Emetophobia − A Metacognitive Therapeutic Approach for an Overlooked Disorder

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Emetophobia – A Metacognitive Therapeutic Approach for an Overlooked Disorder

Michael Simons and Timo Daniel Vloet

Department of Child and Adolescent Psychiatry, Psychosomatics, and Psychotherapy, RWTH Aachen University, Germany

Abstract: *Objective:* Emetophobia is the specific fear of vomiting that usually commences during childhood and adolescence. Cognitive behavioral therapy aims to expose patients to vomiting. In this paper, a newly developed metacognitive concept and treatment approach to this disorder is illustrated within a small case series. *Method:* Three adolescent girls with emetophobia were treated with metacognitive therapy (MCT). Measures of anxiety, worry, depression, and metacognitions before and after the treatment were documented. *Results:* All patients recovered during the course of 8 to 11 sessions, and measurements of anxiety, worry, depression, and metacognitions dropped markedly. *Conclusions:* MCT presents a valuable treatment option for emetophobia in adolescents.

Keywords: adolescents, emetophobia, metacognitive therapy, specific fear of vomiting

Emetophobie – ein metakognitiver Therapieansatz für eine übersehene Störung

Zusammenfassung: *Fragestellung:* Emetophobie zählt zu den spezifischen Phobien und ist die Angst vor dem Erbrechen. Die Kognitive Verhaltenstherapie zielt darauf ab, Patienten mit Erbrechen zu konfrontieren. Die vorliegende Arbeit präsentiert ein neu entwickeltes metakognitives Störungs- und Behandlungskonzept und eine kleine Fallserie. *Methode:* Drei weibliche Jugendliche mit Emetophobie wurden mit Metakognitiver Therapie (MCT) behandelt. Maße für Angst, Sorgen, Depressivität und Metakognitionen vor und nach der Behandlung werden berichtet. *Ergebnisse:* Alle Patienten gesundeten im Verlauf der 8- bis 11-stündigen Behandlung. Die Werte für Angst, Sorgen, Depressivität und Metakognitionen gingen deutlich zurück. *Schlussfolgerungen:* MCT könnte eine wertvolle Behandlungsoption für Jugendliche mit Emetophobie sein.

Schlüsselwörter: Emetophobie, Jugendliche, Metakognitive Therapie, spezifische Phobie vor Erbrechen

Introduction

Emetophobia is the specific phobia of vomiting that, although largely unheard of outside the medical nomenclature, is widely disseminated (Davidson, Boyle & Lauchland, 2007; Vandereycken, 2011; van Hout & Bouman, 2012). The fears emetophobic patients experience range from mild concerns to severe panic attacks, precipitating various individual psychosocial impairments.

Surprisingly, this phobia often seems to be overlooked by professionals, and little attention is paid to the (scarce) scientific literature (Vandereycken, 2011). The paucity of attention to this disorder may be exacerbated further by clinicians' anecdotal impressions of emetophobia as a difficult disorder to treat (Maak, Deacon & Zhao, 2013). In this context, previous surveys cite high dropout rates and poor treatment responses (Veale & Lambrou, 2006). Hence, only few reports exist concerning successful therapy of emetophobia. Most data are found in case reports, and to date no manualized treatment protocols or randomized-controlled studies are available (Bouman & van Hout, 2006; Maack, Deacon & Zhao, 2013; Moran & O'Brien, 2005; van Hout & Bouman, 2012; for a review see Boschen, 2007). The treatment of emetophobia thus is unstandardized, although several therapeutic approaches do exist, ranging from hypnotherapy (e.g., McKenzie, 1994), interoceptive exposure, and "analog vomiting" (McFadyen & Wyness, 1983) to psychotropic medication (Lipsitz, Fyer, Paterniti & Klein, 2001). Furthermore, most treatment protocols relate solely to adults, and there are only few studies of minors – which is surprising as the maximum frequency lie presumably in childhood and midadolescence (van Hout & Bouman, 2012).

Although Boschen (2007) reconceptualized this phobia in cognitive behavioral terms, the current paper present a

new, *metacognitive model* of emetophobia. A small case series of metacognitive therapy (MCT) is presented, which preliminary indicates that it may be a sensible alternative treatment approach in adolescence. A systematic literature search in Pubmed (search terms: emetophobia OR vomiting AND metacognitive) found no electronic database for MCT of emetophobia.

