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When every Mosquito turns into an Elephant

An empirical investigation of the tendency overgeneralize

Thom J. van den Heuvel
“Turning a mosquito into an elephant”, is the Dutch equivalent of the English proverb “turning a molehill into a mountain”. The proverb is a metaphor for the common behavior of responding disproportionately to something – usually an adverse circumstance.

Cover illustration: “Toxorhynchites rutilus” or “Elephant Mosquito” (photo: Brent Smith)

“Toxorhynchites rutilus” or “Elephant Mosquito” is the largest type of mosquito in the world. They belong to the family of “Toxorhynchitinae”, also known as mosquito hawks or mosquito eaters. It is a large cosmopolitan genus (nearly 100 species), and one of the few types of mosquito that does not suck blood. Rather, the adults subsist on nectar and other natural carbohydrates. Their larvae prey on the larvae of other mosquitoes. The adults of these “cannibalistic” mosquitoes are big in size but they are harmless to humans. Most species occur in forests. Vector or toxin control researchers have suggested the mosquitoes be introduced in areas where they do not naturally occur, such as urban zones, where they would be suitable agents to help fight dengue fever.

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An empirical investigation of the tendency overgeneralize
Promotores
Prof. dr. C.P.F. van der Staak
Prof. dr. J.J.L. Derksen (Vrije Universiteit Brussel)

Copromotor
Dr. P.A.T.M. Eling

Manuskriptcommissie
Prof. dr. E.S. Becker (voorzitter)
Prof. dr. P.P.G. Hodiamont
Dr. L.M.C. van den Bosch (Dialexis, Pro Persona, Rivierduinen)
Though this be madness, yet there is method in it
Polonius in *Hamlet* (Shakespeare, 1600)
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CHAPTER 1
General introduction and outline of the thesis
“Turning a mosquito into an elephant”, is the Dutch equivalent of the English proverb “turning a molehill into a mountain”. The proverb is a metaphor for the common behavior of responding disproportionately to something - usually an adverse circumstance.

CHAPTER 1
GENERAL INTRODUCTION AND OUTLINE OF THE THESIS

Imagine that you woke up this morning, got out of bed and, when trying to get to the bathroom, you hit your toe hard to the bed leg. What would go through your head?

In circumstances like the ones described above, for many people, it is not uncommon to have thoughts like the following: “This will be the worst day ever! Again!”, “Why do they always make beds with legs on such awkward places?”, “Why do these things always happen to me?”, “I cannot even get out of my bed in a proper way! I cannot do anything right!” etc. This type of cognitive behavior is usually referred to as overgeneralization.

Overgeneralization is defined by Beck (1976) as “unjustified generalization on the basis of a single incident” (p.94). It is a prominent concept in several theories of personality and depression. Overgeneralization predicted the development of depressive symptoms in a longitudinal research design (Carver, 1998; Dykman, 1996) and led to slower recovery from dysphoric mood states (Edelman, Ahrens & Haaga, 1994). Recently, experimental studies have found evidence that overgeneral thinking is a cognitive bias that causally contributes to depressive symptoms (Watkins & Moberly, 2009; Watkins, Baeyens, & Read, 2009).

As may be clear from the example above, overgeneralization is observed in the behavior of all people. In clinical practice, especially negative overgeneralization seems to be more prominent in the cognitive behavior of individuals suffering from emotional disorders. For example, a man suffering from a major depression, told me that when he failed to reach one deadline at work, he was convinced he was unsuitable for the job and it would be just a matter of time before he would get fired. Another example was provided by a young woman suffering from borderline personality disorder I was to see for an intake interview. She had disappeared from the waiting room, when I came to collect her ten minutes late, despite the fact that the secretary had passed the message to her I was late due to an unexpected crisis situation I had to attend to in the clinic. When I called her to apologize for my
lateness and asked her what had happened, she told me that from my being late this first interview, she was convinced I would never be dedicated enough to her and abandon her anyway.

**Three different approaches to overgeneralization**

Although the implication of overgeneralization in the onset and maintenance of psychopathology is generally accepted, different hypotheses have been formulated with respect to what the concept represents, how it functions and how it is associated to psychological distress.

A *first approach* to understand the concept of overgeneralization is to look at the association of overgeneralization to (extreme) low levels of self-esteem. In psychodynamic views, for example, it has been suggested that overgeneralization is caused by the particularly *hyperactive or punishing superegos* of those prone to depression (Jacobson, 1975). According to this view, individuals with a vulnerability to depression are unable to neutralize the “aggressive drive energy” of their super-egos causing self-criticism to turn into self-hate. They react to limited specific failures with a total rejection of their entire self. As a result, disappointment in a given domain will have implications throughout a person’s entire psychic life, rather than being limited to that specific domain, thereby making a person vulnerable for depression.

Roberts and Monroe (1994) describe overgeneralization as a *self-esteem deflating process* that converts self-criticism following specific and limited failures or disappointments into a global rejection of the entire self. In a review of psychodynamic, cognitive, and social-environmental perspectives, Roberts and Monroe propose a multidimensional model of the etiology, maintenance, and recovery of depression in which overgeneralization is one of three areas of vulnerability that contribute to problems in the regulation of self-esteem, besides *structural inadequacies*, such as limited and overvalued sources of a positive sense of self, and *poor consolidation of information about the self*, including confusion, uncertainty and inconsistency with regard to self-relevant information.

Carver (1998) puts forward that overgeneralization must be seen as a breakdown of confidence of being able to maintain effective functioning in several aspects of life, as a function of failure or disappointment in only one domain. According to Carver, this suggests a kind of fragility in the whole sense of self. He proposes that it is this fragility or variability of self-esteem rather than the low level of self-esteem that makes a person vulnerable to depression (Hayes, Harris, & Carver, 2004) and that the overgeneralization tendency is what underlies it. Carver (1998) mentions two different possibilities of what is happening when a person overgeneralizes. One possibility is that a person who overgeneralizes is someone who has *difficulty*
holding different parts of life separated. He has not elaborated aspects of the self into compartmentalized units that stand relatively distinct from each other. When a problem occurs in one domain, other domains are infected eliciting negative thoughts and associations about those other domains (cf. Linville, 1987 in Carver, 1998).

Another possibility is suggested by the model of self-regulation by Carver and Scheier (1998). This model treats the self as a hierarchy of goals. According to this view, the broad sense of the idealized self is considered a very-high-order goal, whereas the concrete goals in most daily activities are considered as low-order. Carver (1998) suggests that overgeneralizers are people who are trying to control their lives at too high a level of abstraction. So when a person is working on a daily task, he is actually working at the goal of maintaining a sense of his idealized self. Therefore, when the person experiences a setback at a lower level, he will experience this not only as a minor task failure but as a failure of the entire self.

Numerous studies have provided evidence for the relationship between low and variable levels of self-esteem, and depressive symptoms (Beck, Brown, Steer, Kuyken, & Grisham, 2001; Butler, Hokanson, and Flynn, 1994; Kernis, Granneman & Mathis, 1991; Oosterwegel, Field, Hart, & Anderson, 2004). More recently, Hayes, Harris, and Carver (2004) found negative overgeneralization to be associated with low self-esteem as well as variable self-esteem, and with depressive symptoms in the past. They found associations between a tendency to overgeneralize and decrease of self-esteem on ‘bad’ days (days when adverse events occurred), and increase of self-esteem on days when no adverse events occurred, suggesting that negative overgeneralization is one of the processes by which negative events are associated with fluctuations in the level of self-esteem.

A second approach to overgeneralization is to look at the association between overgeneralization and high levels of affect intensity. Affect intensity is defined by Larsen & Diener (1987) as a general intensity dimension in the affective reactions of individuals leading to “stable individual differences in the strength with which individuals experience their emotions”. High affect intensity is associated with a number of emotional disorders (e.g., Dizen, 2006; Flett, Blankstein & Obertynski, 1995) and individuals with high affect intensity tend to experience greater psychological distress (Levine, Marziali, & Hood, 1997; Yen, Zlotnick, & Costello, 2002). Individual differences in affect intensity have been found to correlate with the tendency to overgeneralize (Larsen, Billings, & Cutler, 1996; Larsen, Diener, & Cropanzano, 1987; Dritschel & Teasdale, 1991). Again, different theories about the nature of the relations between overgeneralization, psychological distress, and affect intensity provide competing hypotheses. First, Larsen (2000) in his control theory of mood regulation, describes how individuals with trait high affect intensity
are more likely to engage in mood intensifying cognitive behavior (such as overgeneralization) when in a state of under-arousal, thus making them more vulnerable to psychological distress. In line with this theory, overgeneralization mediates the relation between affect intensity and psychological distress. Second, Larsen, Billings, & Cutler (1996) suggest in their model of informational style that overgeneralization leads individuals to interpret affective stimuli in a manner that intensifies the affective response to those stimuli. This in turn results in high affect intensity, which makes them more susceptible to psychological distress. So here, affect intensity mediates the relation between overgeneralization and psychological distress.

A third approach to the explanation of overgeneralization is that it represents a distortion in the processing of information. Different authors have provided different theories about how overgeneralization distorts information processing and why this leads to depressive mood states. According to the cognitive distortion view of depression, originally set forth by Beck (1967, 1976), depressed people are distinguished from non-depressed not only by the negative contents of their thoughts, but also by the inadequacy of their inferential processes. Information processing refers to the way a person filters and structures environmental input (i.e., what information gains attention, enters memory, and can be recalled) and is believed to be guided by underlying cognitive structures. So, the cognitive distortion view by Beck assumes that information processing in individuals suffering from depression is not only guided by the content of their negative schemata but also by their reasoning faults (i.e., their cognitive distortions). Beck et al. (1979) identified overgeneralization, selective abstraction, mental filter, arbitrary inference, personalization and dichotomous thinking as the major thinking distortions characterizing depressives’ thought. Of these various cognitive biases overgeneralization was identified as the most reliable cognitive indicator of depression (e.g., Carver, 1998; Carver et al., 1985; Ganellen, 1988).

The reformulated learned helplessness theory (Abramson, Seligman, & Teasdale, 1978), assumes that a person experiences depressed affect as a consequence of learning that the outcome of a given situation is uncontrollable. A person feels helpless because a given situation is not contingent on any response in his repertoire. When a person finds that he is helpless, he asks why he is helpless. The causal attribution he makes then, determines the generality and chronicity of his helplessness deficits as well as his later self-esteem. The intensity of self-esteem loss and affective changes will increase with both the certainty and importance of the event the person is helpless about. In addition, a person will expect to be helpless in the immediate and distant future, dependable on the extent in which his attribution is global or stable. Inappropriate broad generalization of the expectation
of incontingency (i.e., overgeneralization) will occur when subjects attribute their helplessness to global and stable factors. An attributional style characteristic to depressive individuals was found to involve internal, stable, and global attributions about negative life events (Abramson, Seligman, & Teasdale, 1978). These negative, self-deprecating attributions are hypothesized to interact with negative life events, thus contributing to the onset and maintenance of the depressive syndrome.

According to hopelessness theory (Abramson, Metalsky, & Alloy, 1989) depression can be caused by generalized hopelessness. Generalized hopelessness occurs when people expect negative outcomes, and experience helplessness about changing the likelihood of the occurrence of these outcomes in many areas of life. Generalized hopelessness is more likely to occur when negative life events are attributed to stable and global causes (i.e. overgeneralization), and are viewed as important. According to this theory there are three types of inferences people may make that modulate whether they become hopeless and, in turn, develop the symptoms of hopelessness: inferences about why the event occurred, inferences about the consequences that will result from it, and inferences about the self. In contrast to helplessness theory, the internality dimension of causal attributions is less emphasized. Where other theories, like Brown and Harris’s social origins of depression (1978) emphasize low self-esteem as the diathesis for depressive symptoms, hopelessness theory explicitly emphasizes negative cognitive styles as the diathesis. In hopelessness theory, low self-esteem is seen as a symptom rather than a cause of depression.

Watkins and colleagues see overgeneralization together with other cognitive processes such as overgeneral memories (see Williams et al., 2007) and depressive rumination as forms of abstract-overgeneral processing which are strongly implicated in the onset and maintenance of depression (Watkins, 2008; Watkins, Baeyens, & Read, 2009; Watkins, Moberly, & Moulds, 2008). First, depression is characterized by an increased tendency toward overgeneralization, in which a general rule or conclusion is drawn on the basis of isolated incidents and applied across the board to related and unrelated situations. Second, depression is characterized by increased recall of overgeneral memories, characterized by categoric summaries of repeated events. A third cognitive process implicated in the onset and maintenance of depression is rumination. The ruminative response style is conceived as a pattern of behaviors and thoughts that focus the individual’s attention on his or her emotional state and inhibit any actions that might distract the individual from his or her mood. Rumination is characterized by an abstract, evaluative style of processing that involves recurrent thinking about the causes, meanings and implications of depressive symptoms (Nolen-Hoeksema, 1991). Watkins and Moberly (2009) argue that, in line with overgeneral memory and rumination, the notion of overgeneralization parallels the concept of abstract
Abstract construals are general, abstract, decontextualized mental representations that refer to the essential meaning of events and actions, such as inferences of global traits that are invariant across different situations (e.g., “cowardice”) or representations about the causes, meanings and implications of situations (the “why” of a situation). In contrast, concrete construals are more concrete mental representations that refer to secondary, contextual, and situation-specific states, such as “panic”, or representations about “how” events happened.

In sum, the evidence that overgeneralization is associated with vulnerability to depression is impressive. However, many questions remain unanswered. The three approaches described above provide overlapping but also contradictory hypotheses about the occurrence and workings of overgeneralization. The aim of the present dissertation is to evaluate and refine some of these hypotheses.

**OUTLINE OF THE THESIS**

*Testing the conceptualization, delimitation and occurrence of the overgeneralization concept (Chapter 2)*

Several authors have claimed that overgeneralization is specific to depression (Carver & Ganellen, 1983; Carver, Lavoie, Kuhl, & Ganellen, 1988; Ganellen, 1988) and frequently these statements are quoted as facts (p.a., Watkins, Baeyens, & Raed, 2009). However, to our knowledge, almost all findings on overgeneralization are from studies with non-clinical samples and only Carver, Lavoie, Kuhl, & Ganellen (1988) and Fennell and Campbell (1984) examined overgeneralization in patients who are clinically depressed. And, more recently, other studies have reported significant correlations between negative overgeneralization and other psychological disorders such as anxiety disorders (Epkins, 1996; Weems, Berman, Silverman & Saavedra, 2001), bulimia (Dritschel, Williams & Cooper, 1991), suicide ideation (Prezant & Neimeyer, 1988), and marital violence (Eckhardt & Kassinove, 1998). In Chapter 2 the question is investigated whether overgeneralization is uniquely associated to depression, and whether these findings can be generalized to clinical populations.

Furthermore, in Chapter 2, some major issues regarding the definition or conceptualization of overgeneralization are tested. Epstein (1992) and Carver and Ganellen (1983) have argued that it is important to distinguish between two ways of defining and measuring overgeneralization. One is the presence of unrealistically broad attributions about the self ("overgeneralization to the self", e.g., “When even one thing goes wrong, I begin to feel bad and wonder if I can do well at anything at all.”). The other is the presence of overly broad attributions in response to specific
situations (“overgeneralization across situations”, e.g., “After I once got stuck in an elevator, I considered every elevator as dangerous so I never took one again.”). Some researchers assume that the two types of overgeneralization are related, with the reactive overgeneralization across situations following negative events tending to sustain a relatively stable trait of low self-esteem (e.g. Carver, Ganellen & Behar-Mitrani, 1985; Kernis, Brockner & Frankel, 1989). MacLeod & Williams (1990), however, stressed the heterogeneity of the overgeneralization concept on the basis of a study, in which they found no significant correlation between two overgeneralization-scales, representing the two definitions. This leads to the question whether overgeneralizations are uniquely directed at the self or whether they affect other areas as well.

A third question that was investigated in Chapter 2, was whether overgeneralization is restricted to negative content. Investigations of overgeneralization have focused predominantly on negative overgeneralization (e.g. Carver, 1998; Carver & Ganellen, 1983; Flett, Hewitt & Mittelstaedt, 1991; Klar, Gabai & Baron, 1997; Prezant & Neimeyer, 1988; Wenzlaff & Grozier, 1988). Therefore, it cannot be determined whether overgeneralization is restricted to negative attributions, or whether it also extends to positive attributions. This focus on negative content makes it hard to separate the effect of the content from the effect of the inferential process.

Investigation of how individual differences in the tendency to overgeneralize lead to differences in the level of psychological distress (Chapter 3)

After having dissected the concept of overgeneralization and having provided new evidence in favor of the relevance of the overgeneralization concept for the understanding of psychological distress in different clinical populations, a next important step was to try and understand how individual differences in the tendency to overgeneralize lead to differences in the level of depression or other psychological disorders. Earlier findings (e.g., Larsen, 1989; Roberts & Monroe, 1994) suggest that (1) both affect intensity and low self-esteem are associated to overgeneralization; (2) the intensity of affect and level of self-esteem respectively, are distinct constructs with differential outcomes; and (3) both affect intensity and low self-esteem are associated to psychological distress. However, it still remains unclear, how these concepts relate to each other. Does overgeneralization mediate the relation between level of self-esteem and affect intensity on the one side and psychological distress on the other? Or, is the relation between overgeneralization and psychological distress mediated by level of self-esteem and affect intensity? According to suggestions made by Beck (1976), Larsen (2000) and Linehan (1993a), affect intensity and low self-esteem have an indirect effect on psychological distress through overgeneralization. On the other side, according to suggestions made by Abramson, Seligman, and Teasdale (1978), Larsen, Billings, and Cutler (1996)
and Linehan (1993b), overgeneralization has an indirect effect on psychological distress through affect intensity and low self-esteem. In Chapter 3, two different models based on these suggestions are investigated to find an answer to the question what mediates what.

How to manipulate overgeneralization? A pilot proof-of-principle study (Chapter 4)

After having investigated how overgeneralization affects psychological distress, our research turned to the question how overgeneralization can be manipulated in clinical practice. Trying to tackle different forms of overgeneralization is in the core of the daily practice of not only cognitive behavior therapy but probably in all types of verbal psychotherapy. To reduce overgeneralized thinking, therapists try to help their patients to notice when they are using absolute terms, such as always or never, to describe situations they are unhappy about in detail and subsequently try to eliminate these words or replace them with terms, such as sometimes or occasionally. They challenge beliefs and help patients to ask themselves if these beliefs really are true in every aspect of their life or not. Likewise, behavior therapists help their patients to break through avoidance and build up confidence of being able to maintain effective functioning in several aspects of life by doing exercises. In this way, they challenge overgeneralized ideas of inadequacy as a function of failure or disappointment in only one domain. The question remains whether it is possible to manipulate a person’s tendency to overgeneralize more directly, thereby helping treatment to be more effective or more efficient.

Watkins and colleagues (Watkins, Baeyens, & Read, 2009; Watkins, Moberly, & Moulds, 2008) have described promising research suggesting that a tendency toward abstract and overgeneral processing can causally influence depressive symptoms in dysphoric individuals and that this tendency is liable to manipulation. Their operationalization of overgeneralization, however, leans heavily to an operationalization of rumination as it aims at the self-relevancy of events and on abstract processing of emotional scenarios focusing on causes, meanings, and implications of each scenario. Chapter 4 reports on a cognitive bias modification approach to the question whether overgeneralization can be induced and how overgeneralization training can intensify emotional reactivity when an operationalization of overgeneralization is used that is situation-focused and associative, in contrast to self-focused or focused on the causes, meanings, and implications of an event.

