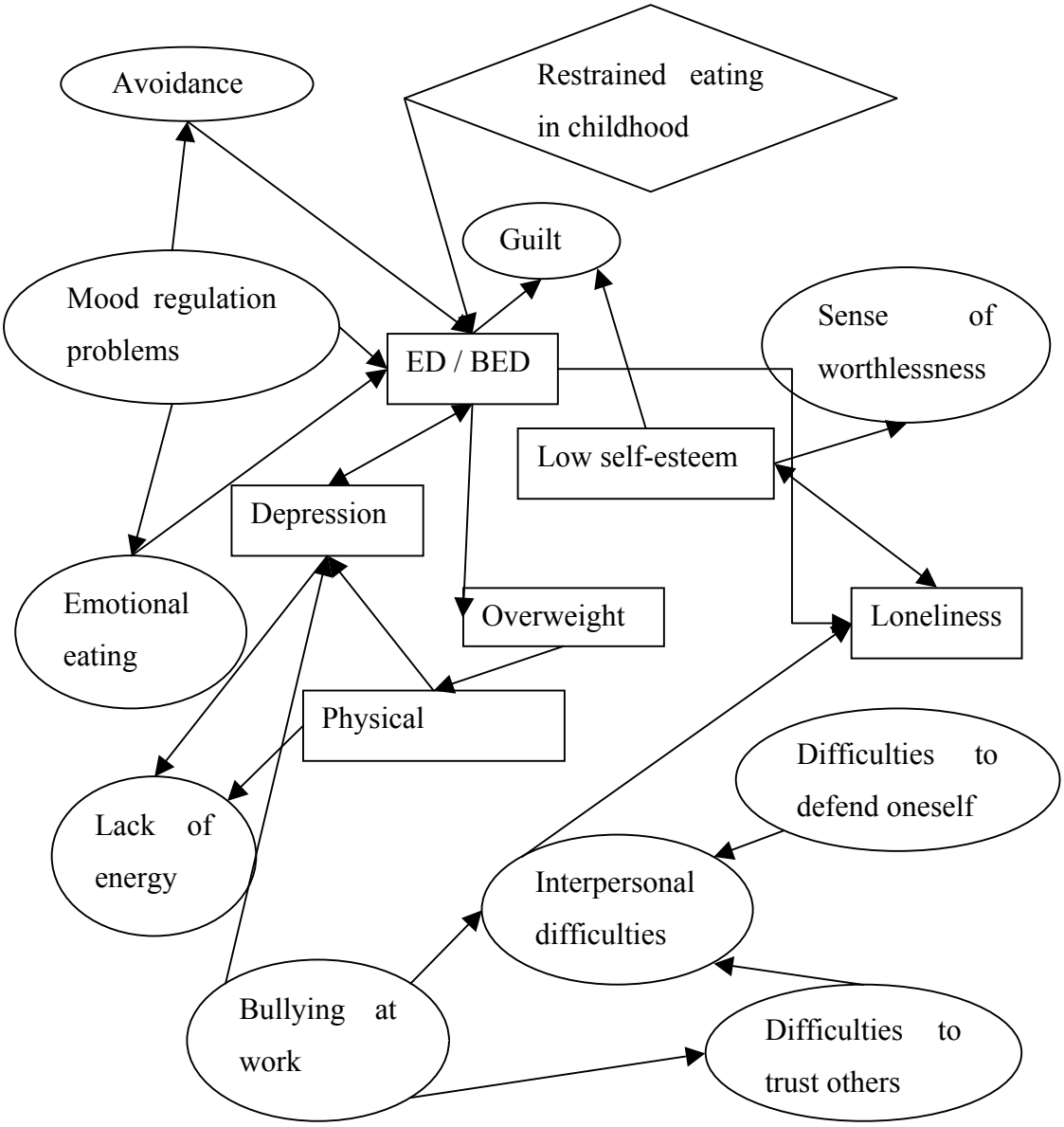

FIGURE 4. Behavioural analysis of case 2

Case 2 was 58-years old women with a diagnosis of BED. She had suffered from eating disorder approximately 50 years. In the beginning of the study her BMI was 50.8, and it did not change significantly during the intervention. In addition to ED, she suffered from numerous physical problems for which she had medication. In the beginning of the intervention she was meeting with a psychologist on an outpatient clinic for general psychiatry ones a week (started January 2010), and during the intervention she started an EMDR-therapy.

Case 2 (figure 4) had a low self-esteem, and she felt herself worthless and lonely. She had interpersonal difficulties, and she had been bullied at work. Overeating served her the function of mood regulation and avoidance of unwanted thoughts and feelings. Because of her overweight, she had a lot of physical problems and lack of energy.

TABLE 7. The pre-, post-, and follow-up scores of case 2

	Pre-treatment	*Post-treatment*	*1 month follow-up*
EDI	74	85	76
TFEQ R-18	78	82	83
BDI-II	36	37	34
BAI	21	27	26
AAQ-2	40	38	33
SCL-90	1.64	1.81	1.80

During the intervention the eating disorder scores of case 2 (EDI and TFEQ R-18) showed no significant changes. Her depression (BDI), anxiety (BAI), and general psychopathology (SCL-90) symptoms remained also at the same level. Her psychological flexibility (AAQ-2) degreased during the study (table 7), which can explain the lack of clinically significant outcomes, because the positive changes on AAQ-2 have been shown to interrelate with the intervention efficacy.

Case 2 spent approximately five hours per week doing the exercises. She found the exercises related to cognitive defusion and mindfulness the most helpful, and she told that she would continue doing the exercises after the study. It is probable that it takes more time than the six intervention weeks to gain lasting results. Case 2 mentioned in the interview that for her an adequate time for the intervention would have been 3-6 months.

Case 3.

