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Immunity and health after bereavement in relation to coping

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Coping was examined as an intervening variable between the stressor of bereavement and its effects on subjective health and immunity in thirty-nine recently bereaved Norwegian women. Coping was defined as: "positive response outcome expectancies". Data were collected approximately one month after the death of the husband, and twelve months thereafter. Data collected were: expected coping success (self-scoring), subjective health (UHI), anxiety and depression (GWB), and immunoglobulins (IgA, IgM, IgG) with components (C3, C4). Statistics were: frequencies, paired *t*-test, ANOVA, and MANOVA. Permissions and confidentiality were in accordance with the Helsinki-declaration. Coping was found to be related strongly to health and to health changes. Few relations were found between immunity and health. Coping, health, and anxiety and depression formed a triangle of interrelations. It was concluded that coping defined as "positive response outcome expectancies" may be a predictor of the adaptational outcome after a crisis.

Key words: Health, immunity, coping, conjugal bereavement.

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INTRODUCTION

Bereavement has been reported to be associated with negative effects on health (Bowling & Windsor, 1995; Stroebe, 1994) and on immune functioning (Beutel, 1991; Zakowski, Hall & Baum, 1992). "Coping" may be a crucial intervening variable between the stressor of bereavement and its effects on health and immunity. This paper examines whether bereavement may be related to different effects on health and immunity, corresponding to how the bereaved person evaluates her "coping".

"Coping" has been conceptualized in various ways (Olff, 1991) but two main uses of the term may be identified (Ursin & Hytten, 1992). "Coping" has been defined as strategies (Lazarus & Folkman, 1984), or as expectancies about the potential success of these strategies (Ursin, 1988). The exact definition of the latter is: "positive response outcome expectancies". This definition is developed within cognitive-behavioral tradition (Bolles, 1972) and stress research (Ursin & Hytten, 1992). It is central to this position that it is *the expectancy* of being able to cope with a stressor or not, which is coping. Expectancies are learned, based upon experienced outcome of coping efforts and perceived probability of that outcome. This concept of "coping" bears resemblance to the concepts "self efficacy" (Bandura, 1977) and the aspect of "controllability" in "sense of coherence" (Antonovsky, 1987). However, here the definition of coping as "positive response outcome expectancies" is chosen because it is stringent, rooted in the conceptualizations of cognitive learning theory, and easy to operationalize and measure.

The loss of a significant other is a stressor. It is probably one of the most severe trauma a human being can go through. The usual presence of a loved person is replaced by her or his absence. In the terminology of control theory one may say that conjugal bereavement causes a discrepancy between the psychosocial set-value: "my spouse exists" and the psychosocial actual-value: "my spouse does not exist".

Discrepancies between set-values and actual-values cause increased activation in almost all physiological systems (Ursin, 1994). This reaction is a major component in "the general adaptation syndrome" (GAS), also called "the stress-response" (Selye, 1936). The ideal course of event is that the individual "copes" with the problem: The taxing situation is changed or eliminated, the set-/actual-value discrepancy is reduced, and consequently activation is reduced. This activation reducing effect of successful responses has been demonstrated both in human and animal subjects (Ursin & Olff, 1993*a*). Thus, short-lasting increased activation has no detrimental impact on health or immunity (Ursin & Olff, 1993*b*). A successful coping response will generate an expectation of success (coping) on later occasions. The emotional reactions to coping are satisfaction and happiness.

If, however, the problem is not solved, then the set-/actual-value discrepancy is maintained, and long-lasting, sustained activation is assumed to occur. Only this sustained, long-lasting activation is believed to be the potentially health-threatening part of the stress-response (Ursin, 1994). This relationship has been demonstrated in several studies involving different animal and human populations, and different stressors (Overmier & Murison, 1991; Ursin & Olff, 1993*a*). The perceived lack of control is essential in keeping the activation sustained. The emotional reactions to unsuccessful coping efforts are anxious and depressive moods.

