

Paper III

Wang, C. E., Brennen, T., & Holte, A. (2006). Automatic and effortful processing of self-statements in depression. *Cognitive Behaviour Therapy*, 35, 117-124.

Automatic and Effortful Processing of Self-Statements in Depression

Catharina E. Wang¹, Tim Brennen² and Arne Holte^{2,3}

¹*Department of Psychology, University of Tromsø, Tromsø;* ²*Department of Psychology, University of Oslo, Oslo;* ³*Department of Mental Health, Norwegian Institute of Public Health, Oslo, Norway*

Abstract. Clark and Beck (1999) and Williams et al. (1997) have come up with quite different conclusions regarding which cognitive processes are most affected by negative self-schemata and negative knowledge structures. In order to increase the understanding of differences in effortful and automatic processing in depression, we compared never depressed (ND), previously depressed (PD) and clinically depressed (CD) individuals on free recall, recognition and fabrication of positive and negative self-statements. The results showed that: (i) overall NDs and PDs recalled more positive self-statements than CDs, whereas CDs correctly recognized more negative self-statements than NDs and PDs; and (ii) CDs and PDs fabricated more negative than positive self-statements, whereas no difference was obtained for NDs. The results seem to be in line with Clark and Beck's suggestions. However, there are several aspects of the present findings that make the picture more complicated. *Key words:* recall; recognition; fabrication; dysfunctional attitudes; dysphoric symptoms; vulnerability.

Received March 1, 2005; Accepted November 11, 2005

Correspondence address: Catharina E. Wang, Department of Psychology, University of Tromsø, N-9037 Tromsø, Norway. Tel: +47 77 64 64 46; Fax: +47 77 64 52 91. E-mail: cwang@psyk.uit.no

Beck's (1967, 1976) cognitive theory of depression suggests that individuals who have experienced loss or adversity in childhood will develop negative self-schemata. Such negative self-schemata may contain dysfunctional attitudes concerning loss, failure and abandonment. Negative self-schemata are thought to be relatively stable across time, situations and mood-states, but also to be relatively dormant and inaccessible during non-depressive states. They can be activated by a wide range of negative and stressful life events or situations (Clark & Beck, 1999). Mere negative mood has also been suggested to be involved in this activation (Miranda & Persons, 1988; Persons & Miranda, 1992). When activated, negative self-schemata will negatively bias the individual's information processing, but also tend to generate negative automatic thoughts and depressive affect (Clark & Beck, 1999; Gotlib & Krasnoperova, 1998). Beck (1967, 1976)

refers to thoughts that unintentionally come to mind as "automatic thoughts". The content of such thoughts may be positive or negative self-statements.

Cognitive vulnerability may also be the result of having experienced a depressive episode. For example, Ingram, Miranda, and Segal (1998) suggested that negative thinking in an initial depressive episode, increases the likelihood of depressive knowledge patterns being activated in the course of future information processing when in periods of mildly depressed mood. Also, they argue that, as the number of depressive episodes increases over time, these knowledge structures are deployed in a growing number of contexts, leading to a situation where even small changes in mood would be sufficient to activate them.

Two research groups (i.e. Clark & Beck, 1999; Williams, Watts, MacLeod, &

Mathews, 1997), which have reviewed the extensive research literature on cognitive processes in depression, have come up with quite different conclusions regarding which cognitive processes are most affected by negative self-schemata and negative knowledge structures. These discrepant findings may be related to the continuum of automatic to effortful processing. For example, according to schemata theory of depression, as outlined above, one would assume that cognitive processes involving more integrative and elaborative processes will be more affected by negative self-schemata than earlier perceptually based processes (Clark & Beck, 1999). However, the earlier, more perceptually-based processes may also be more affected by negative self-schemata because they are more automatic according to the defining characteristics of automatic/strategic processes as described by Beck and Clark (1997), Hartlage et al. (1993) and Williams et al. (1997). Accordingly, Clark and Beck (1999) argued that it may be better to consider cognitive processes in terms of the defining characteristics of automatic and strategic processing rather than consider some cognitive tasks as involving purely automatic, or purely strategic processes.

