



S0022-3999(96)00171-7

TINNITUS COPING STYLE AND ITS RELATIONSHIP TO TINNITUS SEVERITY AND EMOTIONAL DISTRESS

RICHARD J. BUDD* and RACHEL PUGH†

(Received 13 May 1996; accepted 14 May 1996)

Abstract—The structure of the Tinnitus Coping Style Questionnaire (TCSQ) is examined in a sample of 108 tinnitus sufferers. Factor analysis of the TCSQ items identified two coping styles that were termed “effective coping” and “maladaptive coping.” It is shown that “maladaptive coping,” but not “effective coping,” is related to reports of subjective tinnitus severity and emotional distress. The clinical implications of these findings are discussed. *Copyright © 1996 Elsevier Science Inc.*

Keywords: Tinnitus; Coping style; Anxiety; Depression.

INTRODUCTION

Tinnitus is the perception of noises in the absence of any external sound. It is a condition of multiple etiology, that has a chronic benign course for the vast majority of sufferers. The condition is surprisingly common, with epidemiological studies suggesting that up to 18% of the adult population may experience a significant degree of tinnitus [1, 2]. Despite such a high prevalence few sufferers seek professional help for this problem, with most apparently successfully adjusting to tinnitus on their own. However, there remains a small but significant group of sufferers for whom tinnitus becomes a severe, sometimes disabling, condition. For this small group of sufferers the degree of distress their tinnitus causes is most clearly indicated by the high incidence of emotional [3, 4] and psychiatric [5] problems they report. Thus, these findings raise the clinically important question of why some sufferers successfully adjust to tinnitus on their own, while others do not.

As is the case with a broad range of chronic medical conditions [6] adjustment to tinnitus does not appear to be closely related to the severity of the condition [7]. In this regard, many investigators have noted that there appears to be little clear relationship between objective measures of the loudness of the “noises” and subjective measures of their unpleasantness, and the degree of distress they cause [4, 8]. This finding suggests that, in line with many other chronic medical conditions [7], adjustment to tinnitus is likely to be moderated by a broad range of psychological

*Department of Clinical Psychology, Whitchurch Hospital, Cardiff, UK.

†Welsh Hearing Institute, University Hospital of Wales, Cardiff, UK.

Address correspondence to: Richard J. Budd, Department of Clinical Psychology, Whitchurch Hospital, Cardiff CF4 7XB, UK. Tel: (01222) 521118; Fax: (01222) 691593.

factors. One focus of tinnitus research has therefore been to identify those psychological characteristics that distinguish sufferers who have successfully adjusted to tinnitus, from those who have not adjusted to tinnitus. Factors that, to date, have been found to be associated with tinnitus adjustment include personality characteristics, such as locus of control [9], and the presence of mood disturbance [10].

One factor whose relationship to tinnitus adjustment has only recently begun to be explored is coping style [11, 12]. There is now a considerable research literature relating patients' coping style to their degree of adjustment to a broad range of medical conditions [13], including chronic pain [14]. Given the similarity between the challenges of coping with chronic pain, and of coping with tinnitus [10, 11], it would not be surprising if coping style were related to tinnitus adjustment, just as it is related to adjustment to chronic pain. To address this issue, Budd and Pugh [11] have recently reported the development of the Tinnitus Coping Style Questionnaire (TCSQ).

This questionnaire assesses the frequency with which sufferers use a broad range of tinnitus-specific coping strategies to manage the intrusiveness of the "noises." Following a factor analysis of the TCSQ items, Budd and Pugh [11] initially identified three tinnitus coping styles. They termed these: "maladaptive coping"; "effective coping"; and "passive coping." As its name suggests, the first of these coping styles involves the use of a broad range of maladaptive coping strategies. These include: fantasizing about not having tinnitus; telling others how unpleasant the "noises" are; listening to the "noises" and catastrophizing about the consequences of tinnitus. The "effective coping" style, on the other hand, involves the use of a broad range of adaptive coping strategies such as: positive self-talk; attention switching; attention focusing and engaging in activities to minimize the intrusiveness of the "noises." Finally, the "passive coping" style involves attempts to avoid tinnitus by masking the "noises" using background sounds and tinnitus maskers.