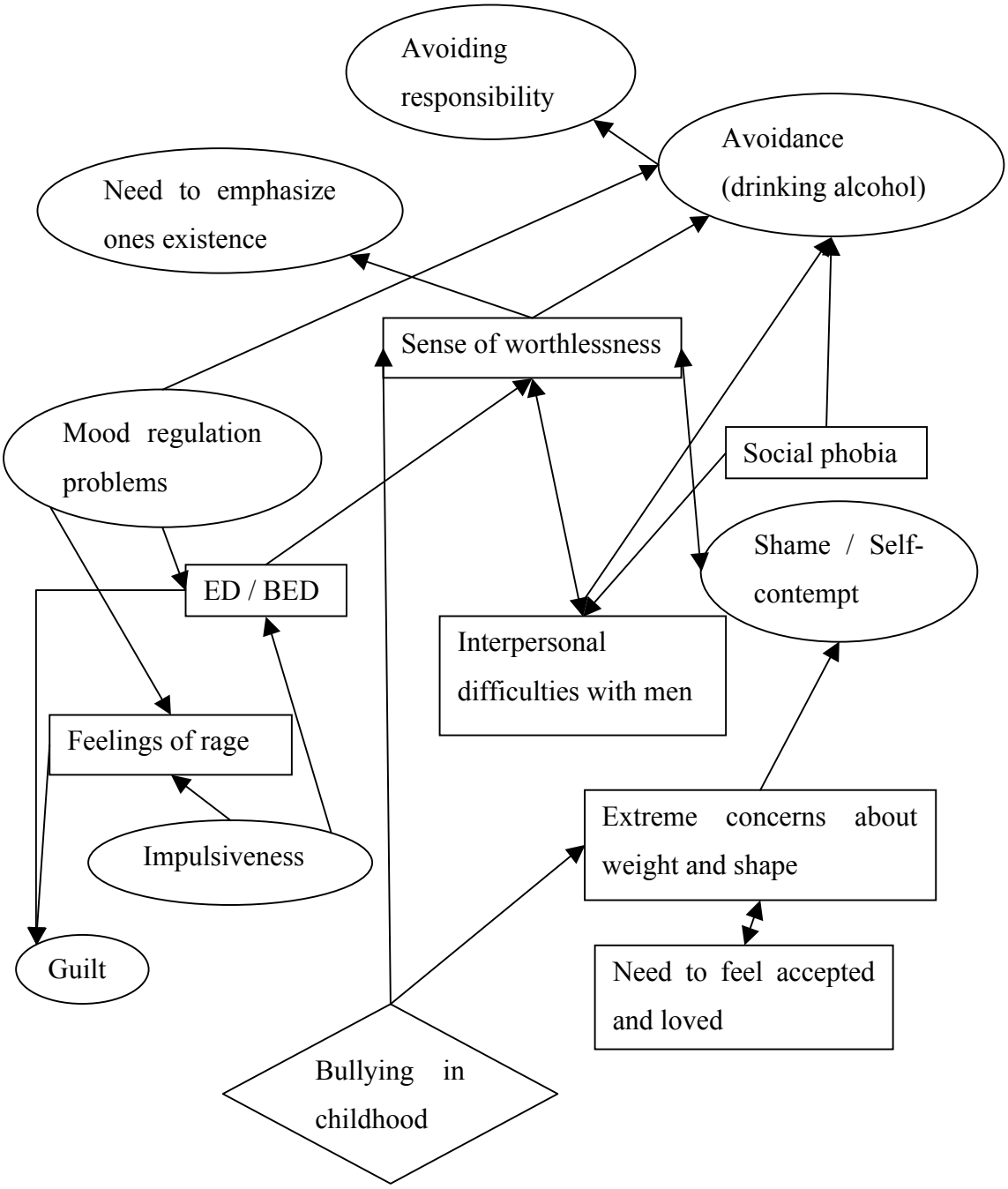

FIGURE 5. Behavioural analysis of case 3

Case 3 was a 27-years old woman with the diagnosis of EDNOS. She told that she had suffered from eating disorder her entire life or at least 20 years. Her BMI in the beginning of the study was 43.5, and it did not show any significant changes during the intervention. In addition to ED, she had a diagnosis of social phobia, and she was using antidepressants. During the intervention she was meeting ones a week with a psychotherapist applying psychoanalytic methods (started January 2010).

Case 3 (figure 5) had a very low self-esteem, and she was highly reliant on the opinions of others. She had interpersonal difficulties especially with men, and she used alcohol as a coping and avoidance strategy in social situations. Case 3 was impulsive which became apparent in her mood swings, outbursts of rage, and inability to constrict her eating. She had a feeling of emptiness and overall dissatisfaction with her life, and eating served her the function of satisfaction and fulfilment.

TABLE 8. The pre-, post-, and follow-up scores of case 3

	Pre-treatment	*Post-treatment*	*1 month follow-up*
EDI	62	69	56
TFEQ R-18	75	76	78
BDI-II	17	15	11
BAI	20	19	16
AAQ-2	41	36	40
SCL-90	0.80	1.10	0.80

During the intervention the main changes for case 3 were seen in her depression symptoms. The scores on BDI-II and BAI continued to decrease also during the follow-up period. The ED symptoms of case 3 degreased mildly on EDI but showed no significant changes on TFEQ R-18 (table 8).

Case 3 reported not having enough time to engage in the intervention, and she felt that the time was not right for here. She spent approximately two hours per week doing the exercises. She mentioned that she did not get into the program the way she would have wanted to. She would have needed more time and support to do the exercises.

Case 4.

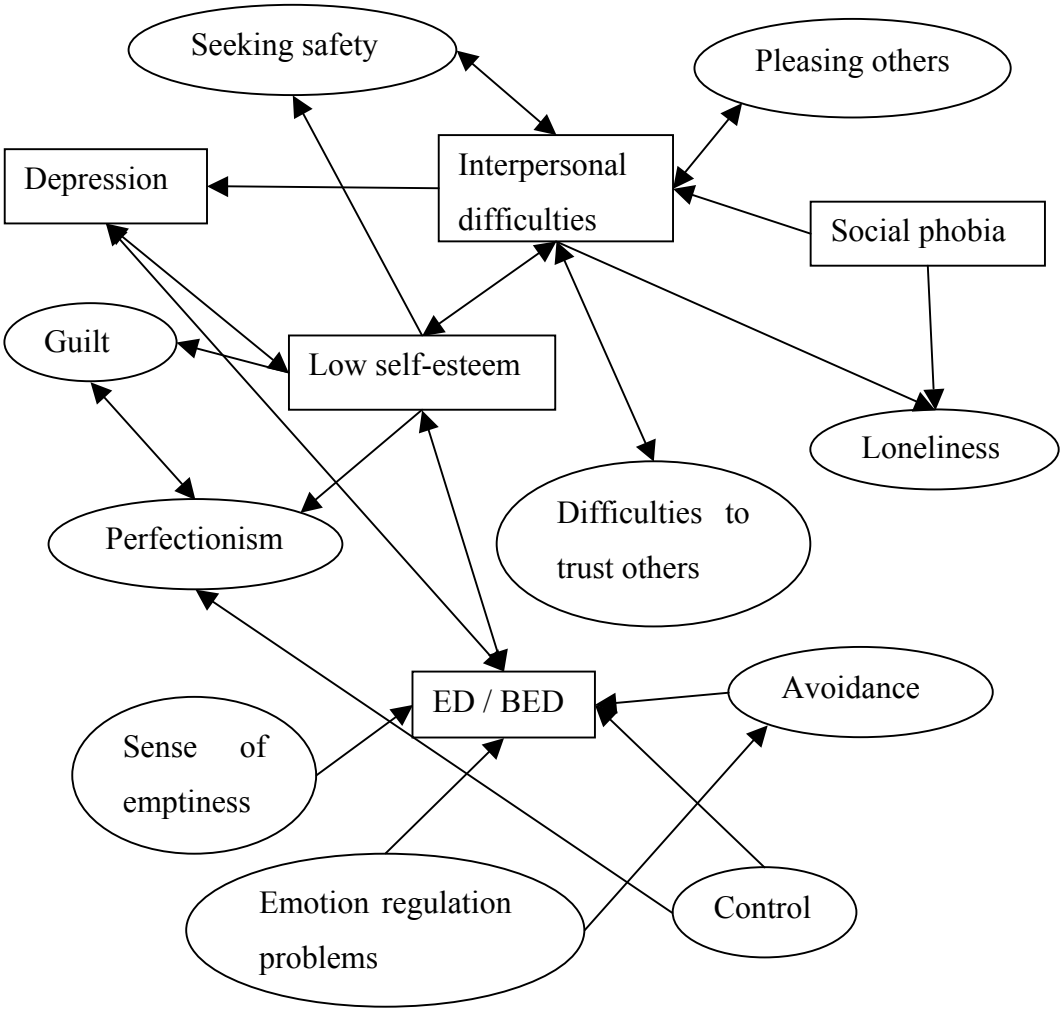

FIGURE 6. Behavioural analysis of case 4

Case 4 was 30-years old women with the diagnosis of EDNOS. She had suffered from ED for 10 years. Her BMI in the beginning of the study was 22.1, and it did not change significantly during the study. Case 4 had also the diagnosis of depression and social phobia. She was using antidepressants. During the intervention she had appointments in a mental health clinic with supportive discussions twice a month (started February 2010). Earlier she had had three years of psychotherapy.

Case 4 (figure 6) had interpersonal difficulties, low self-esteem, and social phobia. She was lonely and felt herself inferior to others. She was also trying to avoid responsibilities. Eating served her the function of mood regulation, and it was her source of safety and satisfaction.