"Helplessness" (Seligman, 1975) and "hopelessness" (Beck & Emery, 1985) are extreme reactions to perceived lack of control. Helplessness is defined as "a perceived zero probability that any actions aimed at coping with a difficult

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situation will be successful''. Hopelessness is defined as ''a perceived probability that any actions aimed at coping will make the situation worse'' (Prociuk *et al*., 1976). 'Perceived probability'' seems to be the same as ''expectation''. Uncontrollable stress often has been found to be related to reduced immune functioning both in human and animal subjects (Laudenschlager *et al*., 1983; Monjan, 1983). Not the stressor itself, but the perceived probability that coping efforts would be unsuccessful, was crucial in creating the impact on the immune system. In humans the emotional reactions to ''helplessness'' and ''hopelessness'' are depression (Seligman, 1975) and anxiety (Gray, 1981). ''Helplessness,'' and, particularly, ''hopelessness,'' are established as cognitive-behavioral models for the development of depression in humans (Prociuk *et al*., 1976; Garber *et al*., 1980).

It seems possible that the biochemistry of depression is the mediating mechanism between perceived lack of coping and negative effects on immunity (Leonard, 1990). Strong depressive reactions are associated with increased cortisol excretion, and large cortisol excretions over time have an immuno-suppressive effect (Kronful & House, 1984; Ursin & Olff, 1993*a*). Several studies have documented that depression is associated with reduced immune parameters (Herbert & Cohen, 1993; Schleifer & Keller, 1991). Anxiety has also been associated with reduction of immunity (Linn *et al*., 1981; Locke *et al*., 1984). Considering the other end of the scale of emotions: humour at work has been found to improve immune functions (Morreall, 1991); and increases in immune parameters have been found to follow both naturally occurring (Stone *et al*., 1987) and experimentally induced positive emotions (Futterman *et al*., 1994).

The fact that death is absolutely irreversible might indeed promote feelings of helplessness in bereaved individuals. However, death itself is not the only problem bereaved people have to struggle with. Bereavement requires multiple problem-solving, and strains the coping resources to the extreme. Depression and anxiety are the most predominant emotions following bereavement (APA, 1994; Bowlby, 1980). Individual differences in depression and anxiety may, at least partly, be a function of differences in perceived coping success in relation to problems in connection with bereavement. This paper examines the role of coping as an intervening variable between the stressor of bereavement and its effect on immunity and health. Anxious and depressive moods were expected to covary with coping and consequently with health and immunity.

Wide inter-individual and inter-cultural variations in the duration of grief exist (APA, 1994; Wortman & Silver, 1989). It has been argued, however, that a reasonable re-adaptation takes place during the first year of bereavement (Lindstrøm, 1995). In this study, measures were taken one month after bereavement and twelve months thereafter. In this way an approximation of ''early-crisis'' and ''post-crisis measures'' was obtained.

METHOD

Subjects and procedure

Data presented were collected from a group of 39 recently bereaved Norwegian women. Forty-eight widows participated in the first data collecting. This was forty-two percent of all widows asked. Thirty-nine participated in the final data collecting. Their names and addresses were obtained consecutively from a major hospital. The criteria for selection were that the husband's terminal hospitalization had lasted for at least one week, or that his last year was characterized by frequent hospitalizations. The mean age of the widows was 62.5 years, ranging from 44 to 79 years. Data were collected twice: on first occasion 4 to 6 weeks after the loss, and on a second occasion approximately 12 months thereafter. Data collection took place in each widow's home, except in a few cases where the widows preferred to come to the university. Data collected were: expected future coping success in relation to various problems following bereavement, subjective health problems, and immunoglobulins from blood samples. Data regarding coping were collected by a female psychologist, or by a female graduate student in psychology or nursing. Data regarding health and samples of blood were collected by a female engineer.