In a review of the research literature from 1993, Hartlage and colleagues concluded that depression interferes with effortful processes, but not with automatic processes. Based on Hartlage et al.'s review, Clark and Beck (1999) hypothesized that in depression one would expect to find enhanced automatic processing of negative self-referent information, but decreased effortful processing of positive stimuli. This is because in depression, positive schemata have low resting activation levels, requiring effortful processing to reach threshold, but due to the depression, effortful processing is limited, thus affecting positive schemata disproportionately.

From their research review on cognitive processes in depression, Williams et al. (1997) also conclude that emotional disorders may affect different aspects of cognitive processing. They distinguish between 2 main processes that operate upon mental representation: priming and elaboration. In contrast to Clark and Beck (1999), however, they argue that depression is primarily characterized by a bias in elaboration, i.e. in the strategic and

conceptually based memorial processing of negative self-referent information. A negativity bias in priming, which they describe as an automatic and selective perceptual encoding of information, they conclude is present in anxiety, but not in depression. Their argument is based on empirical findings from research, and also on theoretical viewpoints. For example, to avoid threatening stimuli, anxious individuals need to be alert to negative information and this will negatively bias priming processes, but not elaboration processes. On the other hand, because depressed individuals have no need to be especially attentive to negative stimuli, no bias in priming processes will occur. However, after this first stage of passive intake of partial information from the environment (i.e. priming), the information is mapped on to internal representations or schemata. These schemata will then accommodate the information and direct further processing resources during the next intake cycle towards the most salient stimulus. For individuals with negative self-schemata, this will be negative self-referent information. Accordingly, Williams et al. (1997) suggested that depression affects the active strategic element of memory retrieval, enhancing the recall of negative material. They summarized the research literature by concluding that "no study has yet been published which has failed to find effects of depression on explicit memory", but also that "no study has yet found mood congruent bias in implicit memory in depression (p. 286)".

The purpose of the present study was to examine effortful and automatic processing of positive and negative self-statements in 3 groups of clinically depressed, previously depressed and never depressed individuals. To do so, we presented the participants with positive and negative self-statements, auditorily. Then we measured cognitive processes in 3 ways that vary along the continuum of effortful to automatic processing: free recall, recognition and fabrication. These cognitive processes also vary according to how integrative and elaborative they are. Hartlage et al. (1993) argue that free recall is more effortful than recognition, whereas Williams et al. (1997) argue that free recall is more elaborative than recognition. Fabrication, or incorrect recall of self-statements may be an

effortful process, but also the most integrative process compared with the other 2 because such self-statements are actually made up by the participant and may therefore reflect the individual's self-schemata.

On the basis of Clark and Beck's suggestions the predictions were: for free recall, as a measure of an effortful process, we predicted a positivity bias in non-depressed individuals compared with clinically depressed individuals. Also, we predicted that free recall of positive self-statements would be negatively related to dysfunctional attitudes and dysphoric mood, whereas no correlation would be seen between free recall of negative self-statements and attitudes and mood. For recognition, as a measure of a more automatic process, we predicted a negativity bias in clinically depressed individuals compared with non-depressed controls. Also, we predicted that recognition of negative self-statements would be positively related to dysfunctional attitudes and dysphoric mood, whereas no correlation would be obtained between recognition of positive self-statements and attitudes and mood. For fabrication, as a measure of an integrative and elaborative process, we predicted more fabrication of negative self-statements than fabrication of positive self-statements in individuals cognitively vulnerable to depression.