These three tinnitus-specific coping styles are broadly similar to the three coping styles that have emerged from factor analytic studies of the strategies people use to cope with general life stresses [15]. These three general coping styles are: emotion-focused coping, which involves focusing on negative mood states and venting feelings; active coping, which involves attempts at problem resolution and/or problem reappraisal; and avoidance. However, despite the apparent convergence of this work on tinnitus coping style with work in the general coping research literature, Budd and Pugh [11] expressed some concern about the robustness of the three factor solution they obtained. In particular, they noted that the "maladaptive coping" and "passive coping" styles were significantly correlated with each other ($r=0.44$), suggesting that these two coping styles may not be assessing distinct dimensions of coping. Furthermore, they noted that only 5 of the 40 TCSQ items weighted on the "passive coping" style factor, further questioning the robustness of this coping style.

The principal aim of the present article was therefore to replicate the factor structure reported by Budd and Pugh [11] and, in particular, the present work aimed to provide further evidence of the factorial validity of the "passive coping" style. In addition, this study aimed to explore further the relationship between tinnitus coping style, tinnitus severity, and emotional distress in a group of sufferers attending outpatient appointments at a specialist tinnitus clinic.

METHOD

Participants and procedure

All those people who, over two 3-month periods, attended outpatient appointments at a specialist tinnitus clinic at the Welsh Hearing Institute were asked to complete the questionnaires described below. Of those approached, 18 declined to complete the questionnaires and a further 12 failed to complete or return the questionnaires despite initially agreeing to do so. Of the remaining 128 subjects, 20 failed to complete all the items on the questionnaires, with their data being removed from the analyses. This left 108 participants, 61 of whom were men and 47 women. The mean age of the sample was 55 years ($\sigma=14.7$), with a range of 18–86 years. The mean number of years since tinnitus onset was 6.6 ($\sigma=7.9$) and the mean number of years since referral to the tinnitus clinic was 2.1 ($\sigma=3.9$). Thus, the sample was slightly skewed toward older, long-term sufferers, as one might expect given the context in which the participants were recruited. With respect to their presenting problem, 11% of the participants said their tinnitus was localized in their left ear, 18% said it was localized in their right ear, 45% indicated that it was located in both ears, 5% indicated that it was located in their head, and 21% indicated that it was located in both their ears and in their head.

Measures

Emotional distress. The degree of emotional distress the sufferers were experiencing was assessed using the Beck Depression Inventory (BDI) [16] and the state form of the State–Trait Anxiety Inventory (STAI) [17].

Tinnitus severity. The reported subjective severity of the tinnitus was assessed using nine questions addressing the loudness and unpleasantness of the “noises”; the degree of annoyance they caused; how often the person was aware of the tinnitus; and the extent to which it had interfered, over the past week, with a range of daily activities (i.e., interfered with sleep, concentration, etc.). Sufferers responded to each of these items on Likert scales (scored from 1 to 7) with high scores indicating higher levels of tinnitus severity. This scale has been shown to be a reliable measure of tinnitus severity [9, 11], with the alpha coefficient [18] for the present sample being 0.90.

Tinnitus Coping Style Questionnaire (TCSQ). Tinnitus coping strategies were assessed using the TCSQ [11]. This 40-item questionnaire assesses a broad range of both adaptive and maladaptive coping strategies, including: diverting attention; making positive coping self-statements; ignoring tinnitus; increasing activity levels; catastrophizing; praying or hoping the tinnitus will go away; increasing tinnitus behavior and using tinnitus-specific coping strategies. While most of these coping strategies are self-explanatory two merit further comment. First, the term tinnitus behavior was derived from the research literature on coping with pain. This term was used to encompass a variety of maladaptive coping strategies which included: attending to the tinnitus; talking about the tinnitus; and attempting to avoid it by taking drugs and going to bed. Second, the tinnitus-specific coping strategies included: the use of background sounds to mask tinnitus; practicing relaxation techniques; and seeking professional help and guidance. Sufferers indicated how frequently they employed each of these coping strategies by responding to each item on a 7-point Likert scale (never, rarely, occasionally, sometimes, often, nearly always, always), with the response “always” scored as 7 and “never” scored as 1.