Instruments

Coping interview consisted of 12 questions about coping efforts in the following potentially problematic areas: accepting the loss, daily chores, economy, religious/philosophical belief, health, work, hobbies and interests, mood and emotional reactions, visits to the grave of the husband, anniversaries including family events, social life including contacts with family and friends, and possible new love relationsips.

''Coping'' was defined as: ''positive response outcome expectancies'' (Ursin, 1988). This was operationalized as: ''expressed expectancies about future coping success''. The widows self-rated their expected future coping success to each problem area covered by the interview. The ratings were done on a five-point scale ranging from -2 to $+2$ (-2: ''very poor'', -1: ''poor'', 0: ''medium'', $+1$: ''good'', $+2$: ''very good''). The early and later ratings correlated 0.63 ($p < 0.01$). The ratings of each widow done early in bereavement and one year later were summed up to give each a final ''coping score''. This was done in order to include both early-crisis and late-crisis ratings in the group assignment. The first data collecting took place varying between four to six weeks after the death of the husband. If only early-crisis ratings had been used, they might not have given an adequate picture of the subjects' ''generalized positive response outcome expectancies''. A constant was added to create only positive numbers.

The coping score was the basis for dividing the subjects into three groups according to whether their overall expectations of coping success was ''poor'', ''medium'', or ''good''. Ratings 2/3 SD below the mean constituted the group of ''poor'' coping. Ratings 2/3 SD above the mean constituted the group of ''good'' coping. The rest constituted the group of ''medium'' coping.

Ursin's Health Inventory (UHI) (Ursin *et al*., 1988): In UHI ''health'' is operationalized as ''subjectively experienced health complaints''. This is an operationalization which encompasses medically diagnosed diseases as well as subjectively perceived somatic symptoms which may not have been brought to medical attention. In this way both disease and well-being are included in the health measure. UHI covers subjectively experienced health problems and symptoms during the last month. It gives a general subjective health score, and scores on the following five health subscales: ''cold and flu symptoms'', ''allergic reactions'', ''gastrointestinal symptoms'', ''headache and muscle pain'', and ''somatic

Table 1. *Means and standard deviations (SD) for the three levels of coping, early in bereavement and one year later.*

	Poor coping				Medium coping				Good coping			
	Early in bereavement		One year after loss		Early in bereavement		One year after loss		Early in bereavement		One year after loss	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
IgG	11.72	1.75	10.62	1.33	11.41	3.06	12.50	3.29	12.42	2.69	13.24	2.73
IgA	3.30	1.19	3.32	1.18	2.64	1.31	3.23	1.72	2.92	1.22	2.88	0.71
IgM	1.87	0.78	3.38	1.94	1.73	1.03	2.14	1.18	2.13	0.98	2.59	1.46
C3	1.02	0.24	1.15	0.44	0.98	0.20	1.01	0.24	0.96	0.21	1.09	0.25
C4	0.38	0.08	0.54	0.32	0.37	0.11	0.36	0.15	0.35	0.09	0.39	0.10
Σ EXP	19.83	6.31	23.67	11.18	30.30	5.47	37.95	6.18	39.45	5.63	47.07	4.11
ANX	7.80	1.79	6.33	2.16	5.41	1.71	4.84	1.80	4.73	2.20	3.64	1.63
DEP	8.40	2.07	7.50	2.26	6.36	1.65	4.74	2.10	4.91	1.87	3.27	1.79

The levels are labelled ''poor coping'', ''medium coping'', and ''good coping'' referring to the widows' expectations of their future coping success. IgG, IgA, IgM: Immunoglobulins, C3, C4: components. Σ EXP: total sum of expectations about future coping success, ANX: self-scored level of anxiety (from The General Well-Being Scale, GWB), DEP: self-scored level of depression (from The General Well-Being Scale, GWB).

symptoms of anxiety and depression''. High scores refer to high numbers of reported health complaints. (The subscales will be marked by quotation marks (" ") throughout the text).