Symptomatology

According to the International Statistical Classification of Diseases and Related Health Problems (ICD-10; WHO, 1992) and the Diagnostical and Statistical Manual of Mental Disorders (DSM-5; APA, 2013) emetophobia is classified as a specific (isolated) phobia (F40.1 and 300.29, respectively). However, the explicit term "emetophobia" is listed in neither of the classification systems. The clinical symptomatology is multifarious: Some patients have an intense fear of vomiting, while others may be afraid of other people vomiting in their presence. Nausea is common in emetophobic patients (Höller, van Overveld, Jutglar & Trinka, 2013). Associated worries concern the fear of contamination by the vomit, social phobic connotations, or a sense of shame in case of vomiting in public (van Hout & Bouman, 2012) as well as the fear of losing control (Davidson, Boyle & Lauchlan, 2007). Price, Veale, and Brewin (2012) observed an incidence of 81 % in a study of 36 participants affected by multisensory intrusive imagery of adult (52 %) and childhood memories (31%) and worst-case scenarios ("flash-forwards") of vomiting (17%). The extent of imagery was found to be significantly related to the severity of the phobia. A collection of important cognitive and behavioral processes can be found in Table 1.

The affected individuals employ avoidance strategies that are often very elaborate (and successful), so that the last episode of real vomiting frequently lies far back in time (van Hout & Bouman, 2012). The affected individuals often also exhibit so-called "safety-seeking" behavior (looking for security signals), selectively focusing their attention on inner, somatic sensations. Hence, a pronounced focusing on interoceptive stimuli such as nausea (Hunter & Antony, 2009) and intensive control of expiration dates (Vaele & Lambrou, 2006); they often avoid eating in a restaurant or visiting somebody with gastrointestinal complaints (Bouman & van Hout, 2006). These individuals frequently exhibit ritualized food intake, restrictions on certain foods as well as ingestion of antacids. They usually make sure that a bathroom is somewhere in close proximity. Female patients with emetophobia may even shun or interrupt a pregnancy in order to avoid nausea in the first trimester (Veale & Lambrou, 2006). The symptomatology often generally causes severe impairments of psychosocial functioning. Increased emetophobic symptoms are associated with higher levels of functional impairments (Wu, Rudy, Arnold & Storch, 2015).

Table 1. Symptomatology

Emotion	Worry	Avoidance of	Safety behavior	Attentional focus
Fear	Vomiting	School attendance	Carrying a plastic bag	Interoceptive attention to gastrointestinal state
Disgust	Losing control	Breakfast before school	Take antinausea medication	Try to distract oneself
Shame	What others think while seeing me vomit	Certain foods	Checking of sell-by dates	Hypervigilance for sick people
		Eating from buffets/salad bars	Keep tight control of body	Looking for an escape route
		Public transport	Keep very still	
		Long travels	Reassuring self	
		Crowded places	Seeking reassurance	
		Public toilets	Frequent handwashing	
		Being near sick or drunk people		
		Watching movies with vomiting scenes		

Etiology, Comorbid, and Differential Diagnoses

There is some evidence of associative learning in the etiology of emetophobia, with vomiting being associated with an unrelated life event or an aversive consequence (e.g., Veale, Costa, Murphy & Ellison, 2012). However, the etiology is relatively understudied (Van Hout & Bouman, 2012), and it is still unclear whether or not emetophobia can be classified as a "primary" or a "secondary" diagnosis. On the one hand, the data from case studies indicate that emetophobia often appears primarily (e.g., Dattilio, 2003; Moran & O'Brien 2005) and comorbid disorders follow (Lipsitz, Fyer, Paterniti & Klein, 2001). On the other hand, emetophobia is also frequently interpreted as a comorbid disorder by constituting a part of the symptomatology of other anxiety disorders, such as social phobia (Marks, 1987), agoraphobia (Pollard, Tait, Meldrum, Dubinsky & Gall, 1996), or panic disorder (Lydiard, Laraia, Howell & Ballenger, 1986) and hence is more of a secondary nature. Therefore, in the penultimate and current edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV, APA 1994; DSM-5, APA 2013) the authors placed in the mixed category of "Specific Phobia" (other type). This exacerbates the issue that only little research of emetophobia as a specific disorder exists.

In a former study, Veale and Lambrou (2006) investigated 100 adults with emetophobia and found many parallels to panic disorder (e.g., selective perception, increased vigilance) on both the behavioral and the associated cognitive processes level. Phenomenological similarities with obsessive-compulsive disorder (OCD) (e.g., fear of contamination) were also observed. Recent studies found that the most common comorbid diagnoses were general anxiety disorder (GAD), OCD, and hypochondriasis (Sykes, Boschen & Conlon, 2015; Veale, Hennig & Gledhill, 2015).