Method

Participants

To recruit participants, the Beck Depression Inventory (BDI; Beck, Rush, Shaw, & Emery, 1979) and the Previous Depression Questionnaire (PDQ; Wang, 1996) were administered to approximately 800 undergraduate students at the University of Tromsø, and to approximately 600 patients consulting their general practitioner, also in Tromsø. About 340 (43%) students and 180 (30%) patients returned the questionnaire by mail. From this sample, subjects were invited to participate if they had a BDI score above 16 (probably depressed), or scored below 16 and met the requirements for previous depression on the PDQ. In addition, a random sample was selected among those who had a BDI score between 0 and 9 (normal range), and did not meet the requirements for previous depression on the PDQ. This screening

resulted in a total sample of 184 participants (84 patients and 100 students).

These subjects were diagnosed individually according to the Diagnostic and Statistical Manual of Mental Disorders (*DSM-IV*; American Psychiatric Association, 1994), using the "The Structured Clinical Interview for *DSM-IV*, Axis I disorders" (SCID-CV) (First, Spitzer, Gibbon, & Williams, 1997). The SCID-CV interview was restricted to the section relating to Mood Disorder which was used to include subjects, and the SCID-CV section related to Psychotic Symptoms which was used to exclude individuals with such symptoms. Thus, final group assignment was made according to *DSM-IV* (American Psychiatric Association, 1994) criteria and not in accordance with Beck and Steer's (1987) BDI classification for normal range, mild, moderate and severe depression. Based on information from the interviews, 30 individuals were excluded from the study either because they failed to meet the full criteria for a current or a previous depression, because their previous depression was more than 5 years ago, or because they had psychotic or hypomanic symptoms. In addition, 5 individuals dropped out of the study before completion. The final sample thus consisted of 61 clinically depressed (CD) (36 patients and 25 students; $M=30.8$ years, $SD=10$), 42 previously depressed (PD) (17 patients and 25 students; $M=27.0$ years, $SD=8$) and 46 never depressed (ND) (18 patients and 28 students; $M=26.9$ years, $SD=9$). Nine of the CDs and 1 of the PDs were on antidepressive medication. One of the CDs and 1 of the PDs were on neuroleptics. None of the participants were inpatients and thus they were not severely depressed. For the PDs the mean period since the last major depressive episode was 1.7 years ($SD=14.84$).

The SCID interviews were administered by 4 *DSM-IV* interviewers who had been individually trained by a highly qualified supervisor in the administration of the SCID. All the SCID interviews were audiotaped, and subsequently, 30 of these interviews, 10 from each group, were randomly sampled for reliability testing. The inter-rater agreement (kappa) between 2 raters for groups (ND, PD, CD) was 0.9. When the kappa was calculated between subjects who had never

experienced a depressive episode (i.e. ND) and those who had (i.e. PD and CD), the obtained result was 1.0. These results indicate a highly satisfactory reliability of the group-classification.

The Regional Committee for Medical Research Ethics evaluated the study, the participants gave written informed consent, were paid NOK 100 (USD 15\$) per hour for their participation, and were treated in accordance with the "Ethical Principles of Psychologists and Code of Conduct" (American Psychological Association, 1992).

Measures

The BDI (BDI; Beck et al., 1979) is a widely used, 21-item self-report symptom scale that assesses a variety of affective, behavioural, cognitive and somatic symptoms indicating dysphoric states or clinical depression. A full description of the inventory, including psychometric properties can be found in Beck, Steer, and Garbin (1988). The sum of all the items were computed and used in all the analyses (Cronbach's $\alpha=0.92$; $M=10.3$, $SD=9.4$). The means and standard deviations for each group were as follows: NDs: $M=1.63$, $SD=1.66$; PDs: $M=7.43$, $SD=4.82$; CDs: $M=18.98$, $SD=7.52$.