TABLE 9. The pre-, post-, and follow-up scores of case 4

	Pre-treatment	*Post-treatment*	*1 month follow-up*
EDI	46	56	72
TFEQ R-18	71	82	74
BDI-II	31	16	24
BAI	22	25	23
AAQ-2	31	31	28
SCL-90	1.90	1.82	1.88

During the intervention the ED symptoms (measured with EDI and TFEQ R-18) of case 4 appeared to increase. Especially her interoceptive awareness declined and her bulimic symptoms increased. However, the depression symptoms of case 4 decreased during the intervention, although her psychological flexibility did not increase (table 9).

She spent approximately 1-3 hours per week doing the exercises, and she reported a lot of resistance to them. She found the exercises sometimes oppressive and difficult, which might have made her use eating as a coping strategy. She also mentioned that she would have needed more personal support during the process.

Case 5.

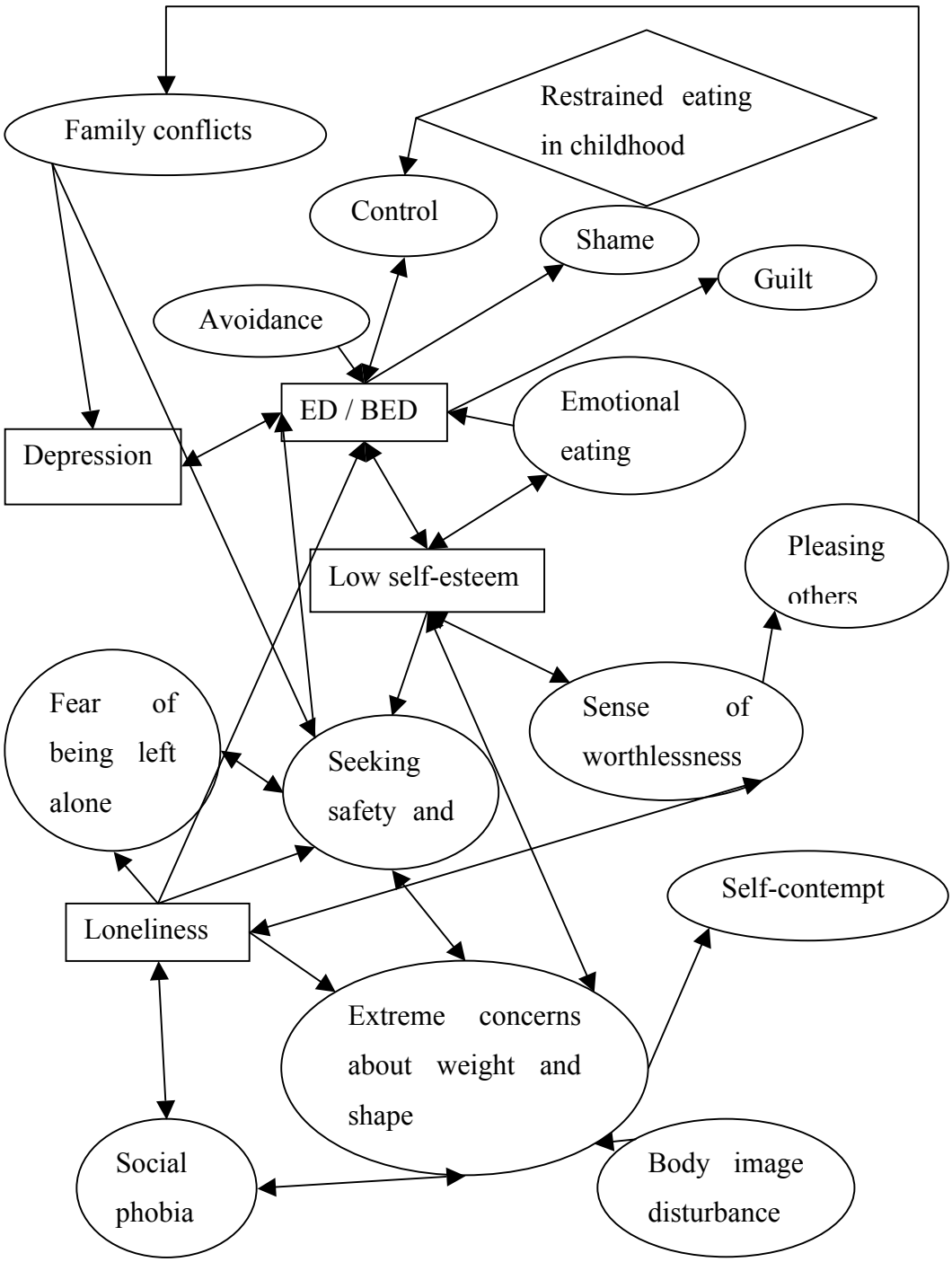

FIGURE 7. Behavioural analysis of case 5

Case 5 was a 37-years old woman with the diagnosis of BED. She had suffered from ED for 15 years. Her BMI in the beginning of the study was 38.1, and it did not change significantly during the intervention. Case 5 had also a diagnosis of depression, and during the intervention she went to psychoanalytic therapy twice a month (started June 2006).

Case 5 (figure 7) had a very low self-esteem stemming already from her childhood. There were often conflicts in her childhood family, which made her worry a lot. She could not accept her own body and felt disgusted by it. She also felt herself lonely, worthless, and depressed, and was seeking acceptance from others. Eating served her the function of mood regulation, and it offered her safety and comfort. She used to both reward and to punish herself with food.

TABLE 10. The pre-, post-, and follow-up scores of case 5

	Pre-treatment	*Post-treatment*	*1 month follow-up*
EDI	85	73	90
TFEQ R-18	69	72	76
BDI-II	33	19	37
BAI	15	15	13
AAQ-2	26	42	25
SCL-90	0.67	0.96	1.00

During the intervention case 5 showed significant improvement in psychological flexibility and depression symptoms, but these changes did not last over the follow-up period. She would have needed more time and support to reach lasting outcomes. The same trend was seen on EDI, which first showed decrease in ED symptoms but then climbed back to the pre-treatment level during the one-month follow-up (table 10). However, case 5 reported 4,5 months after the study that she had started contact therapy applying ACT, and that she was doing very well.

Case 5 was very motivated and spent approximately 15 hours per week doing the exercises. She mentioned in the interview that she would have liked to proceed more slowly and have more exchange of thoughts with the therapist. She was however surprised by the trust and proximity, which developed between her and the therapist during the study, and which probably had an effect on the positive outcomes she was able to reach.

Case 6.