Veale, Costa, Murphy, and Ellison (2012) emphasize that some individuals with emetophobia are falsely diagnosed as suffering from anorexia nervosa or hypochondriasis. Although emetophobic patients may exhibit abnormal eating behavior and are underweight, their symptomatology is obviously a consequence of feared nausea, not of the desire to lose weight. They may share with hypochondriac patients the fear of getting sick, though this is restricted to vomiting. A recent study of 83 emetophobic cases found a significant symptomatic overlap with OCD (Veale, Hennig & Gledhill, 2015): Results indicate that they were often preoccupied with the worry of vomiting (62.5 %), repetitively checking sell by dates (82.2 %), frequently washing their hands (73.6 %), and constantly reassuring themselves (52.7 %) or seeking the reassurance of others (51.6 %). However, although patients with emetophobia might share the frequent checking behavior and reassurance-seeking with OCD patients, this again is solely restricted to associations with vomiting.

Prevalence

Only few studies have examined the prevalence of emetophobia. The disorder usually commences during childhood and adolescence. The affected individuals are mostly females, and course of the disorder is often chronic. An earlier study by Philips (1985) found prevalence rates of 3.1 % for men and 6 % for women in the USA. A German study reported a point prevalence of 0.2 % and 0.1 %, respectively (Becker et al., 2007). More recently, an epidemiological study revealed a point prevalence of emetophobic symptomatology (without assessment of DSM-5 criteria) of about 9 % in adults in the Netherlands. Females were four times more likely to be affected than males (van Hout & Bouman, 2012).

Veale et al.'s (2015) sample of 83 cases included 8 youths (≤17 years old). With respect to the total sample, the mean age of onset of becoming aware of this fear was 8.2 years (*SD* 5.21), while the mean age of onset of seeing this fear as a problem was 14.8 years (*SD* 7.89). This is comparable to a German-speaking sample, in which the fear of vomiting generally started in childhood (*M* 9.5 years, *SD* 6.4; Höller, van Overveld, Jutglar & Trinka, 2013).

Cognitive Behavioral Treatment Options

Cognitive behavioral treatment approaches consider the avoidance of vomiting as well as of stimuli associated with vomiting as the primary factors maintaining the problem. Thus, there are different ways of utilizing exposure therapy for emetophobia (Boschen, 2007).

First, exposure could focus on vomiting itself, whereby the patient is encouraged to vomit, using fake vomiting and the provocation of vomiting by the ingestion of emetics. Second, exposure could focus on stimuli such as vomiting by watching movie scenes or passing streets with bars where drunken people tend to vomit. Third, interoceptive exposure could be conducted by eating disgusting meals. In a recent paper, Maack, Deacon, and Zhao (2013) presented a case study with graduated exposure to vomiting in the course of five prolonged sessions lasting from 1 to 3 hours each. At the beginning of the therapy, the patient

had to watch vomiting scenes with an increasing potential of eliciting disgust. In the following sessions, the patient had to overeat on medium rare burgers and french fries, fake vomiting, and finally actually vomit. Cognitively oriented approaches in turn help patients to estimate putative dangers more realistically, i. e., patients can learn that nausea does not necessarily lead to vomiting, and that nausea may in fact be a sort of "false alarm." By using Socratic dialogues and behavioral experiments patients can be helped to reality test their mistaken beliefs.

In our own experience, emetophobic patients are especially difficult to motivate to expose themselves to vomit or vomiting and to provoke fear and disgust (see also Lipsitz, Fyer, Paterniti & Klein, 2001). After reviewing the broad and often OCD-like symptomatology of emetophobia, Veale, Hennig, and Gledhill (2015) suggested that this phobia may need a more elaborate psychological intervention than just graded exposure. Moreover, we doubt that exposing patients to vomiting actually attacks the pivotal aspects of emetophobia: While most people feel disgust when watching someone vomit or by vomiting themselves and many people show fear of vomiting, only a small proportion actually suffers from emetophobia. Thus, the starting point of a metacognitive model posits that emetophobic patients tend to worry permanently about vomiting although they rarely actually vomit. We propose to define "worry" instead of "disgust" as the crucial feature of emetophobia. This paper presents a new treatment approach that aims to reduce excessive worrying.

Metacognitive Therapy

Wells (1997; 2009) originally developed metacognitive therapy (MCT) for the treatment of GAD, which is characterized by excessive worry. MCT was later applied to other anxiety disorders (social anxiety disorder, hypochondriasis, OCD, posttraumatic stress disorder) and depression. MCT has its roots in cognitive therapy (CT), though contrary to the latter it does not focus on the content of thoughts and beliefs, but on cognitive processes. MCT does not try to change an individual worry, but rather to reduce the process of excessive worrying. From a metacognitive point of view, the following cognitive, attentional, and behavioral processes are suggested to uphold emetophobia:

1. Excessive worry, such about possible vomiting.
2. Interoceptive focus of attention on the gastrointestinal state, especially by searching for possible early signs of nausea.
3. Maladaptive coping strategies, especially the avoidance of school attendance, traveling by bus, and certain foods

as well as safety behaviors like seeking reassurance from parents or carrying around a plastic bag.

