

# Coping styles among adults with Type 1 and Type 2 diabetes

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## Abstract.

*This study identified and compared different coping styles among adults with Type 1 and Type 2 diabetes. A sample comprising 534 Norwegian adults with both types of diabetes aged between 25– 70 participated in the study. Diabetes-related coping styles were assessed by self-reports, using the Diabetes Coping Measure and sub-scales from the COPE scale. A clear majority of the respondents reported to integrate their diabetes. Other encouraging findings indicated that only a small minority responded to diabetes-related problems by denial and/or mental disengagement and resignation. On the other hand, a substantial proportion of the respondents reported that they seldom used active task-oriented coping, such as seeking social support, seeking knowledge and planning. This lack of active task-orientation was more evident among people with Type 2 diabetes than among those with Type 1. The differences found between types of diabetes and coping were mainly related to higher age and lower educational level among people with Type 2 diabetes. Moreover, 40% of the respondents reported that they often blamed themselves. In addition, self-blame correlated significantly with both the active and passive coping styles. The present results indicate that there is ample potential for improving active task orientation among adults with diabetes. It should, however, be of some concern that improving active coping may be associated with an increase in self-blaming.*

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## Introduction

Diabetes is a chronic and challenging disease, and its prevalence is increasing rapidly worldwide, especially for Type 2. The disease is a growing threat to the world's public health (King *et al.*, 1995). People with both Type 1 and Type 2 diabetes are required to behaviourally regulate metabolic processes that are normally automatic such as monitoring and adjusting blood glucose levels (Cox & Gonder-Frederick, 1992). Thus, coping with diabetes is different from other chronic diseases. The resultant psychological burden for people with diabetes is high, because many may consider themselves responsible for their health (Wulsin *et al.*, 1987). People with diabetes must comply with extremely demanding requirements of their regimens and may, therefore, often fear failure (Maes *et al.*, 1996). The regimen involves numerous daily behavioural tasks, as well as changes in such basic habits as diet and exercise, all of which must be done for the rest of the patient's life. In addition, despite their efforts, many will probably encounter complications as the disease advances (Maes *et al.*, 1996). These complications may be delayed by improving metabolic control in both types of diabetes (DCCT, 1993; UKPDS, 1998).

The literature suggests that in chronic diseases such as diabetes, the resultant disruption in health is a continual source of stress, which, in addition to everyday stressors, must be managed if people with diabetes are to be positively adjusted to the disease (White *et al.*, 1992). Although many people with diabetes seem to succeed in integrating the demands of the disease into their daily lives, diabetes may involve a lot of stress for the individual. This diabetes-related stress may in turn affect the patient's ability for self-care, impacting on metabolic control and thus leading the individual with diabetes into a vicious circle (Peyrot & McMurry, 1992). Consequently, people with diabetes are continuously challenged to cope with multifaceted problems. The individual's ability to cope with these problems may be responsible for significant variations in the course of the disease and response to the treatment regimen (Band, 1990; Davidson *et al.*, 1997).

Coping may be characterized by cognitive or behavioural attempts either to avoid a stressful situation or to actively do something to alter the situation (Billings & Moos, 1981). According to Lazarus and Folkman (1984), people usually resort to a combination of problem-focused (task-oriented and approach strategies) and emotion-focused (emotional approach as well as avoidant strategies) coping in almost every stressful encounter. The habitual way in which people cope with stressing situations they encounter is the individual's coping disposition or style (Carver *et al.*, 1989). People with diabetes may use a variety of styles in order to cope with the stressing demands of the disease. In the present study, coping styles refer to habitual coping when dealing with diabetes-related strains, and will therefore be understood as diabetes-related coping styles. It should, however, be noted that diabetes-related coping styles are not understood as stable personality traits. This is supported by a previous study suggesting that coping styles are less stable than personality traits (Murberg *et al.*, 2001).

There is no clear consensus as to which coping styles or modes of coping are most effective, that is, how well a coping strategy serves the purpose of resolving problems, preventing future difficulties or relieving emotional distress. However, previous research suggests that chronically ill patients are particularly inclined to use emotion-oriented strategies to reduce high levels of stress imposed by their disease, although many employ a wide range of strategies when they appraise their situation as stressful. Research has also shown that emotion-oriented and avoidant strategies in the long run may be less adaptive than task-oriented and approach strategies, although the impact of these coping strategies appears to depend on the specific constraints imposed by the stressful situation (De Ridder & Schreurs, 2001). Concerning diabetes, problem-focused coping may be particularly important in order to achieve metabolic control and thus prevent diabetes-related problems such as hypoglycaemic episodes and long-term complications. Research has also suggested that it is only through active coping that diabetes patients are able to maintain their demanding regimen (Maes *et al.*, 1996), and that active/task-oriented coping, such as problem-solving action, logical analysis, seeking social support and information gathering, is conducive to positive adjustment to diabetes (Cox & Gonder-Frederick, 1992).

Even though diabetes is a controllable disease to a large extent, and coping is consequently relevant, only a few studies have focused specifically on coping among adults with Type 1 diabetes and even fewer studies have considered Type 2 diabetes (Maes *et al.*, 1996; Smari & Valtysdottir, 1997). In addition, research offers evidence that effective coping skills can be developed and enhanced through training (Rubin & Peyrot, 1999). In this respect, it is vital for health care professionals to acquire specific knowledge about disease-related coping styles among people with Type 1 and Type 2 diabetes in order to identify

those who will benefit most from a tailor-made health care programme aimed at improving coping skills. As far as can be seen from the literature, no studies have explored the differences in coping styles between people with Type 1 and Type 2 diabetes. The purpose of the present study is, therefore, to identify and compare different coping styles among adults with both types of diabetes.