RESULTS

Sample characteristics

The mean BDI score for the present sample was 9 ($\sigma=6.9$), and the mean STAI score was 39 ($\sigma=12.7$), with 18% of the sample reporting moderate to severe levels of depression and/or anxiety. The mean tinnitus severity score for the sample was 41 ($\sigma=11.0$), and both age and years since tinnitus onset were correlated with tinnitus severity ($r=0.29$, $p<0.01$ and $r=0.36$, $p<0.001$, respectively).

Factor analysis

Factors were initially extracted using principal component analysis, with the scree test indicating that the data were best described by a two factor solution. The data were then reanalyzed using principal axis factoring with two factors being retained. These were initially rotated to simple structures via direct oblimin rotation. (Oblique factors were initially chosen as it was anticipated that different coping

styles might be correlated with each other.) However, as the correlation between these two factors was sufficiently small ($r=0.19$), as to suggest that the factors were orthogonal, they were rerotated using varimax rotation. (This two-factor orthogonal solution is reported in what follows.) In addition, as Budd and Pugh [11] had reported that on a previous sample a three-factor solution had best fitted the TCSQ items, a three-factor solution was also fitted to the present data. However, this three-factor solution was uninterpretable (suggesting an overextraction of factors), and thus provided further evidence that a two-factor solution best fitted the present data.

The first 10 factors had eigenvalues greater than one, with the first two factors accounting for 39% of the variance. The Kaiser–Meyer–Olkin measure of sampling adequacy was 0.75, indicating a significant degree of covariance between the items. All 40 items had communalities greater than 0.5, further indicating that the items were strongly intercorrelated and, hence, were suitable for factor analysis.

Factor structure of coping strategies

Table I presents the rotated factor matrix for this solution. (Only factor loadings greater than 0.3 are reported to aid interpretation of the factor structure.) Inspection of this table indicates that the factor structure has good convergent validity, with only one item (item 7) failing to weight on either factor. Moreover, the factor loadings indicate that this solution has fairly good discriminant validity, with only six items (items 8, 9, 13, 26, 29, and 36) weighting across factors. Most importantly, the factors are readily interpretable and, as noted below, are psychologically meaningful.

Factor 1 was labeled “maladaptive coping.” This factor includes items that focus on sufferers’ attempts to avoid tinnitus, to pray that their tinnitus will go away, and fantasize about not having tinnitus. It includes items that describe a broad range of maladaptive coping strategies including: dwelling on tinnitus; talking to others about how unpleasant the “noises” are; and catastrophizing about the consequences of tinnitus.

Factor 2 was labeled “effective coping,” with this factor assessing the sufferers’ acceptance of tinnitus and their use of a broad range of active coping strategies. These included: the use of “positive self-talk”; attention switching; attention focusing; and engaging in activities as ways of minimizing the intrusiveness of the “noises.”

Subscale construction

Those items that had a factor loading greater than 0.3 were combined to form subscales assessing these two dimensions of tinnitus coping, with items being excluded from these subscales if they weighted across factors. This resulted in 18 items assessing the “maladaptive coping” style subscale and 15 items assessing the “effective coping” style subscale. To assess the internal consistency of these subscales the alpha coefficient [18] was calculated for each of these dimensions. The alpha coefficients for these two subscales were 0.90 and 0.89, respectively. This indicates that the items that weight on these two factors combine to form homogeneous subscales that have high levels of internal consistency. Finally, with respect to the relationship