Positive and negative metacognitive beliefs both initiate and maintain these processes. Positive metacognitive beliefs focus on reasons to initiate these processes, like the following:

- "My thoughts are important, therefore I have to focus on them."
- "Worrying helps me cope and be prepared."
- "I have to be aware of signs of nausea in order to reach the bathroom in time."
- "Avoiding school helps me prevent nausea and vomiting."

Negative metacognitive beliefs deal with the uncontrollability and danger of worrying, like the following:

- "I cannot stop worrying."
- "I could go crazy with worry."

The metacognitive model of emetophobia is depicted in Figure 1.

The following presents a small case series of MCT.

Methods

To illustrate the metacognitive treatment of emetophobia, we present a case series of three female adolescents and their data before and after therapy.

Patients

The following case series focuses on three female patients who were consecutively referred to our outpatient child and adolescent psychiatric clinic. All patients fulfilled the ICD-10/DSM-IV criteria for the specific phobia of vomiting and additionally met criteria for at least one comorbid disorder, such as OCD, somatization disorder, and depression (for details, see Table 3). The diagnoses were based on a semistructured clinical interview (Schedule for Affective Disorders and Schizophrenia for School-Age Children; Kaufman et al., 1997). All patients stated that the fear of vomiting was their main problem; they differed regarding the duration of the disorder before treatment (from 3 months to 2 years; see Table 3). Two of the patients were treatment naïve, while the other indicated having dropped out of an unsuccessful psychotherapy where she was instructed to breathe slowly and mindfully. No patient had received medication.
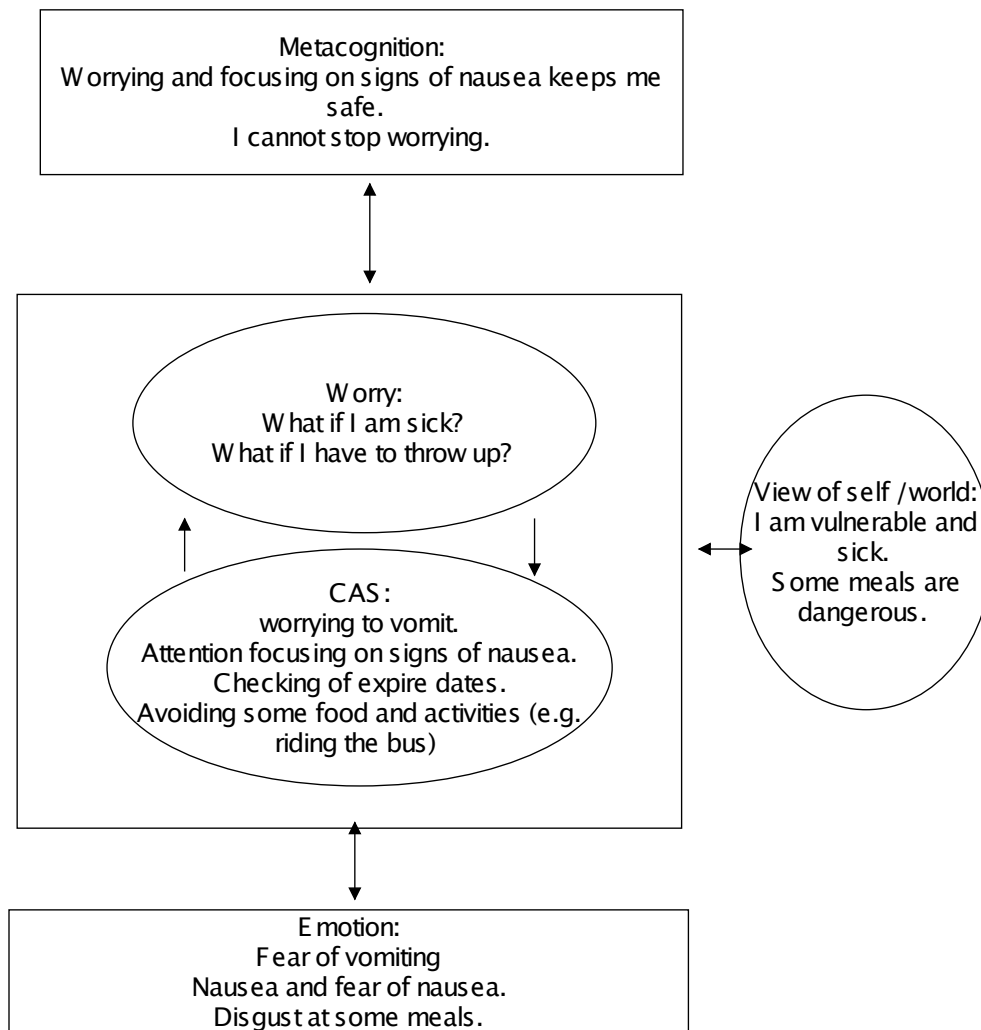
Figure 1. Metacognitive model of emetophobia