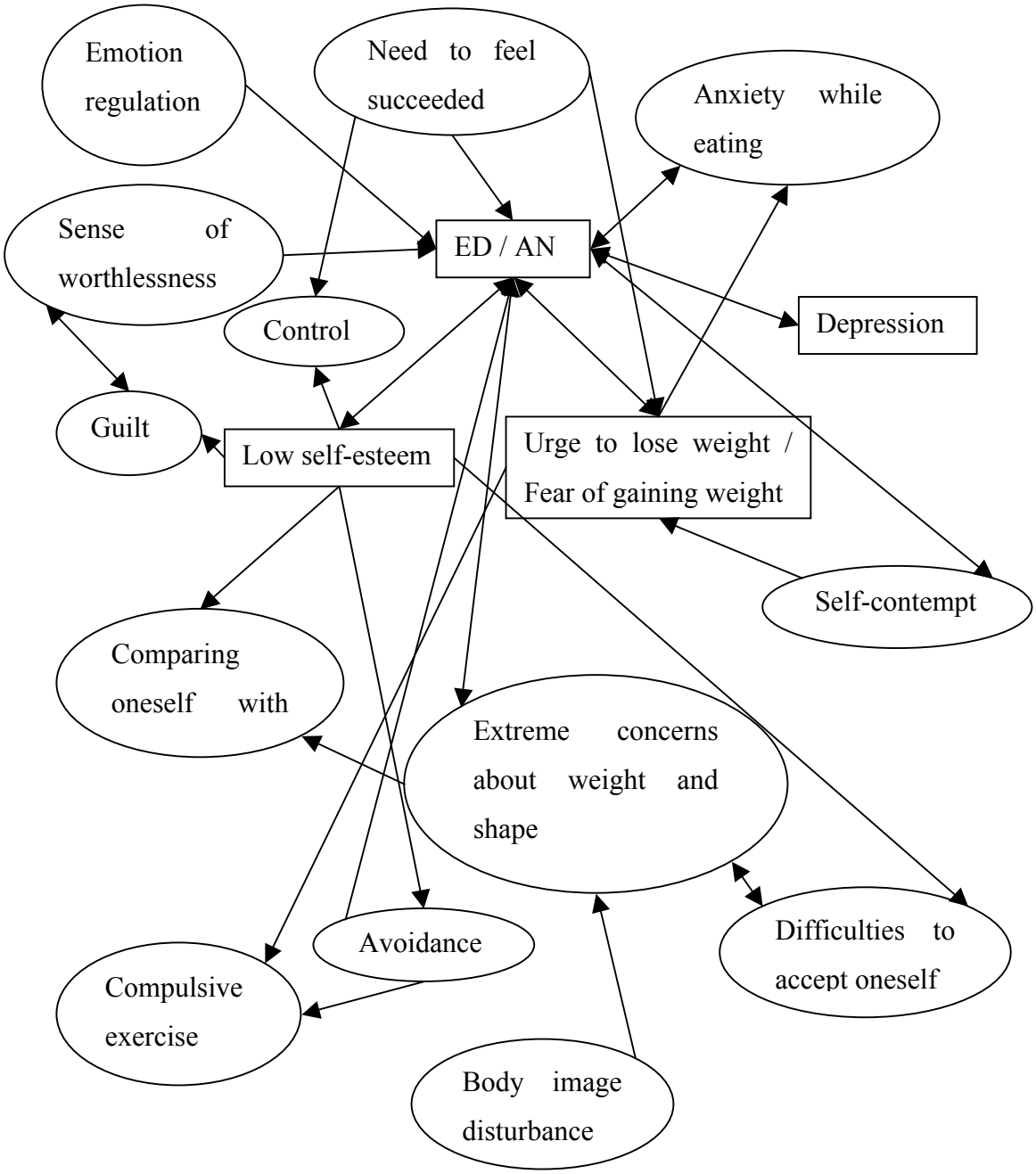

FIGURE 8. Behavioural analysis of case 6

Case 6 was a 35-years old woman with a diagnosis of AN. She had suffered from ED approximately 5 years. In the beginning of the study her BMI was 22.0, and it did not change significantly during the intervention. In addition to AN, case 6 had a diagnosis of depression and fluctuating personality. She had medication for depression and bipolar disorder. During the intervention she went to physiotherapy (started March 2009) and to psychotherapy (started June 2009) ones a week. Her therapist was also using ACT as a therapy form.

Case 6 (figure 8) had extreme concerns about her weight and shape, and she was highly afraid of gaining weight. She was comparing herself to others and felt often inferior to them. She was exercising compulsively, eating made her feel bad about her-self, and she thought that she could not eat "the right way". ED and losing weight served her the function of feeling more self-confident. Not-eating made her feel safe, successful, and in control of herself.

TABLE 11. The pre-, post-, and follow-up scores of case 6

	Pre-treatment	*Post-treatment*	*1 month follow-up*
EDI	119	46	83
TFEQ R-18	65	65	88
BDI-II	31	10	19
BAI	29	10	7
AAQ-2	23	60	56
SCL-90	1.46	0.18	0.31

During the intervention case 6 showed positive changes on many questionnaires (table 11). Her ED symptoms appeared to decrease measured with EDI but increase when measured with TFEQ R-18. This is due to the fact that she was able to let go of the controlled eating, which is an essential part in recovering from AN. Positive changes were seen in her psychological flexibility, depression and anxiety symptoms, and the amount of psychopathological symptoms.

Case 6 was already familiar with ACT, which made the intervention easier for her to participate. She reported spending few hours per week actively doing the exercises. She felt that this intervention was very important regarding her ED symptoms because in her contact therapy they were dealing more with her other problems, and she could quite easily avoid talking about her ED. She mentioned that the intervention came in a perfect moment for her, and that she was ready for the required changes, what most likely played a significant role in her recovery.

3.2 Advantages and disadvantages of a computer-assisted intervention: Client's view

Computer-assisted intervention program was found to be cost-efficient and easy to deliver to patients on a wide area. Professional time spent with each case was on average ½-1 hour per week, which is a little bit less than the time spent with one client in contact therapy. With more experience from therapy work the time could be even shorter. The "freedom and responsibility" offered by a computer-assisted treatment method was found both positive and negative in this study. Some of the participants liked the fact that they could work when they felt like it, but some thought that it was easier to leave the exercises undone when there was nobody commanding to finish them.

All of the participants reported that the intervention felt safe, and that they didn't have any concerns about the data security. 2/6 of the participants mentioned that the anonymity, offered by Internet, made it even easier to share their thoughts and feelings compared to traditional therapy. In face-to-face contact the shame caused by ED was sometimes seen as a barrier to an open relationship with the therapist. Writing down the things, that ED makes one do, was seen easier than talking about them. None of the participants mentioned that the communication only through Internet would have made them more distant or unwilling to share their experiences.

As a disadvantage of computer-assisted intervention program was mentioned the lack of a personal client-therapist relationship. Communication was seen some times harder when the therapist and the client did not meet each other face-to-face. This could also affect the confidence and openness of the clients, although it was not the case in this study. The participants differed from each other widely in the amount of spontaneous email contact they had with the therapist. 2/6 of the participants were highly active and took extra contact in addition to the required returning of the exercises. This active engagement was reflected positively on their treatment outcomes. The remaining 4/6 of the participants took contact mainly just when they returned their exercises or answered some questions of the therapist. However, all of the participants found the email contact important, supportive, and essential for a successful treatment.

The participants of this study found the computer-assisted intervention program easy and reliable to use. They thought that the webpage was interesting and clearly constructed. However a short face-to-face introduction to the program would have been useful according to the participants, especially if ACT was not familiar beforehand. It was also proposed that a computer-assisted intervention program would be a good addition to a traditional contact therapy. 1/6 of the

participants (case 6), who was simultaneously with this study engaging in contact ACT therapy, found that it was easier to talk about her ED symptoms through Internet, and thus this intervention had a significant beneficial effect for her recovery. She also reported that the two different forms of therapy supported each other well.

The participants were asked in the final interview about their opinions concerning the different components of the intervention program. Table 12 shows a list of liked and disliked elements of each component (text material on the webpage, exercises, email contact). In the parentheses are mentioned the amounts of the participants who mentioned the element in question.

TABLE 12. Liked and disliked elements of the intervention

Component	*Liked*	*Disliked*
Text material	-Informative (2/6) -Clear (2/6) -Interesting (2/6) -Comprehensive (1/6)	-Excessive (2/6)
Exercises	-Suitable for EDs (3/6) -Metaphors (1/6) -Clear and concise (4/6) -Convenient/varying degree of difficulty (3/6)	-Excessive (2/6) -Sometimes unclear assignments (2/6) -Boring/Hard to motivate oneself (1/6) -Not able to see old exercises (2/6)
Email contact	-Detailed (2/6) -Supportive (3/6) -Important feedback (3/6) -Essential (4/6)	-Uncertainty how often it is allowed to take contact (1/6) -More exchange of thoughts needed (1/6) -Not enough alone (additional face-to-face/telephone contact needed) (1/6)

Most of the negative feedback concerning this study was given for the short time interval in which the study was carried out. 3/6 of the participants would have needed more time to complete the exercises as thoroughly as they would have wanted to, the desired time ranging from 8 weeks to 6 months. They reported not being able to engage in the exercises as fully as would have been ideal, and the intervention was found to be partly stressing for some participants. The participants also

made clear that ED is a difficult and long-lasting disorder, which can't be cured in few weeks. Thus, brief-therapies were held improper for treating EDs.

