

## **Causal Attributions and Coping with Pain in Chronic Headache Sufferers**

**Floor W. Kraaimaat<sup>1,2</sup> and Rene E. O. Van Schevikhoven<sup>1</sup>**

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*In the present study the relationship between attributions of causality and pain-coping behavior in headache patients was examined. Data from 441 chronic headache sufferers were collected by means of self-report inventories. The most frequently reported causal attributions were hereditary factors, emotional distress, menses or menopause, an overactive life-style, weather conditions, nutrition, and physical exertion. Some support was found for a hypothesized association between physically and psychologically related causal attributions and allied pain-coping behavior. However, as far as a relationship was revealed, it served to explain only less than 2% of the variance in pain-coping behavior. It is concluded that causal attributions do not contribute to the understanding of pain-coping behavior in chronic headache sufferers.*

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**KEY WORDS:** headache; causal attribution; pain; coping.

### **INTRODUCTION**

The cognitive-behavioral view on chronic illness and pain has been considerably influenced by the theory of stress and coping, postulated by Lazarus

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<sup>1</sup>Psychiatric Clinic, National University of Utrecht, Utrecht, The Netherlands.

<sup>2</sup>To whom correspondence should be addressed at Department of Clinical Psychology, Psychiatric Clinic, National University of Utrecht, Catharijnesingel 101, 3511 GV Utrecht, The Netherlands.

(1966) and Lazarus and Folkman (1984), and also by the attribution theory, developed within the social psychological field (Jones *et al.*, 1972). An integrative model of response to illness and treatment has been proposed by Leventhal and Nerenz (1983). With regard to coping and attribution of symptoms, the following propositions are made by these authors: first, coping is based on the interpretation and attribution of symptoms, and second, patients do cope with the objective features of a symptom and/or with the emotion produced by the symptom.

Causal attributions and allied coping behaviors are considered by clinicians to be of influence on the maintenance of complaints and on treatment outcome, compliance, and dropout (Cameron, 1978; Follick *et al.*, 1983). Reattribution training is a common ingredient of cognitive-behavioral treatment packages applied to chronic pain problems. However, these packages lack validation and rely on relaxation or biofeedback procedures as well (Blanchard and Andrasik, 1985). As such, it is difficult to determine how reattribution training contributes to the process of change.

Scarcely any research has been conducted with respect to the relationship of attributions and coping behavior. In the literature the following studies are reported. Witenberg *et al.* (1983) investigated the relationship among attribution, compliance, and coping in dialysis patients. Patients who failed to find a cause for their disease tended to adhere less to the instructions of their medical attendants and to show less adequate coping strategies. Demjen and Bakal (1981) examined illness behavior in chronic headache sufferers. Headache patients who experienced the greatest amount of headache activity were found to view their disorder in somatic terms as opposed to psychological terms. Kraaimaat and Van Dam-Baggen (1985) observed a tendency in tension headache patients who withdrew prematurely from a cognitive-behavioral therapy to attribute their complaints to physical causes. Gerber (1982) mentioned that migraine patients attribute their complaints mainly to physical causes and that a change in causal attributions from physical to psychological causes is related to success in therapy.

Research on the relation of attributions and coping behavior is hampered by the fact that attributions have as yet only been investigated by open questions ("Which are, in your opinion, the causes of your illness?" and "To what do you ascribe your present physical state?"). An investigation into the causes to which patients ascribe headaches and into the relationship between attributions and pain-coping behavior has not been conducted as yet.

The aims of the present study are to examine two related questions: first, is there evidence to support the proposition that chronic headache sufferers attribute their complaints predominantly to physical causes and second, is there an association of attributional modes with allied pain-coping strategies?