## **Methods**

### *Subject sample*

A total of 752 adults with Type 1 and Type 2 diabetes aged between 25 and 70 were invited to participate in the survey. In order to obtain a representative sample of people with diabetes, participants were recruited from three separate sources, through: (1) general practitioners from a middle-sized and a large municipality in the south-western part of Norway, (2) a diabetes clinic at a general hospital in the south-western part of Norway, and (3) members of the Norwegian Diabetes Association.

The sample recruited from the GPs included all patients with diabetes aged between 25 and 70 in the selected general practices. In the middle-sized municipality, respondents were recruited from all practices having diabetes patients in the current age group. In the large municipality, six randomly selected GPs were invited to participate in order to establish contact with diabetes patients, out of which three practitioners responded positively. The second group recruited from the general hospital represented outpatients in the current age group with consecutive appointments at the diabetes clinic over a period of 12 months. Finally, the third sample recruited from the Norwegian Diabetes Association was selected from four Norwegian counties. The counties were strategically selected to represent cultural variations between Norwegian regions and settlement patterns (urban versus rural). The sampling procedure was designed to give people with Type 1 and Type 2 diabetes in the different sub-samples equal opportunities to be recruited to the study.

Patients with disease duration of less than six months and with severe physical co-morbidity were excluded from the study. Five hundred and eighty-seven (587) people with Type 1 and Type 2 diabetes completed the questionnaire. Out of these, fifty-three (53) respondents were excluded from the study due to poor response quality. Those excluded were mainly older people with Type 2 diabetes (mean age of 58.3 years) reporting low level of education. The response rate and characteristics of the three samples are shown in Table 1.

The mean age of the respondents with Type 1 diabetes in the total sample was 40.7 years (SD = 11.4) and their mean disease duration was 18.6 years (SD = 11.7). The group of people with Type 2 diabetes had a mean age of 57.6 years (SD = 9.2) and mean disease duration of 8.6 years (SD = 6.5). In the total sample, 73.1% reported treatment with insulin, and 45.3% among the respondents with Type 2 diabetes. The distribution of educational status was: (1) compulsory school level: Type 1, 27.6%; Type 2, 48.0%, (2) upper secondary school level: Type 1, 32.8%; Type 2, 32.0%, and (3) college or university level: Type 1, 32.0%; Type 2, 19.1%.

### *Instruments*

The choice of scales for assessing diabetes-related coping styles was conducted in cooperation with an expert panel consisting of health care personnel and people with diabetes. The scales were as follows:

**Table 1.** Response rates and characteristics of the sub-samples recruited from GPs, diabetic clinic and Norwegian Diabetes Association

	Sample from GPs	Sample from Diabetic clinic	Sample from Norwegian Diabetes Association	Total sample
Invited	155	239	358	752
Response	124	196	264	587
Response after exclusion	108	186	240	534
Response rate before exclusion (%)	80	82	75	78
Response rate after exclusion (%)	70	78	67	71
Type 1 diabetes (%)	26	70	41	48
Type 2 diabetes (%)	74	30	59	52
Age Mean $\pm$ SD (Years)	54.0 $\pm$ 12.0	43.1 $\pm$ 12.2	52.6 $\pm$ 12.8	49.6 $\pm$ 13.3
Disease duration Mean $\pm$ SD (Years)	11.5 $\pm$ 11.0	14.9 $\pm$ 11.0	13.2 $\pm$ 9.9	13.4 $\pm$ 10.6
Male (%)	56.5	53.6	50.8	52.9
Female (%)	43.5	46.4	49.2	47.1
Co-morbidity (%)	28.7	27.9	22.9	25.8

1. Cognitive and behavioural coping specific to diabetes was measured by the 21-item Diabetes Coping Measure (DCM; Welch, 1994; Welch, *et al.*, 1997). The DCM has emerged from clinical themes described in previous research on coping with chronic medical diseases and subsequent empirical analysis including ATT39 and items from the Medical Modes Coping Questionnaire (Welch, 1994; Welch, *et al.*, 1997). The DCM provides four sub-scales: 'Tackling spirit', 'Avoidance', 'Passive resignation' and 'Diabetes integration'. The respondents are asked to indicate their habitual thoughts and feelings about diabetes and its influence on their lives on a five-point Likert scale ranging from 'Agree strongly' to 'Disagree strongly'. The scale is formulated similar to the way in which Carver *et al.* (1989) define coping styles and will therefore be considered as a measure of diabetes-related coping styles. The higher the scores on each coping style, the greater use of the specific coping style.
2. In addition, five sub-scales, which were considered applicable for the strain and challenge experienced by people with diabetes, and which were not conceptually overlapping with the DCM, were selected from the Cope dispositional coping style scale (COPE; Carver *et al.*, 1989). The COPE scale is conceived as a fine-grained dispositional measure of individual differences in coping, and it reflects a balanced view of the disposition versus situation issue (Schwartz & Schwartz, 1996). The five sub-scales included were: 'Planning', 'Seeking social support for instrumental reasons', 'Seeking social support for emotional reasons', 'Denial' and 'Mental disengagement'.
3. One sub-scale, 'Seeking knowledge', was developed for this particular study through discussions with the expert panel. See Table 2 for the wording of items included in scales on coping. The sub-scale contains five items of how actively the respondents are seeking knowledge about diabetes. This is considered relevant for persons with diabetes in expectation of constantly greater responsibility for their own disease.
4. The final sub-scale, 'Self-blame', including three items (Table 2), is derived from the Ways of Coping Questionnaire (Folkman & Lazarus, 1988). This final sub-scale is also considered applicable for the strain and challenge experienced by people with diabetes.

