

Dissociation, hypnotizability, coping styles and health locus of control: characteristics of pseudoseizure patients

LAURA H. GOLDSTEIN*, CATHERINE DREW†, JOHN MELLERS‡, SARA MITCHELL-O'MALLEY‡ & DAVID A. OAKLEY†

* *Department of Psychology, Institute of Psychiatry, De Crespigny Park, London SE5 8AF, UK;*

† *Hypnosis Unit, Department of Psychology, University College London, Gower Street, London WC1E 6BT, UK;* ‡ *Lishman Neuropsychiatry Unit, Maudsley Hospital, Denmark Hill, London SE5 8AZ, UK*

Correspondence to: Dr L. H. Goldstein, Department of Psychology, Institute of Psychiatry, De Crespigny Park, London SE5 8AF, UK. *E-mail:* l.goldstein@iop.kcl.ac.uk

Although literature in this area is relatively sparse, the occurrence of psychogenic non-epileptic seizures (pseudoseizures) has been linked to stress, anxiety and possible dissociative tendencies. An association between dissociation and hypnotic susceptibility has also been proposed and dissociative tendencies have themselves been found to relate to the use of emotion-focused coping strategies. In order to investigate the hypothesis that pseudoseizure patients may exhibit higher levels of dissociation, a more emotion-focused coping style, and greater hypnotic susceptibility than the general population, the questionnaire responses of 20 patients with pseudoseizures were compared with those obtained from a non-clinical control group. As predicted, pseudoseizure patients demonstrated some evidence of higher levels of dissociation and escape-avoidance coping strategies. They also expressed a greater belief in external control over health and higher depression scores, compared to the control group, but the previously reported elevation in hypnotizability scores in the pseudoseizure patients was not found. Possible explanations for this pattern of results are discussed.

© 2000 BEA Trading Ltd

Key words: non-epileptic seizures; pseudoseizures; hypnotizability; dissociation; coping.

INTRODUCTION

Episodes resembling epileptic attacks, but which are not epilepsy, have been described historically and cross-culturally (e.g. References 1 and 2). These episodes vary considerably in both their aetiology and manifestations², with the possibility that any of the basic types of epileptic seizure may be simulated³. As a result, these seizure-like episodes have acquired a wide variety of labels including hysterical seizures, pseudo-epileptic seizures, pseudoseizures, psychogenic seizures and non-epileptic seizures². The term non-epileptic seizure includes both physiologically mediated seizures, for example migraine or sleep disorder oriented attacks³ and also psychologically mediated episodes. It is important to distinguish between these and therefore for the purpose of this study the term 'pseudoseizures' will be used to describe psy-

chogenic non-epileptic seizures, i.e. paroxysmal attacks that mimic epileptic seizures but are initiated by psychological mechanisms and are not accompanied by epileptiform brain activity^{3,4}. Reservations about the use of this term, however, have been expressed⁴.

Historically, pseudoseizures were known as hysterical seizures in the sense that they were regarded as a manifestation of an emotional disturbance⁵. Hysterical symptoms have since been separated into somatoform and dissociative disorders, although it is not unusual for these disorders to co-occur⁶.

However, dissociation is often regarded as an essential process underlying symptom formation in somatoform disorders⁷ and dissociation and somatoform disorders seem to share common underlying mechanisms, being explicable in terms of the same model of psychological functioning⁸. Depending on the symptom pattern, pseudoseizures can, using DSM-IV⁹, be

classified as either a somatoform disorder, a dissociative disorder¹⁰, or a conversion disorder¹¹. Frances and Baker², however, consider that DSM-IV classifications are insufficiently specific with respect to pseudoseizures, given the heterogeneous presentation of such attacks.

With respect to dissociation, the usually integrated functions of consciousness, memory, identity or perception of the environment are disrupted in the presence of overwhelming stress or anxiety¹². This state of altered awareness is said to act as an avoidance response that protects the individual from stressful events and from memories of those events. Dissociation would appear to be an essential feature of pseudoseizures, which in turn might be viewed as a form of non-verbal communication of distress¹⁰, possibly representing a wish to escape from a difficult or unpleasant situation¹³.