Table I.—Factor matrix

Item	Factor 1	Factor 2
23. Thinking that your tinnitus has ruined the quality of your life	0.81	
34. Thinking that you cannot do anything to cope with your tinnitus	0.76	
12. Asking what you have done to deserve your tinnitus	0.76	
40. Thinking about not being able to put up with tinnitus	0.74	
11. Daydreaming about what life would be like without tinnitus	0.69	
38. Worrying that the noises will give you a nervous breakdown	0.68	
10. Telling others how awful your tinnitus is	0.66	
5. Thinking about how awful and unpleasant the noises sound	0.62	
3. Thinking about giving up	0.61	
18. Going to bed and/or sleeping during the day to get away from your tinnitus	0.56	
32. Thinking of times in the past when you did not have tinnitus	0.56	
8. Praying your tinnitus will suddenly diminish or stop	0.49	0.40
21. Consulting a professional counselor, or psychologist, to learn new ways of coping with tinnitus	0.49	
25. Listening to your tinnitus	0.49	
6. Using a pillow speaker to help you sleep	0.45	
16. Avoiding social situations because of your tinnitus	0.42	
1. Using a tinnitus masker	0.37	
39. Learning and practicing relaxation techniques	0.39	
30. Taking prescribed medication to help you sleep	0.36	
7. Using a background noise to mask your tinnitus		
27. Reminding yourself that you can still enjoy life despite your tinnitus		0.74
19. Reassuring yourself that you can learn to tolerate/ignore your tinnitus		0.72
31. Looking at others around you who are in a worse situation than yourself		0.70
4. Reminding yourself that your life is generally fulfilling and satisfying		0.65
29. Saying to yourself that tinnitus is just one of life's many challenges		0.64
35. Thinking that you won't let your tinnitus get the better of you		0.64
24. Reassuring yourself that you can cope with your tinnitus now because you have coped in the past		0.63
20. Trying not to think about your tinnitus		0.62
2. Thinking of something pleasant rather than concentrating on your tinnitus		0.62
17. Focusing your attention fully on what you are doing, or on the things that are happening around you		0.61
14. Thinking of your tinnitus as part of everyday background noise		0.52
33. Staying busy or active to distract yourself from your tinnitus		0.50
22. Taking up hobbies and interests to distract yourself from your tinnitus		0.45
15. Pretending your tinnitus is not there		0.44
37. Reading in order to distract yourself from your tinnitus		0.35
26. Thinking of things to do to distract yourself from your tinnitus	0.40	0.50
9. Making a conscious effort to think your tinnitus away	0.36	0.50
36. Reassuring yourself that you have access to professional advice and support	0.35	0.48
28. Hoping that a cure for tinnitus will be found soon	0.33	0.47
13. Listening to the radio, music, or watching TV to mask your tinnitus	0.38	0.46

between these subscales, it is not surprising to note that they were not significantly correlated with each other ($r=0.13$).

The relationship between coping style and adjustment

Table II presents the correlations between the two tinnitus coping style subscales described above and the measures of tinnitus severity, depression, and anxiety. In-

Table II.—Correlations between the tinnitus coping style subscales, tinnitus severity, the BDI, and the STAI

	Tinnitus severity	BDI	STAI
Maladaptive coping	0.68*	0.62*	0.70*
Effective coping	0.14	0.14	0.01

* $p < 0.001$.

spection of this table indicates that the “maladaptive coping” subscale is highly correlated with each of these measures of tinnitus adjustment. Sufferers who scored highly on this coping style reported higher levels of subjective tinnitus severity, and experienced more anxiety and depression, than did sufferers who had a low score on this subscale. Surprisingly, “effective coping” was not significantly correlated with any of these measures of tinnitus adjustment. Possible reasons for this lack of relationship between “effective coping,” subjective reports of tinnitus severity, and emotional distress will be discussed next. Finally, it is interesting to note that “maladaptive coping”, but not “effective coping”, was correlated with age ($r=0.39$, $p<0.001$) and years since tinnitus onset ($r=0.46$, $p<0.001$).

DISCUSSION

The present results have provided further evidence that tinnitus sufferers adopt different and identifiable coping styles for dealing with their tinnitus. While the present study has replicated the two main coping styles identified in earlier research by Budd and Pugh [11], with these coping styles having been termed “effective coping” and “maladaptive coping,” the present results have not replicated the third coping style, termed “passive coping,” that was identified by this previous study [11]. Possible reasons for this will be considered below.

The first coping style identified by the present study, labeled “maladaptive coping,” was characterized by sufferers’ failed attempts to avoid tinnitus, with sufferers who scored highly on this dimension reporting that they often daydream about life without tinnitus and pray that their tinnitus will go away. Most importantly, this coping style was characterized by catastrophic thinking about the consequences of tinnitus, with sufferers reporting that they worry that tinnitus may cause a “nervous breakdown,” and often think about not being able to cope with the “noises” and wonder what they have done to deserve tinnitus. Moreover, those sufferers who scored highly on this dimension reported that they attempt to get away from their tinnitus by going to bed and avoid social situations due to their tinnitus. Most significantly, this coping style was associated with increased levels of tinnitus severity, anxiety, and depression.