Measures

A small set of standardized and widespread self-report measures assessing different dimensions of anxiety, depression, and metacognitions was administered. The Spence Children's Anxiety Scale (SCAS; Spence, 1998) is a multidimensional measure of anxiety, comprising the following subscales: panic/agoraphobia (PA), separation anxiety (SA), social phobia (SP), physical injury fears (PIF), obsessive-compulsiveness (OC), and generalized anxiety (GA). The 38 items can be rated on a 4-point scale ranging from *never* (0) to *always* (3). Thus, the total score potentially ranges from 0 to 114. Spence (1998) found a high internal consistency for the total score (Cronbach's α = .92) and adequate internal consistencies for the subscales (α = .60–.82). Test-retest reliability (6 months) for the total scale was r_{tt} = .60. According to internet data (http://www.scaswebsite.com/), the average score of adolescent girls is 27.88 (*SD* 15.32). Furthermore, the following subscale scores were used: general anxiety as a measure of worry (*M* 6.31, *SD* 3.34), panic/agoraphobia as a measure of intense body-focused anxiety and corresponding avoidance behavior (*M* 3.60, *SD* 3.94), social phobia as a measure of social concerns (*M* 6.85, *SD* 3.52), and obsessive-compulsive symptoms (*M* 4.29, *SD* 3.45) referring to Veale, Hennig & Gledhill (2015) proposing to imbed emetophobia in the OCD spectrum. Beside the raw scores, T scores in reference to Spence (1998), as well as internet sources were included in the assessment.

As a measure of depression, the T scores of the German Child Depression Inventory (Depressionsinventar für Kinder und Jugendliche; DIKJ; Stiensmeier-Pelster, Schürmann & Duda, 2000) or – for the 17-year-old patient – the German simplified version of the Beck Depression Inventory (BDI-V; Schmitt et al., 2006) were applied. Both measures show very good internal consistency with Cronbach's α = .91 in German samples (DIKJ; Schmitt et al., 2006; Stiensmeier-Pelster et al., 2000).

To assess metacognitive beliefs, we utilized the Meta-cognitions Questionnaire for Adolescents (MCQ-A; Cartwright-Hatton, Mather, Illingworth, Brocki, Harrington & Wells, 2004). The MCQ-A is a self-report questionnaire for adolescents aged 13 to 17, consisting of 30 items and 5 subscales containing 6 items each, which are rated on a 4-point scale ranging from *do not agree* (1) to *agree very much* (4). The 5 subscales are (1) positive beliefs about worry (POS), (2) negative beliefs about uncontrollability and danger of worrying (UD), (3) beliefs about superstition, punishment and responsibility (SPR), (4), cognitive self-consciousness (CSC), and (5) (low) cognitive confidence (CC). The total score is the sum of all statement scores, allowing for total scores between 30 and 120; the scores of the subscales lie between 6 and 24. Zahn (2015) found very good internal consistencies for the total score with Cronbach's α = .91 in a clinical German sample.

As a last step data of possible school absenteeism were collected.

Procedure

Treatment started with an individualized case conceptualization containing the aforementioned crucial processes and metacognitive beliefs, followed by socializing the patient to the treatment model. The therapist pointed out the important difference between worrying thoughts, on the one hand, and the worrying process answering to these thoughts, on the other hand. Whereas the latter thinking process is controllable, the former thoughts are uncontrollable and often intrusive. Thus, attempts to control and suppress worrying thoughts are bound to fail and often lead to a rebound of the worrying thoughts (Wegner, Schneider, Carter & White, 1987). Instead, patients were encouraged to try and see these thoughts as unimportant, e.g.: "You're saying that you haven't vomited for three years, but every day you worry that you could vomit. Do you think this thought is an important message to you or is it just a thought?" Instead of fighting, arguing, or analyzing this thought, the therapist suggests experiencing the thought nonreactively and then letting it go ("detached mindfulness"). The telephone metaphor helped to further understand this new strategy: "You cannot control whether the telephone rings or not, but you can decide whether to pick up the phone or just let it ring. Likewise, you do not decide whether this worrying thought pops into your mind or not, but you can learn that you do not have to answer to this thought."