As well as playing a crucial role in the symptom formation of somatoform disorders⁷, dissociation is also regarded by some as an important mechanism in hypnosis¹⁰ and a long history of close association exists between hypnosis and hysteria⁸. In support of these connections Spiegel¹⁴ argued that highly hypnotizable individuals might, under stress conditions, develop symptoms that would traditionally be described as hysterical, and Bliss¹⁵ posited that dissociation is a self-hypnotic state, acting as a defensive response to threat which individuals who are able to dissociate easily use as a coping mechanism. Furthermore, there is evidence to suggest that pseudoseizures can be characterized by their dissociative nature and that pseudoseizure patients have increased susceptibility to hypnosis^{10,16-18}, while Frischholz *et al.*¹⁹ found that individuals with dissociative disorders generally tend to have increased levels of hypnotic susceptibility. Additional evidence for the dissociative nature of pseudoseizures comes from the fact that although pseudoseizure patients usually experience amnesia for the period of an attack, it appears that their memories can be recalled under hypnosis because the amnesia is of psychogenic origin^{16,17}. Oakley⁸ has also emphasized common mechanisms which may underlie the close association between conversion symptoms and phenomena associated with hypnosis.

Hypnotic susceptibility is regarded as a stable trait that correlates positively with imaginative involvement, fantasy proneness and absorption^{20,21}. Kuyk and colleagues^{3,10,16,17} and others^{6,18,22} have provided some evidence that dissociative ability can also be positively correlated with these dimensions of hypnotic susceptibility and that some individuals who have pseudoseizures demonstrate a higher level of dissociation and hypnotizability than patients with epilepsy. However, Litwin and Cardeña²³ have suggested that whilst patients with pseudoseizures may

show a greater degree of dissociative behaviour than individuals with epilepsy, patients with epilepsy in their study were slightly more hypnotizable than those with pseudoseizures.

The current study was therefore set up to determine whether individuals with pseudoseizures demonstrate increased levels of both hypnotic susceptibility and dissociation, by comparing their responses on measures of absorption (a trait regarded as related to hypnotic susceptibility²⁰) and involvement in creative imagination (also indicative of hypnotic susceptibility^{24,25}) as well as by comparing their responses on measures of dissociative experiences and perceptual alteration to those of a non-clinical sample. Although dissociative experiences are not uncommon in the general population¹⁰ it was predicted that the experimental (pseudoseizure patients) group would demonstrate higher levels of dissociation than the control group. Raised scores on measures associated with hypnotizability would provide support for previous observations that pseudoseizure patients show increased levels of hypnotizability^{3,10,16}, whereas a failure to find increased scores on these measures in the pseudoseizure patients would support Litwin and Cardeña's²³ views that dissociation rather than hypnotizability is the important variable in distinguishing patients with pseudoseizures from controls.

Dissociative reactions can also be seen as protecting the individual from unacceptable psychological experiences, and can, therefore, be regarded as a coping strategy²⁶. Different types of coping strategies may be utilized depending on an individual's perception of personal control over stressful situations¹². Emotion-focused coping strategies are more likely to be utilized if an individual perceives a stressful situation to be beyond their control. Collins and Ffrench¹² determined that dissociative tendencies may be positively correlated with an external control orientation and the use of emotion-focused coping strategies. To investigate this further, coping styles and beliefs of control over health matters were measured in this study. Frances *et al.*²⁷ demonstrated a significantly greater use of an escape-avoidant style of coping and a significantly lower use of planful problem solving in pseudoseizure patients than in healthy controls. The current study set out to see if this pattern of coping styles would be replicated in an independent sample of adults with pseudoseizures. It was also predicted that a tendency towards escape-avoidant problem solving would correlate with measures of dissociation, thereby providing greater evidence for a link between dissociation and emotion-focused coping strategies. It was also predicted that pseudoseizure patients would score significantly lower on an internal dimension of health locus of control than non-pseudoseizure patients and higher on an external dimension.