The second coping style identified by the present study, labeled “effective coping,” was characterized by the sufferers’ acceptance of tinnitus and their use of a broad range of adaptive coping strategies. The defining feature of this coping style was the sufferers’ use of positive self-talk to encourage themselves to cope with tinnitus, along with their use of a range of active coping strategies including: distraction; attention switching; and attention narrowing. Significantly, those sufferers who

scored highly on this dimension reported increasing their range of daily activities, and taking up new hobbies and interests, to distract themselves from their tinnitus. However, this coping style was *not* correlated with decreased tinnitus severity, or with lower levels of emotional distress, as might have been expected. This finding is particularly surprising, because many of these coping strategies form a significant component of cognitive-behavioral interventions for tinnitus [19, 20]. Possible reasons for this lack of association between these measures will be considered below.

Interestingly, the third coping style, identified in Budd and Pugh's [11] earlier study, which they labeled "passive coping," was not replicated in the present study. Rather, many of those items that weighted on this factor in the earlier study, weighted on the "maladaptive coping" style in the present study. In their earlier study, Budd and Pugh [11] raised the question of whether this third factor, "passive coping," was truly distinct from "maladaptive coping," as they found these two coping styles to be significantly correlated with each other. The present results, therefore, suggest that these coping styles may not in fact be distinct from each other, but rather they may be measuring different aspects of one underlying (maladaptive) coping style.

That such coping strategies as using a tinnitus masker or pillow speaker, and practicing relaxation techniques, should weight on the "maladaptive coping" style may initially seem counterintuitive because many of these coping strategies often form a significant component of psychological interventions for tinnitus. However, this result ceases to be surprising if sufferers' attempts to mask tinnitus are reconstrued as a form of avoidance, rather than as an effective coping strategy. Thus, while masking tinnitus may initially reduce the distress associated with tinnitus, by helping sufferers escape from the "noises," excessive use of this strategy may, in the long run, prevent adjustment to tinnitus. Similarly, the use of relaxation techniques, and seeking psychological help to learn how to cope with tinnitus, may simply reflect the high level of distress these sufferers are experiencing, thus explaining why these items weight on the "maladaptive coping" style.

Most surprising of all, however, was the pattern of relationships between these tinnitus coping styles and the degree of subjective tinnitus severity, anxiety, and depression the sufferers reported experiencing. While the "maladaptive coping" style was strongly correlated with both increased tinnitus severity and with higher levels of anxiety and depression, the "effective coping" style was not correlated with any of these measures. As previously noted, this lack of association between "effective coping" and tinnitus adjustment is quite surprising. Not only do many of these coping strategies form a significant component of psychological interventions for tinnitus [19, 20], but Hallam et al.'s [21] habituation model of tinnitus distress would predict that the use of a broad range of effective coping strategies should facilitate habituation, and thus be associated with successful adjustment to tinnitus. One might therefore have expected "effective coping" to have been correlated with lower levels of tinnitus severity, anxiety, and depression.

This lack of association between these measures may reflect one of a number of factors. First, it is important to consider whether this lack of relationship between measures reflects a lack of validity in the "effective coping" subscale. There is, however, little reason to suspect that this coping style lacks validity. Not only do these items have a high degree of face validity, but the factor analysis indicates that they

combine to form a meaningful factor that has a high degree of discriminate validity. Moreover, this factor has now been replicated across two separate studies. Thus, while it is logically impossible to demonstrate the absence of an effect, these results do nonetheless suggest that "effective coping" may not be associated with better tinnitus adjustment. This conjecture is further supported by Budd and Pugh's [11] earlier study, in which the authors reported that "effective coping" did not appear to be related to tinnitus distress.