In the final chapter of the present dissertation, Chapter 5, the results of the presented studies are summarized and discussed.
REFERENCES


CHAPTER 2

An investigation of different aspects of overgeneralization in patients with major depressive disorder and borderline personality disorder

ABSTRACT

Objective. The aim of this study was to investigate whether (a) overgeneralization is restricted to negative attributions directed at the self; or whether it also extends to positive self-attributions and to attributions of situations in the outside world, and (b) whether the valence and direction (positively or negatively, to the self or across situations) of overgeneralization processes vary among different patient populations.

Methods. Patients with major depressive disorder (MDD, n=34), borderline personality disorder (BPD, n=18) or both (n=35), and never-depressed non-patients (n=50) completed various measures of overgeneralization.

Results. Patients with MDD show higher levels of negative overgeneralization but lower levels of positive overgeneralization to the self and across situations than non-patients. Patients with MDD show more negative than positive overgeneralization to the self: a negative bias. They, however, do show higher levels of positive than negative overgeneralization across situations. Patients with BPD show the same pattern for overgeneralization to the self, but their higher levels of negative overgeneralization across situations are not exceeded by their positive counterpart.

Conclusions. Results indicate that patient groups differ from non-patients not only with respect to negative, but also with respect to positive overgeneralization. Furthermore, the valence and direction of overgeneralization processes vary among MDD and BPD patient populations. More specifically, findings suggest that, as compared to never-depressed individuals, patients with BPD and patients with MDD alike, lack a buffer against negative overgeneralization directed at the self. In patients with BPD, not only the high level of overgeneralization to the self, but also the high level of overgeneralization across situations seems to be problematic, since both types of overgeneralization appear not to be buffered by their positive counterparts.
INTRODUCTION

Overgeneralization, defined by Beck (1976) as “unjustified generalization on the basis of a single incident”, is a prominent concept in cognitive theories of personality and depression, and is believed to be a basic process, underlying the development of maladaptive cognitive schemata (e.g., Beck & Freeman, 1990). Overgeneralization predicted the development of depressive symptoms in a longitudinal research design (Carver, 1998; Dykman, 1996) and led to slower recovery from dysphoric mood states (Edelman, Ahrens & Haaga, 1994). Recently, experimental studies have found evidence that overgeneral thinking is a cognitive bias that causally contributes to depressive symptoms (Watkins & Moberly, 2009; Watkins, Baeyens, & Read, 2009). Although overgeneralization of autobiographical memory has been studied extensively (see Williams et al., 2007), research on overgeneralization in attributions, the concept under study here, has been rather scarce.

Cognitive theory (Beck & Freeman, 1990) assumes that schemata and maladaptive automatic thought processes, differ among patient populations and non-patients, not only in content, but also in valence (positive or negative) and direction (i.e., whether they are directed at the self or at situations in the outside world). Therefore, not only the extent but also the valence and direction of the tendency to overgeneralize, may vary among patients and non-patients. These variations may be relevant for our understanding of the overgeneralization-construct and it’s implications for clinical practice, but they have never been tested directly in patients who are clinically depressed.

According to the cognitive distortion view of depression, originally set forth by Beck (1967, 1976), people with depression differ from non-depressed not only by the negative contents of their thoughts, but also by the inadequacy of their inferential processes. Beck (1976) identified overgeneralization, selective abstraction, mental filter, arbitrary inference, personalization and dichotomous thinking as the major thinking distortions characterizing depressives’ thought. Of the various cognitive biases described, overgeneralization was identified as the most reliable cognitive indicator of depression (e.g., Carver, 1998; Carver et al., 1985; Ganellen, 1988). Research on overgeneralization and depression, though, has focused predominantly on negative overgeneralization (e.g. Carver, 1998; Carver & Ganellen, 1983; Flett, Hewitt & Mittelstaedt, 1991; Klar, Gabai & Baron, 1997; Prezant & Neimeyer, 1988; Wenzlaff & Grozier, 1988). Therefore, it cannot be determined whether overgeneralization is restricted to negative attributions, or whether it also extends to positive attributions. This focus on negative content makes it hard to separate the effect of the content from the effect of the inferential process. In addition, the tripartite model of mood disorders (Clark & Watson, 1991) suggests
that biased cognitive processing specific to depression may emerge more clearly when variations in the degree of positive rather than negative processing bias are studied (Dunn, et al., 2009).

The existing literature offers three competing predictions as to whether overgeneralization in individuals suffering from depression is restricted to negative content. (1) Epstein (1992) presented evidence that individuals who report poor constructive thinking, which is considered a risk factor for the development of depression, show more negative overgeneralization than good constructive thinkers, while no difference was found concerning positive overgeneralization. These findings suggest that overgeneralization is restricted to negative content, resulting in a negativity bias. (2) Larsen and colleagues (Larsen, Bilings & Cutler, 1996; Larsen, Diener & Cropanzano, 1987) found that healthy individuals with high affect intensity – who are vulnerable for depression - show high positive as well as high negative overgeneralization. These findings lend support to the hypothesis that overgeneralization is not restricted to negative content, but that the effect of the inferential process per se makes persons with depression more prone than non-depressed to make overgeneralized attributions, be it on negative or on positive content. (3) A third possibility is offered by the tripartite model of mood disorders by Clark and Watson (1991) in which anhedonia (low positive affect) and general non-specific negative emotionality are considered specific to depression. In line with this theory, Klar et al. (1997) found that participants with subclinical high levels of depressive symptoms overgeneralize more following negative events, but overgeneralize less following positive events than participants with low levels of depressive symptoms. These findings suggest not only a negativity bias, but also a (reversed) positivity bias in the overgeneralization tendencies of persons suffering from depression. These variations in positive and negative overgeneralization have never been tested directly in patients who are clinically depressed. This is the aim of the present study.

Overgeneralization-tendencies may vary not only in valence but also in direction. Epstein (1992) and Carver and Ganellen (1983) have argued that it is important to distinguish between two ways of defining and measuring overgeneralization. One is to infer overgeneralization from the presence of unrealistically broad attributions about the self (i.e., overgeneralization to the self). The other is to infer overgeneralization from evidence of overly broad attributions in response to specific situations (i.e., overgeneralization across situations). Many researchers assume that the two kinds of overgeneralization are related, with the reactive overgeneralization across situations following negative events tending to sustain a relatively stable trait of low self-esteem (e.g. Carver, Ganellen & Behar-Mitrani, 1985; Kernis, Brockner & Frankel, 1989). MacLeod and Williams (1990), however, stressed the heterogeneity
of the overgeneralization-concept on the basis of a study, in which they found no significant correlation between two overgeneralization-scales, representing the two definitions.

The distinction between overgeneralization to the self and overgeneralization to situations is relevant since many researchers have focused exclusively on the relation of overgeneralization with self-esteem in depression. Hayes, Harris, and Carver (2004), for example, found negative overgeneralization to be associated with low self-esteem as well as variable self-esteem, and with depressive symptoms in the past in a non-patient sample. Their findings are consistent with the depression model of Roberts and Monroe (1994). Roberts and Monroe describe overgeneralization as a self-deflating process that converts self-criticism following specific and limited failures or disappointments into a global rejection of the entire self. Overgeneralization is seen as one of the crucial areas of vulnerability that contribute to problems in the regulation of self-esteem, which Roberts and Monroe consider a key vulnerability factor in the etiology, maintenance, and recovery of depression.

In contrast, hopelessness theory (Abramson, Metalsky, & Alloy, 1989), regards low self-esteem as a symptom rather than a cause of depression. Hopelessness theory emphasizes negative cognitive styles directed at many areas of life – not only those directed at self-esteem - as the diathesis. According to hopelessness theory, depression can be caused by generalized hopelessness. Generalized hopelessness is more likely to occur when negative life events are viewed as important and are attributed to stable and global causes (i.e. overgeneralization). Generalized hopelessness occurs when people expect negative outcomes and experience helplessness about changing the likelihood of occurrence of these outcomes in many areas of life, not only outcomes that affect people’s self-esteem. Therefore, it is relevant to examine whether overgeneralizers limit their overgeneralizations selectively to attributions to the self, or whether overgeneralization also relates to situations in other areas, and to what extent these two types are connected. Apart from the study by MacLeod and Williams (1990), however, no studies have been reported in which both types have been studied simultaneously.

Another question to be answered is whether the valence and direction (positively or negatively, to the self or across situations) of overgeneralization processes vary among different patient populations. To our knowledge, only Carver et al. (1988) examined overgeneralization to the self in patients who are clinically depressed. In that study, only negative overgeneralization to the self was studied. Fennell and Campbell (1984) examined patients who are clinically depressed, but only on overgeneralization across situations. Other studies have reported significant correlations between negative overgeneralization and other emotional disorders such as anxiety (Epkins, 1996; Weems, Berman, Silverman & Saavedra, 2001), bulimia (Dritschel,
Williams & Cooper, 1991), suicide ideation (Prezant & Neimeyer, 1988), and marital violence (Eckhardt & Kassinove, 1998). Again, in these studies only one type of overgeneralization was examined. It therefore remains unclear, whether findings from these studies can be generalized to other populations and to other types of overgeneralization. To gain more insight in this particular question, we compared the valence and direction of overgeneralization between non-patients, clinical patients with MDD, and clinical patients with borderline personality disorder (BPD).

We chose patients with BPD as a comparison group, because individuals with BPD are particularly known for showing cognitive distortions (e.g. Abela, Payne, & Moussaly, 2003; O’Leary et al., 1991) and prominent affect and self-regulation problems, even when they are not depressed (e.g. Gratz, Rosenthal, Tull, Lejuez & Gunderson, 2006; Koenigsberg et al., 2001, 2002; Linehan, 1993; Zeigler-Hill & Abraham, 2006). Several authors indicate that the inability to process emotional experience, as displayed by patients with BPD, may result in global, undifferentiated affective states (Westen et al., 1997; Linehan & Heard, 1992; Levine, Marziali & Hood, 1997). These global undifferentiated states resemble the globalized reactions that other authors consider characteristic for overgeneralization (e.g., Dykman, 1996). Therefore, we expected high levels of negative overgeneralization to the self in patients with BPD, just like in patients with MDD. However, we did expect differences between the patient groups, in the extent in which they engage in positive overgeneralization and in overgeneralization across situations. Typically, Linehan (1993) and Millon (1996) consider it characteristic for patients with BPD that they display a deficiency to modulate affect to the negative as well as to the positive side. For that reason, we expected patients with BPD to show not only high levels of overgeneralization following negative events, but also following positive events. In addition, individuals suffering from BPD are known to show maladaptive schemata not only directed at their image of the self, but also of others and the world surrounding them (e.g., Arntz, 2004; Young, 1999; Young, Klosko & Weishaar, 2003). We therefore expected patients with BPD to show high levels of overgeneralization, not only to the self, but also across situations.

In summary, the study reported here, addresses three related questions: Is the tendency to overgeneralize in individuals suffering from MDD restricted to negative content, or does it spread to positive content as well? Is overgeneralization in individuals with MDD restricted to misattributions directed at the self, or does it also extend to misattributions directed at situations in the outside world? And, does the valence and direction of overgeneralization vary among different patient populations? More specifically, do patients with MDD show overgeneralization-tendencies that differ from patients with BPD?
METHOD

Participants and design
A total of 87 psychiatric patients and 50 non-patients (NP) participated in the present study. The mean age for the entire sample was 32.8 years (range 18-58), all participants were Caucasian. Group demographics are displayed in Table 1. All patients were inpatients from two clinical wards, specializing in the psychotherapeutic treatment of personality disorders and depressive disorders, or outpatients from a local Mental Health Service. Patients in a crisis were excluded from the study. Patients were selected out of a total population of 135 patients, on the basis of (a) a signed informed consent; (b) a diagnosis of borderline personality disorder, major depressive disorder or both; and (c) completion of the questionnaire measures. The sample contained 34 patients with a diagnosis of MDD, 18 patients with a diagnosis of BPD, and 35 patients diagnosed with both BPD and MDD. We did not have data of the medication status of all clinical patients. Since a depression can negatively influence intellectual performance (e.g., Sackeim, Freeman, McElhinney, Coleman et al., 1992), and thus cognitive behavior, an abbreviated version of the WAIS III (Information, Picture Completion, Digit Span), based on Kaufman’s abbreviated version of the WAIS-R (Boone, 1992), was administered. The abbreviated version of the WAIS-R correlates .94 with the WAIS-R full scale. No significant differences were found between the groups on this abbreviated measure.

Participant patients were diagnosed according to DSM-IV criteria, using the Dutch translations of the structured clinical interviews for DSM-IV Axis I Disorders (SCID I) First, Spitzer, Gibbon & Williams, 1997; Groenestijn, Akkerhuis, Kupka, Schneider & Nolen, 1999) and DSM-IV Axis II Disorders (SCID II) First, Spitzer, Gibbon, Williams & Benjamin, 1994; Weertman, Arntz & Kerkhofs, 1997) by experienced professionals, specifically trained to adminster SCID interviews. The test-retest reliability of the original SCID I with the DSM III-R was found to be fair to good (kappa = .61) and the interrater-reliability for mood disorders in particular, was good (kappa's .70 to .92) (Segal, Hersen & Van Hasselt, 1994). The Dutch version of the SCID I has not been studied on psychometric properties yet. The short-interval test-retest reliability of the Dutch version of the SCID II for the presence or absence of any personality disorder was found to be fair to good (kappa=.63). The Intraclass Correlation (ICC) values for BPD trait- and sumscores of this version of the SCID II were found to be good (resp., .70 and .71, Weertman, Arntz, Dreessen, van Velzen & Vertommen, 2003). The use of SCID I and II interviews was standard procedure in the clinical setting, where most of the participants were recruited. In the other setting, after informed consent had been obtained, both interviews were held. As a standard procedure, all SCID-diagnoses were also discussed with a neutral supervisor, a registered and experienced clinical psychologist or psychotherapist,
who was involved in the treatment of the particular patients, but not otherwise involved in the study.

Table 1 Characteristics of participants in the study

<table>
<thead>
<tr>
<th></th>
<th>Age (years)</th>
<th>Gender</th>
<th>Inpatients</th>
<th>Outpatients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>Males</td>
<td>Females</td>
</tr>
<tr>
<td>NP (n=50)</td>
<td>36.52</td>
<td>11.25</td>
<td>15</td>
<td>35</td>
</tr>
<tr>
<td>MDD (n=34)</td>
<td>35.00</td>
<td>12.14</td>
<td>14</td>
<td>20</td>
</tr>
<tr>
<td>BPD (n=18)</td>
<td>27.33</td>
<td>8.76</td>
<td>5</td>
<td>13</td>
</tr>
<tr>
<td>BPD+MDD (n=35)</td>
<td>28.08</td>
<td>6.57</td>
<td>0</td>
<td>35</td>
</tr>
</tbody>
</table>

Note. NP= Non-patients; MDD= Major Depressive Disorder without Borderline Personality Disorder; BPD= Borderline Personality Disorder without a comorbid Major Depressive Disorder; BPD+MDD= Borderline Personality Disorder with a comorbid Major Depressive Disorder.

The 50 healthy non-patient comparison participants (35 females, 15 males) were recruited by a ‘stone in the pond’-procedure, where the first author asked a participant to ask a friend to participate, who in turn asked a friend etcetera. The non-patient group was not recruited among university students, but was matched to the MDD-group on age and level of education. The comparison participants were administered an abbreviated version of the SCID I (a shortlist screening all A-criteria of the DSM IV axis I disorders) via the telephone. If one or more DSM diagnostic criteria were met, or if an individual had sought help for psychological problems in the past, the person was excluded from the sample. All of the non-patients had BDI scores below 14 (M=4.06). The study was approved by the local Central Committee on Research involving Human Subjects (CMO number 2002/259).

Procedure and Materials
After provision of informed consent and completion of the diagnostic interviews, each subject completed the various overgeneralization measures. Participants were told that the study concerned “information processing in people with psychological problems”. The pen and paper tests were administered in a standard order.

Overgeneralization to the self
To assess overgeneralization to the self, we used the overgeneralization sub-scale of the Attitudes Towards Self Scale (ATSS; Carver & Ganellen, 1983). The ATSS overgeneralization scale is the most widely used self-report measure for negative overgeneralization to the self. In order to measure positive overgeneralization to the
self, we constructed positive variants of the ATSS items (e.g. When something goes all right, I feel great and get the feeling that I can do anything.) (see appendix 1 for the full scales) The original negative subscale of the ATSS is referred to as the ATSS- and the positive variant as ATSS+. In the Dutch version of the ATSS-, two items were dropped, one item because it was about positive as well as negative overgeneralization, the other because it had a very negative effect on the internal consistency. Internal consistency figures for these newly developed Dutch scales in the current study were good (Cronbach’s alphas of .94 for ATSS- and .83 for ATSS+). Carver and Ganellen (1983) reported a Cronbach’s alpha of .82 for the original 7 item English version of the ATSS- overgeneralization-subscale. We used the ATSS because the inference of overgeneralization from the presence of unrealistically broad attributions about the self (i.e. overgeneralization to the self) is, in our opinion, achieved most validly when a self-report measure is used.

Overgeneralization to situations
To obtain evidence of overly broad attributions in response to specific situations (i.e., overgeneralization across situations), a measure in which participants make actual predictions in reaction to antecedent events, is more valid. We used the task developed by Klar and colleagues (1997), which is based on the judgment-uncertainty literature. In this task, participants are asked to make predictions of the probability of the reoccurrence of a given hypothetical situation (Klar et al., 1997). As such, it provides a direct measure of actual generalizations about future events in reaction to a single situation. The task was translated into Dutch and the content of the items was adjusted for use with an adult population (Klar’s items were made for a high-school population). Like the original version, this ‘Overgeneralization Test’ (OGT) as we called it, includes 20 vignettes of hypothetical everyday situations, 10 positive (e.g., “You asked a person you like, to go out with you, and he/she said yes”), and 10 negative (e.g., “You were late for an important meeting because you had a flat tire.”) (for the full scales see appendix 2). The participants read the vignettes and were asked to imagine the situations happening to themselves. Subsequently they were asked to indicate the probability of the situation happening to them again in the future, using a 10 cm visual analogue scale ranging from 0 to 100%. As in the study by Klar et al. (1997), half the items were of a social nature and half the items were of an achievement nature. Internal consistency figures for these newly developed scales in a pilot test with a student population (n=25) were adequate (Cronbach’s alphas of .65 for OGT+ and .74 for OGT-); in the current study, they were good (Cronbach’s alphas of .81 for OGT+ and .81 for OGT-).1

1 To ensure that the situations were familiar to the participants, and that they agreed with the researcher on the valence of the situations, they were asked to indicate - after scoring the different events for their probability of recurrence - the degree of familiarity for all of the items and to score the items with regard to their positive, negative, or neutral nature. We found a mean familiarity of 69.0 % (sd=2.35), and 85.9 % (sd=9.06) correspondence between the participants’ and our indication of the valence of the items.
Statistical analysis
Given the fact that the BPD+MDD-group contained only female participants, we performed two separate analyses. First, we analyzed group differences for both males and females in only three groups: NPs, MDDs and BPDs. For this analysis, we performed a two-way multivariate analysis of covariance (MANCOVA) with Group and Gender as the between-subjects factors, age as a covariate and the positive and negative versions of both types of overgeneralization as the dependent variables. Contrast analyses were executed for planned comparisons. Subsequently, to be able to report on differences between the BPD+MDD-group and the other groups, these analyses were repeated with all four groups (NPs, MDDs, BPDs and BPD+MDDs) as the between-subjects factor. This analysis could be performed only with female participants. Contrast analyses were performed with the BPD+MDD group as reference category. To study whether participants showed a positivity or a negativity bias for each type of overgeneralization, paired samples t-tests were performed within each group.