Other psychiatric factors can play an aetiological role in pseudoseizures^{28,29} and, given that pseudoseizure patients find life more stressful than non-pseudoseizure patients²⁷, anxiety disorders and depression may play an important role^{3,28}. Thus measures of anxiety and depression were administered to compare the pseudoseizure and non-clinical group, with a prediction that the pseudoseizure group will show elevated scores indicative of abnormal mood in comparison to the non-clinical group.

This study therefore set out to test the predictions that pseudoseizure patients exhibit higher levels of dissociation than the general population^{19,22}, lower internal health control orientation, greater use of emotion-focused coping strategies and higher levels of anxiety and depression than a healthy control group. It also set out to explore the possibility that pseudoseizure patients exhibit characteristics of greater hypnotic susceptibility, and overall possess a pattern of characteristics that may be useful in the diagnosis of the disorder.

MATERIALS AND METHODS

Participants

Patients were recruited from the Neuropsychiatry Unit at The Maudsley Hospital, London. Inclusion criteria consisted of the current diagnosis of pseudoseizures. This was arrived at either as a result of EEG video-telemetry, whereby a seizure (identified by the patient or their nearest relative as being typical of their habitual seizures) showed at least one of the following: the absence of ictal epileptiform discharges; the absence of post-ictal slowing; preserved alpha rhythm during apparent loss of consciousness; clinical semiology incompatible with epilepsy (with the possibility of more than one of these being observed). Where seizure frequency was too low for telemetry to be useful, the clinical opinion of two consultants was used to establish the diagnosis of pseudoseizures. Twenty patients were recruited to take part in the study on the basis of the criteria stated above.

All patients had received a definite, current diagnosis of pseudoseizures on the basis of the semiology of their attacks. Nineteen patients had undergone EEG investigations and in all of these, the results of EEG recordings had failed to reveal ictal epileptiform changes. The remaining patient was diagnosed as having pseudoseizures on the basis of the clinical opinion of two consultants. In two cases there was a history suggestive of previous epilepsy but no current evidence of epileptic seizures having occurred for at least two years prior to the current study. The 20 patients had either been enrolled ($n = 14$) in a treatment

programme using cognitive behaviour therapy to reduce the frequency of their pseudoseizures³⁰, or were awaiting treatment ($n = 6$).

The control group comprised 20 adults taken from the non-clinical, general population, and included one relative (spouse) and two friends of the pseudoseizure patients who accompanied them to the Outpatient Clinic. Pseudoseizure patients and members of the control group with a current or past history of alcohol, drug dependence, or psychosis, were excluded from the study. Groups were matched as far as possible for age (see Table 1). All participants were white European and gave informed consent for their participation in the study.

Measures and procedure

In addition to providing information regarding their age, years of education and number of years they had been having pseudoseizures, participants completed a number of questionnaires (see below). On completion of the questionnaires the participants listened to the Creative Imagination Scale tape and then recorded their responses to it. This measure was administered late in the session so that it did not influence the responses given to the questionnaires. Finally, they completed the National Adult Reading Test (see below).

Data were analysed using analyses of variance, co-varying for any demographic variable that differed between the two groups.

The measures used were as follows.

*The Dissociative Experiences Scale (DES)*³¹

The Dissociative Experiences Scale can be used as a screening instrument for dissociative disorders and disorders with a significant dissociative component. The questionnaire consists of 28 questions about experiences that individuals may have in daily life, for example: 'Some people have the experience of being in a familiar place but finding it strange and unfamiliar'; 'Some people find evidence that they have done things that they do not remember doing'. Experiences are rated on a scale of 0% (never have the experience) to 100% (always have the experience). The overall score is the mean of the individual question scores (range of 1–100). A total score of 30 and above identifies those who may be strongly dissociative. The mean DES score for adults in the general population is 7.8³¹ and in a large Canadian sample the mean score was 10.81³².