If the lack of association between these measures is not artifactual, it may then be due to one of two factors. First, it may be that the mere *use* of effective coping strategies does not necessarily mean that these strategies will be *useful*. Some sufferers may, for example, become obsessed with using such strategies, with their obsessive overuse of the strategies resulting in them not adjusting to their tinnitus. Alternatively, it may be that it is the avoidance of maladaptive coping strategies *per se*, rather than the use of effective coping strategies, that predicts successful adjustment to tinnitus. In this regard, it is important to note that some of the items that form the "maladaptive coping" subscale may describe behaviors that are a result of sufferers' failure to accept tinnitus, rather than these behaviors being the cause of sufferers' poor adjustment to tinnitus. Thus, the tendency to catastrophize about the consequences of tinnitus may not cause poor tinnitus adjustment, but rather, such dysfunctional cognitions may be a result of sufferers' failure to accept tinnitus. In this way, successful adaptation to tinnitus (habituation) may occur with time as a result of sufferers' avoidance of maladaptive coping strategies (i.e., avoiding listening to the noises, avoiding catastrophizing, etc.), rather than being due to their active use of effective coping strategies.

Acknowledgments—We acknowledge the help and support provided by Dr. S. D. G. Stephens and all the staff at the Welsh Hearing Institute.

REFERENCES

1. Coles RRA. Epidemiology of tinnitus: (1) Prevalence. *J Laryngol Otol* 1984;9:7–15.
2. Office of Population and Census Studies. The prevalence of tinnitus. *OPCS Monitor GHS*, 83/1, 1981.
3. Hallam RS, Stephens SDG. Vestibular disorder and emotional distress. *J Psychosom Res* 1985;29:407–413.
4. Stephens SDG, Hallam RS. The Crown–Crisp Experiential Index in patients complaining of tinnitus. *Br J Audiol* 1985;19:151–158.
5. Harrop-Griffiths J, Kayton W, Dobie R, Sakie C, Russo J. Chronic tinnitus association with psychiatric disorders. *J Psychosom Res* 1987;37:613–621.
6. Rachman S, Phillips HC. *Psychology and behavioral medicine*. New York: Cambridge University 1980.
7. Hallam R, Rachman S, Hinchcliff R. Psychological aspects of tinnitus. In: Rachman S, ed. *Contributions to medical psychology*. Oxford: Pergamon 1984.
8. Reed GF. An audiometric study of 200 cases of subjective tinnitus. *Arch Otol* 1960;71:94–104.
9. Budd RJ, Pugh R. The relationship between locus of control, tinnitus severity and emotional distress in a group of tinnitus sufferers. *J Psychosom Res* 1995;39:1015–1018.
10. Kirsch CA, Blanchard EB, Parnes SM. Psychological characteristics of individuals high and low in their ability to cope with tinnitus. *Psychosom Med* 1989;51:209–215.
11. Budd RJ, Pugh R. The relationship between coping style, tinnitus severity and emotional distress in a group of tinnitus sufferers. *Br J Health Psychol* (in press).
12. Hallberg LRM, Erkanndsson SI, Carlsson SG. Coping strategies used by middle-aged males with noise induced hearing loss, with and without tinnitus. *Psychol Health* 1992;7:273–288.

13. Meas S, Leventhal H, Ridder DTD. Coping with chronic diseases. In Zeidner M, Endler NS, eds. *Handbook of coping: theory, research, applications*. New York: John Wiley & Sons 1995.
14. Malone MD, Strube MJ. Meta-analysis of nonmedical treatments for chronic pain. *Pain* 1988;34:231-244.
15. Schwarzer R, Schwarzer C. A critical survey of coping instruments. In: Zeidner M, Endler NS, eds. *Handbook of coping: theory, research, applications*. New York: John Wiley & Sons 1995.
16. Beck AT, Steer RA. *Beck Depression Inventory manual*. San Antonio, TX: Psychological Corp 1987.
17. Spielberger CD, Gorsuch RL, Lushene RE, Vagg PR, Jacobs GA. *Manual for the State-Trait Anxiety Inventory*. Palo Alto, CA: Consulting Psychologists Press 1983.
18. Cronbach LS. Coefficient alpha and the internal structure of tests. *Psychometrika* 1951;16:297-334.
19. Davies S, McKenna L, Hallam RS. Relaxation and cognitive therapy: a controlled trial in chronic tinnitus. *Psychol Health* 1995;10:129-143.
20. Kirsch CA, Blanchard EB, Parnes SM. A review of the efficacy of behavior techniques in the treatment of subjective tinnitus. *Ann Behav Med* 1989;11:58-65.
21. Hallam R, Rachman S, Hinchcliffe R. Psychological aspects of tinnitus. In: Rachman S, ed. *Contributions to medical psychology*. Oxford: Pergamon 1984.