In the COPE scale, as well as in the two additional sub-scales, the respondents are asked to indicate what they generally do and feel when they experience diabetes-related stressful events. The sub-scales have response alternatives, 'I usually don't do this at all', 'I usually do this a little bit', 'I usually do this a medium amount' and 'I usually do this a lot' (scored from 1 to 4) (Carver *et al.*, 1989). The higher the scores on each coping style, the greater was the use of the specific coping style. To correspond with these response alternatives, the sub-scale mean scores were categorized into four groups: (1) 'Very seldom use of coping style'; scores within the low quarter of the scoring range indicate typical use of response alternatives 'don't do this at all' through 'do this a little bit'; (2) 'Seldom use of coping style'; scores within the low middle quarter of the scoring range indicate typical use of response alternatives 'do this a little bit'; (3) 'Occasional use of coping style'; scores within the high middle quarter of the scoring range indicate typical use of response alternatives 'do this a medium amount'; and (4) 'Frequent use of coping style'; scores within the high quarter of the scoring range indicate typical use of response alternatives 'do this a medium amount' through 'do this a lot'. Prior to the categorization, the scores for the DCM were adjusted by multiplying each score by 4/5 to have the same scoring interval as the other sub-scales ranging from 1–4.

*Diabetes type* was determined by self-report, asking whether the respondents had Type 1 or Type 2 diabetes. Self-reports of diabetes type were validated against the patients' medical records from both the diabetes clinic and the GPs. As the data from both sources were consistent, it is likely to assume the same consistency among data from the Norwegian Diabetes Association, if the self-reported data had been validated with medical records.

Scores for age, gender, educational level, negative life-events unrelated to diabetes, disease duration, other diseases affecting health as well as treatment regimen were implemented as *control variables*. *Age* was scored as a continuous variable (in years). *Gender* was scored as follows: women = 1 and men = 2. *Educational level* was assessed by asking the respondents to indicate the highest level achieved in a three-point ordinal response ranging from ten years of primary/secondary school or less (scored 1) to college or university (scored 3). *Disease duration* was scored as a continuous variable (in years). *Treatment regimen* was assessed by asking the respondents to indicate whether they were treated by diet, oral medication, insulin once or twice a day, multiple insulin injections or insulin pump. In addition, the respondents were asked to indicate whether they have *other diseases affecting health unrelated to diabetes (co-morbidity)* or not. Dichotomous score for co-morbidity was computed by counting those reporting yes to co-morbidity. The same statistical procedure was also implemented for the item on *negative life-events during the last year unrelated to diabetes*.

### *Study procedures*

Eligible patients attending the diabetes clinic and the GP surgeries and members of the Norwegian Diabetes Association were invited by letter to participate in the survey. A brief description of the study was included in the letter, together with the questionnaire. In addition, patients from the hospital and the GPs gave their written consent to collect medical records. The questionnaires were returned by mail to the researchers. The Norwegian Regional Medical Ethical Committee approved the study protocol.

## Statistical analyses

The analyses were conducted using the SPSS program (Norusis, 2000). Statistical analyses included descriptive statistics, factor analyses, reliability testing, product moment correlation and multiple linear regression analysis. For the explorative factor analyses, maximum likelihood estimation with a promax rotation was implemented. In addition, a confirmatory factor analysis implementing maximum likelihood estimation was conducted. Internal consistency was estimated using Cronbach's alpha coefficients. Factor-based indexes including un-weighted scores for items with factor loadings above 0.40 were computed. Note that the negatively stated items in the sub-scale 'integration' were reversed before the factor-based index 'integration' was computed. Two dummy variables for educational level were computed, one indicating college or university level and one indicating upper secondary school level.

Respondents who had given response to at least 70% of items included in any scale were included in the study. Missing data were handled by giving a missing item the mean score for the other items in each sub-scale completed by the individual.

## Results

Dimensionality of responses to items on coping was explored by exploratory factor analyses (see Table 2). Factor solutions with different number of factors were explored. The eight-factor solution presented the most meaningful factor content that were in best accordance with the dimensions in the original coping subscales. These factors except for one also yielded adequate within-factor consistence. The factor solution had a minimum eigenvalue of 1.3 and accounted for 49.5% of the total variance in items assessing diabetes related coping styles.

*Factor 1*, 'seeking social support', was constituted by items from two sub-scales in the COPE scale ('seeking social support for instrumental reasons' and 'seeking social support for emotional reasons'). *Factor 2*, 'integration', was primarily constituted by items from the diabetes integration dimension in the Diabetes Coping Measure, whereas *factor 3*, 'denial/mental disengagement', was made up of variables from two sub-scales in the COPE scale ('denial' and 'mental disengagement'). In addition, items from the sub-scale 'passive resignation' and one item from the sub-scale 'avoidance coping' in the DCM constituted *factor 5*, 'resignation'. The following factors: *factor 4*, 'seeking knowledge', *factor 6*, 'planning', *factor 7*, 'self-blame' and *factor 8*, 'tackling spirit' were made in accordance with the original sub-scales.