*The Perceptual Alteration Scale (PAS)*³³

This scale is also a measure of dissociation. The 27 representative items of the three sub-scales (mod-

Table 1: Characteristics of the control and pseudoseizure patient groups.

	Control group	Pseudoseizure group
Number of participants	20	20
Gender		
Female	9	16
Male	11	4
Mean age: (years)	35.95 (SD 8.46)	34.35 (SD 12.40)
Mean NART-predicted FSIQ	111.8 (SD 11.97)	94.10 (SD 13.33)
Mean age at onset of pseudoseizures (years)	N/A	27.21 (SD 13.24)
Mean duration of pseudoseizures (years)	N/A	6.84 (SD 5.84)

ification of affect, modification of control and modification of cognition) extracted by Sanders from the original scale were used. The questionnaire consists of statements describing experiences people may have in their every day lives. For example: 'I feel out of touch with my body'; 'I get torn between doing one thing or another'; 'In some situations my mind and my body are just not together'. Participants tick one of four boxes (Never, Sometimes, Frequently, Almost Always) to indicate how often the statements apply to them. Scores can range from 1–108. Higher scores indicate greater dissociative tendencies.

The Creative Imagination Scale (CIS)^{25, 34}

The Creative Imagination Scale correlates positively with other standardized measures of hypnotizability, although the strength of this correlation varies depending on the context in which it is administered²⁴. Participants listen to a tape recording, of 20 minutes duration, on which 10 different experiences are suggested, for example: making an arm and hand feel heavy; imagining drinking cool, refreshing water; age regressing to childhood. They then rate each of these experiences in terms of how similar they were to real experiences, on a scale from 0 (not at all the same) to 4 (almost exactly the same). Scores can range between 0–40. Higher scores indicate higher levels of involvement in creative imagery that are indicative of higher hypnotic susceptibility. The norm for the scale is 20.8 (SD 8.6)³⁴.

The Tellegen Absorption Scale (TAS)²⁰

Absorption is interpreted as a disposition for having episodes of total attention that fully engage an individual's representational resources. This leads to a heightened sense of the reality of the attentional object, an imaginative involvement, and an imperviousness to distracting events²⁰. The TAS has been shown to be a significant predictor of hypnotizability (see Kirsch and

Council²¹). The questionnaire contains 34 statements a person might use to describe his/her attitudes, opinions, interests and other characteristics. Examples include: 'Sometimes I can be greatly moved by eloquent or poetic language'; 'I like to watch cloud shapes change in the sky'; 'My thoughts often do not occur as words but as visual images' and these are rated as true or false by the person completing the scale. Scores can range between 0 and 34. Higher scores indicate greater absorption tendencies. Norms³⁵ for the TAS are: females 21.4 (SD 6.9); males 19.6 (SD 7.3).

The Ways of Coping Questionnaire (WOC)³⁶

The questionnaire, used by Frances *et al.*²⁷, subdivides coping processes into eight coping factors (see Table 2). The two coping styles of particular interest here were escape-avoidance (involving wishful thinking or behaviours designed to help the person escape or avoid the problem) and planful problem-focused attempts to deal with the situation as well as an analytic approach towards problem solving. Individuals have to think about the most stressful situation that they have experienced in the past week, and then respond to each of 66 items using a four-point Likert scale, indicating the frequency with which each strategy is used, ranging from 0 (does not apply and/or not used) to 3 (used a great deal). A relative score for each coping strategy used is calculated, with higher scores indicating that those coping strategies were particularly used. Although Frances *et al.*²⁷ appear to have used mean raw scores in their between-groups comparisons on the WOC sub-scales, Vitaliano *et al.*^{37, 38} recommended the use of relative scores since they permit the differentiation between individuals in the same or different experimental groups with identical raw scores by allowing for the magnitude of each raw score relative to the person's total coping efforts. Therefore relative scores (which for each person sum to 100%) were used in the present study.