The Dysfunctional Attitude Scale (Form A) (DAS; Weissman & Beck, 1978) is a 40-item self-report questionnaire designed to measure the presence of dysfunctional attitudes that may relate to cognitive vulnerability to depression (Oliver & Baumgart, 1985). A full description, including psychometric properties is provided by Chioqueta and Stiles (2004b), Dobsen and Breiter (1983) and Oliver and Baumgart (1985). The sum of all the items were computed and used in all the analyses (Cronbach's $\alpha=0.94$; $M=118.1$, $SD=35.4$). The means and standard deviations for each group were as follows: NDs: $M=93.9$, $SD=21.4$; PDs: $M=116.6$, $SD=30.4$; CDs: $M=133.6$, $SD=38.3$.

Materials and equipment

The material to be remembered consisted of the items of the Automatic Thought Questionnaire-Negative (ATQ-N; Hollon & Kendall, 1980) and the Automatic Thought Questionnaire-Positive (ATQ-P; Ingram & Wisnicki, 1988). ATQ-N items consist of negative self-statements that characterize

depressive thoughts (e.g. "I'm no good", "I'm a failure", "I can't finish anything"). ATQ-P was designed to assess positive self-statements (e.g. "My future looks bright", "Life is exciting", "I have many good qualities"). Both ATQ-N and ATQ-P include 30 messages. The ATQ-N has recently been shown to be a useful measure of frequency of automatic negative thoughts in both clinical and non-clinical population (Chioqueta & Stiles, 2004a). A Norwegian male speaker produced an oral version of the statements of the ATQ-N and ATQ-P, which were recorded on 2 tapes. The sequence of the 30 statements was looped repeatedly to make a 20-minute recording of each statement series. Two cassette players were wired together to allow the participants to select freely, via a toggle switch, which of the 2 taped self-statements they preferred to listen to.

Free recall and fabrication (i.e. incorrect recall) were measured with an empty page with an instruction to write all the sentences and phrases the participants could remember from the tapes.

Recognition was measured with a 56-item questionnaire (Wang & Holte, 1995) developed by the first and third authors. Thirty positive and 30 negative self-statements were created. Then, 14 positive self-statements were randomly picked from the ATQ-P, and 14 positive self-statements were randomly picked from the created list with positive self-statements. The same procedure was used for the negative self-statements, creating a questionnaire existing of totally 56 items, 28 positive and 28 negative intermixed self-statements. The participants were instructed to place a cross on the line by each statement they think were on the tapes.

Procedure

The participants completed the BDI before they were given the instruction for the listening preference task: They were told that the tapes "contained the kind of statements people sometimes say to themselves during the day", and were advised that their task was simply to "choose which tape you want to listen to, but feel free to switch as often or as little as you like". The listening preference task lasted for 20 minutes. After completing the listening preference task, the participants performed the recall task and the

questionnaire about recognition. On a second testing day, the participants answered the DAS together with some other questionnaires and another experimental task which results have been reported in Wang, Brennen, and Holte (in press).

Results

Free recall and fabrication

Three research assistants, unaware of group status, rated individually each statement produced by the participants as to whether it was recognizable as an ATQ-P or ATQ-N statement. Six categories were used; correct ATQ-P, correct ATQ-N, close ATQ-P, close ATQ-N, incorrect ATQ-P and incorrect ATQ-N. Whereas correct ATQ-P/ATQ-N indicated exact match to the tape-recorded statements, incorrect ATQ-P/ATQ-N indicated no resemblance, i.e. fabricated recall. Between correct and incorrect recall there were statements, which closely matched the tape-recorded statements or had some resemblance to them, i.e. close ATQ-P/ATQ-N. Finally, a seventh category, the total ATQ-P, included all exact and close recall of positive

statements, whereas an eighth category, the total ATQ-N, included all exact and close recall of negative statements. After the individual ratings, the 3 raters came to a consensus for each statement produced by the 149 participants.