The General Well-Being schedule (GWB; Depuy, 1973) consists of five questions regarding emotional well-being, focusing on depression and distress. Here, only the last two questions were used. They measure depression and anxiety by self-scorings on a ten-point Likert scale. High scores on the GWB indicate high levels of emotional well-being. Alpha value on GWB was 0.70 in this sample.

Immune parameters. The measurements of immune functioning included both quick and slow elements: the immunoglobulins IgA, IgM, and IgG, and the components C3 and C4, all sampled from blood, IgA, IgG, IgM, and C3 were quantified by a nephelometric technique (Buffone, 1980) using a Behring Laser Nephelometer with automatic equipment. C4 was quantified by single radial immunodiffusion. The equipment was purchased from Behringwerke AG, Germany.

Statistical analyses. Frequencies, paired *t*-test, correlations, one-way analysis of variance (ANOVA), and multiple analysis of variance (MANOVA) were conducted by the ''SPSS-X For the Macintosh V 4.0'' (SPSS-X, 1990).

Ethical considerations

Permission to do the investigation was granted from The Norwegian Data Inspectorate, from The Regional Ethical Committee for Medical Research, and from the hospital authorities where the addresses of the widows were collected. A detailed written description of the project was mailed to the widows. The description emphasized that voluntary participation was required and that participants could quit the project at any time. Confidentiality was guaranteed as all data-collectors had given work-related vows of confidentiality. Names and addresses would be kept separately from all personal data and securely locked up. The widows were called some days later, and asked to give their consent to participate by agreeing to let the interviewer come to their home for data collecting. All sensitive data were kept strictly confidential in accordance with the Helsinki declaration (Beauchamp & Childress, 1994; Encyclopedia of Bioethics, 1978).

RESULTS

Self-rated coping

The group of ''poor'' coping counted 6 subjects, ''medium'' coping 19, and ''good'' coping 14 subjects. Over the first year of bereavement 50% of the widows in the ''poor'' group had increased their coping score, 50% decreased. In the ''medium'' group 75% increased, 25% decreased, and in the ''good'' group 83.4% increased 16.6% decreased their self-rated coping score.

Means and standard deviations

Means and standard deviations for the immunoglobulins and complement components for the three different levels of coping (''poor'', ''medium'' and ''good'') are shown in Table 1. The normal range for IgG is: 7–16 g/l, IgA: 0.5–3.3 g/l, IgM: 0.3–2.5 g/l, C3: 0.5–1.3 g/l, and C4: 0.1–0.5 g/l (Hyde, 1995). Endresen and Ursin (1992) reported means and standard deviations to be 12.4 (SD: 2.3) for IgG, 2.12 (SD: 0.96) for IgA, and 1.92 (SD: 0.79) for IgM, based on data from 169 Norwegian working women. (Their age ranging from 19 to 62, mean age 31). Here, the values for the immune parameters were within normal levels, with the exception of a significant elevation of IgM in the group of ''poor coping'' one year after bereavement.

Means and standard deviations for total sum of expectations about future coping success, and the scores on the GWB scales for anxiety and depression in the three different levels of coping, are shown in Table 1. All three groups reported higher expectations of future coping success and reduced levels of anxiety and depression one year after bereavement.

Table 2. *Means and standard deviations (SD) for the three levels of coping, early in bereavement and one year later.*

	Poor coping				Medium coping				Good coping			
	Early in bereavement		One year after loss		Early in bereavement		One year after loss		Early in bereavement		One year after loss	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Age	65.00	7.38			63.35	8.46			58.09	8.13		
UHI	1.14	0.54	1.11	0.45	0.70	0.42	0.66	0.33	0.42	0.22	0.22	0.33
UHIB1	1.67	1.37	1.33	1.37	0.48	1.08	1.17	1.82	1.09	1.38	0.64	1.03
UHIB2	1.17	2.40	0.67	1.21	0.61	1.12	0.33	0.77	0.36	0.67	0.00	0.00
UHIB3	6.50	4.23	6.00	5.33	2.91	3.22	4.17	4.50	1.73	1.56	1.18	1.08
UHIB4	8.50	5.50	8.67	5.24	6.13	4.40	5.87	4.21	2.82	3.06	1.36	3.56
UHIB5	12.67	4.84	12.83	2.40	8.61	4.76	6.33	4.09	5.36	3.67	2.64	4.18