Table 2: Mean scores and standard deviations on the measures used.

Measure	Control group, mean (SD)	Pseudoseizure patients mean (SD)	<i>P</i> -value
DES	13.12 (11.81)	22.63 (16.36)	0.042
CIS	16.05 (10.63)	12.70 (7.95)	0.266
TAS	22.40 (7.91)	14.30 (7.23)	0.002
PAS	43.80 (7.24)	50.85 (14.37)	0.741 ^a
Ways of coping:			
Confrontive coping	12.26 (5.99)	11.79 (6.97)	0.820
Distancing	10.34 (4.83)	10.62 (6.96)	0.881
Self-controlling	12.66 (5.02)	12.13 (5.37)	0.751
Seeking social support	18.32 (7.11)	17.42 (9.34)	0.734
Accepting responsibility	9.46 (7.73)	13.92 (7.63)	0.075
Escape-avoidance	8.16 (5.35)	12.11 (5.02)	0.021
Planful problem solving	18.01 (6.65)	13.09 (7.57)	0.035
Positive reappraisal	11.73 (5.93)	8.56 (7.84)	0.158
Health locus of control:			
Internal	28.15 (4.99)	22.25 (5.78)	0.001
Chance	18.25 (4.55)	18.55 (6.66)	0.869
Powerful others	12.35 (5.83)	17.95 (8.04)	0.492 ^a
HAD Anxiety	6.70 (3.47)	9.19 (4.85)	0.080
HAD Depression	2.95 (2.01)	5.90 (3.84)	0.005

^a With NART-predicted full scale IQ as covariate.

Hospital Anxiety and Depression Scale (HAD)³⁹

The HAD scale consists of 14 items from which two scores are calculated, one for anxiety and one for depression (with scores ranging from 0–21 for each sub-scale). Borderline scores fall between 8–10 and higher scores indicate more severe symptomatology on the dimension measured.

Multi-dimensional Health Locus of Control Questionnaire (MHLC)⁴⁰

This questionnaire measures how strongly people believe in each of three dimensions of control for health: Internality (I-MHLC), Chance (C-MHLC) or external factors and Powerful others (P-MHLC). It consists of 18 such items to which the participants respond on a six-point scale ranging from 1 (Strongly disagree) to 6 (Strongly agree). There are six items per sub-scale for which the higher the score the stronger the belief, and three separate scores are derived.

National Adult Reading Test (NART—2nd Edition)⁴¹

A list of 50 irregularly spelled words is read out aloud by participants, and scored for pronunciation errors to determine a predicted full scale IQ. The upper and lower limits yield, for current purposes, predicted full scale IQs ranging from 69–131.

RESULTS

Data were analysed using SPSS V6.0⁴². Analysis of the data indicated that although the pseudoseizure patients and controls did not differ in mean ages (see Table 1) the control group had achieved a higher mean IQ value predicted on the basis of their NART scores. Subsequent analysis indicated that NART-predicted IQ scores correlated significantly, and negatively, with scores on the PAS (pseudoseizure patients: $r = -0.573$, $P = 0.008$) and on the Powerful-others dimension of the MHLC (controls: $r = -0.686$, $P = 0.001$; pseudoseizure patients: $r = -0.731$, $P = 0.000$) and thus IQ was used as a covariate when examining between-groups differences on these two measures.

Mean scores and standard deviations for the questionnaire measures are presented in Table 2, along with the significance levels achieved.

Table 2 indicates that the pseudoseizure group obtained significantly higher scores on one measure of dissociation, the DES, but not on the other, the PAS. Neither of the measures predictive of hypnotizability (CIS, TAS) elicited significantly higher scores in the pseudoseizure patient group, and in fact on the TAS the control group achieved significantly higher scores than the pseudoseizure group.