RESULTS
Tests showed that the assumption of homogeneity of regression was validated. The MANCOVA examining group differences on the positive and negative versions of both types of overgeneralization in both males and females in three groups (Patients with BPD, patients with MDD and NPs) resulted in significant main effects for Group \((F(8,184)= 14.371, p<.00001, \eta^2_p=.385)\) and Age \((F(4,92)= 2.560, p=0.044, \eta^2_p=.100)\). Univariate F-tests showed that the three groups differed significantly on all four measures of overgeneralization (see table 2 for means, standard deviations, main effects and planned comparisons). There was an Age effect for OGT- \((F(1,95)=9.869, p=.002, \eta^2_p=.094)\). There were no significant univariate interactions with Age, nor Gender effects for all four overgeneralization-measures. Contrast-analyses indicated that both MDDs and BPDs differed from NPs on overgeneralization (both \(p<.00001\)), but not from each other. Subsequently, planned comparisons revealed that BPDs and MDDs both showed higher negative overgeneralization to the self than NPs. MDDs also showed higher negative overgeneralization across situations than NPs. BPDs did not differ from NPs on negative overgeneralization across situations. BPDs and MDDs both showed less positive overgeneralization to the self and across situations than NPs.

Paired samples t-tests revealed that NPs showed higher positive than negative overgeneralization to the self \((t(49)=13.250, p<.00001, d=2.50)\) and across situations \((t(49)=15.112, p<.00001, d=3.06)\). MDDs showed higher negative than positive overgeneralization to the self \((t(33)=-4.398, p=.0001, d=1.27)\), but higher positive than
Table 2  Overgeneralization to the self and across situations for Non-Patients, MDDs and BPDs (males and females)

<table>
<thead>
<tr>
<th></th>
<th>NP (n=50)</th>
<th>MDD (n=34)</th>
<th>BPD (n=18)</th>
<th>Main effects</th>
<th>Planned comparisons</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
<td>F</td>
</tr>
<tr>
<td>ATSS-</td>
<td>1.84</td>
<td>.12</td>
<td>3.70</td>
<td>.13</td>
<td>3.79</td>
</tr>
<tr>
<td>ATSS+</td>
<td>3.39</td>
<td>.11</td>
<td>2.59</td>
<td>.12</td>
<td>2.88</td>
</tr>
<tr>
<td>OGT-</td>
<td>2.21</td>
<td>.18</td>
<td>3.04</td>
<td>.21</td>
<td>2.62</td>
</tr>
<tr>
<td>OGT+</td>
<td>5.50</td>
<td>.18</td>
<td>4.30</td>
<td>.20</td>
<td>4.40</td>
</tr>
</tbody>
</table>

*Note. NP= Non-patients; MDD= Major Depressive Disorder; BPD= Borderline Personality Disorder. OGT-= negative overgeneralization across situations; OGT+= positive overgeneralization across situations; ATSS-= negative overgeneralization to the self; ATSS+= positive overgeneralization to the self.  
*p<.05. **p<.01. ***p<.001. ****p<.0001
### Table 3
Means and standard deviations for overgeneralization to the self and across situations for non-patients, MDDs, BPDs and BPD+MDDs (only females)

<table>
<thead>
<tr>
<th></th>
<th>NP (n=35)</th>
<th>MDD (n=20)</th>
<th>BPD (n=13)</th>
<th>BPD+MDD (n=35)</th>
<th>Main effects</th>
<th>Planned comparisons</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>ATSS-</td>
<td>1.98</td>
<td>.12</td>
<td>3.59</td>
<td>.16</td>
<td>3.68</td>
<td>.20</td>
</tr>
<tr>
<td>ATSS+</td>
<td>3.43</td>
<td>.11</td>
<td>2.79</td>
<td>.15</td>
<td>2.62</td>
<td>.18</td>
</tr>
<tr>
<td>OGT+</td>
<td>5.48</td>
<td>.19</td>
<td>4.43</td>
<td>.25</td>
<td>3.81</td>
<td>.31</td>
</tr>
</tbody>
</table>

Note. NP= Non-patients; MDD= Major Depressive Disorder without Borderline Personality Disorder; BPD= Borderline Personality Disorder without a comorbid Major Depressive Disorder; BPD+MDD= Borderline Personality Disorder with a comorbid Major Depressive Disorder. OGT- = negative overgeneralization across situations; OGT+ = positive overgeneralization across situations; ATSS- = negative overgeneralization to the self; ATSS+ = positive overgeneralization to the self.

*p<.05. **p<.01. ***p<.001. ****p<.0001
negative overgeneralization across situations ($t(33)=4.476, p<.0001, d=1.02$). BPDs showed higher negative than positive overgeneralization to the self ($t(17)=-3.085, p<.01, d=1.27$). The difference between positive and negative overgeneralization across situations, however, was not significant for BPDs ($t(17)=2.063, p=.055, d=.81$).

The second MANCOVA examined differences between the BPD+MDD-group and the other groups, and was performed with only females. This analysis resulted in a significant main effect for Group ($F(12,254)=12.553, p<.00001, \eta^2_p=.337$) and no significant effect for Age. Therefore, Age was removed as a covariate. Univariate F-tests showed that the four groups differed significantly on all measures of overgeneralization (see table 3 for means, standard deviations, main effects and planned comparisons). The contrasts presented in the first analysis were also significant in the second. Furthermore, contrast-analyses indicated that BPD+MDDs differed from NPs ($p<.00001$), and MDDs ($p=.001$) but not from BPDs ($p=.092$). Subsequently, planned comparisons revealed that BPD+MDDs showed higher negative overgeneralization to the self and across situations than NPs, higher negative overgeneralization to the self than MDDs, and lower positive overgeneralization to the self and across situations than both NPs and MDDs. Paired samples t-tests revealed that BPD+MDDs showed higher negative than positive overgeneralization to the self ($t(34)=-12.354, p<.00001, d=3.34$). They did not show a difference between positive and negative overgeneralization across situations ($t(34)=1.31, p=.897, d=.04$).

**DISCUSSION**

The present study is the first to explore the degree of negative, as well as positive overgeneralization to the self and across situations in a clinical sample of patients suffering from MDD and/or BPD, as compared to never depressed non-patients. Results show that patients with MDD differ from non-patients in that they show more negative overgeneralization - to the self and across situations - but less positive overgeneralization. This illustrates that variations in the tendency to overgeneralize between patients and non-patients are not restricted to negative content. The absence, though, rather than the presence of positive overgeneralization, appears to be related to emotional disorders. The data confirm, now in a clinical population, the findings by Klar et al. (1997), that patients suffering from MDD not only overgeneralize more following negative events than non-patients, but they overgeneralize less following positive events as well. These findings are in agreement with the cognitive distortion view of depression (Beck,1976) in that patients with MDD differ from non-patients not only in the negative content of their thoughts, but also in their inferential process: patients with MDD show a processing-bias in that they have different overgeneralization tendencies than
non-patients. Furthermore, these findings are in line with the hypothesis of the tripartite model of mood disorders by Clark and Watson (1991) that depression can be accounted for not only by the presence of negative overgeneralization, but also – or even more - by the absence of positive overgeneralization. The findings further illustrate that overgeneralization in individuals with MDD is not restricted to misattributions directed at the self, but extends to misattributions directed at situations in the outside world. This finding justifies a broader focus on overgeneralization than only on overgeneralization to the self, which is in accordance with the hopelessness theory of Abramson, Metalsky and Alloy (1989).

Patients with BPD differ from non-patients in that they show more negative and less positive overgeneralization to the self. Patients with both BPD + MDD even show more negative and less positive overgeneralization to the self than patients with MDD. So, for overgeneralization to the self, patients with MDD and patients with BPD show the same pattern, with patients with BPD+MDD showing a cumulated effect. For overgeneralization across situations, patients with MDD and patients with BPD show the same pattern for positive attributions, with BPD+MDD showing a cumulated effect. In this study, patients with BPD only show more negative overgeneralization across situations than non-patients when they are also suffering from a comorbid MDD. So, in contrast with never-depressed individuals, and with the exception of negative overgeneralization across situations, patients with MDD and patients with BPD show more or less the same pattern in their tendency to overgeneralize. Patients suffering from both disorders appear to show this pattern to a larger degree.

Further, results show that non-patients show more positive than negative overgeneralization, indicative of a positivity bias. This finding is in agreement with findings by Epstein (1992) and Klar et al. (1997). Epstein (1992) suggested that this positivity bias in non-patients serves as a tendency toward unrealistic but healthy self-enhancement. In our study, this effect was found in attributions to the self as well as across situations, suggesting that this positivity bias in healthy individuals not only enhances their self-confidence, but also protects their view of the world against the effect of negative overgeneralization.

Patients with MDD, BPD and BPD+MDD all show more negative than positive overgeneralization to the self. So, all patients show a negativity bias on overgeneralization to the self, and not a positivity bias as non-patients do. These findings suggest that, as compared to never-depressed individuals, patients with BPD and patients with MDD both lack a buffer against negative cognitions directed at the self (e.g. Lightsey, 1994). Then again, these patient groups show different biases on overgeneralization across situations. While the patients with MDD resemble the non-patients’ positivity bias in showing more positive than negative overgeneralization across situations, patients with BPD – with or without a comorbid MDD –
show neither a positivity, nor a negativity bias. The difference between these patient groups appears to be that while patients with MDD seem to be able to hold on to expectations of positive situations to come again, patients with BPD appear to lack this specific positivity bias. It appears that since patients with BPD lack a healthy positivity bias, it is very difficult for them to profit from positive experiences happening to themselves or around them. These results lend support to the assumption, formulated by authors like Beck and Freeman (1990), Young (1999, 2003), and Depue and Lenzenweger (2005), that patients with BPD – even more than patients with MDD - distort their view of life events only in a negative manner. The finding of a negativity bias on the self in patients with BPD is in agreement with Kernberg’s (1975) conception of a preponderance of negative affect in relation to positive affect in BPD, which in his theory results in splitting, a construct conceptually related to overgeneralization. The results are also in line with findings by Sieswerda, Arntz and Wolfis (2005), which indicated, that patients with BPD are best characterized by a general negative evaluative style, more than by dichotomous (black and white) thinking, and, that the extreme negative evaluations of patients with BPD are not restricted to the personal domain, but spread more globally to non(inter)personal situations as well. Data from the current study go beyond these earlier studies, as they indicate, that this negativity bias appears to be influenced not only by negative overgeneralization, that is too high, but also by positive overgeneralization, that is too low: patients with BPD tend not to generalize, as much as normal people do, following positive situations in the outside world. As a result they lack a healthy positivity bias.

The results indicate that although patients with MDD do show a positivity bias when overgeneralizing across situational attributions, this bias is still reduced relative to non-patients suggesting that depressed individuals do have an altered view both of self and world. For both groups, the emotional biases in information processing seem to be greater for self (both show a negativity bias) than for across situations (MDD - reduced positivity bias, BPD - no emotion bias). This is an interesting finding, which suggests that in all patient groups information processing is biased for both self and world but that self-relevant information processing has a larger impact. It may also mean that MDD and BPD both are disorders in which self-esteem is deflated as a result of overgeneralization but that patients with BPD also have a less positive image of the world.

Contrary to expectation, we did not find patients with BPD to differ from patients with MDD in the valence of their tendency to overgeneralize. Both patient groups showed higher levels of negative and lower levels of positive overgeneralization. This finding contrasts with hypotheses formulated on the basis of the influential models of BPD by Linehan (1993) and Millon (1996) who both call attention to the presence of high intensity of negative as well as positive affect in patients
with BPD. In several studies their hypothesis of enhanced intensity of positive affect states in BPD was not confirmed (e.g. Yen et al., 2002) which is more in line with our findings.

The differences between self-attributions and situational attributions could also be ascribed to differences in the amount of abstractness versus concreteness of the patients’ mode of processing. Watkins and colleagues (e.g. Watkins, Baeyens, & Read, 2009) have presented evidence of a maladaptive over-abstract processing style in individuals with depression resulting in more global negative self-evaluations. In contrast to a more concrete, experiential way of processing information resulting in reduced overgeneral recall and reduced global negative self-evaluations. Such difference in abstract and concrete processing, as described by Watkins and his coworkers, may also be present in the tasks we used to measure overgeneralization to the self and across situations. An explanation of the differences we found from a processing mode perspective (abstract versus concrete) instead of from a content perspective (attributions to the self versus to situations) is an interesting one and deserves further investigation.

Several factors limit the generalizability of the results of the present study. Patients were recruited in different settings. Therefore, patient groups may differ in symptom acuity that does not show up in the SCID-data, and this may be influencing the results. As far as the observed differences between patients with BPD and patients with MDD are concerned, the question of comorbidity is relevant. One reason to expect high levels of overgeneralization in individuals diagnosed with BPD, is that this patient group is known to have high comorbidity figures with all types of disorders that were found to be associated with overgeneralization: depression (e.g. Skodol et al., 1999; Corruble, Ginestet & Guelfi, 1996), anxiety (e.g. Zanarini, Frankenburg, Hennen, Reich & Silk, 2004), eating disorders, especially bulimia (e.g. Van Hanswijck De Jonge, Van Furth, Hubert Lacey & Waller, 2003), recurrent suicidal behavior (e.g. Yen, et al., 2003), impulsiveness in general (e.g. Dowson et al., 2004) and marital violence (e.g. Edwards, Scott, Yarvis, Paizis & Panizzon, 2003). Clearly, comorbidity can act as a possible confounder in this patient group. Especially, reservations must be made regarding patients with BPD who have experienced one or more (subclinical) depressive episodes in their lives. In our study 55.6% of the patients with BPD, not suffering from MDD at the time of testing, indeed had experienced at least one depressive episode in the past. On the other hand, overgeneralization may be so nonspecific, that it applies to all types of (more severe) psychopathology. In that case, overgeneralization would be as characteristic to BPD as it is to depression, and the more specific characteristics we observed, may help to gain more insight in the impact of this important phenomenon. Nonetheless, since our study lacked a measure of depression severity, it is impossible to determine whether the differences between the MDD and the
Both the item-set for positive overgeneralization to the self and the measures for overgeneralization across situations were developed for this study and are of unknown validity. Yet, the original versions of both scales are backed up by an impressive body of research on respectively negative overgeneralization to the self (see, e.g. Carver, 1998) and judgment under uncertainty (see Klar et al., 1997), and the internal consistency figures of the used scales are good. In wording, the positive overgeneralization to the self item-set is an exact opposite of the frequently used negative item-set. Furthermore, despite of the fact that the ATSS and OGT are rather different ways of measuring overgeneralization, we found almost identical scoring-patterns. Therefore, concurrent validity appears adequate. Both measures have their own strengths and in our opinion reflect validly the differences between the two types of overgeneralization. The weakness of the ATSS is, that it is a self-report measure and therefore dependent on the self-awareness of the participants (e.g. MacLeod & Williams, 1990). On the other hand, it is based on real experience. The OGT uses hypothetical situations, but does not depend on the participant’s awareness of his cognitive behavior (Klar et al., 1997). Finally, the order of the questionnaires was not counterbalanced. Therefore, order effects may have influenced performance.

In conclusion, in patients suffering from MDD, high levels of negative overgeneralization directed at the self, appear to be especially problematic because they surpass the level of positive overgeneralization to the self. The high level of negative overgeneralization across situations, that was also found in this patient group, might be less problematic since it does not surpass the level of positive overgeneralization across situations. In patients with BPD, not only the high level of overgeneralization to the self, but also the high level of overgeneralization across situations seems to be problematic, since both types of overgeneralization appear not to be buffered by their positive counterparts. These findings direct the focus of attention on the role of not only negative overgeneralization to the self, but also of positive overgeneralization to the self, as well as across situations in research with patients suffering from these disorders. If overgeneralization is indeed one of the basic processes underlying the development or activation of cognitive schemata, as was suggested by Beck and Freeman (1990), the high levels of negative overgeneralization or perhaps even more the low levels of positive overgeneralization in these patient populations, may explain why patients and their therapists struggle so hard when trying to reconstruct basic schemata in the course of treatment. After all, as long as negative overgeneralization prevails over positive overgeneralization, the chance that patients will develop even more negative schemata is much higher than the chance that they will develop new positive schemata.
REFERENCES


APPENDIX 1

Items of the Dutch version of the overgeneralization subscale of the Attitudes Towards Self Scale (ATSS)

**ATSS-**
1. How I feel about myself overall, is easily influenced by a single mistake.
2. My feelings about myself drop, if I notice any weaknesses or shortcomings at all.
3. The things about myself that other people like and respect, are unimportant to me when I feel down.
4. When even one thing goes wrong, I begin to feel bad and wonder if I can do well at anything at all.
5. If something goes wrong – no matter what it is – I see myself negatively.

**ATSS+**
6. If something goes right – no matter what it is – I get a very positive image of myself.
7. When I realize I did something well, nothing can bring me down.
8. When something goes all right, I feel great and get the feeling that I can do anything.
9. When I feel good, other people’s opinion of me becomes highly irrelevant to me.
10. My feelings about myself rise if I realize my talents and strengths.

NB. Original items in Dutch can be retrieved from the first author.

APPENDIX 2

Vignettes of the Dutch version of the overgeneralization-test (OGT)

**OGT-**
1. When you turned on the television yesterday, there was a break in transmission, as a result of which you couldn’t watch your favorite show. How probable is it that the next time you want to watch that show there will be a break in transmission again?
2. A good friend of yours is going abroad for a long time. If you meet a new friend, how probable is it that this new friend will leave you as well?
3. Yesterday you were late for an important meeting due to a flat tire. How probable is it that the next time you have an important meeting you will have a flat tire again and be late?
4. Last year it rained heavily in June. How probable is it that it will rain heavily in June this year again?
5. You have met a person you like very much. After a few weeks he/she turned out to be not as nice as you thought. How probable is it that, next time you meet someone you like, this person will turn out to be not so nice either?
6. Your new neighbor often turns on very loud music when you want to go to sleep. How probable is it that when you get a new neighbor he/she will be a nuisance too?
7. The other day, you had to go to the ninth floor of a department building. You went up in an elevator and, because of a technical problem, the elevator got stuck and you were caught for over 15 minutes. How probable is it that next time you take an elevator, it will get stuck also?
8. This morning during breakfast, you accidentally spilled your milk. How probable is it that you will spill something again during tomorrow morning’s breakfast?
9. Friday morning last week you had an important meeting. The night before you set your alarm clock wrongly. Consequently you overslept and missed your appointment. In two weeks, you have an important meeting again. How probable is it that you will oversleep again?
10. You were walking home on the sidewalk the other day when a car passed right by you through a puddle causing your trousers to get all dirty and wet. How probable is it that the next time you are walking on the sidewalk, you will be spattered again?