To determine whether the 3 groups differed with respect to the 8 categories, separate analyses of variance (ANOVA) were carried out. As predicted, for total recall of ATQ-P statements, there was a significant group effect (Table 1). The CDs recalled fewer ATQ-P statements than the NDs and fewer than the PDs, as shown by contrasts, (CDs vs NDs: $t(146)=3.58, p<0.0001$; CDs vs PDs: $t(146)=2.19, p<0.030$; NDs vs PDs: $t(146)=1.22, p>0.05$). No significant differences were obtained for the remaining 7 categories.

To determine, within each group, whether there was a difference between fabrication of ATQ-P statements and fabrication of ATQ-N statements, 3 t -tests were carried out. As predicted, while a difference was found for the PDs ($t(41)=-3.18, p<0.003$), and for the CDs ($t(60)=-3.17, p<0.002$), i.e. participants in both groups fabricated more ATQ-N

Table 1. One-way ANOVAs for effects of clinically depressed, previously depressed and never depressed on free recall, fabrication and recognition of ATQ-P and ATQ-N statements.

	Never depressed ($n=46$)	Previously depressed ($n=42$)	Clinically depressed ($n=61$)	F
	M (SD)	M (SD)	M (SD)	
Free recall				
Tot. ATQ-P	5.72 (2.54)	5.21 (2.66)	4.10 (2.89)	4.99**
Tot. ATQ-N	2.30 (1.67)	2.55 (2.11)	3.00 (2.10)	1.71
Cor. ATQ-P	1.41 (1.38)	1.26 (1.95)	0.75 (1.27)	2.78
Cor. ATQ-N	0.83 (0.88)	60 (0.86)	1.03 (1.17)	2.38
Clo. ATQ-P	4.30 (2.36)	3.95 (1.82)	3.34 (2.34)	2.58
Clo. ATQ-N	1.48 (1.24)	1.95 (1.79)	1.97 (1.56)	1.56
Fab. ATQ-P	0.58 (0.83)	0.38 (0.58)	0.30 (0.67)	2.32
Fab. ATQ-N	0.74 (1.02)	0.88 (1.02)	0.74 (1.03)	0.29
Dif. ATQ-N/P	0.15 (1.03)	0.50 (1.02)	0.44 (1.09)	1.45
Recognition				
Cor. ATQ-P	9.57 (2.45)	9.79 (2.58)	9.68 (2.53)	0.08
Cor. ATQ-N	6.98 (3.41)	7.42 (3.82)	9.23 (2.57)	7.31**
Inc. ATQ-P	3.11 (2.34)	2.62 (2.09)	3.23 (2.27)	0.98
Inc. ATQ-N	3.23 (2.71)	3.19 (2.81)	3.90 (2.43)	1.23

Abbreviations: ATQ-P = Automatic Thought Questionnaire-Positive. ATQ-N = Automatic Thought Questionnaire-Negative. Tot. = Total. Cor. = Correct. Clo = Close. Fab. = Fabricated. Inc. = Incorrect. Dif. ATQ-N/P = the difference score between fabricated ATQ-N and fabricated ATQ-P.

* $p<0.05$; ** $p<0.01$; *** $p<0.001$.

statements than they fabricated ATQ-P statements, no such difference was obtained for the NDs ($t(45)=-1.00, p>0.05$). To determine whether the groups differed with respect to their differences in fabricated positive and negative statements generated, the difference score between fabricated ATQ-P and fabricated ATQ-N was calculated for each participant and separate analyses of variance (ANOVA) were carried out (Table 1). No significant difference was obtained. However, the results are in the right direction and with more statistical power, the results might have been significant. Also, difference scores have often very low reliability.

Recognition

To determine whether the 3 groups differed with respect to correct and incorrect recognition of ATQ-P statements and ATQ-N statements, separate analyses of variance (ANOVA) were carried out. As predicted, for correct recognition of ATQ-N statements, there was a significant group effect (Table 1). The CDs correctly recognized more ATQ-N statements than the NDs and more than the PDs, as shown by contrasts, (CDs vs NDs: $t(145)=-3.55, p<0.001$; CDs vs PDs: $t(145)=-2.78, p<0.006$; NDs vs PDs: $t(145)=-0.636, p>0.05$). No significant differences were obtained for the remaining 3 categories.