Analysis of the relative coping scores derived from the WOC supported findings reported previously²⁷. Thus, in comparison to the control group, the pseu-

doseizure patients achieved a significantly lower mean relative coping score with respect to the use of planful problem solving and a significantly higher mean relative coping score with respect to the use of escape avoidance. None of the other between-group comparisons of relative coping scores achieved statistical significance. However, both groups were found to demonstrate seeking social support as their main coping strategy.

Correlations between the use of escape-avoidance coping strategies (an emotion-focused coping style) and measures of dissociation were computed. For the control group these achieved statistical significance for the DES ($r = 0.443$, $P = 0.05$) and this was also the case for the pseudoseizure patients ($r = 0.511$, $P = 0.021$), where the finding was more highly significant. For neither group did the correlations between relative use of escape-avoidance strategies and PAS scores achieve statistical significance. The relative use of planful problem solving achieved a significant negative correlation with the DES score ($r = -0.455$, $P = 0.044$) but this was for the pseudoseizure patient group only; no significant correlations were found with PAS scores.

With respect to the MHLC scale, the pseudoseizure patients obtained a significantly lower mean Internal MHLC score than the controls. The two groups did not differ significantly on the other two dimensions of the MHLC scale.

To determine whether dissociation might be linked to an external-control belief concerning health, correlations between DES and PAS scores were computed with the three dimension scores from the MHLC. For neither group were correlations with Internal HLC scores significant. For controls there was a trend towards a significant correlation between Chance HLC and PAS scores ($r = 0.423$, $P = 0.063$) whereas for patients, Powerful-others HLC scores were correlated with DES scores ($r = 0.543$, $P = 0.013$) and with PAS scores ($r = 0.619$, $P = 0.004$).

The pseudoseizure patient group had significantly higher depression scores than the control group on the HAD; their anxiety scores did not differ, although there was a trend towards higher anxiety in the patient group ($P = 0.08$). Of the control group, 10% of the group had scores above the cut-off of 10, suggestive of anxiety, whereas 30% of the pseudoseizure patients scored in the anxious range. None of the control group scored above the cut-off of 10 for depression, whereas 20% of the patients did.

DISCUSSION

To summarize the main results: as predicted, pseudoseizure patients scored significantly higher than the

control group on the Dissociative Experiences Scale, in their use of escape-avoidance as a coping technique and in their levels of depression. The control group unexpectedly scored significantly higher than the pseudoseizure patients on the Tellegen Absorption Scale but, as predicted, scored higher on the use of planful problem solving as a coping strategy and had a higher internal health locus of control.

Evidence to support the proposal that pseudoseizure patients exhibit higher levels of dissociation than the general population was thus supported in that the pseudoseizures group reported significantly higher levels of dissociation on the Dissociative Experiences Scale than the control group. Although examination of the mean scores on the Perceptual Alteration Scale (the second measure of dissociation) suggests that the pseudoseizure patients achieved higher scores, the significant correlation between NART-predicted IQs and PAS scores suggested that, in the current study, the PAS may have been tapping cognitive ability to a greater degree than dissociation. Although the scores given by the patient group on the Dissociative Experiences Scale were significantly higher than those of the controls, the scores did not indicate severe dissociative tendencies (regarded as a score of 30 or above).

It is possible that the Dissociative Experiences Scale and the Perceptual Alteration Scale are measuring different aspects of dissociation, as suggested by Fischer and Elnitsky⁴³, and that pseudoseizure patients demonstrate a particular dimension of dissociation that is measured by the Dissociative Experiences Scale. There is no clear support for this however in the present study, since the DES and PAS scores correlated significantly for both the control ($r = 0.634$, $P = 0.003$) and the pseudoseizure patient ($r = 0.818$, $P = 0.000$) groups. Fisher and Elnitsky⁴³ suggest that the DES scale measures disturbances in cognition-control and the Perceptual Alteration Scale measures disturbances in affect-control. In the current study, however, for both groups, the DES scores correlated significantly with the use of escape-avoidance coping techniques whilst the PAS scores did not achieve a statistically significant correlation with this coping strategy. Furthermore, previous studies have suggested that sub-groups may exist within the group of pseudoseizure patients with some sub-groups exhibiting more dissociative tendencies than others³. However no clear sub-groups of patients were found in the current study from an examination of the frequency distributions of scores on the DES. Dissociation is a poorly understood phenomenon and self-report techniques may inadequately assess its characteristics⁴⁴. It is also possible that the patients in the experimental group undergoing treatment were not using dissociation as a coping technique as much as they had been before treatment which may explain why significantly different levels