OGT+

11. Last time when you had a couple of days off, the weather was great. How probable is it that the next time you have a day off, you will have beautiful weather again?
12. You had a job-interview, you prepared very well for. You just got the message you can have the job. This week you have another job-interview, that you also want to prepare well for. How probable is it, that you will get this job too?
13. You met someone you like. You asked this person to go and have a drink with you and he/she said ‘yes’. How probable is it that the next time you meet someone you like and ask this person to have a drink, he/she will say ‘yes’ also?
14. Yesterday, when you went shopping, a product that you wanted to buy anyway, turned out to be on sale. How probable is it that when you go shopping again tomorrow, again something you want to buy, will be on sale?
15. You entered a competition in your local paper. The jury chose your slogan as the winning entrance. How probable is it that if you enter the competition next year, the jury will reward your contribution again with a prize?
16. You asked your supervisor if you could leave early for an important thing you had to do. He consulted the manager and you got permission. Next week you have to leave early again, when you work under another supervisor. How probable is it that you will get permission again?
17. Last year you worked very hard and your boss gave you a raise in salary. If you will work hard this year again. How probable is it that you will get a raise next year?

18. You got a very difficult assignment. You have done your best and got a very good result. How probable is it that next time you get such a difficult assignment, you will succeed again?

19. Last weekend your friends taught you a new game of skill. The first time you played you won right-away. How probable is it that, when you play the game once more, you will win again?

20. Last year you got a new colleague. You two got on together very well and you became good friends. How probable is it that when you get a new colleague again, you will become friends also?

NB. Original vignettes in Dutch can be retrieved from the first author.
Chapter 2  An investigation of different aspects of overgeneralization in patients with major depressive disorder and borderline personality disorder
Overgeneralization and Psychological Distress in a Clinical Population: The Mediating Role of Affect Intensity and Self-Esteem

ABSTRACT

Objective. A growing amount of empirical literature suggests that overgeneralization is associated with emotional disorders as a factor that instigates psychological distress. This study was conducted to better understand the relation between overgeneralization, low self-esteem, high affect intensity and psychological distress, and to answer the question whether low self-esteem and high affect intensity mediate the relation between overgeneralization and psychological distress, or, that overgeneralization is the mediator.

Methods. The two mediation models were investigated, using structural equation modeling in a clinical sample of 101 individuals, all diagnosed with one or more personality disorders in addition to various axis 1 disorders.

Results. The results show that both low self-esteem and negative affect intensity mediate the relation between overgeneralization and acute psychological distress.

Conclusions. The findings from the current study indicate that clinicians should not only focus on the treatment of their patients’ low self-esteem and the high intensity of their emotions, but also on their overgeneralizing cognitive style especially in patients suffering from a personality disorder.
INTRODUCTION

A fundamental theme in emotion research is that biased cognitive processes are central features of probably all emotional disorders. A cognitive bias that is shown to be of great implication in the onset and maintenance of depression is overgeneralization. Various studies provide evidence that overgeneralization – defined by Beck (1976) as unjustified generalization on the basis of a single incident – is related to depression and depressive mood states (e.g., Carver, 1998; Carver & Ganellen, 1983; Flett, Hewitt & Mittelstaedt, 1991; Ganellen, 1988; Klar, Gabai, & Baron, 1997). In more recent studies, overgeneralization is found in individuals with other emotional disorders such as bulimia (Dritschel, Williams & Cooper, 1991), anxiety disorders (Epkins, 1996; Weems, Berman, Silverman & Saavedra, 2001), and borderline personality disorder (Van den Heuvel, Derksen, Eling & Van der Staak, in press). Two studies demonstrate that overgeneralization predicts the development of depressive symptoms in non-clinical samples in a longitudinal research design (Carver, 1998; Dykman, 1996). These findings suggest that overgeneralization is associated to general psychopathology as a factor that instigates psychological distress. It remains unclear though, how individual differences in the tendency to overgeneralize lead to differences in the level of psychological distress.

In the literature, overgeneralization and psychological distress are associated with self-esteem (e.g., Roberts & Monroe, 1994) and with affect intensity (e.g. Larsen & Diener, 1987). The relation with self-esteem is discussed in Roberts and Monroe’s multidimensional model of the etiology, maintenance, and recovery of depression (1994). This model suggests that overgeneralization is one of three crucial areas of vulnerability that contribute to problems in the regulation of self-esteem. Roberts and Monroe describe overgeneralization as a self-deflating process that converts self-criticism following specific and limited failures or disappointments into a global rejection of the entire self. Numerous studies provide evidence for the relation between level of self-esteem and depressive symptoms (e.g. Beck, Brown, Steer, Kuyken, & Grisham, 2001; Butler, Hokanson, & Flynn, 1994; Kernis, Granneman, & Mathis, 1991; Oosterwegel, Field, Hart, & Anderson, 2001). Hayes, Harris, and Carver (2004) have found negative overgeneralization to be associated with low self-esteem as well as variable self-esteem, and with depressive symptoms in the past in a non-patient sample.

The relation with affect intensity is discussed by Larsen and Diener (1987) who define affect intensity as “stable individual differences in the strength with which individuals experience their emotions”. High affect intensity is associated with a number of emotional disorders (e.g., Dizen, 2006; Flett, Blankstein & Obertynski, 1995) and individuals with high affect intensity tend to experience greater psychological distress (Levine, Marziali, & Hood, 1997; Yen, Zlotnick, & Costello,
Individual differences in affect intensity have been found to correlate with the tendency to overgeneralize (Larsen, Billings, & Cutler, 1996; Larsen, Diener, & Cropanzano, 1987; Dritschel & Teasdale, 1991).

These findings suggest that (1) both affect intensity and low self-esteem are associated to overgeneralization; (2) the intensity of affect and level of self-esteem respectively, are distinct constructs with differential outcomes (e.g., Larsen, 1989; Roberts & Monroe, 1994); and (3) both affect intensity and low self-esteem are associated to psychological distress. Yet, it is unclear how these constructs relate to each other.

**Overgeneralization as mediator**

According to Beck’s cognitive model (1976) individuals develop negative views of the self under certain circumstances, which grow into trait-like maladaptive cognitive schemata. These negative self-schemata bias cognitive processing in an overly negative and depressive fashion which lead to greater vulnerability to psychological distress. In line with this theory, overgeneralization mediates the relation between level of self-esteem and psychological distress. Kernis, Brockner & Frankel (1989), Brown & Dutton (1995), and Wenzlaf & Grozier (1988) have found support for this hypothesis in a non-patient sample.

Larsen (2000) in his control theory of mood regulation, describes how individuals with trait high affect intensity are more likely to engage in mood intensifying cognitive behavior (such as overgeneralization) when in a state of under-arousal, thus making them more vulnerable to psychological distress. In line with this theory, overgeneralization mediates the relation between affect intensity and psychological distress.

Beck (1976) and Larsen (2000) describe how overgeneralization mediates the effect of either affect intensity or self-esteem on psychological distress. The biosocial theory of personality functioning by Linehan (1993a), offers an hypothesis that involves both the regulation of the intensity of affect and the level of self-esteem. According to this theory, certain individuals are assumed to possess a biological predisposition for a heightened intensity of affect. Individuals with high affect intensity, who grow up in an invalidating environment, may develop a self-invalidating cognitive style, resulting in (trait) low self-esteem. Linehan argues that the transaction between high affect intensity and self-invalidation leads these individuals to engage in maladaptive emotion-regulation strategies such as rumination, a concept closely related to overgeneralization, which in turn leads to distress. Thus, according to this biosocial theory, overgeneralization mediates the relation between affect intensity and self-esteem on one side and psychological distress on the other.
Following the suggestions made by Beck (1976), Larsen (2000) and Linehan (1993a), we arrive at the model described in figure 1. According to this model, affect intensity and low self-esteem have an indirect effect on psychological distress through overgeneralization.

**Figure 1** Overgeneralization as mediator

![Diagram](image)

**Overgeneralization as predictor**
According to the *reformulated learned helplessness model* (Abramson, Seligman, & Teasdale, 1978), individuals who attribute negative events to internal, stable and global causes, are likely to suffer depression if negative events happen to them. The basis for this attribution is a maladaptive cognitive style that leads to trait-like negative self-depreciation which in turn may lead to a greater vulnerability to psychological distress. In line with this theory, low self-esteem mediates the relation between overgeneralization and psychological distress.

Larsen, Billings, and Cutler (1996) suggest in their *model of informational style* that overgeneralization leads individuals to interpret affective stimuli in a manner that intensifies the affective response to those stimuli. This in turn results in high affect intensity, which makes them more susceptible to psychological distress. In line with this theory, affect intensity mediates the relation between overgeneralization and psychological distress. Van den Heuvel, Eling, Derksen and Van der Staak (2012) present evidence in support of this hypothesis in an experimental study in which participants, who are trained to overgeneralize, subsequently show higher affect intensity.

The work of Linehan also offers an alternative explanation for the relations between overgeneralization, psychological distress, affect intensity, and low self-esteem, than the one described earlier. In her skills training manual (1993b),
Linehan describes how individuals can react to situations from a state called the ‘emotional mind’. In this state of mind, they tend to process information in an overgeneral manner, in which the specific details of factual events are ignored, resulting in overgeneralizations and catastrophizations of their thoughts and experiences. This state of mind can lead to both extremely intense emotional reactions and judgmental self-invalidating thoughts which subsequently lead to distress. Here, overgeneralization predicts the rise of intensity of affects and the lowering of self-esteem.

Following the suggestions made by Abramson, Seligman, and Teasdale (1978), Larsen, Billings, and Cutler (1996) and Linehan (1993b), we arrive at the model described in figure 2. In this model, overgeneralization has an indirect effect on psychological distress through affect intensity and low self-esteem.

**Figure 2** Overgeneralization as predictor

To our knowledge, no studies have been reported on sophisticated models that investigate whether overgeneralization mediates or predicts the effect of both affect intensity and self-esteem on psychological distress. The current study does exactly that.

**Choice of the population**

By far most research on the concepts in this study is performed in non-clinical samples. We are especially interested in the effects of overgeneralization in emotionally disordered patients. Relations between the described variables may be different in clinical and non-clinical populations, and therefore conclusions from research in these populations may be different too. For example, people with low self-esteem in non-clinical populations do not regard themselves in excessively
negative terms, as clinical patients do (Baumeister, Tice & Hutton, 1989). Instead, they generally hold positive beliefs about themselves, particularly relative to their beliefs about others (Brown & Gallagher, 1992).

We investigate these concepts in a clinical sample of patients suffering from Axis II personality disorders, since a typical problem in studies on Beck’s cognitive model is that the strength of the relations between variables may be different dependent on whether and to what extent schemata are activated. One group of individuals that is shown to engage in depressotypic thinking, even in the absence of a depressive syndrome, are patients diagnosed with Axis II personality disorders (Ilardi & Craighead, 1999). This makes this group highly suitable for the investigation of these relations in clinical populations.

METHOD

Participants
The clinical sample (N=101) consists of psychiatric inpatients recruited from the Scelta Expertise Center for Personality Disorders in Apeldoorn, the Netherlands. Patients were asked to participate in the study, when they had been referred for the inpatient treatment units of the Scelta Expertise Center for Personality Disorders. Participants completed the diagnostic interviews as part of the standard general assessment for their treatment. Participants were diagnosed according to DSM-IV criteria by trained psychologists under supervision of experienced clinical psychologists, not otherwise involved in the study. The Dutch translation was used of the structured clinical interviews for DSM-IV Axis I Disorders ((SCID I) First, Spitzen, Gibbon, & Williams, 1997; Groenestijn, Akkerhuis, Kupka, Schneider & Nolen, 1999) and DSM-IV Axis II Disorders ((SCID II) First, Spitzen, Gibbon, Williams, & Benjamin, 1994; Weertman, Arntz, Dreessen, van Velzen & Vertommen, 2003). Patients in an acute crisis were not included in the study. Participants were not compensated. All participants gave informed consent and the study was approved by the institutional’s medical ethics committee.

Participants had a mean age of 28.8 years (range 18 - 51), 75 were female. All participants were Caucasian. All participants had either a primary or secondary diagnosis of one or more axis II personality disorders (avoidant (n=25), dependent (n=12), obsessive-compulsive (n=20), paranoid (n=25), schizoid (n=3), histrionic (n=4), narcissistic (n=4), borderline (n=43) and anti-social (n=19)); 24 participants had a diagnosis of personality disorder NOS or a deferred diagnosis on Axis II but enough features of different personality disorders to justify at least a diagnosis of personality disorder NOS. In addition, 17 participants had a current comorbid diagnosis of major depressive disorder, 48 had suffered from a depressive episode.
in the past, 32 had a dysthymic disorder and 3 had a bipolar disorder. Additional comorbid Axis I diagnoses included panic disorder with \( n = 6 \) and without agoraphobia \( n = 8 \), agoraphobia without panic disorder \( n = 3 \), social phobia \( n = 21 \), specific phobia \( n = 5 \), obsessive-compulsive disorder \( n = 6 \), posttraumatic stress disorder \( n = 23 \), generalized anxiety disorder \( n = 10 \), anorexia nervosa \( n = 5 \), bulimia nervosa \( n = 8 \), eating disorder NOS \( n = 1 \), psychotic disorders \( n = 5 \), substance abuse or dependence \( n = 22 \), and adjustment disorder \( n = 1 \).

**Materials**

*Overgeneralization*, the tendency to generalize from a bad outcome to the totality of one’s self-concept (cf. Beck, 1967; Carver, La Voie, Kuhl, & Ganellen, 1988) was measured with the Dutch version of the widely used overgeneralization subscale of the Attitudes Towards Self Scale (ATSS) constructed by Van den Heuvel, Derksen, Eling, & Van der Staak (in press). The ATSS (Carver & Ganellen, 1983) is a self-report questionnaire that assesses overgeneralization to the self, using such items as: “When even one thing goes wrong, I begin to feel bad and wonder if I can do well at anything at all.” The respondents are asked to indicate the extent of their agreement with each of the items along a five-point Likert scale. Van den Heuvel, Derksen, Eling, & Van der Staak reported good validity and internal consistency for this Dutch measure. The internal consistency coefficient of this scale in the current study is reported on the diagonal of table 1.

**MMPI-2 Low Self-Esteem scale (LSE).** To measure level of self-esteem, we used the low self-esteem scale (LSE) which is part of the Minnesota Multiphasic Personality Inventory-2 (MMPI-2: Butcher, Dahlstrom, Graham, Tellegen, & Kaemmer, 1989; Dutch translation by Derksen, de Mey, Sloore, & Hellenbosch, 1993). McCurdy and Kelly (1997) and Brems & Lloyd (1995) reported good concurrent validity with different self-esteem measures for this scale. In the current study, LSE-scale scores were acquired from the original computer scoring program. Therefore Cronbach’s alphas were not available. In table 1 we report the figures described by Derksen, de Mey, Sloore, & Hellenbosch (2006) for the Dutch subscale.

**Affect Intensity Measure-Negative Affectivity Scale (AIM-NA).** To measure negative affect intensity, we used one subscale (Negative Affectivity: AIM-NEG) derived from a three-factor model created from the Short Affect Intensity Scale in Dutch by Geuens & De Pelsmacker (2002) which was based on the original 40-item AIM by Larsen & Diener (1987). The Negative Affectivity-subscale includes 6 items that assess the characteristic intensity of negative emotions when they are experienced, and each item is rated on a 6-point frequency scale. Geuens & De Pelsmacker (2002) reported good validity and adequate internal consistency for this subscale. The internal consistency coefficient of this scale in the current study is reported on the diagonal of table 1.
Psychological Distress: 90-item Symptom Checklist (SCL-90). To measure psychological distress we utilized the widely used SCL-90 global severity index of general psychopathology, as measured with the SCL-90 total score (Derogatis, Lipman & Covi, 1973; Dutch translation by Arrindell & Ettema, 1986). Arrindell & Ettema (1986) report good validity and reliability for the Dutch version. Internal consistency for the total score in the current study (see table 1) was calculated on the eight subdimensions of the SCL-90.

Procedure
Psychological distress and low self-esteem were administered as part of the psychological test-assessment for all inpatients of the Scelta Expertise Center. The self-report measures for overgeneralization and affect-intensity were administered separately. Participants were all assessed in a period of one or two weeks between the fourth and tenth week of their admission to the treatment unit (mean length of admission to these treatments units is nine months).

RESULTS
The 4 measures in this study were created by making composite scores, i.e. sum scores. A missing values analysis reported no missing values for overgeneralization, 1 missing value for negative affect intensity, 13 missing values for the SCL-90 total score, and 28 for the LSE scale in the MMPI-2. Missing values were imputed with the EM algorithm, as implemented in the SPSS version 17.0, using all information we collected on the participants: 160+ variables, among those variables the MMPI-2 and the SCL-90 (subscale)scores. The results reported below are based on the imputed dataset. The observed means, standard deviations, correlations, and the internal consistency coefficients are summarized in table 1. One can see that all correlations between the variables are quite high and significant.

All models were estimated with LISREL8.80 (Jöreskog & Sörbom, 1999). We used the maximum likelihood (ML) estimation procedure in LISREL8.80 to estimate the model parameters. This procedure was applied to the data even though the variables were not perfectly normally distributed. Both skewness and kurtosis ranged between -0.8 and 0.8, which indicate just a mild violation of normality. In addition, robustness studies by Anderson & Amemiya (1988), Satorra & Bentler (1990), and Satorra (1992) have shown that the so-called “quasi maximum likelihood” estimator, which is LISREL’s implementation of ML, is robust against violations of normality under quite general conditions (Saris, Satorra, & Van der Veld, 2009). Therefore, the mild normality violations will not seriously affect the parameter estimates and standard errors.
We did not assume full mediation. Therefore, in both models, we also allowed for direct effects between overgeneralization, affect intensity, low self-esteem and psychological distress. We expected a correlation between affect intensity and low self-esteem. And, we expected all effects and relations to be positive. We estimated the models presented in figure 1 and figure 2 with LISREL, the results are presented in figure 3 and figure 4. The mediation models are saturated, meaning that the structure of the models cannot be tested because the degrees of freedom is zero. What can be tested however, are the direct and indirect effects (e.g. Preacher & Hayes, 2004). The estimates of the direct effects and their significance are presented in figure 3 and 4. The estimates of the indirect effects and tests of their significance cannot be presented in the same models, therefore they are presented in table 2.

The indirect effects in the 1st and 2nd row of table 2 are both not significant. The direct effects of AIM_NEG and LSE on SCL-90, see figure 3, are both significant. As a consequence we reject the idea that overgeneralization is the mediator.

The indirect effects in the 3rd and 4th row of table 2 are both significant. In addition, the direct effect of ATSS on SCL-90 is not significant as can be seen in figure 4. Therefore, we conclude that both affect intensity and low self-esteem mediate the relation between overgeneralization and psychological distress. Moreover, because the direct effect of ATSS on SCL-90 is not significant, there is full mediation (Preacher & Hayes, 2004). And, we find that 28% of the variance of SCL-90 is explained by these three variables.

### Table 1

<table>
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<tr>
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<th>SCL-90</th>
<th>LSE</th>
<th>AIM_NEG</th>
<th>ATSS</th>
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<tr>
<td>SCL-90</td>
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<td>LSE</td>
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<td>0.37*</td>
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<tr>
<td>SD</td>
<td>67.28</td>
<td>13.54</td>
<td>0.86</td>
<td>0.79</td>
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Note: SCL-90 = total score of the SCL-90 item symptom checklist; LSE = MMPI-2 Low Self-Esteem Scale; AIM_NEG = Affect Intensity Measure-Negative Affectivity Scale; ATSS = overgeneralization subscale of the Attitudes Towards Self Scale.