Subsequently, the therapy focused on modifying negative metacognitive beliefs regarding the asserted uncontrollability of worrying, by practicing detached mindfulness and by postponing the worry process. Every time the patient had a worry thought, she could say to herself: "This is just a thought, I'll take care of it later." She then had the option of reserving 10 minutes in the evening to deal with these thoughts if she wanted to. It was recommended to determine the beginning and the end of this "worry time" in advance.

A further strategy to foster the controllability of worrying is called "stop and go." The therapist asked the patient first to bring the worry thought to mind and then to initiate the worry process. After about 15 seconds the therapists said: "Stop!" and asked the patient to hold the worry thought in mind without processing it further. This can be compared to watching a DVD and then pressing the pause button. After 15 seconds the patient was prompted to proceed with worrying ("as hard as you can") and again after further 15 seconds to stop worrying, while keeping the thought in mind. This exercise often markedly reduced negative metacognitive beliefs about the uncontrollability of worrying in a very short period of time. Interestingly, after the successful reduction of these uncontrollability beliefs, no patient stated any negative beliefs about the possible dangers of worrying anymore; thus, no further interventions to reduce these beliefs were needed.

After reducing the negative metacognitive beliefs, the therapy aimed at challenging positive beliefs about worrying and threat monitoring, e.g., through the use of Socratic dialogues: "You say that you have to worry in order to be prepared. How is it important that you prepare yourself permanently for possible vomiting when you do not even vomit afterwards? How does it affect your nausea when you try to detect early signs of it?"

Afterwards, the patients learned to reduce the heightened interoceptive focus of attention and to direct focus toward external affairs instead, e.g., the social environment, school lessons, or current tasks. The next step aimed at removing avoidance and safety behaviors, because they encouraged the overestimation of thoughts: "When you dispense with certain foods and meals because of your worries, do you treat these worries as facts or 'just as thoughts'?" and "If you knew these thoughts were meaningless, would you have any reason for not riding the bus?" In the case that avoidance referred to very essential aspects of daily living, therapy focused on reducing these behaviors early on in the treatment. In our sample, emetophobia resulted repeatedly in (total or partial) school absenteeism. Thus, we aimed at gradually increasing school attendance relatively early in the treatment. If the treatment had failed to increase school attendance, inpatient treatment would have been recommended.

At the end of the therapy, residual symptoms were removed and strategies for relapse prevention initiated. Therapist and patient worked together on writing a therapy blueprint that contained a comparison of crucial think-

ing and behavioral, attentional processes before and after therapy, as well as a new plan for information processing (see Table 2).

Results

As can be seen in Table 3 and Figure 2, before treatment measures of fear (SCAS total score), worry (SCAS GA), panic/agoraphobia (SCAS PA), obsessive compulsive symptoms (SCAS OC), and depression were clinically relevant, while social anxiety (SCAS SP) was not. In one of the cases, school absenteeism lay at 50 %, in another at 100 %. Metacognition scores were somewhat elevated, especially beliefs concerning uncontrollability and the danger of worrying.

After treatment, all anxiety, depression, and metacognition scores fell substantially and returned to normal. Thus, in all three patients the treatment succeeded in reducing fear of vomiting, worrying, and metacognitions. In cases of partial or total school absenteeism, school attendance was restored within a rather short time. The entire treatment was quite short, with 8 to 11 sessions on a predominantly weekly basis, lasting each about 40 to 50 minutes. The treatment was well accepted, and none of the three patients dropped out of therapy prematurely.