4/6 of the participants thought that there is a huge need for a specific ED treatment, and that EDs are not well understood among health care personnel. It was emphasized that EDs have some special features, which need special understanding, and that traditional psychotherapy methods should be developed to meet better the needs of individuals with ED. ACT was seen as a potential therapy form for treatment of EDs, although specific exercises would still be needed. 2/6 of the participants gave extra credit for this study for noticing also BED and EDNOS. They felt that a person with some other kind of ED than AN or BN is easily left without treatment or not taken seriously.

3.3 Advantages and disadvantages of a computer-assisted intervention: Therapist's view

From the therapist's point of view, a computer-assisted intervention sets up some challenges, which were seen also in this study. Interaction with the client only through emails can be more difficult than face-to-face due to the lack of non-verbal cues essential in conversation. The therapist must be really sensible to interpret how forthright he/she can be with each client. There is also a possibility for misunderstandings because the client can't ask immediately if something that the therapist says remains unclear.

The advantages on the other hand include the possibility to treat more patients at the same time and to work with each individual case in a more flexible schedule. Based on this study, Internet seems to be a rather natural way of communication for most people, which helped the participants share their thoughts and feelings freely. Thus, it was possible to get a good view of each participants situation, which is supported by the fact that individual functional analyses (figures 3-8) were possible to be drawn based only on the information received from the emails during the first intervention week. On the grounds of these analyses it was possible to lead the therapeutic processes of each participant, and the intervention could be tailored to meet the specific features of each participants situation.

An additional advantage of a computer-assisted intervention as a form of treatment is the ability to get unique information about the thought processes of the patients. During this study the

participants wrote rather freely and without censorship about their thoughts and feelings in real time while living through difficult situations.

> *-- I already feel that I'm living in a new way – because I'm LISTENING to myself. At the same time I'm afraid that I will lose this. That I won't manage this time either. That soon will come the first binging episode, which will put me off again. Whoops, just as I wrote those words I realised again that those thoughts belong also to ED, not to m. -- (Case 5)*

> *-- It was good that you wrote about the importance of practicing. I have never before even thought that I could practice to live in a new way. It feels now like a new, fresh thought, which I want to get to know better, and I want to observe myself as a "learner". The ED monster is sitting on my shoulder all the time and throwing the well-known sentences to command and play me down. I hope that the monster will fall off its place, for good.--(Case 5)*

Thus it was possible to get the kind of information, which is not normally attained in contact therapy but which can be seen highly useful for the therapeutic process and for the understanding of the patient. This information could play an important role also in the field of research.

A therapist's understanding of the specific features of EDs was noticed to be essential for a successful treatment. It made the conversation with the participants easier, increased the confidence, and made it possible to construct the intervention and exercises to meet the participants' needs. In some cases it was necessary to be able to read between the lines things that the participants didn't mention for one reason or another (mainly because of the shame). Because of the lack of non-verbal queues, an understanding of the nature of ED made the interpretation of the participants' messages easier. In the interviews at the end of the study also the participants brought out clearly the importance of the therapist's understanding of EDs.

3.4 The feasibility of Acceptance and Commitment Therapy for treatment of eating disorders

The processes of ACT (acceptance, cognitive defusion, being present, self as context, values and committed actions) can all be seen important and closely related to the special features of eating

disorders. The participants mentioned cognitive defusion, being present/mindfulness, and values as the most important processes. In the interviews conducted after the study, 5/6 of the participants shared the view that ACT is a suitable therapy form for treatment of EDs, and that it brings a refreshing new breeze to more traditional treatment methods. The participants described ACT as an interesting new viewpoint, which contains something very efficient. One participant mentioned the practicality and the concrete changes in old behavioural habits especially important. Only 1/6 of the participants thought that ACT did not diverge significantly from other forms of therapy.

Although the participants reported being able to get acquainted with ACT based only on the material offered through Internet, a short introduction to the principles of ACT would have been useful according to them, and it would have made the intervention program even more beneficial. For the participants who were not familiar with ACT beforehand, the 6-week time period was not enough to get properly in to the method. There was also a risk of misunderstandings, especially with the concept of acceptance, when the participants learned about ACT privately through Internet.

5/6 of the participants received some other kind of conversational help during this intervention (1 EMDR, 2 psychoanalytic psychotherapy, 1 ACT, 1 unspecified psychotherapy). None of them reported that these two simultaneous treatments would have impeded each other. On the contrary, 4/6 of the participants felt that the different treatments had supported each other, and all of them saw the potential extra benefit of the computer-assisted intervention when added to a face-to-face therapy. Although this ACT-based intervention seemed to work in association with all kinds of psychotherapy forms, the participants agreed that it would be most beneficial together with a contact therapy applying ACT.

4 DISCUSSION

The aim of this study was to develop a computer-assisted eating disorder intervention based on Acceptance and Commitment Therapy (ACT), and to find out whether this kind of intervention would be feasible and acceptable in the treatment of EDs. The results show that a computer-assisted intervention is well accepted, and it works especially with patients who are motivated and willing to do independent work. Some personal support is still often needed. Computer-assisted forms of treatment have in any case a lot of advantages, which can offer solutions to problems confronted in contact therapy, e.g. cost-effectiveness, anonymity, ease of use, and possibility to offer specialized

treatment for individuals on a wide area. However, some disadvantages were also found, e.g. the lack of personal relationship between the therapist and the patient. Another matter of interest was to determine whether ACT is a suitable form of treatment for eating disorders. It was shown that the processes of ACT correspond well to the risk and maintenance factors of ED, thus making ACT a suitable therapy method for individuals with ED.

The results of this study show that a computer-assisted intervention requires a lot of motivation from the patient, which can sometimes be a problem with eating disorder patients. This motivational level can be seen to relate with the patient's stage of change, according to Prochaska's transtheoretical model of change (Prochaska & DiClemente, 1992). In previous studies it has been shown that the stage of change has an effect on the patient's motivational level and the treatment outcome (Hasler, Delsignore, Milos, Buddeberg, & Schnyder, 2004; Rossi, Rossi, Velicer, & Prochaska, 1995). The importance of the phase of the disorder, the stage of the change, and the motivational readiness to recover for the positive clinical outcome were also evident in this study. It was seen that the participants who were really motivated to change their old habits, who kept actively contact with the therapist, and who spent the most time doing the exercises, benefited the most from the intervention. In the interviews, which were conducted after the intervention, it became clear that the timing must be right to make this kind of intervention work. The patient must already be on a recovery process in order to find the required motivation and to benefit from the treatment. Thus, it can be assumed that a computer-assisted intervention is best suitable for patients at more advanced levels of change. When the motivation for change is not strong enough, the patient is likely to need more personal support than the one that can be offered via Internet.

According to this study, the advantages of a computer-assisted form of treatment include cost-effectiveness, ease of use, anonymity, the possibility to offer specialized treatment for patients at multiple locations, and freedom to choose the time and place for the therapy. When using computer-assisted treatment methods, the therapist and the patient can work with the case when it suits them best, which makes the working more efficient. Patients have also the possibility to get support via email outside a fixed therapy sessions when they need it the most. The interactivity of computer-assisted forms of treatment makes it possible to tailor the intervention individually for each patient. These results are consistent with earlier studies (Bara-Carril et al., 2004; Bauer et al., 2009; Zabinski et al., 2003).