* The internal consistency is an estimate from a different study with the same measurement instrument (Derksen, de Mey, Sloore, & Hellenbosch, 2006), we only had the composite score of the measure and could not estimate the internal consistency.

* p<0.05
Figure 3  Estimates (left) and standardized estimates (right) for the model in figure 1.

\* $p<.05$

$\chi^2=0$, the model fit is perfect but that is due to the fact that this model is saturated (df=0).

Figure 4  Estimates (left) and standardized estimates (right) for the model in figure 2.

\* $p<.05$

$\chi^2=0$, the model fit is perfect but that is due to the fact that this model is saturated (df=0).
DISCUSSION

This study focuses on the nature of the relations between overgeneralization and psychological distress in a clinical sample, taking into account the relations with low self-esteem and high affect intensity. Previous studies have provided contradictory evidence on the nature of these relations. Several studies suggest that overgeneralization acts as a mediator, where others suggest that overgeneralization acts as a predictor.

Our results support the model that regards overgeneralization to be a predictor of low self-esteem and affect intensity (see fig. 2). The findings indicate that the tendency to overgeneralize (following negative events) has a significant effect on both low self-esteem and negative affect intensity. The evidence further supports the results from numerous studies that have shown that low self-esteem as well as affect intensity have an effect on psychological distress (e.g. Larsen & Diener, 1987; Roberts & Monroe, 1994). The findings from the current study extend previous research in that they demonstrate that the combination of low self-esteem and negative affect intensity fully mediate the effect of overgeneralization on psychological distress.

The findings in the current study back up Linehan's considerations on the emotional mind (1993b) but do not support her thoughts on how the transaction between high affect intensity and self-invalidation leads to emotion regulation strategies such as overgeneralization, which in turn lead to distress (1993a). After all, the mediation effects in the model with overgeneralization as a mediator were not significant. The current findings probably correspond best with the perspective formulated by Epstein (1992) in his theoretical considerations about the conceptualization of overgeneralization and self-esteem. According to Epstein, it may not be difficult to explain why children under certain circumstances develop negative self-views. What is more puzzling, is why they maintain their negative self-views in

<table>
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<th>Standardized estimate</th>
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<td>AIM_NEG → ATSS → SCL-90</td>
<td>-1.61</td>
<td>-0.02</td>
</tr>
<tr>
<td>Figure 4 for this mediation</td>
<td>ATSS → LSE → SCL-90</td>
<td>18.58*</td>
<td>0.22*</td>
</tr>
<tr>
<td>Figure 4 for this mediation</td>
<td>ATSS → AIM_NEG → SCL-90</td>
<td>16.32*</td>
<td>0.19*</td>
</tr>
</tbody>
</table>

* p<.05

Table 2 Estimates and standardized estimates of the indirect effects.
adulthood, under conditions in which their self-view is clearly incorrect. Epstein suggests that people do so, because they overgeneralize in a negatively biased way. In this conceptualization, overgeneralization does not result from, but leads to low levels of self-esteem, resulting in greater psychological distress. Our results suggest exactly this. In addition, our results extend Epstein’s theoretical conceptualization to affect intensity. That is, they suggest that high intense negative affect does not lead to, but result from negatively biased overgeneralization.

Several factors limit the generalizability of our study. Most importantly, we estimated and tested the models under study with structural equation modelling. Due to the correlational nature, we cannot draw conclusions about the causal process that creates the correlations between variables in the models. In structural equation modelling, there is usually more than one model that can account for the relations between the variables. As a consequence, the acceptance of the second model is in favour of the theoretical considerations describing overgeneralization as the predictor, but not more than that: the findings support that this theory represents one of the possible explanations for the relations between the variables. On the other hand, in structural equation modelling, the rejection of a model does imply the rejection of the causal hypothesis. This implies that we can conclude that overgeneralization is not the mediator. Furthermore, the cross-sectional rather than longitudinal assessment precludes a definitive test of the constructs under study. Further, the study is mainly based on self-report questionnaires that assess the constructs at hand as stable individual characteristics. The question remains whether these trait-like constructs represent actual state behaviour. This is especially important for the question how self-esteem plays a role in models of vulnerability for psychological distress. According to Roberts & Monroe (1994) this vulnerability may result from abnormal levels of low self-esteem, but also from highly fluctuating levels of self-esteem. Unfortunately, we were not able to incorporate a proper measurement of the latter factor in this study. Future studies may include measurements of both level of self-esteem and the fluctuation of self-esteem.

One of the strengths of this paper is that we studied overgeneralization, self-esteem, affect intensity, and psychological distress in a clinical population. To our knowledge, this is the first study in that respect. As argued in the introduction, we believe that the personality disordered sample we chose, was especially appropriate to investigate the effect of the concepts under study. However, future studies may include different patient groups as well as non-patients, to investigate whether the role of overgeneralization is comparable for all groups or whether overgeneralization works differently in specific groups. Unfortunately, in this study the sample size was not large enough to create subgroups, representing different diagnostic categories. Likewise, gender imbalance prevented separate analyses.
This also seems important for future research to evaluate.

The findings in this study suggest that clinicians should surely focus on the treatment of their patients’ low self-esteem and the high intensity of their emotions. But in order to get more grip on high affect intensity and low self-esteem, clinicians should also focus on the treatment of their patients’ overgeneralizing cognitive style, especially in patients suffering from a personality disorder. Hayes, Harris, & Carver (2004) already stressed, that targeting negative overgeneralization in psychotherapy would be particularly useful for preventing relapse of depression, given their findings that formerly depressed individuals endorse higher degrees of negative overgeneralization in a non-patient sample. Our findings are in line with this advice for a clinical population. In this respect, it is noteworthy that Watkins, Baeyens, & Read (2009) recently developed a training procedure that proved to be successful in bringing down levels of overgeneralization in a non-patient population. It will be a goal for future work on this topic to examine the effect of such training in a clinical population.
REFERENCES


CHAPTER 4

Overgeneralization training intensifies emotional reactivity: A cognitive bias modification approach

ABSTRACT

Objective. The present study aimed to develop an experimental paradigm to investigate whether training can induce overgeneralization that is situation-focused and associative, in contrast to self-focused and focused on analytical, interpretative, evaluative processing. A further aim was to examine whether this processing mode influences emotional reactivity.

Methods. 69 participants were randomly allocated either to (a) overgeneralization training, (b) specification training, matched with overgeneralization training for training rationale, experimenter contact, and training duration but in which participants had to focus on the emotional cue; or (c) a free association control condition. Emotional reactivity was assessed in general mood assessments at the beginning and the end of the experiment, and by measuring immediate affective reactions to emotional cues.

Results. The induction method was successful but faded away quickly. Nevertheless, findings show that overgeneralization training led to significantly more intense reactions to affective stimuli in terms of the arousal that was experienced, and we found some indications of an effect on mood.

Conclusions. The paradigm can be used to further investigate positive and negative associative, situation-focused overgeneralization and its influence on emotional reactivity. The findings are relevant to cognitive theories of depression and other psychological disorders, and offer further support for a possible intrinsical relation between overgeneralization and emotional reactivity.
INTRODUCTION

Overgeneralization refers to generalization that is inappropriate, because it is excessive (Epstein, 1992) or unjustified (Beck, 1976). A person who overgeneralizes, fails to make important discriminations and therefore arrives at incorrect conclusions and draws inappropriate lessons from experience. Various studies have provided evidence that overgeneralization is related to depression and depressive mood states (e.g., Carver, 1998; Carver & Ganellen, 1983; Flett, Hewitt & Mittelstaedt, 1991; Ganellen, 1988). In a longitudinal research design, overgeneralization predicted the development of depressive symptoms (Carver, 1998; Dykman, 1996). Also, evidence was found that overgeneralization is associated with slower recovery from dysphoric mood states (Edelman, Ahrens & Haaga, 1994). Additionally, depression is characterized by the overgenerality of autobiographical memories, characterized by summaries of globally described events that lack specificity (Williams et al., 2007). Overgeneral memory retrieval predicts delayed recovery from episodes of affective disorders (Williams et al., 2007).

Watkins and Teasdale (2001) suggested that overgeneral memory in depression may be associated with ruminative attempts to make sense of current or past difficulties. They investigated which component of rumination was responsible for the effect of rumination on overgeneral memory and found that an overgeneral processing mode characterized by a highly analytical, evaluative self-focus maintained overgeneral memory whereas a processing mode low in analytical thinking reduced overgeneral memory. Rimes and Watkins (2005) found that the induction of an analytical, evaluative self-focus is associated with increased levels of global self-judgements in dysphoric patients and that this may influence depressed mood. They claim that the categoric nature of overgeneral memory not only overlaps with global self-judgments but also with other forms of overgeneral thinking found in depression which predict future depressive symptoms, such as overgeneralization. They also explicitly state that categoric memories are distinct from overgeneralization, as far as memories that do not involve self-evaluations (e.g. ‘playing football every Sunday”) are concerned.

Watkins, Moberly, and Moulds (2008) reported evidence that explicit as well as implicit inductions of an analytic, evaluative self-focused processing mode modifies emotional reactivity. Watkins and Moberly (2009) argued, that if an abstract-overgeneral processing mode leads to an increase of negative affect, then a concrete processing mode should lead to a decrease of negative affect. In a cognitive bias modification paradigm, they trained dysphoric individuals to become more concrete and specific in their thinking. Indeed, their training procedure led to a decrease of rumination and a reduction of depressive symptoms. Watkins, Baeyens, and Read (2009) compared repeated sessions of this concreteness training with a bogus
training condition and a waiting-list control condition in a dysphoric sample. They found concreteness training to have a greater effect on depressive symptoms than the other interventions. However, although concreteness training did reduce self-reported self-criticism, it did not produce a significantly greater change on self-reported overgeneralization than the other conditions.

The studies of Watkins and colleagues provide strong evidence that overgeneral thinking can be successfully modified and that such modification influences rumination and depressive symptoms. The fact, however, that their intervention had an effect on depressive symptoms, rumination and on self-reported self-criticism, but not on self-reported overgeneralization leads to the question whether the overgeneral processing mode they induced is the same as the processing mode responsible for the effect of overgeneralization. Watkins and his coworkers make a strong case for the suggestion that this overgeneral processing mode involves (a) a focus on self-experience; and (b) a focus on analytical, evaluative processing. These are the same two components that Nolen-Hoeksema and Morrow (as cited in Watkins & Teasdale, 2001) found to be characteristic for rumination. However, several authors have argued that overgeneralization is not restricted to self-related content. For example, Epstein (1992) and Carver and Ganellen (1983) distinguished two ways of defining and measuring overgeneralization. One is the presence of unrealistically broad attributions about the self (“overgeneralization to the self”). The other is the presence of overly broad attributions in response to specific situations (“overgeneralization across situations”). MacLeod & Williams (1990) provide evidence for the heterogeneity of the overgeneralization-concept on the basis of a study, in which they found no significant correlation between two overgeneralization-scales, representing the two definitions. Van den Heuvel, Derksen, Eling and Van der Staak (in press) present findings that overgeneralization in individuals with major depressive disorder (MDD) is not restricted to misattributions directed at the self, but extends to misattributions directed at situations in the outside world and that the two types of overgeneralization act slightly different in different populations. More specifically, individuals diagnosed with borderline personality disorder (BPD) showed different patterns of situation-focused overgeneralization in comparison to non-patient controls. These findings suggest that the overgeneral processing mode underlying overgeneralization involves self-focused as well as situation-focused processing.

The second component of the overgeneral processing mode, defined by Watkins c.s., as a focus on the analysis of the causes, meanings and consequences of one’s symptoms and feelings, may be an essential aspect of rumination, but not necessarily of overgeneralization. The overgeneral processing mode is worked out by Watkins and his collaborators as a bias of interpretation or judgment. However, Power and Dalgleish (1997) point out that, though cognitive biases can occur in
cognitive processing at a high level of semantic representation in which appraisal, interpretation, evaluation and analysis take place, they also occur in a lower, more implicit, level of associative cognitive processing. We reasoned that the overgeneralization concept essentially refers to the notion that one single emotional experience activates an entire collection of emotional experiences (in past, present or future) that somehow becomes equivalent or even equal to this one experience. In other words, for a person who is overgeneralizing, one emotional experience becomes ‘prototypical’ for all experiences of that kind. This kind of overgeneralization is not necessarily related to the self, but may also be contextual or stimulus-specific. Also, it is not necessarily based on higher-level inferential, interpretative processes or analyses of causes, meanings and consequences but simply on a lower-level digressive associative style.

The first aim of the present study was to develop an experimental paradigm to investigate an overgeneral processing mode that is situation-focused and associative, in contrast to self-focused and focused on interpretative, analytical, evaluative processing. To create an induction of overgeneralization that is situation-focused and associative, we instructed participants in the experimental Overgeneralization condition to look at stimulus slides and focus on their feelings. Subsequently, they were trained to name as many associations they could think of that evoked the same feelings as the picture on each slide. In order to induce overgeneralization not focused on analytical, interpretative, evaluative processing of an event or action, participants were instructed not to go into stories but instead just name associations.

We used a design with two control conditions. Participants in a first control condition – Specification condition - were instructed to look at the stimulus-slide, to focus on their feelings, subsequently concentrate exclusively on the picture, and name as many features of the picture they could think of. In this control condition, the participants had to focus on the emotional cue, in contrast to the participants in the experimental condition who had to focus on their digressing associations. Participants in a second control condition – Free Association condition – were instructed to look at the stimulus-slide, to focus on their feelings and subsequently just say everything that came to mind. This control condition was created as a baseline control condition in which there was no specific focus on the emotional cue, nor on the associations they evoked. We instructed participants in all conditions to focus on their feelings, to make sure that emotional experience was activated and to be sure that we did not accidentally tap on a difference in the focus participants would have on their feelings due to the training they received.

A pilot study had provided evidence that participants produced different manifestations of overgeneralization in reaction to our training procedures.
Therefore, to examine which types of overgeneralization were produced by the participants in the different training conditions, we counted two different manifestations of associative situation-focused overgeneralization: (1) *simple overgeneralizations*, operationalized as associations of events or experiences that are not visible in the stimulus slide and contain a specific person, time or place (e.g. ‘that makes me think of the trip to India last year, when we were scared by a snake’; ‘that makes me think of the party where I met my boyfriend’), and (2) *categoric overgeneralizations*, operationalized as associations of events or experiences not visible in the picture that are not specific in terms of person, time or place, but represent a summary or category of experiences (e.g. ‘that makes me think of vacation’; ‘that makes me think of war’). Besides, we counted one manifestation of interpretative, evaluative overgeneralization: *interpretative overgeneralizations*, operationalized as interpretative, evaluative statements about people or the world as a whole (e.g. ‘all men are pigs’, ‘people always fight’).

The second aim of the current study was to investigate whether an increase in associative, situation-focused overgeneralization would influence emotional reactivity. Emotional reactivity is conceptualized as the change in the quality and intensity of affect in response to an emotionally evocative event (e.g. Watkins, Moberly & Moulds, 2008). In the current study, emotional reactivity was assessed in general mood assessments at the beginning and the end of the experiment, and by measuring immediate affective reaction in arousal and emotional valence immediately after each emotional cue. Since we designed this study bearing BPD patients in mind, we were, next to the valence of affective reactions, especially interested in the intensity of affective reaction. This research question is related to the work of Larsen and his coworkers (Larsen, Diener & Emmons, 1986; Larsen & Diener, 1987; Larsen, Diener & Cropanzano, 1987; Dritschel & Teasdale, 1991) on overgeneralization and high affect intensity. The central assumption underlying these studies was that overgeneralization leads individuals to interpret affective stimuli in a manner that intensifies the affective response to those stimuli (Larsen et al., 1996). The hypothesis that an increase of overgeneralization would lead to higher affect intensity, though, was not tested directly. In the current study, we did exactly this.

Finally, since according to DSM-IV criteria (APA, 1994) BPD patients differ from MDD patients not only in the intensity of their affects, but also in the range of their emotions (not only dysphoria but also irritability, anxiety and anger) and overgeneralization might influence some specific emotions differently than others, we also included a measure for specific emotions.

We predicted that the participants in the overgeneralization-condition would produce more simple and categoric overgeneralizations than the participants in the control conditions but not interpretative overgeneralizations. Next, we predicted that compared to specification-training, overgeneralization training would influence
emotional reactivity, in line with the findings of Watkins, Moberly and Moulds (2008) and Watkins, Baeyens, and Read (2009). And, from the literature on affect intensity (e.g. Larsen & Diener, 1987), we predicted that participants that received the overgeneralization training would show significantly greater increases of the intensity of their immediate affective reaction after each cue than participants in the two control conditions. We made no specific predictions concerning the influence of overgeneralization training to the different specific emotions.

METHOD

Participants
A total of 73 psychology students participated in this study. The data of four participants were discarded because of missing values so that 69 participants remained. The mean age was 23.4 years (range 18-30). The sample included 23 males and 46 females. Participants had no knowledge of the research topic and participated in exchange for course credit. The participants were randomly allocated either to overgeneralization training \(n=24\), specification training \(n=22\), or free association \(n=23\). No significant age or gender differences were found between the groups in a one-way ANOVA (resp. \(F(2,70)=.755\), n.s. and \(F(2,70)=.348\), n.s.).

PROCEDURE

The experiment had 6 phases (A to F) (see figure 1). In phase A, participants rated their general mood-state in terms of arousal and valence, the experienced intensity of their specific emotions and the extent of depressed mood. We used Self-Assessment Manikins (SAM; Lang, Bradley and Cuthbert, 2001) to get ratings of the valence and arousal dimensions of the participants’ mood. Ratings ranged from 1 to 9 on each dimension on a 9-point Likert scale (i.e., from feeling extremely unpleasant to very pleasant, and from a state of very low arousal to very high arousal). To get ratings of specific emotions, we used the same 9-point Likert scales to assess the five basic emotions as defined by Power and Dalgleish (1997): fear, anger, happiness, sadness and disgust. The Dutch version of the Depression Adjective Check Lists (DACL; Lubin, 1965), was used to get an estimate of depressed mood. Reliability and validity of the Dutch version of this instrument are good (Arrindell & Van Rooijen, 1999). We used the two versions of the list to assess pretest and posttest depressed mood.

Then, in the pretest phase for affective reaction (phase B), participants were shown pictures full screen in a Powerpoint slideshow, on a 17 inch monitor in a
### Figure 1 Phases in the experimental procedure

<table>
<thead>
<tr>
<th>Phase</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Object</td>
<td>General mood state</td>
<td>Affective reaction</td>
<td>Training condition</td>
<td>Overgeneralization of number of overgeneralizations</td>
<td>SAM arousal</td>
<td>SAM valence</td>
</tr>
<tr>
<td>Measurements</td>
<td>SAM arousal</td>
<td>SAM valence</td>
<td>Fear</td>
<td>Anger</td>
<td>Happiness</td>
<td>Sadness</td>
</tr>
<tr>
<td>Audiotape ratings</td>
<td>SAM arousal</td>
<td>SAM valence</td>
<td>Fear</td>
<td>Anger</td>
<td>Happiness</td>
<td>Sadness</td>
</tr>
</tbody>
</table>
| Note. SAM = Self-Assessment Manikin; DACL = Depression Adjective Check Lists.
mildly darkened room. Stimulus materials consisted of digitized photographs from the International Affective Picture System (CSEA-NIMH, 1999). We created 10 different categories of affective pictures: five pleasant (romantic couples, children, cute animals, exciting sports, impressively beautiful landscape) and five unpleasant (maltreatment, injury, scary animals, snakes, dingy sights). All categories contained seven pictures, which were matched for valence and arousal ratings based on the original ratings by Lang, Bradley and Cuthbert (2001). Pictures from each category were shown in blocks of ten, one of each category in every block. They were shown in random order, the only restriction being that pleasant and unpleasant pictures were shown alternately. All participants were shown the same pictures in identical order. Each slide was preceded for 3 seconds by the instruction “Look first and concentrate on your feelings. When you hear a tone, fill in the accompanying scales.” Then, after a click, the slide was shown for 10 seconds, followed by a black screen for 5 seconds. Then a tone sounded, the instruction “now fill in the scales for this slide” appeared on the black screen and participants had 15 seconds to rate their affective reaction to this particular slide on the same ratings scales that were used in the general mood assessment, except for the DACL. During these 15 seconds, the screen remained black. After three practice slides, participants rated their emotional reactions to one block of 10 slides.