Clinical Significance

To ensure that any occurring clinical significant change was reliable, Jacobson & Truax (1991) introduced the reliable change index (RCI), which is calculated by taking the difference between pre and post scores divided by the standard error of the differences ($RCI = x_{pre} - x_{post}/S_{Diff}$). If the RCI is greater than 1.96, then the change is accepted as reliable (p <.05). For every patient the RCI was calculated regarding the primary outcome measure (SCAS total) and found greater than 1.96; thus, the improvements can be determined as reliable.
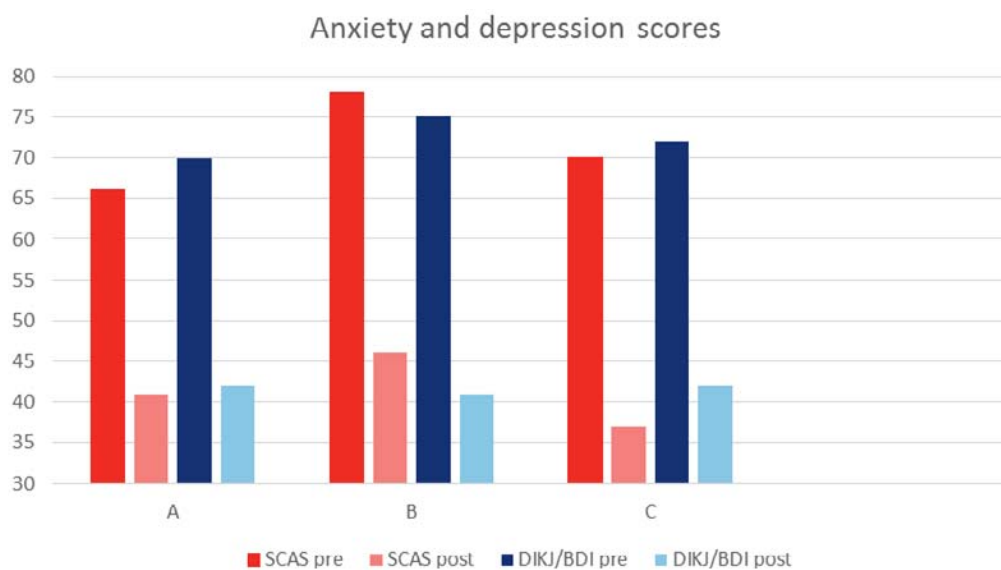

Figure 2. T scores of anxiety and depression pre and post treatment for each patient.

Note: SCAS = Spence Children's Anxiety Scale, DIKJ = Depressionsinventar für Kinder und Jugendliche (Child Depression Inventory), BDI = Beck Depression Inventory

Table 2. New plan

Trigger: "What if I have to vomit?"	
Old Plan	New Plan
Thinking: concerned with this thought, consider them as important and worried about it	Thinking: ignore the thought, it's just a thought
Behavior: avoid going to school, avoid situations with many people and places with no chance of leaving immediately, avoid eating outside of home (e.g., in restaurants)	Behavior: go to school, stay in places and rooms with many people, go to restaurants
Attention: to signs of nausea, breathing (as recommended by my former therapist)	Attention: to people around me, school lesson, teacher, TV shows ...
Reframe: I've learned to take thoughts less seriously and to provoke my fears. It's not about vomiting, but about worries.	

Table 3. Case series: sample (all female) and measures pre and post

Case		A		B		C	
Age		15		14		17	
Comorbidities		OCD, social anxiety, somatization		Depression		Somatization	
Duration of disorder		3 months		2 years		5 months	
Sessions		11		8		11	
Measures	*Range*	*Pre*	*Post*	*Pre*	*Post*	*Pre*	*Post*
SCAS total (T)	0–114	55 (66)	15 (41)	77 (78)	21 (46)	67 (70)	11 (37)
SCAS GA (T)	0–18	9 (60)	1 (40)	16 (80)	3 (42)	14 (66)	4 (43)
SCAS PA (T)	0–27	9 (64)	1 (45)	21 (87)	4 (55)	21 (87)	3 (50)
SCAS SP (T)	0–18	8 (55)	5 (48)	10 (60)	3 (43)	11 (63)	2 (42)
SCAS OC (T)	0–8	13 (70)	0 (40)	12 (69)	6 (55)	6 (55)	1 (40)
RCI		2.07	2.90	2.90			
CDI/BDI T		70	42	75	41	71.5	41.4
MCQ-A total	30–120	62	34	83	44	68	37
MCQ-A POS	6–24	11	6	7	7	6	6
MCQ-A UD	6–24	16	8	23	10	24	9
MCQ-A SPR	6–24	12	7	21	8	17	7
MCQ-A CSC	6–24	13	7	18	12	13	8
MCQ-A CC	6–24	10	6	14	7	8	7
School absenteeism (%)	0–100	0	0	50	0	100	0

Discussion

Before treatment, emetophobic patients scored high in anxiety measures (including, but not exclusively, OC symptoms) as well as measures of depression and meta-cognition. These very preliminary results suggest that emetophobia is a broad problem with overlappings with OCD as well as with panic disorder, generalized anxiety, and, to a lesser extent, social anxiety. High scores of depression confirm that this phobia is highly distressing for patients.

After treatment, these clinical scores and metacognition scores normalized. With regard to the MCQ-A, the greatest difference between pre and post scores were found in the subscale "negative beliefs about uncontrollability and danger." This emphasizes the premise of MCT that these metacognitive beliefs are the most influencing beliefs maintaining the condition and hence should be addressed and changed in therapy. All patients succeeded in a rather short time; no forced exposure to vomiting was needed to gain this success. The treatment was very well accepted by the patients. The results suggest that MCT may effectively be applied to the treatment of emetophobia.