**Table 2.** Distribution and factor loadings of the responses given to the items on coping styles across eight factors explored by maximum likelihood estimation with promax rotation\*

Sub-scale names and items	Factor loadings							
	1	2	3	4	5	6	7	8
<i>1. Seeking social support</i> ( $\alpha = 0.85$ )								
I talk to someone about how I feel.	0.78							
I discuss my feelings with someone	0.75							
I try to get emotional support from friends or relatives	0.75							
I talk to someone to find out more about the situation.	0.64							
I get sympathy and understanding from someone.	0.59							
I talk to someone who could do something concrete about the problem.	0.52							
I ask people who have had similar experiences what they did.	0.50							
I try to get advice from someone about what to do.	0.47							

<b>2. Integration (<math>\alpha = 0.80</math>)</b>									
Having diabetes over a long time changes your outlook on life for the worse.									0.70
Diabetes is the worst thing that has ever happened to me.									0.63
Most people would find it difficult to adjust to diabetes.									0.60
I think it is unfair that I should have diabetes when other people are so healthy.									0.64
Diabetes makes me feel different from everyone else.									0.54
Because of my illness, I cannot plan realistically for the future.									0.52
Whatever I do, diabetes complications will continue to ruin my health.									0.40
<b>3. Denial/mental disengagement (<math>\alpha = 0.78</math>)</b>									
I refuse to believe that it has happened.									0.68
I pretend that it hasn't really happened.									0.67
I say to myself 'this isn't real'.									0.58
I turn to work or other substitute activities to take my mind off things.									0.52
I daydream about things other than this.									0.52
I act as though it hasn't even happened.									0.49
I go to the movies or watch TV, to think about it less.									0.48
<b>4. Seeking knowledge (<math>\alpha = 0.79</math>)</b>									
I am actively seeking information about how I can avoid complications.									0.91
I am seeking knowledge about how I best can live with diabetes.									0.85
At consultations with doctor/nurse I am active in asking for diabetes-related advice and counselling.									0.48
Prior to consultations with doctor/nurse I have prepared a number of questions I seek the answers to.									0.44
<b>5. Resignation (<math>\alpha = 0.70</math>)</b>									
I always seem to have poor blood sugars no matter what I do.									0.68
I am reluctant to visit my doctor for my regular diabetes check up when I know I am in poor blood glucose control.									0.57
There is little I can do to control my blood glucose well.									0.52
I feel like just giving in to my diabetes.									0.50
<b>6. Planning (<math>\alpha = 0.80</math>)</b>									
I try to come up with a strategy about what to do									0.68
I make a plan of action.									0.62
I think hard about what steps to take.									0.60
I think about how I might best handle the problem.									0.57
<b>7. Self-blame (<math>\alpha = 0.85</math>)</b>									
I blame myself.									0.85
It is my fault.									0.74
I am criticizing myself.									0.70
<b>8. Tackling spirit (<math>\alpha = 0.49</math>)</b>									
I believe that research will discover a cure for diabetes before long.									0.71
Clinical research is continually improving the treatments available for diabetes.									0.47
Eigenvalues	6.84	6.63	2.48	2.06	1.90	1.51	1.45	1.34	
(%): Total = 49.5	14.0	13.5	5.1	4.2	3.9	3.1	3.0	2.7	

\*Note. Only factor loadings at and above 0.40 are given.

**Table 3.** Sections of scoring intervals in percentages (low quarter of scoring range to high quarter of scoring range), mean scores and standard deviations for factor-based indexes for the total sample of people with Type 1 and Type 2 diabetes (N 534).

	Very seldom use† (%)	Seldom use ‡ (%)	Occasional use§ (%)	Frequent use** (%)	Mean	Std. Deviation
Seeking support	29	42	25	4	2.19	0.62
Integration	5	18	35	42	3.02	0.70
Denial/mental disengagement	54	33	12	1	1.78	0.58
Seeking knowledge	9	45	38	8	2.65	0.64
Resignation	75	16	8	1	1.39	0.65
Planning	12	27	41	20	2.77	0.71
Self-blame	38	22	27	13	2.19	0.88

†Very seldom use of coping style refers to scores within the low quarter of scoring range.

‡Seldom use of coping style refers to scores within the low middle quarter of scoring range.

§Occasional use of coping style refers to scores within the high middle quarter of scoring range.

\*\*Frequent use of coping style refers to scores within the high quarter of scoring range.

Revised sub-scales were constructed on the basis of the factor analysis. With regard to the internal consistency of the eight sub-scales for assessing coping (Table 2), the following Cronbach's alphas were found: 'social support' 0.85, 'integration' 0.80, 'denial/mental disengagement' 0.78, 'seeking knowledge' 0.79, 'resignation' 0.70, 'planning' 0.80, 'self-blame' 0.85, and 'tackling spirit' 0.49 (See Table 2). Due to the low Cronbach's alpha of 'tackling spirit' (0.49), this sub-scale was excluded from further analyses. Using factor loadings at and above 0.40 as inclusion criteria for items in the sub-scales, the following items were not included in any sub-scale: (1) 'Whatever I do, diabetes complications will continue to ruin my health' (factor 2); (2) 'When my blood sugars are high I don't bother monitoring them as much' and 'It's difficult to fit regular blood glucose monitoring into my busy lifestyle' (factor 5); and (3) 'Most people would be a lot healthier if they followed a diabetes diet' (factor 8).

Confirmatory factor analyses for the new sub-scale division (seven sub-scales) indicated satisfactory fit (RMSEA = 0.054, 90% CI = (0.049, 0.059)).

Table 3 shows that 71% of the respondents in the whole sample reported very seldom and seldom using the coping style, 'seeking support', whereas only 4% reported frequent use. The same tendency was found for the sub-scales 'seeking knowledge' and 'planning'. Fifty per cent and 39% reported very seldom and seldom use of the current coping styles, respectively, whereas only 8% and 20% reported frequent use. On the other hand, only 13% and 9% of people with diabetes reported occasional and frequent use of 'denial/mental disengagement' and 'resignation', whereas 77% reported occasional and frequent use of 'integration'.