The levels are labelled "poor coping", "medium coping", and "good coping" referring to the windows' expectations of their future coping success. UHI (Ursin's Health Inventory): general subjective health, UHIB1: cold and flu symptoms, UHIB2: allergic reactions, UHIB3: gastro-intestinal symptoms, UHIB4: headache and muscle pain, UHIB5: somatic symptoms of anxiety and depression.

Means and standard deviations for age, and the UHI scales "general subjective health" and the health subscales in the three different levels of coping are shown in Table 2.

Correlations

Significant correlations between the health measures and immunoglobulins were few and moderate. Early in bereavement "general subjective health" correlated 0.32 to C3; "allergic reactions" correlated −0.33 to IgA and 0.38 to C3; "gastro-intestinal symptoms" 0.36 to C3 and 0.31 to C4 ($p < 0.05$). One year after bereavement only "cold and flu symptoms" were related to the immune parameters, 0.46 to IgA, ($p < 0.01$), 0.43 to C3 and 0.36 to C4 ($p < 0.05$).

Anxiety and depression (GWB) correlated 0.58 on the first and 0.43 on the second occasion ($p < 0.01$). Anxiety correlated 0.47 and depression 0.68 between occasions ($p < 0.01$). Correlations between anxiety and depression, and the measures of health and immune parameters are shown in Table 3. Anxiety and depression were significantly related to "general subjective health" on both occasions. Anxiety and depression were related to the UHI health subscale "headache and muscle pain" early in bereavement, and to the UHI health subscale "anxiety and depression" on both occasions. Depression was negatively related to IgM early in bereavement, and positively related to age one year after bereavement.

Within each occasion "general subjective health" and the subscales had significant correlations ranging from 0.45 to 0.89 ($p < 0.01$) with the exception of "cold and flu symptoms" early in bereavement; and correlations ranging from 0.43 ($p < 0.05$) to 0.89 ($p < 0.01$) one year later. Between the two occasions "general subjective health" correlated 0.88, "allergic reaction" 0.56, "gastro-intestinal symptoms" 0.56, "headache and muscle pain", 0.90, and "anxiety and depression" 0.72 ($p < 0.01$). Only "cold and flu symptoms" were not significantly related between occasions. Age was not significantly correlated to any measure of health or immunity. One-way analysis of variance (ANOVA) showed that there were no significant age-differences between the three different coping levels.

Multivariate Analysis of Variance

Multivariate analysis of variance with repeated analysis design (MANOVA) was performed in order to see whether there were any significant differences between the three levels of coping and time differences with regard to immunity, health, anxiety, and depression. The results are shown in Table 4.

Table 3. *Correlations between anxiety and depression, age and the measures of health and immune parameters.*

	Early in bereavement		One year later	
	ANX	DEP	ANX	DEP
Age	0.12	0.10	0.21	0.37*
UHI	0.60**	0.39*	0.47**	0.39*
UHIB1	0.06	−0.16	0.26	0.06
UHIB2	0.08	0.04	0.17	0.25
UHIB3	0.22	0.05	0.23	0.01
UHIB4	0.51**	0.41*	0.30	0.22
UHIB5	0.65**	0.42**	0.54**	0.63**
IgG	−0.06	0.06	−0.19	0.03
IgA	−0.01	−0.02	0.09	0.04
IgM	−0.19	−0.33*	0.20	0.08
C3	0.02	−0.02	0.18	0.08
C4	−0.01	−0.10	0.31	0.12

ANX: self-scored anxiety (from The General Well-Being Scale, GWB), DEP: self-scored depression (from The General Well-Being Scale, GWB); UHI (Ursin's Health Inventory): general subjective health, UHIB1: cold and flu symptoms, UHIB2: allergic reactions, UHIB3: gastro-intestinal symptoms, UHIB4: headache and muscle pain, UHIB5: somatic symptoms of anxiety and depression. IgG, IgA, IgM: immunoglobulins, C3, C4: components.