## METHOD

### Measures

*The Attribution Inventory.* By means of a survey of the literature, different types of attributions to physical complaints were collected. Next, intake interviews of 27 patients with chronic headaches were analyzed with respect to the patients' personal opinions about the cause of their complaints. The ages of the patients ranged between 18 and 55 years; the duration of complaints, between 2 and 30 years. Three researchers categorized the causes mentioned into conforming sets. Finally, the attributions were formulated as concretely and unambiguously as possible, and all overlapping items were deleted. In this way, 20 items were obtained in order to be judged on applicability by means of a 4-point scale (1 = not at all, 2 = a little, 3 = quite a bit, 4 = very much so). Item 21 was added to give an opportunity to indicate causes not mentioned in the inventory.

*The Headache Questionnaire (Kraaimaat and Zwart, 1984).* This contains 36 items referring to symptoms, severity of headaches, use of medication, and number of visits to the general practitioner. The items concerned with symptoms and severity were rated on frequency of occurrence, by means of a 4-point scale (1 = almost never, 2 = sometimes, 3 = often, 4 = very often). Scores on the following items represented somatically oriented coping behavior: use of medication (item 24), visiting the general practitioner during the last 6 months (item 33) and paramedical treatment during the last 6 months such as physiotherapy, yoga, relaxation training, and acupuncture (item 35).

*The Pain-Coping Inventory (Kraaimaat and Van Schevikhoven, 1984).* This consists of 67 items, referring to the way in which patients deal with pain. The items are rated on a frequency of occurrence by means of a 4-point scale. In previous research (Van Schevikhoven and Kraaimaat, 1987) the identification of six pain-coping strategies by varimax-rotated factor analysis led to the development of the following scales: "avoiding mental and physical effort" (10 items), "worrying" (9 items), "distraction" (11 items), "taking it easier" (4 items), "seeking social support" (4 items), and "applying nonallopathic treatment such as homoeopathy and mesmerism" (3 items). Cronbach alpha reliabilities ranged from .73 (seeking social support) to .85 (avoiding mental and physical effort).

### Headache Patients

The inventories were sent to a random sample of 650 members of the Dutch Migraine Patients Foundation. Four hundred forty-one patients com-

pleted and returned the inventories. The sample comprised 353 women and 88 men. The mean age was 44.20 years ( $SD = 11.72$  years), with an average history of headache complaints of 26.7 years ( $SD = 14.2$  years). The frequency of headache symptoms and headache severity, as revealed by the headache inventory, is shown in Table I. Generally speaking, the sample consists of headache sufferers of moderate to high severity. In individual patients various headache symptoms are very often combined (Bakal *et al.*, 1983; Kroner, 1983). Therefore no attempts were made in the present investigation to differentiate between headache types.

## RESULTS

### Attributions

Table II shows the means and standard deviations for each item of the attribution inventory for the total sample. Table II indicates that hereditary factors, emotional distress, problems related to menses or menopause, overactive or agitated life-style, weather conditions, nutrition, and physical effort were rated as being most applicable. Rated as least applicable were punishment imposed by God, extraterrestrial influences or forces of nature, physical problems after accident, use of medication, and hypersensitivity for certain substances. The clinical impression that chronic headache sufferers attribute their headache complaints predominantly to physical causes was not supported.

Item 21 in the inventory presented an opportunity to indicate a cause not previously mentioned. The 441 migraine patients gave a total of 356 additions. For 61% these consisted of repetitions or specifications of attribu-

**Table I.** Frequency of Symptoms and Headache Severity

	Mean	SD
Symptoms		
Pain starting in neck/occipital region	2.42	1.22
Tightness	1.94	1.07
Unilateral	3.43	.90
Throbbing	2.93	1.16
Nausea at start	2.74	1.10
Vomiting	2.35	1.10
Visual prodromi	2.21	1.17
Severity		
Sudden onset	2.56	.91
More than 8 hr of pain	2.82	1.02
Headache frequency (days per week)	2.71	2.01