The correlation coefficients between the different coping styles are presented in Table 4. Relatively strong significant correlations were found between the active coping styles, such as 'seeking support', 'planning' and 'seeking knowledge', as well as between passive, emotional coping styles such as 'denial/mental disengagement' and 'resignation'. In addition, 'self-blame' correlated significantly with both active and passive coping styles. 'Integration', however, only correlated significantly negatively with passive, emotional-focused coping styles.

Table 5 lists the correlation coefficients between demographic and clinical variables. Coefficients of correlations between type of diabetes and age, insulin treatment, disease duration and college or university level were significant, ranging from high to moderate, whereas the correlations between diabetes type and gender, upper secondary school level,



**Table 4.** Pearson's product moment coefficients for inter-correlation between factor-based indexes for coping styles (N=534).

Factor-based indexes for coping styles	Seeking support	Integration	Denial/mental disengagement	Seeking knowledge	Resignation	Planning
Integration	-0.05					
Denial/mental disengagement	0.15**	-0.44**				
Seeking knowledge	0.36**	-0.09	-0.01			
Resignation	-0.07	-0.52**	0.35**	-0.14**		
Planning	0.54**	-0.02	0.18**	0.42**	-0.13**	
Self-blame	0.27**	-0.18**	0.37**	0.06	0.14**	0.36**

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

**Table 5.** Pearson's product moment coefficients for correlations between scores for demographic and clinical variables (N= 534)

	Type of diabetes	Age	Gender	College or university level	Upper secondary school level	Life-events	Disease duration	Co-morbidity
Age	0.63**							
Gender	0.05	-0.02						
College or university level	-0.16**	-0.22**	-0.01					
Upper secondary school level	0.04	-0.21**	0.10*	-0.46**				
Life-events	0.03	-0.05	-0.09*	-0.05	-0.09*			
Disease duration	-0.47**	-0.03	-0.09*	0.08	-0.06	-0.06		
Co-morbidity	0.06	0.06	-0.11*	-0.01	-0.02	0.20**	-0.02	
Insulin treatment	-0.60**	-0.39**	-0.04	0.15**	0.03	-0.05	0.38**	-0.05

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

life-events and co-morbidity were low and non-significant. Significant positive correlations were found between diabetes type and age, whereas diabetes type was negatively associated with college or university level, indicating that people with Type 2 diabetes in the present study are older and less educated than those with Type 1.

The results from the correlation and multiple linear regression analyses for associations between control variables, scores for type of diabetes and factor-based indexes for coping styles are presented in Table 6. Type of diabetes yielded significant negative bivariate associations with scores for the coping sub-scales 'seeking support', 'planning' and 'self-blaming' reflecting that respondents with Type 1 diabetes had higher scores on these diabetes-related coping styles. However, results from the multiple regression analysis showed that associations of diabetes type with 'seeking support', 'planning' and 'self-blame' were non-significant, when the covariates of age, insulin treatment, disease duration and college or university level were entered. Corresponding analysis showed that type accounted only for a marginally significant amount of unique variance in 'seeking support'. Follow-up analyses entering covariates one at a time showed that the difference between respondents with Type 1 and Type 2 diabetes in 'seeking support' was mainly accounted for by age and educational level. The younger and well-educated reported to use this coping style the more frequently. Moreover, the difference between people with Type 1 and Type 2 diabetes in 'planning' was mainly accounted for by educational level, whereas the difference in 'self-blame' was mainly by age. The more well-educated reported more planning, whereas the youngest reported the more self-blame.

**Table 6.** Results from correlation (Pearson's *r*) and multiple linear regression analyses (standardized beta weights ( $\beta$ )) for associations between control variables, scores for type of diabetes and coping styles (N =534)

	Seeking support		Integration		Denial/mental disengagement		Seeking knowledge		Resignation		Planning		Self-blame	
	<i>r</i>	$\beta$	<i>r</i>	$\beta$	<i>r</i>	$\beta$	<i>r</i>	$\beta$	<i>r</i>	$\beta$	<i>r</i>	$\beta$	<i>r</i>	$\beta$
Control variables														
Age	-0.21**	-0.10	-0.01	-0.06	-0.06	-0.10	0.11*	0.22**	-0.01	-0.09	-0.17**	-0.04	-0.21**	-0.20**
Gender	-0.23**	-0.22**	0.02	0.04	-0.10*	-0.09*	-0.12**	-0.10*	-0.14**	-0.12*	-0.10*	-0.08*	-0.17**	-0.16**
College or university level	0.15**	0.16**	-0.13**	-0.19**	-0.09*	-0.07**	0.13**	0.18**	-0.09*	-0.17**	0.19**	0.23**	0.12**	0.09*
Upper secondary school level	0.00	0.08	-0.00	-0.10*	0.08	0.06	-0.06	0.06	-0.07	-0.13*	0.02	0.14**	-0.01	0.04
Life-events	0.11**	0.08	0.08	0.07	0.22**	0.21**	0.06	0.07	0.11*	0.07	0.14**	0.17**	0.11*	0.11*
Disease duration	0.05	-0.03	-0.00	-0.01	-0.04	-0.01	0.05	-0.02	-0.02	-0.01	0.13**	0.07	0.08	0.06
Co-morbidity	0.11*	0.09*	0.01	0.00	0.01	-0.04	0.08	0.06	0.04	0.01	0.00	-0.03	-0.03	-0.05
Insulin	0.12**	-0.01	0.09*	0.16**	0.02	0.05	0.10*	0.17**	0.03	0.08	0.17**	0.06	0.15**	0.08
Independent variable														
Types of diabetes	-0.20**	-0.12	0.00	0.09	0.01	0.09	0.02	0.01	0.02	0.09	-0.19**	-0.05	-0.14**	0.09
R <sup>2</sup>	0.14		0.05		0.07		0.08		0.05		0.11		0.10	