After this pretest phase, the training phase (C) started. In this phase, which contained 20 stimulus slides, all subgroups received instructions to look at the picture and concentrate on their feelings. Each slide was shown for 10 seconds, followed by a black screen for 5 seconds. Then the exact instruction was given, again followed by a black screen and the participants were asked to think aloud for 20 seconds. The Overgeneralization subgroup received the instruction: “First look and concentrate on your feelings. After the tone, name as many associations you can think of, that raise the same feelings.” The Specification subgroup received the instruction: “First look and concentrate on your feelings. After the tone, describe the picture and the accompanying feelings as good as possible.” The Free Association subgroup received the instruction: “First look and concentrate on your feelings. After the tone, say everything that comes to mind.” The first three slides were shown with an extensive explanation and some examples of what was expected. During the training, a trainer shaped the desired cognitive behavior by making remarks like ‘that is what we mean’, ‘that’s not what we mean’, and ‘are there any other associations that raise the same feelings you can think of?’ (overgeneralization-condition) or ‘can you think of more things you saw in the picture?” (specification-condition) or ‘can you think of anything else?’ (free association-condition). The training phase was recorded on audiotape.

After the training phase, a posttest phase for affective reaction followed (phase D). Phase D was similar to pretest phase B but with a different set of pictures. The two
sets of pictures that were used in phase B and D were alternated between the participants in such a manner that half the participants in each group was shown one order, while the other half was shown the opposite order.

In the next phase (E), participants again were shown 10 slides and were asked to speak out loud everything they thought, so that the (lasting) effect of the training could be assessed. This control phase was also recorded on audiotape. Phase F was a posttest phase for the participants’ general-mood-state.

The tape-recordings were rated by two trained raters who were unaware of the group membership of the participants on the tape. Simple, categoric and interpretative overgeneralizations were counted at three moments in time: (I) at the end of the training-procedure C, directly before the posttest phase D (picture C17 to C20), (II) immediately after the posttest phase D at the start of control phase E (picture E1 to E4), and (III) at the end of phase E (picture E7 to E10).

RESULTS

Training-effects: number of overgeneralizations.
Nine tape recordings were excluded from the analysis due to bad sound quality. In order to estimate interrater reliability, Pearson correlations between the two raters’ ratings were computed for the three types of overgeneralization: simple overgeneralizations: \( r = .92, p < .001 \); categoric overgeneralizations: \( r = .94, p < .001 \); interpretative overgeneralizations: \( r = .82, p < .001 \). Because the interrater correlations were so high, the ratings of the two raters were averaged prior to subsequent analyses.

To investigate whether (a) the training procedures were successful and (b) whether the effect of the manipulation had lasted long enough to assume that changes in affective responses before and after the training could be ascribed to this training-effect, first a repeated measures MANOVA was performed on number of overgeneralizations for the three types of overgeneralization, with Slide valence (pleasant-unpleasant) and Time (end of phase C, start of phase E, end of phase E) as within subject variables and Group as between subjects variable. Multivariate tests revealed main effects for Group \( F(6,116)=4.692, \ p < .001, \ \eta^2_p = .195 \), Slide valence \( F(3,58)=18.685, \ p < .001, \ \eta^2_p = .491 \) and Time \( F(6,55)=4.928, \ p < .001, \ \eta^2_p = .350 \), an interaction effect for Time and Group \( F(12,110)=2.089, \ p = .023, \ \eta^2_p = .186 \) and no significant Slide valence by Group interaction. Univariate tests revealed main effects for Group on simple overgeneralizations \( F(2,60)=9.702, \ p < .001, \ \eta^2_p = .244 \), and categoric overgeneralizations \( F(2,60)=5.320, \ p = .007, \ \eta^2_p = .151 \), but not for interpretative overgeneralizations. Contrast analyses revealed that the overgeneralization (OG)
### Table 1  Means and Standard Deviations for Number of overgeneralizations, main effects and contrasts before and after test-phase D

<table>
<thead>
<tr>
<th>Condition</th>
<th>Simple Overgeneralizations</th>
<th>C</th>
<th>E1</th>
<th>E2</th>
<th>Main effects</th>
<th>Contrasts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pleasant</td>
<td>SD</td>
<td>SD</td>
<td>SD</td>
<td>F df p η²</td>
<td>Sig. Sig.</td>
</tr>
<tr>
<td>I: OG (n=21)</td>
<td>1.55 0.96 1.01 2.02 1.26 1.55 1.00 1.43 1.10 1.52 1.12</td>
<td>9.702 2, 60 &lt;.001</td>
<td>.244</td>
<td>I-II &lt;.001 I-III .002 II-III n.s.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>II: SP (n=21)</td>
<td>0.10 0.30 0.60 0.83 1.19 1.28 1.07 1.05 0.95 0.96 1.38 1.16</td>
<td>5.320 2, 60 .007</td>
<td>.151</td>
<td>I-II .002 I-III n.s. II-III n.s.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>III: FA (n=21)</td>
<td>0.64 0.85 1.21 0.60 1.38 0.97 0.83 0.64 0.79 0.96 1.38 1.07</td>
<td>0.258 2, 60 .773</td>
<td>.009</td>
<td>- - - - - -</td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Condition</th>
<th>Categoric Overgeneralizations</th>
<th>C</th>
<th>E1</th>
<th>E2</th>
<th>Main effects</th>
<th>Contrasts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pleasant</td>
<td>SD</td>
<td>SD</td>
<td>SD</td>
<td>F df p η²</td>
<td>Sig. Sig.</td>
</tr>
<tr>
<td>I: OG (n=21)</td>
<td>1.11 1.08 1.00 0.95 1.07 0.90 1.02 1.08 1.86 1.59 .74 1.01</td>
<td>5.320 2, 60 .007</td>
<td>.151</td>
<td>I-II .002 I-III n.s. II-III n.s.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>II: SP (n=21)</td>
<td>.10 .30 .07 .24 .95 .82 .45 .95 .98 1.21 .19 512</td>
<td>0.258 2, 60 .773</td>
<td>.009</td>
<td>- - - - - -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>III: FA (n=21)</td>
<td>.95 1.11 .26 .70 1.29 1.56 .45 .91 1.40 1.15 .55 74</td>
<td>0.258 2, 60 .773</td>
<td>.009</td>
<td>- - - - - -</td>
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</table>

<table>
<thead>
<tr>
<th>Condition</th>
<th>Interpretative Overgeneralizations</th>
<th>C</th>
<th>E1</th>
<th>E2</th>
<th>Main effects</th>
<th>Contrasts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pleasant</td>
<td>SD</td>
<td>SD</td>
<td>SD</td>
<td>F df p η²</td>
<td>Sig. Sig.</td>
</tr>
<tr>
<td>I: OG (n=21)</td>
<td>.10 .30 .10 .30 .00 .00 .05 .22 .02 1.09 .02 .11</td>
<td>0.258 2, 60 .773</td>
<td>.009</td>
<td>- - - - - -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>II: SP (n=21)</td>
<td>.05 .21 .00 .00 .05 .22 .10 .30 .00 .00 .00 .00</td>
<td>0.258 2, 60 .773</td>
<td>.009</td>
<td>- - - - - -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>III: FA (n=21)</td>
<td>.00 .00 .05 .22 .00 .00 .21 .51 .05 .22 .05 .22</td>
<td>0.258 2, 60 .773</td>
<td>.009</td>
<td>- - - - - -</td>
<td></td>
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</tr>
</tbody>
</table>

*Note.* OG = Overgeneralization training; SP = Specification training; FA = Free Association; C: number of overgeneralizations at the end of training-phase C; E1: idem at the start of phase E; E2: idem at the end of phase E.
group showed more simple overgeneralizations after training than the specification (SP) group and the free association (FA) group (resp. $p<.001$ and $p=.002$), but that the latter two groups did not differ significantly from each other. Also, the OG group showed more categoric overgeneralizations than the SP group ($p=.002$), but did not differ significantly from the FA group (see table 1).

To ascertain that the OG group actually differed in the amount in which they generated simple c.q. categoric overgeneralizations at the moment of testing affective reaction (phase D), and because Time and Group showed an interaction effect, we conducted ANOVAs in order to assess simple effects for each phase separately. We found main effects for simple as well as categoric overgeneralizations at the end of training phase C (resp. $F(2,60)=25.282, p<.001, \eta^2_p=.457$ and $F(2,60)=13.160, p<.001, \eta^2_p=.305$). Contrast-analyses revealed significantly higher simple as well as categoric overgeneralization in the OG group than in the other two groups (simple overgeneralizations: SP vs. OG: $p<.001$; FA vs. OG: $p<.001$; categoric overgeneralizations: SP vs. OG: $p<.001$; FA vs. OG: $p=.021$). At the start of phase E, participants in the OG group produced more simple overgeneralizations than the other two groups (main effect for Group: $F(2,60)=4.035, p=.023, \eta^2_p=.119$), contrast 1: SP vs. OG: $p=.019$, contrast 2: FA vs. OG: $p=.015$), but they did not differ in the amount of categoric overgeneralizations any more. At the end of phase E, the difference between the groups was not significant any more. From these findings we can conclude that during the test-phase D, the OG group showed more simple overgeneralization than the other two groups. We cannot be certain whether this also holds for categoric overgeneralization. Groups certainly did not differ on interpretative overgeneralization as this type of overgeneralization was hardly observed in any of the groups.

Emotional reactivity, affective reaction: arousal and valence pre- and post-training. To investigate whether the overgeneralization-training led to more intense affective reactions, a repeated measures ANOVA was conducted for the SAM ratings of emotional arousal with Slide valence (pleasant-unpleasant) and Time (before (phase B) and after the training (phase D)) as within subject variables and Group as between subjects variable. Means and standard deviations are presented in table 2. Analyses revealed a significant main effect for Slide valence ($F(1,66)=15.808, p<.001, \eta^2_p=.193$) but no significant interaction effect for Slide valence and Group. Participants reacted with more arousal to unpleasant than to pleasant slides and this holds for all groups. As expected a significant main effect was found for Time ($F(1,66)=10.904, p=.002, \eta^2_p=.142$) as well as for the interaction of Time and Group ($F(2,66)=3.459, p=.037, \eta^2_p=.095$), but no significant main effect for Group. There was also no significant Group by Time by Slide valence interaction. Contrast analyses revealed that the OG group reported a larger change in arousal from phase B to
Table 2  Emotional reactivity, affective reaction: data (SAM) pre- and post-training (B-D) for arousal and valence

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Training-condition</th>
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<tr>
<td></td>
<td></td>
<td>Pre-training (phase B)</td>
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<tr>
<td></td>
<td></td>
<td>All slides</td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
<td>M</td>
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<td>Arousal</td>
<td>Overgeneralization</td>
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<td>1.13</td>
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<td>1.38</td>
<td>4.80</td>
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<tr>
<td></td>
<td>Specification</td>
<td>5.15</td>
<td>1.14</td>
<td>4.90</td>
<td>1.35</td>
<td>5.40</td>
<td>1.20</td>
<td>5.23</td>
<td>1.16</td>
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<tr>
<td></td>
<td>Free association</td>
<td>4.72</td>
<td>1.27</td>
<td>4.51</td>
<td>1.50</td>
<td>4.93</td>
<td>1.34</td>
<td>4.89</td>
<td>1.36</td>
<td>4.52</td>
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<tr>
<td>Valence</td>
<td>Overgeneralization</td>
<td>5.52</td>
<td>.84</td>
<td>6.78</td>
<td>1.01</td>
<td>4.26</td>
<td>1.28</td>
<td>5.36</td>
<td>.76</td>
<td>6.85</td>
<td>.76</td>
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<tr>
<td></td>
<td>Specification</td>
<td>5.30</td>
<td>.59</td>
<td>6.85</td>
<td>.81</td>
<td>3.75</td>
<td>1.04</td>
<td>5.07</td>
<td>.61</td>
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<tr>
<td></td>
<td>Free association</td>
<td>5.34</td>
<td>.82</td>
<td>6.77</td>
<td>.78</td>
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<td>1.34</td>
<td>5.37</td>
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<td>.85</td>
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</table>

Note. SAM = Self-Assessment Manikin.
phase D than the SP group \((p=.018)\) and the FA group \((p=.043)\). Subsequently, paired-samples t-tests were performed for each group separately with mean levels of arousal for all slides, and for pleasant and unpleasant slides separately. Since we used a repeated measures design, effect sizes (Cohen’s d) were calculated conservatively with the original pooled standard deviations (see Dunlop, Cortina, Vaslow, & Burke, 1996). As can be seen in table 2, the subjects trained to overgeneralize, indicate significantly higher levels of arousal in reaction to the stimulus slides after the training than they did before the training, the effect size is medium to large \((t(23)= -3.45, p=.002; d=.56)\) and this holds for positive as well as negative slides (resp. \(t(23)= -2.69, p=.013; d=.50\) and \(t(23)= -3.43, p=.002; d=.50)\). Both the subjects trained to specify and to free associate show no differences in their levels of arousal in reaction to the slides before and after the training.

Next, a repeated measures ANOVA was conducted for the SAM ratings of emotional valence with Slide valence (pleasant-unpleasant) and Time (before (phase B) and after the training (phase D)) as within subject variables and Group as between subjects variable. Means and standard deviations are presented in table 2. Results show a main effect for Slide valence \((F(1,67)=272.621, p<.001, \eta_p^2=.803)\), indicating that participants reacted more positively to pleasant pictures and more negatively to unpleasant pictures, and a significant interaction effect of Slide valence and Time \((F(1,67)=8.094, p=.006, \eta_p^2=.108)\), reflecting a slight raise of positive affect with pleasant pictures and a slight raise of negative affect with unpleasant pictures for all groups during the experiment. There were no significant effects for Group nor interactions with Group.

Emotional reactivity, affective reaction: specific emotions pre- and post-training.

To investigate whether the specific emotional reactions of the participants had changed after the training, a repeated measures MANOVA was conducted with all five different specific emotions separately and with Slide valence (pleasant-unpleasant) and Time (before (phase B) and after the training (phase D)) as within subject variables and Group as between subjects variable. Analyses revealed no significant main Group effects nor significant interactions with Group.

Affective reactivity, general mood states: pre- and posttest.

To investigate the effect of the training and the test-procedure on the general-mood-state of the participants, a repeated measures ANOVA was conducted for depressed mood (DACL), the five specific emotions, general arousal (SAM), and general emotional valence (SAM) with Time (before (phase A) and after the test (phase F)) as within subject variable and Group as between subjects variable. Means and standard deviations for depressed mood (DACL), general arousal (SAM), and general emotional valence (SAM) are presented in table 3. Multivariate tests revealed
Table 3  Emotional reactivity, mood data: data at start and end of the experiment (A-F) of general arousal (SAM), general valence (SAM) and depressive mood (DACL).

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Training-condition</th>
<th>General mood state Pretest (A)</th>
<th>General mood state Posttest (F)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>$M$</td>
<td>$SD$</td>
</tr>
<tr>
<td>General arousal</td>
<td>Overgeneralization</td>
<td>4.71</td>
<td>1.65</td>
</tr>
<tr>
<td></td>
<td>Specification</td>
<td>4.77</td>
<td>2.05</td>
</tr>
<tr>
<td></td>
<td>Free association</td>
<td>4.30</td>
<td>1.61</td>
</tr>
<tr>
<td>General valence</td>
<td>Overgeneralization</td>
<td>6.54</td>
<td>1.35</td>
</tr>
<tr>
<td></td>
<td>Specification</td>
<td>6.14</td>
<td>1.55</td>
</tr>
<tr>
<td></td>
<td>Free association</td>
<td>6.56</td>
<td>1.24</td>
</tr>
<tr>
<td>Depressive mood (DACL)</td>
<td>Overgeneralization</td>
<td>6.75</td>
<td>4.01</td>
</tr>
<tr>
<td></td>
<td>Specification</td>
<td>7.50</td>
<td>3.57</td>
</tr>
<tr>
<td></td>
<td>Free association</td>
<td>7.91</td>
<td>4.14</td>
</tr>
</tbody>
</table>

Note. SAM = Self-Assessment Manikin; DACL = Depression Adjective Check Lists.
a significant main effect for Time ($F(8,62)=3.954, p=.001, \eta^2_p=.338$) and a significant interaction effect for Time and Group ($F(16,124)=1.707, p=.050, \eta^2_p=.181$) indicating that the mood of the participants changed after the training and that it changed differently in the different groups. On the separate univariate tests, however we did not find differences between the groups on depressed mood (DACL) or general arousal. The specific emotions afraid and sad gave a significant effect, but only for Time (resp. $F(1,69)=5.119, p=.027, \eta^2_p=.069$ and $F(1,69)=3.856, p=.054, \eta^2_p=.053$). SAM ratings of general emotional valence gave a significant univariate interaction effect for Time and Group ($F(2,69)=3.715, p=.029, \eta^2_p=.097$). Contrast analyses on general emotional valence revealed that the OG group differed from the SP group in the way valence changed from phase A to phase F ($p=.013$), but not from the FA group ($p=n.s.$). Paired-samples t-tests that were performed for each group separately to assess the nature of this change in valence, revealed no significant changes in valence. Inspection of the separate means on all measures however, reveals a trend that mood had become more negative in the subjects trained to overgeneralize and more positive in the subjects trained to specify.

DISCUSSION

The primary aim of the present study was to develop an experimental paradigm to investigate an overgeneral processing mode that is situation-focused and associative, in contrast to self-focused and focused on interpretative, analytical, evaluative processing. To induce overgeneralization, we trained participants to produce as many associations as possible that evoke the same feelings as a set of consecutively presented pictures, pleasant as well as unpleasant. The training procedure appeared to be effective in creating an overgeneral processing mode: results at the end of the training-phase indicate that the overgeneralization training-procedure successfully influenced participants to produce more situation-focused associative overgeneralizations than the participants in both control-groups. This effect shows up for simple as well as categoric, and for positive as well as for negative overgeneralizations. Also, the participants in this experiment hardly produced interpretative overgeneralizations (overgeneralizations related to causes, meanings and consequences of an event or action) and no group differences could be established for this category.

The training-effect remained for some time but decreased rapidly. The increase of simple overgeneralizations in the experimental group lasted long enough to draw a safe conclusion concerning its effect on emotional reactivity. We cannot be certain, though, about the effect of the increase of categoric overgeneralizations on emotional reactivity during the entire testing phase, as this increase had disappeared at the start of phase E. For now, we conclude that the cognitive bias
modification paradigm presented here, offers an interesting opportunity for the investigation of the overgeneralization concept and its influence on emotional reactivity, but that future use of the paradigm may benefit from improvement of the training procedures to have longer impact, for example with longer and repeated training sessions.