Associations between free recall, recognition, symptoms and attitudes

To determine how free recall and recognition was associated with symptoms and attitudes, correlations were computed. The results from the correlations are presented in Table 2. As predicted, while free recall of positive self-statements was *negatively* associated with symptoms and attitudes, the recognition of negative self-statements was *positively* associated with symptoms and attitudes.

Discussion

The results show that overall the NDs and the PDs recalled more positive self-statements than the CDs, whereas the CDs recognized more negative self-statements than the NDs and the PDs. Also we found a negative correlation between recall of positive

Table 2. *Bivariate correlations between BDI, DAS, and free recall, fabrication and recognition (n=149).*

	BDI	DAS
Free recall		
Total ATQ-P	-0.26**	-0.33**
Correct ATQ-P	-0.15	-0.17*
Close ATQ-P	-0.22**	-0.30**
Fabricated ATQ-P	-0.21*	-0.02
Total ATQ-N	0.09	0.12
Correct ATQ-N	0.10	0.16
Close ATQ-N	0.06	0.08
Fabricated ATQ-N	-0.08	-0.14
Recognition		
Correct ATQ-P	-0.05	-0.15
Incorrect ATQ-P	0.05	-0.06
Correct ATQ-N	0.28**	0.19*
Incorrect ATQ-N	0.14	-0.01

* $p<0.05$; ** $p<0.01$ (two-tailed).

self-statements and dysfunctional attitudes and dysphoric mood, but a positive correlation between recognition of negative self-statements and attitudes and mood. The results seem to be in line with the predictions from Clark and Beck (1999). However, there are several aspects of the findings that make the picture more complicated.

Firstly, the participants were allowed to choose which tape they preferred to listen to for the whole listening time period. Wang, Brennen, and Holte (in press) have previously reported that the NDs and the PDs listened more to the ATQ-P tape than to the ATQ-N tape, whereas the CDs listened about equally to each tape. One may argue that this is a major threat to the internal validity of the study. For example, it is reasonable that the CDs recalled less positive self-statements than the PDs and the NDs because they actually listened less to the ATQ-P tape. The same argument can be made for the results on recognition, i.e. the CDs recognized more negative self-statements than the other 2 groups because they actually listened more to the ATQ-N tape. However, there are both theoretical arguments and interesting patterns in the results, which still make the findings worth reporting.

In the present study, even if listening time is confounded with emotionality of message and group, we would argue that the clinical or external validity is more important because the experimental set-up acts as a model of the

real-world situation that confronts us in daily life: People are continuously exposed to both positive and negative information and have to choose, preconsciously and automatically, or strategically and effortfully, what kind of information they should attend to. Accordingly, memory will always depend on this first stage of information processing. In fact, this is a crucial point in cognitive theory of depression, that vulnerable individuals select and interpret emotionally ambiguous information differently to non-vulnerable individuals. In other words, it seems obvious that a presupposition for getting individual differences in memory must be individual differences in attention. Accordingly, while the design of the present study may be able to demonstrate that depression is associated with a pattern of recalling less positive items and recognizing more negative items, it cannot decide whether this depends on processes during encoding or retrieval.

Taking into account that recall and recognition are functionally dependent on earlier stages of information processing, the findings on recognition seem to be more in line with Williams et al.'s (1997) suggestions. When looking at group differences in recognition, the CDs recognized more negative self-statements than the other 2 groups. However, when comparing the findings from recognition with the listening time, there is no support for the presence of a negativity bias in CDs, i.e. they listened 50-50 to each tape and they recognized as many positive as negative self-statements. What is interesting, however, is that no difference in recognition of positive self-statements was obtained between CDs and the other 2 groups. Because the NDs and the PDs listened more to the ATQ-P tape than the CDs, it is striking that that these 2 groups did not recognize more positive self-statements than the CDs.