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

## Discussion

### *Coping styles among adults with diabetes*

One major purpose of our study was to identify different coping styles among adults with Type 1 and Type 2 diabetes. The dimensionality of items on coping was explored by factor analysis (Table 2), yielding dimensions that correspond mainly with the original coping concepts. However, three pairs of sub-scales assessing related concepts were merged into single sub-scales. Firstly, the two COPE sub-scales on 'seeking social support' were loaded on one factor, indicating that seeking support for instrumental and emotional reasons could be assessed as a single concept among people with diabetes. According to Carver *et al.* (1989), 'seeking social support for instrumental reasons' is regarded as problem-focused coping, whereas 'seeking social support for emotional reasons' is considered as emotional-focused coping. In practice, however, they often co-occur (Carver *et al.*, 1989). Moreover, the tendency to seek out emotional social support may be as functional as seeking support for instrumental reasons when coping with diabetes-related problems. The person with diabetes who may feel insecure because of diabetes-related problems can be reassured by receiving moral support, sympathy or understanding and thus foster a return to problem-focused coping. Secondly, results from the factor analysis also suggested that it is statistically difficult to distinguish between the two concepts of 'denial' and 'mental disengagement'. This may reflect that both types of coping serve to distract the person from thinking about diabetes-related problems and possibly from trying to solve the problems as well and thus impede adaptive coping (Carver *et al.*, 1989). Thirdly, items from the DCM-sub-scales 'passive resignation' and 'avoidance coping' converged in one factor assessing passive coping responses to diabetes-related problems. This factor included three items from the first sub-scale and one item from the latter sub-scale yielding factor loadings above 0.40.

Moreover, the DCM-scale was also designed to assess 'tackling spirit' as a coping response to diabetes-related problems. The factor analysis identified 'tackling spirit' as a separate concept of diabetes-related coping. The items for assessing this concept showed, however, low internal consistency. Further research is, therefore, needed to develop a better measure of 'tackling spirit'. Moreover, items in a scale on 'tackling spirit' should probably focus more on perceived internal control and active coping efforts than the present items in the DCM, which are primarily focusing on how research may help to cure diabetes.

The results from the present study indicate that a clear majority of the respondents were able to integrate their diabetes. Our results, however, indicated no significant associations of integration with active coping styles. This may reflect that subjects who integrated the challenge of their diabetes were not more likely than others to apply active coping styles. These findings are rather inconsistent with the literature suggesting that integration is a functional coping response (Carver *et al.*, 1989). The contrast between the present and previous results could be related to the negative wording of items in the integration sub-scale. An alternative scale on integration with positive wording of items should therefore be developed and examined in further studies.

An encouraging finding from the present study was that only a small minority of the respondents seemed to respond to diabetes-related problems by passive, emotional-focused coping such as 'denial/mental disengagement' and 'resignation'. Only 13% of the respondents reported coping by occasional and frequent use of tactics that serve to deny and distract the person from diabetes-related problems, whereas 9% reported often applying resignation as a coping style. Coping with the highly demanding regimen of diabetes with such coping responses may give short-term emotional relief, but is bound to be inadequate in

the long run (Taylor, 1999). Consequently, by using these coping styles over time, people with diabetes- may face an enhanced risk of long-term complications, because of the failure to stick to their regimen (Maes *et al.*, 1996). In addition, use of resignation in the sense of giving up the attempt to attain diabetes-related goals and not seeking proper treatment may be highly destructive and even lead to death (Andersson & Ekdahl, 1992). This may explain why these coping styles were the least evident in our sample.

A more discouraging finding is that the present study suggested that a substantial proportion of the respondents seldom used active task-oriented coping styles, while previous research indicates that active/task-oriented coping is conducive to adjustment to diabetes (Cox & Gonder-Frederick, 1992). About two-thirds of the total sample reported seldom seeking support, every second reported seldom seeking knowledge, whereas one in three reported seldom planning or being systematic in their approach to diabetes-related problems (Table 3). The present findings are somewhat inconsistent with previous research. Frenzel *et al.* (1988) demonstrated in their study that up to 80% of coping efforts used by diabetes patients concerned active coping; there are, however, some limitations to this study. The sample was small and the subjects (39 adults with insulin-dependent diabetes) were drawn from participants in a project concerned with predicting diabetes adherence and control. Participation in a project may thus have stimulated more use of active-focused coping. Further research on coping with diabetes in larger representative samples is therefore needed.

Results from the present study may reflect that many adults with diabetes are not taking active steps in trying to cope with the demands of their disease. One possible interpretation may therefore be that a substantial proportion of people with diabetes are not taking full responsibility for their own care, which is normally required today. They may not engage well in the cognitive and emotional efforts needed to deal with long-term threats such as complications. Findings from the present study, therefore, indicate that there is ample potential to improve active-task orientation among adults with diabetes. Active coping skills may be developed or enhanced through training, leading people with diabetes to the opposite direction from those who cope passively, and thus reinforcing an active approach to coping (Welch *et al.*, 1997). On the other hand, too high coping activity may increase the risk of psychological burnout and thus impinge on adaptive coping in the long term. This dilemma is an issue that requires further study.