The Difference Between Metacognitive and Cognitive Behavioral Therapy

In Germany, MCT is often considered an extension of CBT, i.e., MCT interventions are added as a further module to CBT, for example, of GAD (e.g., Becker & Margraf, 2007). Whereas from a CBT point of view this seems reasonable, from a metacognitive angle the main metacognitive interventions are incompatible with CBT. The main difference is that CBT strives to discuss the content of the worry thoughts and to expose the patient to these thoughts. In contrast, MCT views these thoughts as unimportant, meaningless, passing events in the mind. They are best left alone. Hence, whereas the cognitive therapist might challenge the patient's beliefs by saying: "What is the evidence that you might vomit at school?", the metacognitive therapist would ask: "How helpful is it to think

that much about vomiting at school? Could you try to reduce this worrying?"

Similarities between MCT and CBT lie in the recommended estimation of the worry about vomiting as meaningless (MCT) or as a "false alarm" (CBT). In fact, the "false alarm" metaphor was previously used in this MCT approach as well, until it became clear that a patient had utilized this as a self-reassurance strategy: Every time she felt signs of upcoming nausea she told herself repeatedly: "This is just false alarm." Interestingly, she did not think this to be very helpful. So the therapist asked her: "If you were to take these sensations as meaningless, would you have to say again and again to yourself that it is just a 'false alarm'? And how often would you have to focus your attention on this possibly upcoming sensation then?"

Because avoidance behavior maintains the phobic symptoms, exposure is as much key in MCT as in CBT. Note, however, that the goal of exposure differs in MCT and CBT: MCT does not aim at the habituation of feelings of fear and disgust, but rather at metacognitive change. The main question is: "If you knew that sensations of nausea and worries were meaningless, to what extent would you deal with them and avoid going to school?" Therefore, MCT and CBT differ noticeably in the way exposure is conducted.

In MCT, neither the initial activation of fear and disgust nor the habituation of these feelings is pursued, which in our experience makes the exercise more tolerable for the patient. Nevertheless, exposure is indispensable in order to generalize progress in therapy, especially regarding cognitive and attentional strategies. Two of our patients avoided riding the bus in order to prevent nausea and the fear of vomiting. In traditional behavioral exposure therapy, they would have been instructed to ride the bus in order to reduce fear and nausea. Instead, we instructed them to ride the bus while addressing worries through detached mindfulness and focusing their attention outwardly on other people in the bus and the external landscape.

The following two interventions, which weren't used in the cases presented here, should be considered in the future: the "attention training technique" (ATT; Wells, 1990; 2009) and "affect labeling." The ATT is a metacognitive intervention that aims at gaining more flexibility regarding the focus of attention. Just like panic patients, patients with emetophobia show a heightened attentional bias toward physical symptoms resulting in an increase of noticeable bothersome sensations. By focusing the attention on external noises, the ATT helps to reduce this negative attentional bias. "Affect labeling" is a strategy in which patients are asked to verbalize their negative feelings during the exposure exercise (Craske, Treanor, Conway, Zbozinek & Vervliet, 2014). Preliminary findings suggest that, for example, in spider phobia, affect labeling ("Sitting in front of the ugly spider makes me very nervous") was effective in reducing physical stress symptoms (skin conductance response), while cognitive reappraisal ("Sitting in front of the little spider is not dangerous for me"), distraction, and exposure alone were not (Kircanski, Lieberman & Craske, 2012). In the metacognitive procedure presented above, affect labeling could easily be combined with detached mindfulness ("This is just a thought – this thought scares me and now I will leave this thought alone").

Limitations

This study has three principal limitations. First, the generalizability of the effects of MCT is extremely limited by the simple pre-post design (i.e., no multiple baseline and no follow-up data) and by the small sample of rather homogeneous patients treated (with regard to age and sex). Second, the outcome of treatment relied solely on self-report measures, so that objective and independent clinician-administered assessments are missing. Finally, the delivery of this brief treatment relied on a single therapist. The effectiveness as well as the feasibility of MCT delivered by less experienced metacognitive therapists remains to be demonstrated.

Conclusion

This case series shows for the first time that MCT may be a valuable new treatment option for emetophobia. This paper should stimulate further studies on the multifarious and sometimes OCD-like symptomatology of emetophobia, the role of metacognitions in maintaining and treating this condition, and of course the randomized and controlled evaluations of MCT.

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Dr. phil. Dipl.-Psych. Michael Simons
Klinik für Psychiatrie, Psychosomatik und Psychotherapie des Kindes- und Jugendalters
Uniklinik RWTH Aachen
Neuenhofer Weg 21
52074 Aachen
Deutschland
msimons@ukaachen.de