Also, in correct recall of positive self-statements no group differences were obtained. Again, this is an interesting finding due to the fact that the CDs listened less to the ATQ-P tape compared with NDs and PDs. It was only when the looser criterion for correct recall was used (making the category of total recall) that group differences were obtained. Accordingly, the higher recall of positive self-statements in NDs and PDs may be explained by more *effort* to recall positive self-statements

(i.e. a "self-enhancing illusion"). As recall is an effortful task, these findings support Clark and Beck's (1999) assumption that in depression there is decreased effortful processing of positive stimuli.

Finally, while both CDs and PDs fabricated more negative self-statements than positive self-statements, no such difference was obtained in the NDs. However, the difference obtained is explained by decreased fabrication of positive self-statements in PDs and CDs and not by increased fabrication of negative self-statements (Table 1). As mentioned at the beginning, fabrication may be defined both as an effortful task, but also as an integrative and elaborative task. As an effortful task, Clark and Beck (1999) suggest decreased processing of positive stimuli. As an integrative and elaborative task, both Clark and Beck (1999) and Williams et al. (1997) propose increased processing of negative self-referent information. Accordingly, the finding is only in line with the hypothesis of fabrication as an effortful task.

However, because the PDs differ from the NDs on this cognitive measure, it may be that reduced ability to fabricate positive self-statements may be a vulnerability factor to depression.

In conclusion, the present results provide support for the suggestion that in depression one would find decreased effortful processing of positive self-referent information, as suggested by Clark and Beck (1999), but no bias in the more automatic processing of emotionally valenced information as suggested by Williams et al. (1997). Interestingly, however, the CDs, in spite of less listening time to the ATQ-P tape, correctly recalled and recognized as many positive self-statements than the other 2 groups. Accordingly, in the present study, the CDs were impaired at recalling positive self-statements on the loose criterion, and produced fewer fabricated positive self-statements. However, it is possible that the findings would have been different if the CD had been more severely depressed and if symptoms of anxiety had been controlled for.

Acknowledgements

We thank the participants, the general physicians in Tromsø who have contributed by recruiting participants to the project, and the

research assistants Kjersti Fredheim, Renate Berg and Tanja Berg. Furthermore, we wish to thank Rue L. Cromwell, J. Jeffrey Crowson Jr., Maria Lewicka, Monica Martinussen and Tore C. Stiles for their helpful suggestions, and Ingunn Skre for the training in SCID I-interviewing. Norwegian Research Council, the Norwegian Foundation for Health and Rehabilitation, the Norwegian Council for Mental Health, and the Psychiatric Research Centre of Northern-Norway has financially supported the project.