Table 4. *Analysis of variance between all three levels of coping (section I); for "poor coping" against "medium coping" (section II); "poor coping" against "good coping" (section III); and "medium coping" against "good coping" (section IV).*

	Section I			Section II			Section III			Section IV		
	Betw. group diff.	Time diff.	Group by time	Betw. group diff.	Time diff.	Group by time	Betw. group diff.	Time diff.	Group by time	Betw. group diff.	Time diff.	Group by time
UHI	0.000	0.012	NS	0.038	NS	NS	0.000	0.011	0.041	0.003	0.002	NS
UHIB1	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
UHIB2	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
UHIB3	0.012	NS	NS	NS	NS	NS	0.004	NS	NS	0.024	NS	NS
UHIB4	0.007	0.048	NS	NS	NS	NS	0.006	NS	NS	0.008	0.003	NS
UHIB5	0.000	0.015	NS	0.011	NS	NS	0.000	NS	(0.063)	0.016	0.001	NS
IgG	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
IgA	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
IgM	NS	0.007	NS	NS	0.013	0.054	NS	0.033	NS	NS	NS	NS
C3	NS	0.044	NS	NS	NS	NS	NS	(0.062)	NS	NS	(0.055)	NS
C4	NS	0.046	NS	NS	NS	NS	NS	(0.067)	NS	NS	NS	NS
ANX	0.004	0.037	NS	0.007	NS	NS	0.008	0.016	NS	NS	(0.074)	NS
DEP	0.000	0.001	NS	0.001	(0.059)	NS	0.001	0.007	(0.074)	0.047	0.000	NS

($p < 0.05$). Non-significant differences are indicated by: NS. UHI (Ursin's Health Inventory): general subjective health, UHIB1: cold and flu symptoms, UHIB2: allergic reactions, UHIB3: gastro-intestinal symptoms, UHIB4: headache and muscle pain, UHIB5: somatic symptoms of anxiety and depression; IgG, IgA, IgM: immunoglobulins, C3, C4: components; Σ EXP: total sum of expectations about future coping success; ANX: self-scored level of anxiety (from The General Well-Being Scale, GWB), DEP: self-scored level of depression (from The General Well-Being Scale, GWB).

Highly significant group differences were found in the health measures with the exception of the subscales "cold and flu symptoms" and "allergic reactions". The differences between "poor coping" and "medium coping" on the health subscales were few and small, indicating that the difference lay primarily between "good coping" and the other two groups. No significant group differences were found with regard to the immune parameters.

Significant time differences were found in "general subjective health" and in the subscales "headache and muscle pain" and "anxiety and depression" in all groups analysed together, in and "medium coping" versus "good coping". Time differences in the immune parameters were primarily found in IgM, C3 and C4 in all groups analysed together, and for the groups of "poor coping" versus "good coping".

In the health measures, significant time by group differences were found only in the comparison between "poor coping" and "good coping" on "general subjective health". There were also two close to significant group by time differences in "allergic reactions" and "symptoms of anxiety and depession" in "poor" versus "good coping". There was only one significant group by time difference in the immune parameters. IgM increased significantly in the group of "poor coping".

With regard to the GWB measures of anxiety and depression (lower part of Table 4), there were highly significant group differences, and substantial time differences in all comparisons involving the group "good coping". No group by time differences were found.

DISCUSSION

Besides the different levels of coping scores defining the three coping groups, the direction of change in coping scores during the first year of bereavement increased the differences between the groups. The "poor" copers started off worse and improved less than the others, whereas the opposite was true for the "good" copers.