Disadvantages on the other hand include lack of close personal therapy relationship between the therapist and the patient, and lack of adequate support for some patients, who are not able to complete the exercises alone. The participants of this study emphasized the significance of emotional support during the intervention. Thus, some kind of personal contact (in this study email

contact) can be seen essential for a successful treatment. In previous studies the emotional support has been offered e.g. through support groups or chat forums among the participants (Bauer et al., 2009; Ljotsson et al., 2007; Winzelberg et al., 1998), but email contact has also proven to be useful (Robinson & Serfaty, 2008; Yager, 2003). Email contact with a therapist can be seen to serve a different function than support groups by offering professional support in contrast to peer support.

The disadvantages of computer-assisted forms of treatment could be avoided by using a computer-assisted intervention as an additional support for a traditional therapy. In severe ED cases computer-assisted self-help program might not be enough alone but it could serve as an important additional component to traditional therapy sessions. Computer-assisted forms of treatment could also be useful for patients who have just been released from the hospital, and who still need some additional support to prevent relapses, especially if they had got familiar with the program and treatment method already during the in-patient treatment. One potential way to take advantage of computer-assisted interventions could be stepped-care approaches. In previous studies (Ljotsson et al., 2007; Nevonen et al., 2006) it has been suggested that by using computer-assisted self-help programs as a first step in stepped care approaches, it could be possible to prevent the disorder from developing and to save resources. Thus Internet-based ED programs have been suggested to be useful in preventing new ED cases, although the results regarding their efficacy have been somewhat inconsistent (Bauer et al., 2009; Newton & Ciliska, 2006; Zabinski et al., 2001).

Another matter of interest in this study was to find out whether Acceptance and Commitment Therapy is suitable for treating EDs. Based on this study, the processes of ACT (acceptance, cognitive defusion, being present, self as context, values and committed actions) can be seen consistent with the main problems of EDs, which makes ACT a potential form of therapy for EDs. ACT responds to the main maintenance factors of eating disorders, illustrated by Fairburn in his transdiagnostic theory (Fairburn, 2008; Fairburn et al., 2003). Fairburn claims that there are transdiagnostic mechanisms, which are the same for all EDs and which play a major role in maintaining ED psychopathology. These mechanisms include over-evaluation of shape and weight and their control, clinical perfectionism, core low self-esteem, mood intolerance, and interpersonal difficulties. (Fairburn, 2008; Fairburn et al., 2003.) All of these mechanisms can be treated with corresponding ACT process.

It is also known that the thoughts related to EDs are not easily changed. Thus the experiential approach of ACT, which does not require the alteration of thoughts, can be seen effective. The functional perspective of ACT takes account of the functions that eating disorder symptoms serve for the patient, and the aim of the therapy is to save the functions but to find alternative ways to

achieve them using values work. Thus the patient does not have to give up his/her symptoms without getting something to serve the same function that ED has served before.

The main effects of this intervention study were seen on the depression scale (BDI-II) and on the scale measuring psychological flexibility (AAQ-2), which has been the case also in previous studies addressing the efficacy of ACT (Kohtala, 2009). The positive changes on these scales can be seen to affect the overall quality of life of an individual, which was one aim of this study. On the other scales the effects were rather small and showed notable changes only for few cases. Because of the long ED history of the participants, the ED symptoms would have needed more time to show significant positive changes. The scores on the ED scales (EDI, TFEQ R-18) deteriorated in some cases, showing increase of the symptoms on the other scale and decrease on the other. On the TFEQ R-18 scale the ED symptoms, especially uncontrolled eating, of many participants seemed to increase. This is however in accordance with the principles of ACT, i.e. letting go of the control. It is also possible that the participants relied on eating as a coping mechanism or one form of avoidance while confronting unpleasant private events.

In summary, according to this study computer-assisted brief-interventions have many potential advantages to be utilized in treatment of EDs although they don't offer sufficient support for all patients. If the disorder has lasted for a long time or the symptoms are severe, it requires more intensive methods to help the patient recover. However, computer-assisted interventions can offer a clinically significant addition to the traditional treatment path. At the moment, many individuals remain outside of the reach of professional care, and they would benefit from an easy-access intervention in the early stages of the disorder. If the individuals at risk of ED could be offered this kind of ED-specific support in a preventive manner, the incidence of EDs could decrease and the amount of nursing costs would be smaller. The importance of prevention programs has been highlighted also in previous studies (Phelps, Sapia, Nathanson, & Nelson, 2000). Based on this study, it can be assumed that computer-assisted interventions are quite easily accepted making them a potential route for prevention interventions.

This intervention could be further developed, by adding more personal contact and support groups into the program. Also more flexible time period, in which the program should be completed, would probably add the benefits attained through this intervention. If the exercises were kept on the webpage constantly and the patients were given instructions more individually, it would enable everyone to proceed in the pace that suits them best. Audio and video material provided on the webpage would be a significant enhancement of the program. They would facilitate the completion of some exercises, especially mindfulness exercises. One other potential way this intervention could be put to use in the future is to turn it into a CD-ROM format and to offer it for

therapist familiar with ACT, who are working with EDs, as a supplement to more traditional therapy methods.

In the future it would be interesting to find out more about the potential advantages that computer-assisted forms of treatment can offer to psychotherapy. The limitations of this study include the small amount of participants and the short follow-up period, which could be redressed in the future studies. As was seen with case 5 the results might appear after a longer time period. The processes, which started during the intervention, might lead to significant results if the participants would have enough time and support to process them. This supports the hypothesis that this kind of computer-assisted intervention might work well alongside a traditional, face-to-face therapy. In the future it would be essential to study, who would benefit the most from computer-assisted self-help programs, in order to be able to offer them for the right population.

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APPENDIX 1: The email from the therapist to the participants: Third week

The third week of the intervention is about to start!

The past two weeks we have prepared ourselves for the forthcoming journey. You have found out why you want to start this journey, that is, you have made your personal problem list, and you have thought over which way you would like to go in your life, which means you have charted your own values. Now it is time to actually start going in your chosen direction. Your values are like a course on a compass and they will guide you, wherever you want to go. Besides the course you will need some guideposts or benchmarks on your journey, which help you to keep on the right path. These guideposts are the concrete goals, which we are about to ponder during this week. To make the journey go forward, you need to take steps in your value consistent direction – that means you need to make concrete, value consistent actions.

Like always while travelling, also this journey might be connected with some surprises and difficulties. The road isn't always straight and smooth – on the contrary, it might sometimes be rocky and curvy. You might not always be able to take the shortest path into the direction you would like to go, and you might have to make some rounds before getting there. The most important thing is however that you maintain the course in your compass. Probably you will also confront some barriers on your journey but don't let them put you off. During the forthcoming weeks we will focus more on the means, which will help you handle these barriers.

This journey has yet another special feature – you will never reach the end. You will reach your goals and benchmarks but you can always keep on walking into your value consistent direction. Values can never be reached. This means that you have to keep on doing value consistent actions after this week's exercises and after the whole study too to make progress on your journey. You can surely have a rest ones in a while or you can alter the speed you are moving on. However, you have to keep on moving if you want to make your life more value consistent and meaningful for you.

You will find this week's exercises on the webpage. The most important thing is that you start to do concrete actions, which will lead you in your value consistent direction, and that you keep on doing these actions during the whole study and also after the study although it isn't specially mentioned in

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the exercises of the coming weeks. If you confront some insuperable barriers on your journey or you feel like you have lost the course in your compass, don't hesitate to get in contact – then we can together discuss, how you could continue your journey.