A substantial proportion of the respondents reported that they often blamed themselves when facing diabetes-related problems. These findings may reflect upon the specific constraints of having diabetes such as dealing with their diabetes all day, every day, making countless decisions in an often-futile effort to approximate the non-diabetic metabolic state (Welch *et al.*, 1997). Although people with diabetes wish to cope actively with the highly demanding regimen of diabetes, they may at the same time blame themselves too much for not achieving the demands of this regimen. The significant associations between passive, emotional coping styles and self-blaming found in the present study support this assumption. However, as suggested by a previous study, self-blaming may also be adaptive, because it may lead to the acceptance of responsibility and thereby to active coping responses (Bulman & Wortman, 1977). The significant positive associations between self-blame and some active coping styles in the present study support this suggestion. The tendency to self-blame seems to be a double-edged sword. On the one hand, it may stimulate active coping, on the other hand, it may lead to guilt and even depression (Taylor, 1999). The dilemma between being active in coping with diabetes-related challenges and self-blaming should be a subject for further research.

## *Type of diabetes and different coping styles*

Another purpose of the present study was to compare coping styles among people with Type 1 and Type 2 diabetes. The results showed some tendency for adults with Type 1 diabetes to seek more support, to plan more and also to be more self-blaming when faced with diabetes-related problems than people with Type 2. However, differences in planning and self-blame were accounted for by differences in age and educational level between the two groups. Thus, the results indicate that differences in coping styles between people with Type 1 and Type 2 diabetes that could be attributed to their condition were very modest, except for seeking support, showing marginally significant associations with type. Yet, health care professionals should be aware of that the lack of active task orientation is more evident among older people with diabetes than younger ones, independent of type. It should also be noticed that young people with diabetes tend to blame themselves more than older ones. This should be a subject for further research.

Despite the fact that the present study is cross-sectional and that the causality of the relationships could not be concluded, the present findings about coping styles among adults with Type 1 and Type 2 diabetes could be of great concern to health care personnel. The results may have implications for the development, improvement and choice of health care and counselling programmes aimed at increasing diabetics' coping ability, especially for the group of adults with Type 2 diabetes. Further research using experimental or longitudinal design is needed to test the effects of such health care programmes.

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## **References**

- ANDERSSON, S.I. & EKDAHL, C. (1992). Self-appraisal and coping in out-patients with chronic disease. *Scandinavian Journal of Psychology*, 33, 289–300.
- BAND, E. (1990). Children coping with diabetes: understanding the role of cognitive development. *Journal of Pediatric Psychology*, 15, 127–141.
- BILLINGS, A.G. & MOOS, R.H. (1981). The role of coping responses and social resources in attenuating the impact of stressful life events. *Journal of Behavioral Medicine*, 4, 139–157.
- BULMAN, M.K. & WORTMAN, C.B. (1977). Attributions of blame and coping in the 'real world': severe accident victims react to their lot. *Journal of Personality and Social Psychology*, 35, 351–363.
- CARVER, C.S., SCHEIER, M.F. & WEINTRAUB, J.K. (1989). Assessing coping strategies: a theoretically based approach. *Journal of Personality and Social Psychology*, 56, 267–283.
- COX, D.J. & GONDER-FREDERICK, L. (1992). Major developments in behavioural diabetes research. *Journal of Consulting and Clinical Psychology*, 60, 628–638.
- DAVIDSON, M., BOLAND, E.A. & GREY, M. (1997). Teaching teens to cope: coping skills training for adolescents with insulin-dependent diabetes mellitus. *Journal of the Society of Pediatric Nurses*, 2, 65–72.
- Diabetes Control & Complications Trial Research Group (DCCT) (1993). The effect of intensive treatment of diabetes on the development and progression of long-term complications in insulin-dependent diabetes mellitus. *New England Journal of Medicine*, 329, 977–986.
- DE RIDDER, D. & SCHREURS, K. (2001). Developing interventions for chronically ill patients: is coping a helpful concept? *Clinical Psychology Review*, 21, 205–240.
- FOLKMAN, S. & LAZARUS, R.S. (1988). *Manual for the Ways of Coping Questionnaire*. Palo Alto, CA: Consulting Psychologist Press.

- FRENZEL, M.P., MCCAUL, C.K.D., GLASGOW, R.E. & SCHAFFER, L.C. (1988). The relationship of stress and coping to regimen adherence and glycemc control of diabetes. *Journal of Social and Clinical Psychology*, 6, 77–87.
- KING, H., GRUBER, W. & LANDER, T. (Eds) (1995). *Implementing National Diabetes Programmes. Report of a WHO Meeting*. Geneva: World Health Organization; Division of Non-communicable Diseases.
- LAZARUS, R.S. & FOLKMAN, S. (1984). *Stress, appraisal, and coping*. New York: Springer.
- MAES, S., LEVETHAL, H. & DE RIDDER, D.T.D. (1996). *Coping with chronic diseases*. In: M. ZEIDNER & N. S. ENDLER (Eds), *Handbook of coping: theory, research, applications* (pp. 221–251). New York: John Wiley.
- MURBERG, T., BRU, E. & STEPHENS, P. (in press). The relationships between personality and coping among individuals living with a life-threatening disorder. *Personality and individual differences*.
- NORUSIS, M.J. (2000). *SPSS 10.0. Guide to data analysis*. Chicago, IL: Prentice Hall.
- PEYROT, M.F. & MCMURRY, J.F. (1992). Stress buffering and glycemc control: the role of coping styles. *Diabetes Care*, 15, 842–846.
- RUBIN, R.R. & PEYROT, M. (1999). Quality of life and diabetes. *Diabetes Metabolism Research Reviews*, 15, 205–218.
- SCHWARTZER, R. & SCHWARTZER, C. (1996). A critical survey of coping instruments. In: M. ZEIDNER & N. S. ENDLER (Eds), *Handbook of coping: theory, research, applications* (pp. 107–132). New York: John Wiley.
- SMARI, J. & VALTYSODOTTIR, H. (1997). Dispositional coping, psychological distress and disease-control in diabetes. *Personality and Individual Differences*, 22, 151–156.
- TAYLOR, S.E. (1999). *Health psychology*. Boston: McGraw-Hill.
- UK Prospective Diabetes Study Group (UKPDS) (1998). Intensive blood-glucose control with sulphonylureas or insulin compared with conventional treatment and risk of complications in patients with type 2 diabetes (UKPDS 33). *The Lancet*, 352, 837–853.
- WELCH, G.W. (1994). The Diabetes Coping Measure: a measure of cognitive and behavioural coping specific to diabetes (Appendix: newly designed scales). In: C. BRADLEY (Ed.), *Handbook of psychology and diabetes: a guide to psychological measurement in diabetes research and practice* (pp. 391–404). London: Harwood Academic.
- WELCH, G.W., JACOBSON, A.M. & POLONSKY, W.H. (1997). The Problem Areas in Diabetes Scale: an evaluation of its clinical utility. *Diabetes Care*, 20, 760–766.
- WHITE, N.E., RICHTER, J.M. & FRY, C. (1992). Coping, social support and adaptation to chronic illness. *Western Journal of Nursing Research*, 14, 211–224.
- WULSIN, L.R., JACOBSON, A.M. & LAWRENCE, I.R. (1987). Psychosocial aspects of diabetic retinopathy. *Diabetes Care*, 10, 367–373.