Given the evidence that a group difference in the number of overgeneralizations was induced, it was possible to directly examine the hypothesis that overgeneralization influences emotional reactivity. Analyses of the arousal scores confirmed, that the participants in the overgeneralization training condition displayed a significant and substantial elevation of arousal in response to the stimulus pictures. The participants trained to focus on the stimulus picture or to focus on whatever comes to mind, reported no significant change in arousal. This finding is in line with the findings on overgeneralization and affect intensity of Larsen and colleagues (Larsen & Diener, 1987; Larsen, Diener & Cropanzano, 1987; Larsen et al., 1996), and Dritschel and Teasdale (1996). It is also in line with the findings of Watkins, Moberly, and Moulds (2008) on the causal influence of an overgeneral processing mode on emotional reactivity.

In contrast to the findings of Watkins, Moberly, and Moulds (2008), and contrary to our expectations, we did not find a significant effect on our measure of depressive mood. Yet, we did find that the mood of the participants had significantly changed after the training and that it changed differently in the different groups; also, we found non-significant trends that the mood of the participants became more negative in the overgeneralization-condition and more positive in the specification-condition. This is remarkable since the participants in the overgeneralization condition showed more intense affective reactions following both negative and positive stimuli. These trends of a negative effect on mood in the overgeneralization group and a positive effect on mood in the specification group resemble the findings of Watkins, Moberly, and Moulds (2008), Watkins and Moberly (2009) and Watkins, Baeyens, and Read (2009) that negative mood increases in individuals that are trained in overgeneral thinking and decreases in individuals that are trained to focus on concrete, specific details of a stimulus. The fact that we did not find a greater effect on depressive mood can possibly be explained by the switching between both positive and negative stimuli, the short time effect of the training procedure and/or the small sample size. Another possibility is that the induction of overgeneralization in individuals who are not dysphoric has no differential effect on mood. Lyubomirsky and Nolen-Hoeksema (1995), for example, found that induction of rumination in dysphoric individuals intensified dysphoric mood but had no effect in nondysphoric individuals. An interesting finding in this matter, is that we found a main effect of slide valence in the test on training-effect. This finding suggests that overgeneralization was more easily induced with unpleasant cues than with
pleasant cues. This might explain the negative trend on mood we found in the overgeneralization-group.

The answer to the speculative question whether certain specific emotion types would be influenced more than other emotion types by the different training-conditions is negative since no significant differences were found between the groups. This non-result suggests that overgeneralization – or specification – as induced by the training methods in the current study, appears to influence the intensity and possibly the valence of emotional reactions but does not affect any emotion type specifically.

In conclusion, our operationalization of overgeneralization as situation-focused and associative, in contrast to self-focused and focused on analytical, interpretative, evaluative processing, appears to have effectively induced overgeneralization in reaction to positive as well as negative emotional cues. Our study extends the work of Larsen and colleagues (1987, 1996), Dritschel and Teasdale (1991) and Watkins and colleagues (2001, 2008, 2009) as it offers a new paradigm for studying overgeneralization. Furthermore, results show that this overgeneralization induction influences emotional reactivity, as it led to more intense reactions to affective stimuli in terms of the arousal that is experienced. Besides, it had a possible negative effect on mood. These findings are relevant to cognitive theories of depression and other psychological disorders, and offer further support for a possible intrinsical relation between overgeneralization and affect intensity. The paradigm can be used to further investigate positive and negative associative, situation-focused overgeneralization and its influence on emotional reactivity which may contribute to the development of more effective and/or efficient treatment methods.
REFERENCES


Chapter 4

Overgeneralization training intensifies emotional reactivity: a cognitive bias modification approach
CHAPTER 5
Summary and discussion
In the past three decades, cognitive models have explicitly emphasized the role of cognitive biases or cognitive processing modes in the onset and maintenance of depression and other psychological disorders (e.g., Mathews & MacLeod, 2005). Overgeneralization is a prominent concept in these models. Experimental studies have found evidence that overgeneral thinking is a cognitive bias that causally contributes to depressive symptoms (Watkins & Moberly, 2009; Watkins, Baeyens, & Read, 2009). The three approaches to overgeneralization described in the general introduction provide overlapping but also contradictory hypotheses with respect to the occurrence and workings of overgeneralization. The aim of the present dissertation is to evaluate and refine some of these hypotheses. In this chapter we will first provide a summary and a discussion of the major findings of the studies reported in the present thesis. Finally we will formulate our major conclusions in the context of the most up-to-date therapeutic implementation of the findings concerning overgeneralization.
SUMMARY AND DISCUSSION OF THE FINDINGS

Testing the conceptualization, delimitation and occurrence of the overgeneralization concept

The results of the study reported in chapter 2 clearly show that information processing in individuals suffering from clinical depression is characterized by an increased tendency toward negative overgeneralization. Results also show that it is important to distinguish between two ways of defining and measuring overgeneralization as Carver and Ganelen (1983), MacLeod and Williams (1990) and Epstein (1992) already suggested. Overgeneralization in individuals with MDD is not restricted to misattributions directed at the self, but extends to misattributions directed at situations in the outside world. Although the patterns of group differences between patients and non-patients are largely the same for the two types of overgeneralization, the heterogeneity of the overgeneralization-concept is displayed in the finding that overgeneralization to the self and overgeneralization across situations show slightly different patterns in different patient groups. This finding justifies a broader focus on overgeneralization than only on overgeneralization to the self.

Results further show that variations in the tendency to overgeneralize between patients and non-patients are not restricted to negative content, but also extend to positive content. The absence, though, rather than the presence of positive overgeneralization, appears to be related to emotional disorders. The data confirm, now in a clinical population, the findings by Klar et al. (1997), that patients suffering from MDD not only overgeneralize more following negative events than non-patients, but they overgeneralize less following positive events as well. These findings are in agreement with the cognitive distortion view of depression (Beck, 1976) in that patients with MDD differ from non-patients not only in the negative content of their thoughts, but also in their inferential process: patients with MDD show a processing-bias in that they have different overgeneralization tendencies than non-patients. Furthermore, these findings are in line with the hypothesis of the tripartite model of mood disorders by Clark and Watson (1991) that depression can be accounted for not only by the presence of negative overgeneralization, but also – or even more – by the absence of positive overgeneralization. The answer to the question whether overgeneralization is unique to depression is clearly negative. The tendency to overgeneralize is also present in non-patients. They tend to overgeneralize to a degree which is comparable to individuals suffering from depression. However, they overgeneralize more following positive events, while depressed patients overgeneralize more following negative events. Results also show that non-patients show more positive than negative overgeneralization, indicative of a positivity bias. This finding is in agreement with findings by Epstein (1992) and Klar et al. (1997). Epstein (1992) suggested that this positivity bias in
non-patients serves as a tendency toward unrealistic but healthy self-enhancement. In our study, this effect was found in attributions to the self as well as across situations, suggesting that this positivity bias in healthy individuals not only enhances their self-confidence, but also protects their view of the world against the effect of negative overgeneralization.

The answer to the question whether high levels of negative overgeneralization are unique for depression remains inconclusive. Patients with MDD, BPD and BPD+MDD all show more negative than positive overgeneralization to the self. So, all patients show a negativity bias on overgeneralization to the self, and not a positivity bias as non-patients do. These findings suggest that, as compared to never-depressed individuals, patients with BPD and patients with MDD both lack a buffer against negative cognitions directed at the self (e.g. Lightsey, 1994). However, we were unable to rule out the possibility that these tendencies could be part of a more general diathesis for depression also shared by the patients suffering from BPD without a comorbid MDD at the time of testing. On the other hand, these patient groups do show different biases on overgeneralization across situations. While the patients with MDD resemble the non-patients’ positivity bias in showing more positive than negative overgeneralization across situations, patients with BPD – with or without a comorbid MDD – show neither a positivity, nor a negativity bias. The difference between these patient groups appears to be that while patients with MDD seem to be able to hold on to expectations of positive situations to come again, patients with BPD appear to lack this specific positivity bias. Therefore, for now, a conclusion that a bias characterized by an increased tendency toward negative overgeneralizations to the self and a decreased tendency toward positive overgeneralizations to the self is typical for individuals who are depression prone, seems to be in place. For overgeneralization across situations, the conclusion for now is somewhat different as for this type of overgeneralization, patients with MDD do not show a negativity bias but resemble the non-patients’ positivity bias. However, patients with BPD – with or without a comorbid MDD – show neither a positivity nor a negativity bias, which appears to contribute to their cognitive vulnerability to psychological distress.

Investigation of how individual differences in the tendency to overgeneralize lead to differences in the level of psychological distress

Evidence from different lines of research suggest that both the level of a person’s self-esteem and one’s affect intensity play a crucial role in the relation between overgeneralization and psychological distress. Chapter 3 focuses on the nature of the relation between overgeneralization and psychological distress, taking into account the relations with low self-esteem and high affect intensity. Previous studies have provided contradictory evidence on the nature of this relation. Several
studies suggest that overgeneralization is the mediator, where others suggest that overgeneralization is the predictor. The results presented in chapter 3 are in support of the model that indicates that overgeneralization is not the mediator but the predictor and that the effect of overgeneralization on psychological distress is not only mediated by low self-esteem but also by negative affect intensity. The findings are consistent with Epstein’s (1992) theoretical considerations about the conceptualization of overgeneralization and self-esteem. According to Epstein, it may not be difficult to explain why children under certain circumstances develop negative self-views. What is more puzzling, is why they maintain their negative self-views in adulthood, under conditions in which their self-view is clearly incorrect. Epstein suggests that people do so, because they overgeneralize in a negatively biased way. In this conceptualization, overgeneralization does not result from, but leads to low levels of self-esteem, resulting in greater psychological distress. The findings reported in chapter 3 demonstrate exactly this. In addition, our results extend Epstein’s theoretical considerations on overgeneralization to both self-esteem and affect intensity. That is, they suggest that the trait of high negative affect intensity does not lead to, but results from negatively biased overgeneralization.

How to manipulate overgeneralization? A pilot proof-of-principle study

The primary aim of the study described in chapter 4, was to develop an experimental paradigm to investigate an overgeneral processing mode that is situation-focused and associative, in contrast to self-focused and focused on interpretative, analytical, evaluative processing. To induce overgeneralization, we trained participants to produce as many associations as possible that evoke the same feelings as a set of consecutively presented pictures, pleasant as well as unpleasant. The training procedure appeared to be effective in creating an overgeneral processing mode: results at the end of the training-phase indicate that the overgeneralization training-procedure successfully influenced participants to produce more situation-focused associative overgeneralizations than the participants in both control-groups. This effect shows up for simple as well as categoric, and for positive as well as for negative overgeneralizations. Also, the participants in this experiment hardly produced interpretative overgeneralizations (overgeneralizations related to causes, meanings and consequences of an event or action) and no group differences could be established for this category. The training-effect remained for some time but decreased rapidly.

Given the evidence that a group difference in the number of overgeneralizations was induced, it was possible to directly examine the hypothesis that overgeneralization influences emotional reactivity. Analyses of the arousal scores confirmed, that the participants in the overgeneralization training condition displayed a significant and substantial elevation of arousal in response to the stimulus pictures.
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The operationalization of overgeneralization as situation-focused and associative, in contrast to self-focused and focused on analytical, interpretative, evaluative processing, appears to have effectively induced overgeneralization in reaction to positive as well as negative emotional cues. The training-effect remained for some time but decreased rapidly. For now, we conclude that the cognitive bias modification paradigm presented in chapter 4, offers an interesting opportunity for the investigation of the overgeneralization concept and its influence on emotional reactivity. Future use of the paradigm may benefit from improvement of the training procedures to have longer impact, for example with longer and repeated training sessions. The study extends the work of Larsen and colleagues (1987, 1996), Dritschel and Teasdale (1991) and Watkins and colleagues (2001, 2008, 2009) as it offers a new paradigm for studying overgeneralization. Furthermore, results show that this overgeneralization induction influences emotional reactivity, as it led to more intense reactions to affective stimuli in terms of the arousal that is experienced. Besides, it had a possible negative effect on mood. These findings are relevant to cognitive theories of depression and other psychological disorders, and offer further support for a possible intrinsical relation between overgeneralization and affect intensity. The paradigm can be used to further investigate positive and negative associative, situation-focused overgeneralization and its influence on emotional reactivity which may contribute to the development of more effective and/or efficient treatment methods.
THEORETICAL AND PRACTICAL IMPLICATIONS

The findings described in chapters 2 and 4 suggest that the focus of most authors in the literature on self-focused negative overgeneralization is just, as this type of overgeneralization seems to have the most prominent effect on depressive symptoms. The findings from these two chapters also suggest that an exclusive focus on self-focused negative overgeneralization leaves out relevant aspects of the overgeneralization concept. Situation-focused overgeneralization seems to add a dimension to the overgeneralization concept that is especially relevant in the cognitive processing of individuals suffering from borderline personality disorder. In addition, the finding that overgeneralization across situations basically goes together with overgeneralization to the self, but to a different degree in different populations supports the conviction that we are dealing with a thinking style or processing mode here, not a content-driven belief.

The finding that clinical patients show different proportions of negative as well as positive overgeneralization than non-patients and that different patient populations show different intensities of the different overgeneralization types, suggests that we are not dealing with one cognitive bias but with a combination of three: (1) a bias towards overgeneral vs. specific processing; (2) a positivity vs. a negativity bias, and (3) a bias towards overgeneral processing of information concerning the self vs. information concerning situations in the outside world. Research findings from earlier studies already suggested that the combination of high overgeneral, negative self-focused processing is what underlies depressive vulnerability. The studies described in this dissertation extend these findings with evidence that the combination of high overgeneral, positive self-focused processing may act as a buffer against depressive symptoms. The tendency towards negative, overgeneral processing in individuals suffering from depression also extends to situation-focused processing but this tendency does not seem to be problematic since it is compensated by a stronger tendency towards positive situation-focused overgeneralization. Individuals suffering from borderline personality disorder do not show such a stronger tendency towards positive situation-focused overgeneralization which might explain why borderline patients typically also show negative schemata of the world surrounding them (e.g. Young, 1999; Lawrence, Allen & Chanen, 2011). From a theoretical perspective, an exclusive focus on negative, self-focused overgeneralization turns away attention from the fact that we are dealing with a thinking style or processing mode which is in essence not related to positive or negative content per se, or focused on self or on situations per se.

Although models of cognitive biases associated with anxiety, depression or other psychological disorders differ in numerous ways, they share the assumption that cognitive processes play a causal role in emotional vulnerability. This assumption is
not only crucial to these theories, but it also carries implications for the therapeutic
d value of the interventions based on these theories. The finding presented in chapter
3 that overgeneralization predicts the effect of low self-esteem and negative affect
intensity on psychological distress may have some theoretical implications.
Although causal relations may not be concluded from the data, they do suggest that
overgeneralization influences level of self-esteem and the intensity of affect and
not the other way around. This suggestion is in agreement with the findings
reported in chapter 4 as they show that an associative, situation-focused over-
general processing mode influences affect intensity, and possibly has an effect on
the valence of the participants’ mood. These findings extend the findings by
Watkins and his coworkers who found that an interpretative, self-focused over-
genral processing mode influences emotional reactivity.

The findings in chapter 3 suggest that negative overgeneralization has an effect
on psychological distress but only via the mediating variables of low self-esteem
and high affect intensity. These findings also suggest that manipulation of an
overgeneral processing mode will affect both the level of self-esteem and the
intensity of affect at the same time. This finding advocates the manipulation of
overgeneralization in treatments of all psychological disorders in which self-esteem
and intensity of affect play a role.

Watkins and his collaborators have recently developed an innovative cognitive
bias modification training as a treatment intervention for depression: concreteness
training (Watkins, Baeyens, & Read, 2009). Concreteness training is designed to
train dysphoric individuals to become more concrete and specific in their thinking
i.e. focus on specific details of an event, on what makes each event unique and on
the process how it happened, as a way to decrease overgeneral thinking. This
training proved to be successful in that it led to greater increases in concrete
thinking than controls and to greater decreases in depressive symptoms. The
findings presented in this dissertation suggest that concreteness training would
benefit from a supplement in which individuals are trained to be more concrete
with negative events not only when focused on the self but also in not self-focused
negative events. This advice is especially apt when this treatment method would be
applied for the treatment of individuals with symptoms of borderline personality
disorder. This treatment supplement comes close to the training of borderline
personality patients to take a mindful, non-judgmental stance to all experiences,
self-relevant or not, as proposed in Linehan’s dialectical behavior therapy (1993),
but offers a different, more cognition-focused, training method. Furthermore, the
findings presented in this dissertation suggest a supplement to concreteness-train-
ing in which patients are explicitly trained to be more overgeneral in self-focused
positive events. For the treatment of individuals with symptoms of borderline
personality disorder, a supplement should also be made for the training of positive
situation-focused overgeneral processing. Most traditional treatment methods have focused exclusively on the decrease of negativity and left the increase of positivity to cognitive manipulation methods which were supposed to be less evidence based. This dissertation supports cognitive manipulation of a positive overgeneral processing mode. In conclusion, the findings presented in this dissertation suggest that there may be value in further developing and evaluating bias modification training methods to induce different combinations of overgeneral vs. specific, positivity biased vs. negativity biased, self-focused vs. situation focused, and associative vs. interpretative processing modes. These bias modification methods can be applied as potential interventions to support treatments for depression, and borderline personality disorder.
REFERENCES


NEDERLANDSE SAMENVATTING

In de laatste drie decennia is in cognitieve modellen over het ontstaan en het behoud van depressieve en andere psychologische stoornissen, door verschillende auteurs gewezen op de cruciale rol van cognitieve biases of cognitieve informatie-verwerkingsstijlen (bijv., Mathews & MacLeod, 2005). Met name de cognitieve bias overgeneralisatie komt in deze modellen naar voren als een centraal concept. Diverse experimentele studies hebben aangetoond dat een overgegeneraliserende manier van denken leidt tot depressieve symptomen (Watkins & Moberly, 2009; Watkins, Baeyens, & Read, 2009). In de inleiding van dit proefschrift zijn drie overlappende maar ook elkaar tegensprekende hypotheses beschreven met betrekking tot het voorkomen en de werking van overgeneralisatie. De eerste benadering focust in het bijzonder op het verband tussen overgeneralisatie en een laag gevoel van eigenwaarde. De tweede benadering gaat in op het verband tussen overgeneralisatie en een hoog niveau van affect intensiteit. De derde benadering gaat in op hoe overgeneralisatie van invloed is op het informatieverwerkingsproces. Het doel van dit proefschrift is om een aantal hypotheses afgeleid van deze drie benaderingen te evalueren en verder aan te scherpen. In dit hoofdstuk geef ik eerst een samenvatting en een bespreking van de belangrijkste bevindingen uit de studies die in dit proefschrift worden beschreven. Vervolgens worden de belangrijkste conclusies voor het theoretisch concept en consequenties voor de klinische praktijk beschreven.