Have a valuable journey!

APPENDIX 2: Examples of the webpage's content

Examples of the webpage's content include one metaphor and one exercise from each week.

1. Week – ACT and ED

Metaphor: Passengers on a bus

Imagine that you are a bus driver. On the way some rude passengers get on your bus. They give you orders, shout advices, and try to get you to change the direction. They want you to drive a different route that you have chosen yourself. You try to kick the troublemakers out of the bus but they won't leave. Instead they become even louder and try to make you obey their advices. You notice that you can't drive them out of the bus, so you have two options. Either you can obey the passengers and change the route, or you can stay on the road you have chosen and let the troublemakers keep on shouting. If you just keep on driving the bus in the direction you have chosen, sooner or later the troublemakers will notice that they can't distract you from the road no matter how hard they try.

Your thoughts and feelings are kind of these troublemakers, who have got on your bus on the way. They might shout you some unpleasant comments, like "You always fail", "You need to lose weight", or "You're not goof enough", and insist you to follow their advices. Because you can't kick those passengers out of your bus and you can't get rid of your thoughts, you have to make a choice. Will you let them guide your life or do you choose the direction for your life by yourself according to your values?

Remember that thoughts and feelings come and go. Always when you notice some troublemakers on your bus, who try to convince you that you will fail or that there is no point to keep doing value consistent actions, just keep on moving into the direction you have chosen. The effects of your actions are more lasting than the ones of your thoughts and feelings. At the end you are responsible for the direction you are going, and you can choose whether you obey your thoughts or not. You can thyself choose the destination and the route for your bus.

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Exercise: Making one's own problem list

Think about the things and situations that are psychologically difficult for you at the moment. Some situations are probably related to food or body image, but you can also think about situations that aren't directly related to eating disorder. Don't describe just things external to you but also your inner events, like your thoughts and feelings. E.g. it is better to write "After I have eaten, I feel myself anxious" or "I'm afraid that I will get fat if I don't exercise enough" than just write "food" or "exercising". Write a list of these things and situations and consider also how long they have been problematic for you.

Go through the things on your list and rank them according to their importance or effect on your life. Start with the things that cause you the most distress and finish with the things that bother you least. Finally draw arrows between the things on your list according to the way they are related to each other. The things are related if a change in one thing will also change the other. You can draw one- and two-way arrows between the things.

In this exercise there aren't right or wrong answers, and it doesn't matter whether there are only a few or many arrows. It's about your personal experience. You might feel that all the things are related to each other or that just a few of them are somehow connected. All the information is equally important and useful. The higher on the list a thing is and the more things it is related to, the more important it probably is.

This is your personal problem list, with which you'll be working in the future.

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2. week – Values

Metaphor: Wrong train

Imagine that you are going on a trip to some interesting place, which you really want to see. Maybe you are going somewhere that you have dreamed of your whole life. When you arrive at the railway station, you see two trains a bit further away waiting to get to the platforms. The other one is a little bit strange, new train. This new train looks weird, a bit messy, and somehow dangerous. The other train is neat and safe, you have travelled with it before, and according to your experience it runs on schedule. You think: "Of course I have to choose this familiar train. I don't want to take that strange, new train." So you wait for the neat and safe train ready to get on it. You wait and wait… Strange new trains leave the station one after another. All the time you stand on the platform and wait for the familiar train to finally get to the trip of you dreams. What if this train never leaves the station? What if you are waiting for the wrong train?

Exercise: 70th Birthday

Defining personal values can sometimes be hard, but the next exercise will help you to think what kind of things you would like to be important in your life.

Imagine that you are on your 70th Birthday. All your friends, relatives and beloved ones are there. Someone, who is really important to you, will give a speech and tell about all the things he/she appreciates in you. The speech will be about the things and characteristics that you are remembered of. Notice that people don't normally remember from each other their thoughts, feelings or bodily sensations, but the choices and actions they have made. What would you like to hear? How would you like your life to be described? Remember that it's not a prophecy or a description but a dream, a wish or a goal.

Try to describe your most essential values in this kind of short speech.

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3. week – Values

Metaphor: Gravity

Although a value consistent life often leads to good results, values are not a way to "get what you want". Values are directions, not end results.

You can compare this to the way gravity affects the water in a jug. Gravity defines that the water runs downwards and not upwards. Gravity is the direction, not the result. If the water can somehow run downwards (for example, if there is a hole in the jug), you can see the effect of the gravity. However, if there is no way how the water could run downwards, you can't see the effect of the gravity. From the outside it may seem that there is no direction. The direction is nonetheless all the time there, and it comes revealed when there is an opportunity for it.

Exercise: Setting and achieving goals

Last week you were thinking about the things that are important to you – your personal values. This week we'll move on to think about the actions through which you can move closer to a value consistent life. You will probably notice that making value consistent actions isn't always pleasant and it might even cause pain and unpleasant feelings. Moving towards your values requires a lot of courage. When you care about something, you simultaneously take the risk that you'll be hurt, rejected, cheated, or that you lose something. However, the temporary pain and suffering related to caring and to the possibility of losing won't hurt as much as the pain that comes from not living your life the way you want. You have to commit yourself to walking the way your values guide you, making value consistent actions, and changing your behaviour. So think for a while, are you ready to devote yourself in making acts consistent with your personal values and to accept the distress that might be related with changing your behaviour. Are you ready to take brave steps on the road paved by your values – not despite of your distress but *whit* it?

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If you answered the previous question affirmative, it's time to set some goals, which will lead you towards a value consistent life. First you need to choose one value area (close relationships, parenthood, family, friends, career, education, leisure, spirituality, community life, health) where you would like to start adding value consistent actions. If values are the directions you would like to lead your life, then goals are the signposts with which you can mark your way. Goals are reachable events and they give you a concrete method to live out your values.

When pondering on your value consistent goals, it is good to consider both short- and long-term goals. It is also important that the goals are working. A working goal is practical, possible to be reached in the current situation, and it leads you to your value consistent direction. Don't let yourself too easy with your goals, but be also realistic and go for something you can actually reach.

When you have found out the direction you would like to go (values), and set some signposts on your way (goals), it is time to take steps into the right direction. Those steps are your value consistent actions, which you have to do to be able to live the life you really want. The actions should be precise and situation-specific, in other words actions with a beginning and an end, a specific shape, and actions that occur in specific situations. An example of this kind of actions could be "I'll eat breakfast every morning". Consider some actions, which could help you reach a value consistent goal you have set for yourself. Try to make up enough big and small actions, so that if you would do them all, achieving your goal would be very likely or even sure. Then every day try to add some value consistent actions in your life, and observe what happens.

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4. week – Control

Metaphor: A weird, little man

Imagine that a weird little man would follow you wherever you go and give you financial advices. What if most of the advices, which you get from the little man, would lead to bad end results? You would have invested money the way he told you, and suddenly you would loose it all. Every time he would have a new explanation, why he failed, and a new advice to give. It would be hard for you to drive him away or to make him leave. But what would you trust in – the little man or your personal experience?

Exercise: Coping strategies

Form early on we learn to think that control is a solution to difficult situations. We develop all kinds of coping strategies for problem situations, and we try to remove suffering from our lives with them. In some external situations control might be a good coping strategy, but we can't affect our unpleasant thoughts and feelings with it. You might already have noticed that your thoughts and feelings won't change, no matter how hard you try to master and control them. The more you try not to think or feel something unpleasant, the stronger it will appear. So, could it be that control is the problem, not the solution?