References

- American Psychiatric Association (1994). *Diagnostic and Statistical Manual of Mental Disorders (4th edn)*. Washington, DC: American Psychiatric Association.
- American Psychological Association (1992). Ethical principles of psychologists and code of conduct. *American Psychologist*, *47*, 1597–1611.
- Beck, A. T. (1967). *Depression: Clinical, Experimental, and Theoretical Aspects*. New York: Harper & Row.
- Beck, A. T. (1976). *Cognitive Therapy of the Emotional Disorders*. New York: New American Library.
- Beck, A. T., & Clark, D. A. (1997). An information processing model of anxiety: Reconsidering the role of automatic and strategic processes. *Behaviour Research and Therapy*, *35*, 49–58.
- Beck, A. T., Rush, A. J., Shaw, B. F., & Emery, G. (1979). *Cognitive Therapy of Depression*. New York: Guilford Press.
- Beck, A. T., & Steer, R. A. (1987). *Beck Depression Inventory Manual*. New York: The Psychological Corporation Harcourt Brace Jovanovich, Inc.
- Beck, A. T., Steer, R. A., & Garbin, M. G. (1988). Psychometric properties of the Beck Depression Inventory: twenty-five years of evaluation. *Clinical Psychology Review*, *8*, 77–100.
- Chioqueta, A. P., & Stiles, T. C. (2004a). Norwegian version of the Automatic Thoughts Questionnaire: A reliability and validity study. *Cognitive Behaviour Therapy*, *33*, 79–82.
- Chioqueta, A. P., & Stiles, T. C. (2004b). Psychometric properties of the Norwegian version of the Dysfunctional Attitude Scale (Form A). *Cognitive Behaviour Therapy*, *33*, 83–86.
- Clark, D. A., & Beck, A. T. (1999). *Scientific Foundation of Cognitive Theory and Therapy of Depression*. New York: John Wiley & Sons.
- Dobson, K. S., & Breiter, H. J. (1983). Cognitive assessment of depression: Reliability and validity of three measures. *Journal of Abnormal Psychology*, *92*, 107–109.
- First, M. B., Spitzer, R. L., Gibbon, M., & Williams, J. B. W. (1997). *The Structured Clinical Interview for DSM-IV, Axis I Disorders – Clinician Version (SCID-CV)*. Washington, DC: American Psychiatric Press.
- Gotlib, I. H., & Krasnoperova, E. (1998). Biased information processing as a vulnerability factor for depression. *Behavior Therapy*, *29*, 603–617.
- Hartlage, S., Alloy, L. B., Vazquez, C., & Dykman, B. (1993). Automatic and effortful processing in depression. *Psychological Bulletin*, *113*, 247–278.
- Hollon, S. D., & Kendall, P. C. (1980). Cognitive self-statements in depression: development of an automatic thoughts questionnaire. *Cognitive Therapy and Research*, *4*, 383–395.
- Ingram, R. E., Miranda, J., & Segal, Z. V. (1998). *Cognitive Vulnerability to Depression*. New York: Guilford Press.
- Ingram, R. E., & Wisnicki, K. S. (1988). Assessment of positive automatic cognition. *Journal of Consulting and Clinical Psychology*, *56*, 898–902.
- Miranda, J., & Persons, J. B. (1988). Dysfunctional attitudes are mood-state dependent. *Journal of Abnormal Psychology*, *97*, 76–79.
- Oliver, J. M., & Baumgart, E. P. (1985). The Dysfunctional Attitude Scale: psychometric properties and relation to depression in an unselected adult population. *Cognitive Therapy and Research*, *11*, 25–40.
- Persons, J. B., & Miranda, J. (1992). Cognitive theories of vulnerability to depression: reconciling negative evidence. *Cognitive Therapy and Research*, *16*, 485–502.
- Wang, C. E. (1996). *Sporreskjema om Tidligere Depressive Episoder. (Questionnaire about Previous Depressive Episodes (PDQ))*. Unpublished manuscript. The University of Tromsø, the Department of Psychology, Norway.
- Wang, C. E., Brennen, T., & Holte, A. (2005). Mechanisms of recurrent depression: a cognitive battle model and some preliminary results. *Clinical Psychology and Psychotherapy*, *12*, 427–442.
- Wang, C. E., Brennen, T., & Holte, A. (2005). *Decreased approach motivation in depression*. Manuscript submitted for publication.
- Wang, C. E., & Holte, A. (1995). *Sporreskjema om Gjenkjenning av Selv-Refererende Budskap. (Self-Referent Statement Recognition Questionnaire)*. Unpublished manuscript. University of Tromsø, Department of Psychology, Norway.
- Weissman, A., & Beck, A. T. (1978). *Development and Validation of the Dysfunctional Attitude Scale: A Preliminary Investigation*. Paper presented at the meeting of the American Educational Research Association, Toronto, Canada.
- Williams, J. M. G., Watts, F. N., MacLeod, C., & Mathews, A. (1997). *Cognitive Psychology and Emotional Disorders*. Chichester, England: Wiley.

ISBN 89-91636-30-3