Onderzoek naar de conceptualisatie, de afgrenzing en het voorkomen van overgeneralisatie

Het onderzoek naar overgeneralisatie tot nu toe wordt gekenmerkt door een vrijwel exclusief focus op negatieve overgeneralisatie gericht op het zelf. De resultaten van de studie, beschreven in hoofdstuk 2, tonen inderdaad aan dat de informatie-verwerking van mensen die lijden aan een klinische depressie wordt gekenmerkt door een toegenomen neiging tot negatief overgeneraliseren. De bevindingen laten echter bovendien zien dat het belangrijk is om onderscheid te maken tussen twee manieren van definiëren en meten van overgeneralisatie. Overgeneralisatie blijkt bij mensen die lijden aan een depressieve stoornis zich niet te beperken tot verkeerde attributies over zichzelf maar zich tevens te manifesteren in misattributies over situaties in de buitenwereld. De patronen van groepsverschillen tussen patiënten en niet-patiënten blijken min of meer hetzelfde voor de twee typen overgeneralisatie (overgeneralisatie naar het zelf en overgeneralisatie over situaties). Tussen verschillende patiëntengroepen vinden we echter verschillende patronen wat suggereert dat het overgeneralisatieconcept heterogeen van aard is. Deze bevindingen dringen aan op het hanteren van een bredere focus op over-
generalisatie dan het nauwe focus op overgeneralisatie naar het zelf dat in de meeste onderzoeken gehanteerd wordt.


De vraag of een sterke neiging tot negatieve overgeneralisatie uniek is voor depressie blijft onbeantwoord. Patiënten met een depressieve stoornis, een
borderline persoonlijkheidsstoornis en een borderline persoonlijkheidsstoornis met een comorbide depressieve stoornis vertonen allen meer negatieve dan positieve overgeneralisatie naar het zelf. Al deze patiënten vertonen dus een negatieve bias wat betreft overgeneralisatie naar het zelf, niet een positieve bias zoals niet-patiënten. De bevindingen in deze studie veronderstellen dat zowel borderline patiënten als depressieve patiënten, in tegenstelling tot mensen die nooit depressief geweest zijn, een buffer missen tegen negatieve cognities gericht op het zelf (bijv. Lightsey, 1994). We hebben hierbij echter niet de mogelijkheid kunnen uitsluiten dat deze denkfouten onderdeel zouden kunnen zijn van een meer algemene kwetsbaarheid voor depressie die ook voor zou komen bij borderline patiënten die niet depressief waren op het moment van testen. Deze patiëntengroepen waren wel van elkaar te onderscheiden in dat zij verschillende biases vertonen met betrekking tot overgeneralisatie over situaties. Waar patiënten met een depressie, net zoals niet-patiënten, meer positief dan negatief overgeneraliseren over situaties en dus een positieve bias vertonen, vertonen patiënten met een borderline persoonlijkheidsstoornis hier noch een positieve, noch een negatieve bias. Het verschil tussen deze patiëntengroepen lijkt hier te zijn dat patiënten met een depressieve stoornis in staat lijken te zijn om een positieve verwachting te handhaven ten aanzien van de terugkeer van positieve situaties, maar dat borderline patiënten deze positieve bias missen. Voor dit moment lijkt de conclusie dan ook op zijn plaats dat een verhoogde neiging tot negatief overgeneraliseren naar het zelf en een verlaagde neiging tot positief overgeneraliseren naar het zelf kenmerkend is voor mensen met een kwetsbaarheid voor depressie. Echter voor overgeneralisatie over situaties luidt de voorlopige conclusie anders. Voor dit type overgeneralisatie lijkt te gelden dat depressieve patiënten, net zoals niet-patiënten, een positieve bias vertonen. Patiënten met een borderline persoonlijkheidsstoornis met of zonder een comorbide depressie vertonen echter geen positieve noch een negatieve bias hetgeen lijkt bij te dragen aan hun cognitieve kwetsbaarheid voor psychologische stress.

Verkenning van het effect van individuele verschillen in de neiging tot overgeneralisatie op verschillen in het niveau van psychologische stress

Onderzoeksresultaten uit verschillende onderzoekslijnen suggereren dat zowel de hoogte van het gevoel van eigenwaarde als de intensiteit van het gevoelde affect een cruciale rol spelen in de relatie tussen overgeneralisatie en de mate van iemands psychologisch lijden. Hoofdstuk 3 richt zich op de aard van de relatie tussen overgeneralisatie en psychologisch lijden en de rol van een laag niveau van eigenwaarde en een hoge affect intensiteit in deze relatie. Eerdere studies hebben tegenstrijdige gegevens opgeleverd ten aanzien van de aard van deze relatie. Sommige studies suggereren dat overgeneralisatie in deze relatie de rol heeft van
mediator waar andere studies suggereren dat overgeneralisatie juist de voorspeller is van de andere variabelen. In deze studies werden de vier variabelen echter nooit in één model tegelijkertijd onderzocht. De resultaten die gepresenteerd worden in hoofdstuk 3 ondersteunen het model dat veronderstelt dat overgeneralisatie niet de mediator is maar de voorspeller en dat het effect van overgeneralisatie op psychologisch lijden wordt gemedieerd door zowel een laag niveau van eigenwaarde als een hoge negatieve affect intensiteit. Deze bevindingen ondersteunen de beschrijving van Linehan (1993b) van de emotionele geest maar lijken in tegenspraak met haar gedachten (Linehan, 1993a) over hoe de transactie tussen hoge affect intensiteit en zelf-invalidation kan leiden tot emotieregulatie strategieën zoals overgeneralisatie die resulteren in psychologisch lijden. De bevindingen lijken het best te corresponderen met de theoretische bespiegelingen van Epstein (1992) over overgeneralisatie en gevoelens van eigenwaarde. Volgens Epstein is het niet zo moeilijk om te verklaren waarom kinderen onder bepaalde omstandigheden een negatieve zelfbeeld ontwikkelen. Wat echter meer vragen oproept is waarom zij dit negatieve zelfbeeld behouden als zij volwassen zijn, in omstandigheden waarin hun zelfbeeld duidelijk onjuist is. Epstein veronderstelt dat een negatief zelfbeeld in stand gehouden wordt door de overgeneralisatie van negatieve gebeurtenissen. In zijn conceptualisatie is overgeneralisatie dus niet het gevolg van een laag gevoel van eigenwaarde maar leidt het juist tot een negatief zelfbeeld wat weer resulteert in psychologisch lijden. Onze onderzoeksonderdelen sluiten volledig aan bij deze visie. Ze voegen er bovendien aan toe dat Epsteins overwegingen ten aanzien van overgeneralisatie en negatief zelfbeeld ook opgaan voor overgeneralisatie en een hoge intensiteit van negatieve gevoelens. De data suggereren dat een gemiddeld hoge intensiteit van negatieve gevoelens het gevolg is van negatieve overgeneralisatie, niet de oorzaak.

**Hoe kunnen we overgeneralisatie manipuleren? Een pilot “proof-of-principle” studie**

Het eerste doel van de studie die wordt beschreven in hoofdstuk 4, was om een experimenteel paradigma te ontwikkelen om onderzoek te kunnen doen naar een overgeneraliserende denkstijl die gericht is op situaties en associatief is. Dit in contrast met eerdere onderzoeken naar een overgeneraliserende denkstijl die gericht is op het zelf en op informatieverwerking die meer analyserend en evaluerend van aard is, zoals bij mensen die veel piekeren. Om overgeneralisatie op te wekken, werden proefpersonen getraind om zoveel mogelijk associaties te noemen die hetzelfde gevoel oproepen als een set van emotionele stimuli in de vorm van foto’s die aangename of onaangename gevoelens oproepen. Deze induc-}

iethode bleek effectief in dat het leidde tot een sterker overgeneraliserende informatieverwerkingsstijl: metingen op het einde van de trainingsfase geven aan
dat proefpersonen na de overgeneralisatie training meer associatieve op situaties gerichte overgeneralisaties benoemen dan de proefpersonen in de twee vergelijkingscondities. Dit verschil zien we voor verschillende types overgeneralisatie en zowel bij positieve als bij negatieve overgeneralisaties. En we vinden dat dit type overgeneralisatie-inductie zich inderdaad onderscheidt van de eerder onderzochte methode omdat het nauwelijks leidt tot overgeneralisaties die te maken hebben met een analyserende, evaluerende denkstijl. Het effect van de training hield enige tijd aan maar verdween ook weer snel.

Nadat we hadden vastgesteld dat de verschillende groepen van elkaar verschillen in het aantal overgeneralisaties dat zij produceerden, werd het mogelijk om gericht onderzoek te doen naar de hypothese dat overgeneralisatie van invloed is op emotionele reactiviteit. Analyses van de arousal scores bevestigden dat de deelnemers aan de overgeneralisatie-inducitie een significante en substantiële verhoging lieten zien van de intensiteit van hun emotionele reactie op de stimuli. Zowel de deelnemers aan de controleconditie waarin mensen zich juist op de stimuli zelf moesten richten, als de deelnemers aan de controleconditie die vrij moesten associëren, vertoonden geen verandering van de intensiteit van hun emotionele reactie. Deze onderzoeksbevindingen sluiten aan bij de bevindingen van Larsen en zijn collega’s (Larsen & Diener, 1987; Larsen, Diener & Cropanzano, 1987; Larsen et al., 1996) en van Dritschel en Teasdale (1996). De bevindingen liggen ook in dezelfde lijn als de resultaten van de onderzoeken van Watkins, Moberly en Moulds (2008) naar de causale relatie tussen een evaluërende, analyserende overgeneraliserende denkstijl en emotionele reactiviteit.

In tegenstelling tot de bevindingen van Watkins, Moberly en Moulds (2008) en in tegenspraak met onze eigen verwachtingen vonden we geen direct effect van dit type overgeneralisatie op depressieve stemming. De resultaten laten wel zien dat de stemming van de deelnemers significant veranderd was na de training en dat deze verandering verschillde tussen de verschillende groepen. We vonden bovendien niet-significante trends dat de stemming van de deelnemers negatiever in de overgeneralisatiegrup en positiever in de groep die zich specifiek op de stimuli richtte. Deze trends komen overeen met de bevindingen van Watkins, Moberly en Moulds (2008), Watkins en Moberly (2009) en Watkins, Baeyens en Read (2009) dat negatief stemming toeneemt in personen die getraind zijn in een overgeneraliserende denkstijl en afneemt in personen die getraind zijn om te focussen op de concrete, specifieke details van een stimulus.

De hier toegepaste operationalisatie van overgeneralisatie als gericht op situaties en associatief, in plaats van gericht op het zelf en analyserend, evaluerend en interpreterend, lijkt een effectieve inductie van overgeneralisatie te hebben opgeleverd in reactie op zowel positieve als negatieve stimuli. Dit trainingseffect

THEORETISCHE EN PRAKTISCHE IMPLICATIES

De bevindingen die in de hoofdstukken 2 en 4 beschreven worden, suggereren dat het merendeel van de auteurs in de literatuur over overgeneralisatie zich terecht richten op negatieve overgeneralisatie gericht op het zelf. Dit type overgeneralisatie lijkt het meest aanzienlijke effect te hebben op depressieve symptomen. De bevindingen uit deze twee hoofdstukken maken echter ook duidelijk dat een exclusieve focus op negatieve overgeneralisatie gericht op het zelf, relevante aspecten van het overgeneralisatieconcept buiten beschouwing laat. Overgeneralisatie gericht op situaties lijkt een dimensie toe te voegen aan het overgeneralisatieconcept dat in het bijzonder relevant is voor ons begrip van de cognitieve verwerkingsprocessen van personen die lijden aan een borderline persoonlijkheidsstoornis. In het bijzonder van belang voor de conceptualisatie van overgeneralisatie is de bevinding dat beide soorten overgeneralisatie in het algemeen samen opgaan wat betreft de verhouding van positieve en negatieve overgeneralisatie maar hierin juist verschillen over verschillende patiëntenpopulaties heen. Dit onderbouwt de overtuiging dat het hier gaat om een denkstijl of informatieverwerkingsmodus die van invloed is op de psychologische coping en niet louter om een inhoud-gestuurde overtuiging of een schema.
De bevinding dat klinische patiënten verschillen van niet-patiënten in de mate waarin zij zowel negatief als positief overgeneraliseren en dat verschillende patiënten-populaties onderling verschillen in de mate waarin zij de verschillende types overgeneralisatie vertonen, veronderstelt dat we niet te maken hebben met één cognitieve bias maar met een combinatie van drie: (1) een neiging tot overgeneraliseren versus een neiging tot specificeren; (2) een positiviteits- versus een negativiteitsbias, en (3) een bias in verwerking van informatie over het zelf versus informatie over situaties of de wereld om ons heen. Resultaten uit eerdere studies gaven al aan dat de combinatie van een overgeneraliserende, negatieve en op het zelf gerichte denkstijl bijdraagt aan een kwetsbaarheid voor depressie. De studies die worden beschreven in dit proefschrift bevestigen deze hypothese en voegen eraan toe dat de combinatie van een overgeneraliserende, positieve en op het zelf gerichte denkstijl kan bijdragen aan een beschermende buffer tegen depressieve symptomen. Verder wordt bewijs geleverd voor de stelling dat de neiging tot overgeneraliseren van negatieve informatie in personen die lijden aan een depressie, zich tevens uitstrekt tot informatie over situaties in de buitenwereld maar dat deze negatieve denkstijl hier niet zo problematisch lijkt te zijn omdat zij wordt gecompenseerd door een nog sterker aanwezige neiging tot overgeneralisatie van positieve situaties. Personen die lijden aan een borderline persoonlijkheidsstoornis, echter, vertonen die neiging tot overgeneralisatie van positieve situaties niet in sterkere mate dan de neiging tot negatieve overgeneralisatie van situaties wat zou kunnen verklaren waarom het denken van borderline patiënten bij uitstek wordt gekenmerkt door negatieve schemata over de wereld (bijv. Young, 1999; Lawrence, Allen & Chanen, 2011). Vanuit een theorethisch perspectief kan opgemerkt worden dat een exclusieve focus op negatieve overgeneralisatie gericht op het zelf, zoals gehanteerd werd in eerdere studies, de aandacht wegleidt van het feit dat we te maken hebben met een denkstijl of informatieverwerkingsmodus die in essentie niet samenhangt met of iets positief of negatief is, noch of deze gericht op het zelf of op situaties buiten onszelf maar juist kan variëren op al deze facetten.

De diverse modellen over cognitieve bias samenhangend met angst, depressie en andere psychische stoornissen kunnen behoorlijk van elkaar verschillen. Al deze modellen komen echter overeen in dat zij veronderstellen dat deze cognitieve processen een causale rol spelen in de ontwikkeling van of het behoud van emotionele kwetsbaarheid. De bevinding, beschreven in hoofdstuk 3, dat overgeneralisatie het effect voorspelt van een laag gevoel van eigenwaarde en negatieve affectintensiteit op psychologisch lijden, sluit aan bij deze theoretische veronderstelling. Ofschoon uit de data geen directe conclusies kunnen worden getrokken ten aanzien van de causale relatie tussen deze variabelen, leveren ze wel een sterke aanwijzing op dat negatieve overgeneralisatie leidt tot een negatief zelfbeeld en hogere affect intensiteit en niet andersom. Deze indicatie wijst in dezelfde richting
als de bevindingen die worden beschreven in hoofdstuk 4, die aangeven dat een associatieve op situaties gerichte overgeneraliserende informatieverwerkingsmodus invloed heeft op de intensiteit van gevoelens en mogelijk een effect heeft op de negatieve dan wel positieve kleur van iemands stemming. De bevindingen sluiten tevens aan bij die van Watkins en zijn medewerkers die vonden dat een analyserende op het zelf gerichte overgeneraliserende informatieverwerkingsmodus van invloed is op de intensiteit en valentie van de stemming. De assumptie van een causale rol voor overgeneralisatie is niet alleen cruciaal voor theorieën over depressie, angst en andere psychologische stoornissen maar heeft ook implicaties voor de therapeutische waarde van de interventies die erop zijn gebaseerd.

De bevindingen uit hoofdstuk 3 leveren bewijs dat negatieve overgeneralisatie een effect heeft op psychologisch lijden maar alleen via de mediërende variabelen laag zelfbeeld en hoge affect intensiteit. Dit resultaat suggereert ook dat manipulatie van een overgeneraliserende verwerkingsmodus tegelijkertijd invloed zal hebben op zowel het zelfbeeld als op de intensiteit van gevoelens. Deze conclusie vormt een sterk argument om overgeneralisatie te bewerken in de behandeling van alle psychologische stoornissen waarin het zelfbeeld en de intensiteit van gevoelens een rol spelen.

Watkins en zijn medewerkers hebben recentelijk een innovatieve cognitieve bias modificatie training ontwikkeld als een behandelinginterventie voor depressie, de zogenaamde concreteness training (Watkins, Baeyens & Read, 2009). Concreteness training is ontworpen om personen die lijden aan dysforie te trainen om meer specifiek en concret te denken, i.e. te focussen op specifieke details van een gebeurtenis, op wat een gebeurtenis uniek maakt en op hoe iets gebeurd is, als een manier om overgeneraliserend denken te doen afnemen. Deze training blijkt succesvol. Hij leidt tot een toename van concreet specifiek denken en een afname van depressieve symptomen. De resultaten van de studies in dit proefschrift geven aan dat het effect van concreteness training verder versterkt zou kunnen worden als deze zodanig wordt uitgebreid dat personen worden getraind om concreet en specifiek te kijken naar negatieve gebeurtenissen niet alleen als ze met henzelf te maken hebben maar ook in situaties in de buitenwereld. Deze toevoeging zou in het bijzonder van waarde kunnen zijn in de behandeling van personen met kenmerken van een borderline persoonlijkheidsstoornis. Een dergelijke aanvulling doet denken aan de training van borderline patiënten om een niet oordelende opletende (mindful) houding aan te nemen ten opzichte van gebeurtenissen die met henzelf te maken hebben maar ook met de wereld om hen heen, zoals wordt gedaan in Linehans dialectische gedragstherapie (1993). Het zou in dit geval echter gaan om een meer op de cognities gerichte trainingsmethode. De bevindingen uit dit proefschrift geven bovendien aanleiding tot een aanvulling op concreteness training waarin patiënten expliciet worden getraind om juist meer te generaliseren
naar aanleiding van positieve gebeurtenissen. Met name personen die lijden aan een borderline persoonlijkheidsstoornis zouden profiteren van training in generalisatie van positieve gebeurtenissen die gebeuren in de wereld om hen heen. Veel traditionele behandelmethodes hebben zich exclusief gericht op de afname van negativiteit. Cognitieve manipulatiemethodes gericht op toename van positiviteit worden vaak verondersteld niet evidence-based te zijn. Dit proefschrift ondersteunt echter de toepassing van cognitieve methodes die een positieve overgeneraliserende denkstijl stimuleren. Tenslotte, de bevindingen die worden beschreven in dit proefschrift suggereren dat het de moeite waard is om te investeren in de ontwikkeling en evaluatie van bias modificatie methodes om verschillende combinaties te beïnvloeden van overgeneraliserende versus concreet specificerende, op positieve gebeurtenissen gerichte versus op negatieve gebeurtenissen gerichte, op het zelf gerichte versus op situaties in de buitenwereld gerichte en associatieve versus analyserende verwerkingsmodi. Deze bias modificatie methodes kunnen worden ingezet als mogelijke interventies die de behandeling kunnen ondersteunen van personen die lijden aan een depressie en/of een borderline persoonlijkheidsstoornis.
REFERENCES

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Dankwoord
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Thom van den Heuvel is getrouwd met Irene van den Heuvel-Lensen en is de trotse vader van Line, Yanna en Ole.