## Appendix

**Table 1.** Extended results from multiple linear regression analyses for associations between control variables, scores for type of diabetes and coping styles (N = 534)

	Support				Integration			
	B	SE	$\beta$	p	B	SE	$\beta$	p
Control variables								
Constant	2.92	0.19		0.00	1.76	0.22		0.00
Age	0.00	0.00	0.10	0.08	0.00	0.00	0.06	0.37
Gender	0.27	0.05	0.22	0.00	0.06	0.06	0.04	0.36
College or university level	0.23	0.07	0.16	0.00	0.32	0.08	0.19	0.00
Upper secondary school level	0.11	0.06	0.08	0.08	0.14	0.07	0.10	0.05
Life-events	0.02	0.01	0.08	0.06	0.02	0.01	0.07	0.14
Disease duration	0.00	0.00	0.03	0.59	0.00	0.00	0.01	0.90
Co-morbidity	0.13	0.06	0.09	0.03	0.00	0.07	0.00	0.97
Insulin	0.02	0.07	0.01	0.81	0.25	0.08	0.16	0.00
Independent variable								
Types of diabetes	0.14	0.09	0.12	0.09	0.13	0.10	0.09	0.21
R <sup>2</sup>	0.14				0.05			

	Denial/mental disengagement				Seeking knowledge			
	B	SE	$\beta$	<i>p</i>	B	SE	$\beta$	<i>p</i>
<b>Control variables</b>								
Constant	1.85	0.18		0.00	2.01	0.20		0.00
Age	0.00	0.00	-0.10	0.11	0.01	0.00	0.22	0.00
Gender	-0.11	0.05	-0.09	0.03	-0.13	0.05	-0.10	0.02
College or university level	-0.09	0.07	-0.07	0.20	0.27	0.07	0.18	0.00
Upper secondary school level	0.07	0.06	0.06	0.21	0.08	0.06	0.06	0.19
Life-events	0.05	0.01	0.21	0.00	0.02	0.01	0.07	0.11
Disease duration	0.00	0.00	-0.01	0.89	0.00	0.00	-0.02	0.69
Co-morbidity	-0.05	0.06	-0.04	0.35	0.08	0.06	0.06	0.20
Insulin	0.06	0.07	0.05	0.38	0.24	0.07	0.17	0.00
<b>Independent variable</b>								
Types of diabetes	0.11	0.08	0.09	0.19	0.01	0.09	0.01	0.92
R <sup>2</sup>	0.07				0.08			
	Resignation				Planning			
	B	SE	$\beta$	<i>p</i>	B	SE	$\beta$	<i>p</i>
<b>Control variables</b>								
Constant	1.68	0.21		0.00	2.74	0.22		0.00
Age	0.00	0.00	-0.09	0.17	0.00	0.00	-0.04	0.55
Gender	-0.16	0.06	-0.12	0.01	-0.12	0.06	-0.08	0.05
College or university level	-0.25	0.08	-0.17	0.00	0.37	0.08	0.23	0.00
Upper secondary school level	-0.18	0.07	-0.13	0.01	0.20	0.07	0.14	0.00
Life-events	0.02	0.01	0.07	0.10	0.05	0.01	0.17	0.00
Disease duration	0.00	0.00	-0.01	0.82	0.00	0.00	0.07	0.15
Co-morbidity	0.01	0.06	0.01	0.89	-0.04	0.07	-0.03	0.54
Insulin	0.12	0.08	0.08	0.14	0.10	0.08	0.06	0.24
<b>Independent variable</b>								
Types of diabetes	0.12	0.09	0.09	0.21	-0.07	0.10	-0.05	0.48
R <sup>2</sup>	0.05				0.11			
	Self-blame							
	B	SE	$\beta$	<i>p</i>				
<b>Control variables</b>								
Constant	2.74	0.27		0.00				
Age	-0.01	0.00	-0.20	0.00				
Gender	-0.29	0.07	-0.16	0.00				
College or university level	0.21	0.10	0.10	0.04				
Upper secondary school level	0.08	0.09	0.04	0.36				
Life-events	0.04	0.02	0.11	0.01				
Disease duration	0.01	0.00	0.06	0.21				
Co-morbidity	-0.10	0.09	-0.05	0.24				
Insulin	0.15	0.10	0.08	0.15				
<b>Independent variable</b>								
Types of diabetes	0.15	0.12	0.09	0.22				
R <sup>2</sup>	0.10							