The reason, why people try to cope with difficult thoughts and feelings by controlling them, is that we are used to control our external events and thus affect unpleasant situations. So it's very understandable that we try to use the same strategy with our internal events, and in some situations it might even seem to be working at first. The unpleasant thoughts and feelings are alleviated and it's easy to think that it is possible to control them after all. However, in several studies it has been shown that they will come back later even stronger. It might still be hard to give up the control, because the short-term effectiveness of coping strategies is more rewarding than the long-term effectiveness. In addition to this, our surroundings are giving us the information, that thoughts and feelings should be controlled (e.g. "Don't cry" or "Don't be afraid").

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So it's very usual that people have different coping strategies based on controlling and avoiding unpleasant thoughts and feelings. This is called experiential avoidance. We might avoid situation that cause unpleasant thoughts and feelings, direct our attention away from the problem by focusing on something else, numb our pain by sleeping, drinking etc., or try to control a difficult situation verbally. Eating disorder can also be one coping strategy. Dieting and restricted eating or vomiting might temporarily ease the distress, enhance self-confidence, or create a sense of control. Because this kind of coping and avoidance strategies won't in spite of all work in the long-term but only increase the suffering, you have to let them go if you want to be free from the suffering.

Now think about your coping strategies in difficult situations. Are you used to control or avoid those situations? How well have your control strategies been working in the short- and long-term? Choose first one difficult thought or feeling, with which you have been struggling. Then think about the strategies, with which you have tried to cope with the though or feeling you chose. Finally, consider whether the coping strategy has made your state easier or not. Assess the effectiveness of every strategy in the short- and long-term on the scale from 1 to 5 (1=doesn't work at all; 5=works very well).

5. week – Mindfulness

Metaphor: Chessboard

Imagine that all you see is an endless black-and-white chessboard. And just like in chess, there are two teams working together – the white pieces are fighting against the black ones. You can think that your thoughts and feelings are these pieces; they also work in teams. "Bad" feelings (anxiety, depression etc.) will join the "bad" thoughts and "bad" memories. The same applies to "good" feelings. You play the game so that you choose the side, which you want to win. You put the "good" pieces (e.g. thoughts related to self confidence, sense of control, satisfaction etc.) on one side and the "bad" pieces on the other. Then you go

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behind the white queen and ride off into the battle to win the unpleasant thoughts and feelings. It is a war. You think that if you beat enough objectors, you can control them. You think you can control the situation. However, in this metaphor it looks like you can't win the battle because you can't get the black pieces off the board. They are part of you. So the battle goes on from one day to another, year after year. You are hopeless because you know that you can't win. But you can't stop fighting either. If you are on a white horse, the only thing you can do is to keep on fighting. However there is a rational and a logical problem in this situation. In matter of fact you are your own enemy. When you identify yourself with your thoughts and feelings, you are on the board at the same level with the pieces. Sometimes they are even bigger than you and win the battle or the game. But what if those pieces aren't you after all? What if you are the chessboard? What would happen to all the pieces without the board? They would just vanish. Notice that if you are the pieces, the game is important: you have to win. Your life depends on it. But if you are the chessboard, it doesn't matter how the game ends. The game may go on but it doesn't have an effect on the board.

Exercise: Mirror exercise

Because body image distortions are often related to eating disorders, looking into a mirror might cause difficult thoughts and feelings. In the next exercise you can practice mindfulness skills while looking your own reflection.

Place yourself in front of a full-length mirror. Wear as few clothes as possible or be naked. Look yourself closely and describe your body from head to toes. Describe, what you see, and try to avoid judging. You might observe that some judgments are entering your mind (e.g. "I'm too fat", "I'm ugly", or "My stomach is too big"). Try to distinguish this kind of judgments from descriptions (e.g. "My hair is blond", "I become anxious while looking my reflection", or "I can see the blood vessels on my arms"). If you notice that your mind is making judgments, just notice the thought and feelings connected to it but don't identify yourself with them. You don't have to do anything for your thoughts and feelings. It's enough that you observe them. Let yourself experience all the thoughts and feelings and the

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distress related to them. Don't intermit the exercise although you might have to confront some unpleasant inner events, but look at yourself in the mirror at least five minutes. If after five minutes you feel as much distress as in the beginning of the exercise, keep looking at your reflection as long as it gets easier.

6. week – Acceptance

Metaphor: A broken vending machine

Imagine that you are thirsty and you decide to buy yourself a drink from a vending machine. You put a coin in the machine and choose the drink you would like to have. The machine makes noises but the bottle you want won't come out. You put some more money in the machine but you still don't get your drink. You press the return button to get your money back but it doesn't work either. You get frustrated and angry, and you start pushing and hitting the machine. No matter how much money, time or energy you spend, the drink you want won't come out. The machine is obviously broken. You have to choose whether you keep on fighting with the vending machine the whole day, or whether you accept your loss and move on to do more pleasant things.

This is what active acceptance means.

Exercise: Acceptance in this moment

You are already getting more conscious of the negative impressions your mind is creating. You have confronted some of them in previous exercises when you have thought of some thing that is difficult for you and observed the unpleasant feelings, thoughts, sensations, and memories related to it. But what happens, when you confront a difficult situation here and now? How do you manage when you confront distressing situations in your life? A short answer is that you will manage them with the mindfulness skills that you have learned. You just need to take the observer role and view your internal events mindfully with acceptance without any explanations or judgments.

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Now it is time to make a personal, gradually progressing exposure program for you, which will bring out the unpleasant things that you have tried to avoid. The aim is to learn how to confront difficult situations in everyday life and how to accept the unpleasant thoughts and feelings related to them. The task might seem hard and your mind will probably object it. So remember that you already know ways to handle difficult situations and that you don't need to let your thoughts and feelings guide your life.

Summon up one psychically difficult thing, and think of some physical situations, where this distress might occur. Try to come up with ten different situations. Choose on the other hand situations, which cause you a lot of unpleasant feelings, and on the other hand situations, which aren't as difficult. Write down the situations you have chosen and assess them on a scale from 1 to 10 (1=the situation causes only a little distress; 10=the situation causes a lot of distress). When you have finished your list, you can expose yourself to these situations gradually by starting whit the least difficult one and proceeding to more distressing ones.

So choose now the least distressing situation (the one you ranked with the number 1) and decide, when and where you want to expose yourself to it. You can define the time and the place but not how willing you are to experience the unpleasant thoughts, feelings, memories, and sensations that will come up during the exposure. You need to give up all the avoidance. Choose a task, which is so easy, that you can commit yourself to it for sure.

During the exposure:

- Observe what happens around you and try to be more aware of your surroundings. Don't try to weaken the thing you are struggling with, but notice that the life around you goes on despite of the difficult feelings you are going through.
- Don't avoid the unpleasant thoughts and feelings or struggle against them.
- Observe your thoughts, feelings, and bodily sensations. Let them come and go without joining them.
- Try to be present in this moment and just notice, if your mind wanders in to the past or the future.

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- Notice your urge to do or to avoid something. Do nothing to this urge, just observe it.
- Do something new; break your old behaviour habits.
- Do the opposite that your mind is telling you.
- Notice the experience of yourself as an observer, who is taking note of all these things.
- Hold on to your commitment: Be present. No avoidance.

You can repeat the exposure with the first situation as long as you feel that you can be open to and accept all the things that go on in this situation. The aim is not to do the exposure as long as the distress goes away for good, but to give more space for your thoughts, feelings, urges, memories, and sensations. When you have exposed yourself to the first situation and you feel that you can look at it openly and with acceptance, move on to the next task on your list and repeat the exposure with it. Proceed like this until the end of the list.

In some point the acceptance and mindfulness skills will become more routine for you, and you can connect them with your everyday life. However, remember that the exposure won't work if you aren't truly present in the exposure situation and confront the unpleasant thoughts and feelings related to it. So if you notice that you're not able to do these exercises openly and with acceptance, set yourself even easier tasks and get back to more difficult ones only when you feel like you're ready for it.