**Table II.** Attribution Inventory: Means and Standard Deviations per Item

Item	Mean	SD
1. Hereditary factors	2.66	1.14
2. Physical disease or impairment	1.43	.84
3. Physical problem after accident	1.13	.46
4. Menses or menopause <sup>a</sup>	2.43	1.23
5. Psychological problems	1.54	.85
6. Use of medication	1.22	.60
7. Use of stimulants	1.61	.96
8. Nutrition	2.04	1.01
9. Harmful environmental substances	1.47	.73
10. Weather conditions	2.09	1.02
11. Allergy	1.25	.64
12. Wrong posture	1.60	.80
13. Physical exertion	1.99	.94
14. Overactive or agitated life-style	2.33	1.04
15. Emotional distress	2.65	1.09
16. Misery and suffering in the world	1.46	.73
17. Punishment imposed by God	1.05	.28
18. Extraterrestrial influences	1.10	.42
19. Unhappy childhood	1.34	.73
20. Age	1.33	.71

<sup>a</sup>Only females (*N* = 353).

tions already listed. The remainder appeared to refer to provoking elements, such as “too little or too much sleep,” “sharp lights and loud noises,” and “prominent fluctuations of temperature or humidity.” The fact that hardly any novel attributions were added appears to suggest that the list contained representative causes, to which patients ascribed their headaches.

Considering the means and standard deviations of the data, only 10 items rendering mean scores greater than 1.50 are eligible for further investigation with respect to general modes of attribution. The amount of applicability assigned to the other items was too small to merit any meaningful investigation of an interrelationship. The remaining 10 items of the Attribution Inventory were factor analyzed by a principal-factor solution with squared multiple correlations on the diagonals followed by a varimax rotation of those factors with eigenvalues greater than or equal to one. An item was considered to load significantly on a factor if that item was equal to or greater than the absolute value of .40 on that factor. The results of the factor analysis yielded an interpretable four-factor structure, which accounted for 59.2% of the common variance.

*Factor 1*, which accounted for 23.8% of the common variance, had significant loadings on the following four items (factor loadings are given in parentheses): 5 (.54), 13 (.46), 14 (.78), and 15 (.83). This factor, with its loadings emphasizing emotional distress, an overactive or agitated life-

style, psychological problems, and physical exertion, appears to represent an attribution of the complaints to psychological distress.

*Factor 2*, accounting for 14.2% of the common variance, had significant loadings on two items: 7 (.77) and 8 (.74). This factor, with its loadings emphasizing the perceived role of stimulants (tobacco and alcohol) and nutrition, seems to represent the attribution of headache symptoms to the use of certain stimulants and food.

*Factor 3*, which accounted for 11% of the common variance, also had significant factor loadings on two items: items 10 (.57) and 12 (.79). This factor, with its loadings emphasizing the influence of weather conditions and wrong posture, appears to represent the attribution of the complaints to physical causes which are to some extent external and within the control of the patient.

*Factor 4*, accounting for 10.1% of the common variance, had significant loadings on two items: 1 (.78) and 4 (.77). This factor, with its loadings emphasizing the role of hereditary factors and of the menses or menopause, seems to represent the attribution of the complaints to inborn somatic causes.

Scales were computed for each factor by summing items with factor loadings greater than or equal to .40.

To gain some insight into the relationship between the chronicity and the severity of the complaints and attributional mode, Pearson product-moment correlations were computed between the number of years with headache, the headache frequency, and the four attributional scales. Only two significant correlations were evidenced. These correlations were, respectively, between the number of years with headache and the stimulant-food mode of attribution ( $r = .12$ ) and between the headache frequency and the attribution of the complaints to external physical causes such as weather conditions and wrong posture ( $r = .18$ ).

### **The Relationship Between Attributional Mode and Pain-Coping Behavior**

Scores on the following items from the Headache Inventory were used as coping variables: visiting the general practitioner (item 33), paramedical treatment (item 35) and use of medication (item 24). In addition, the six scales of the pain-coping inventory were used as coping variables. Considering the means and standard deviations of the data, the coping variables proved to be eligible for further investigation with respect to their relation with attribution.