"Poor coping" in bereavement was related to poor subjective health, and "good coping" was related to positive measures of subjective health both early and late in bereavement. During the first year of bereavement, the best copers reported an improvement in "general subjective health" unsurpassed by the other groups. The group of poor copers reported poorer health one year after bereavement than the best copers did shortly after the loss. If "poor coping" is similar to "helplessness", this finding is compatible with a study reporting a strong positive relationship between a helpless explanatory style and the occurrence of physical illness symptoms (Aydin, 1993).

It could be argued that the differences in self-evaluated coping capacities simply reflected their health status. The differences in health corresponding to differences in coping early in bereavement may support this argument. However, the changes in the health condition during the first year of bereavement clearly indicate that differences in coping defined as "positive response outcome expectancies," not only covaried with health, but also predicted changes in health.

The immune parameters, particularly IgM, but also C3 and C4 tended to increase over time, but were unrelated to subjective health and coping. The increase can be interpreted as an enhanced response serving as a part of the general activation which enables the organism to endure strain (Ursin & Olff, 1993*a*). Contrary to findings in other reports (Laudenschlager *et al*., 1983; Monjan, 1983), the changes were not related to coping. It was also noteworthy that these changes did not correspond to the health changes, and that there were so few relationships between the immune and health measures. However, the measured immune parameters were all within normal ranges. It may be questioned whether changes within the normal ranges may have any measurable health consequences (Ursin, 1994).

IgM was negatively related to the GWB-measure of depression early in bereavement, giving some support to the hypothesis that depression has a negative effect on immunity (Beutel, 1991; Zakowski *et al*., 1992). It has been argued that only the sustained activation typical of a major depressed disorder (APA, 1994) may cause such a reduction in IgM (Spurrell & Creed, 1993). According to DSM-IV (APA, 1994) a full depressive reaction is common in the early phase of bereavement. This may explain why the relationship between IgM and the GWB-measure of depression was found early in bereavement only.

Anxious and depressive moods (GWB) covaried with coping. As could be expected, all groups reported lowered levels of anxiety and depression one year after bereavement. The changes were relatively equal in the three groups. Yet, the group of poorest copers reported higher levels of anxiety and depression one year after bereavement than the best copers did shortly after the loss. This means that the emotional status early in bereavement may predict emotional status one year later. This finding runs counter to an established belief regarding grief resolution claiming that emotional status early in bereavement is negatively correlated to the later status, implying that depression and distress are inevitable and necessary conditions for grief resolution (Wortman & Silver, 1989). However, in psychophysiological research it has long been established that the strength of an initial reaction to a stimulus predicts the amount of time needed to return to baseline levels (Sternbach, 1966). The present findings are in accordance with this. Still, reports on bereavement have also argued that it is not necessarily the initial reaction to the loss which determines the speed and direction of the later emotional re-adaptation, but the initial cognitive coping strategies employed in the first hours and days after the trauma (Wortman & Silver, 1989). However, it was beyond the scope of the present paper to comment upon this.

Depression and anxiety, which were related to coping, showed strong relations to subjective health (both sum-score and subscales) in the same manner as coping did. Similar relationships between depression, poor medical health and poor coping have been reported in connection with widowhood before (Zisook & Schuchter, 1993). The strong interrelations between the health sub-scales were noteworthy, and may be interpreted as indicating a general tendency to somatization as described in DSM-IV as ''somatization disorder'' (APA, 1994). The relationships between the subjective health, depression, anxiety, and coping point in the same direction.

The traumatic stress of bereavement strikes people differently. This may partly be a consequence of differences in the nature of the lost relationship, the circumstances around the loss, and the social resources around the bereaved person. Here, however, coping, health, and the emotions of anxiety and depression formed a triangle of interrelations. After one year of bereavement the gap between those reporting ''poor'' contra ''good'' health and high contra low anxiety and depression, had widened. The discriminant was ''coping'' defined as: ''positive response outcome expectancies.'' Therefore, it is proposed that ''coping'' thus defined represents a possible determinant and predictor of the outcome after a crisis.

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