Pearson product-moment correlations were then computed between attributional mode measures and pain-coping scores. Since headache severity may be a confounding variable in the relationship between these measures, first-order partial correlation coefficients were generated in the case that the

Table III. Correlations Between Attribution and Pain-Coping<sup>a</sup>

	See gen. pract.	Paramed-ical	Medica-tion	Nonallo-pathic	Avoid effort	Take easy	Dis-tract	Worry-ing	Social support
Psychol. distress	.03	.05	.09	.10	.09	.14*	.05	.15**	.01
Stimulants/food	.09	.05	.02	.09	.04	.04	.03	.06	.01
External phys.	.09	.13*	.05	.16**	.07	.02	.13*	.15**	.05
Inborn somatic	.02	.02	.15**	.11	.06	.13*	-.02*	.08	.02

<sup>a</sup>First-order coefficients are given in italics.

\* $p < .05$ , two tailed.

\*\* $p < .01$ , two tailed.

number of headache days per week was associated with both the attributional mode and the pain-coping strategy under investigation. Table III shows the zero-order and first-order (in italics) correlation coefficients between attributional modes and coping strategies. The general impression is that the relationship between mode of attribution and pain-coping is minimal. Hardly any support was obtained for the hypothesis that attributing headache to physical causes (stimulants/food, external physical causes, and inborn somatic causes) and to psychological distress was associated with, respectively, a somatic and a psychological approach. Only a slight association between the attribution of the headache complaints to inborn somatic causes (such as heredity factors and menses of menopause) and pain-coping by means of the use of medication, as well as taking it easier, has become evident. Attributions to external physical factors, such as the weather condition and wrong posture, were slightly associated with the somatic pain-coping strategies of "seeking paramedic treatment" and "the use of nonallopathic medication" as well as with the psychologically oriented strategies of "distraction" and "worrying." Furthermore, attributions of the headache to psychological distress appeared to be somewhat associated with the allied strategies of "taking it easier" and "worrying."

## DISCUSSION

The attribution inventory, comprising 20 items, appears to be a useful instrument to gain insight into the causes to which headache sufferers ascribe their headache. The amount of attributions to any specific cause hardly differed for men and women. Attributions receiving high rates of applicability were hereditary factors, emotional distress, menses or menopause, overactive and agitated life-style, weather conditions, nutrition, and physical exertion. The remaining items received very low scores. In particular, it was shown that attributions to a punishment imposed by God, extraterrestrial influences and forces of nature, physical problems resulting from an accident, use of medication, and allergy rated extremely low. Generally speaking, headache sufferers appeared to attribute their complaints to physical as well as stress-related causes. Similar results were reported by Passchier (1985) in Dutch elementary- and secondary-school students. Some support was found for the proposition of Demjen and Bakal (1981) that patients with a longer headache history and more headache activity hold a somatic view of their headache. In contrast with the findings of Passchier (1985) with regard to elementary- and secondary-school children, headache severity and duration were not associated with the report of psychological distress as a cause of headache in our sample of chronic headache patients. In this respect



chronic headache sufferers were found to be different from nonchronic sufferers.

Our hypothesis that attributing headaches to physical or psychological causes would be associated with allied pain-coping strategies was hardly supported. The most striking result was that—as far as an association between specific types of attributions and coping behavior became evident—the explained variance was very low (less than 2%). Contrary to the clinical point of view, causal attributions did not contribute to the understanding of pain-coping behavior in chronic headache sufferers. Further research into antecedent and consequent events of pain-coping behavior might render more insight into this issue. It has to be noted that the present study was restricted to headache sufferers with a long history of headache complaints and with rather severe headaches. Thus the relationship between causal attributions and coping behavior in a less severe group of headache sufferers or at the onset of headache complaints warrants further research.

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