of dissociation were not found between the groups on the Perceptual Alteration Scale. Increasing the number of individuals in each group and recruiting patients before they had received treatment may help to clarify the situation, and further investigations into the claims that there are different dimensions to dissociation need to be carried out.

In support of Litwin and Cardeña²³ but contrary to the findings of Kuyk *et al.*^{16,17} and Barry *et al.*¹⁸, scores obtained on the Creative Imagination Scale and the Tellegen Absorption Scale did not provide evidence that pseudoseizure patients exhibit higher levels of hypnotic susceptibility than the control group. In fact, the non-patient group in the present study scored more highly, although not significantly so, on the Creative Imagination Scale, and produced significantly higher scores on the Tellegen Absorption Scale than the pseudoseizure patients. It is perhaps worth noting that several of the pseudoseizure patient group commented that they found the tape recording of the Creative Imagination Scale difficult to concentrate on and in one case, upsetting. In addition, it is also possible that some participants did not pay full attention to the tape as it was played near to the end of the session. Furthermore, the Creative Imagination Scale was not presented in an hypnotic context which may have made it less effective as a measure of hypnotic susceptibility²⁴. Preceding the CIS with a hypnotic induction, presenting it as a 'test of hypnotic susceptibility' or replacing it with the Stanford Clinical Hypnosis Scale (which was used by both Kuyk *et al.*¹⁶ and Litwin and Cardeña²³) or by the Hypnotic Induction Profile (used by Barry *et al.*¹⁸) might assess hypnotizability more explicitly. While it is important to keep the possible limitations of the CIS in mind, it is also the case that the other measure predictive of hypnotizability (the TAS) also failed to indicate higher levels of hypnotizability in the pseudoseizure group and in common with the CIS showed the reverse pattern of scores.

Support for further investigation of increased hypnotizability as a characteristic of pseudoseizure patients comes from the apparently heightened suggestibility of such individuals as demonstrated in various studies that have used provocation of pseudoseizures by suggestion as a diagnostic procedure⁴⁵⁻⁴⁸. Barry *et al.*¹⁸ have made the linkage between hypnotizability and seizure suggestion more explicit in their proposal that a combination of hypnotizability scores and seizure provocation by suggestions given during hypnosis may not only be an aid to diagnosis but may also provide a basis for the treatment of pseudoseizures. There is good evidence that suggestibility, particularly 'imaginative suggestibility', measured outside hypnotic contexts correlates very highly with hypnotic suggestibility when the same measures are

used in the two conditions⁴⁹⁻⁵².

The fact that the pseudoseizure patients scored more highly on one of the emotion-focused coping strategies, i.e. escape avoidance, confirms Frances *et al.*'s²⁷ recent findings. The observation that these scores correlated with DES scores partially supports the argument that dissociative tendencies can be positively correlated with emotion-focused coping strategies and that dissociation is used as a coping mechanism¹², albeit a maladaptive one. The control group demonstrated significantly higher scores on planful problem solving, a problem-focused coping strategy. For the patients, the use of this strategy showed a significant negative correlation with DES scores. The findings also suggest that DES scores were independently linked both to emotion-focused coping strategies and locus of control¹² as there was no direct correlation found between the use of escape-avoidance coping techniques and internal/external locus of control, whereas for patients, DES and PAS scores correlated with one measure of external HLC. Future research might usefully examine, in addition to MHLC scores, pseudoseizure patients' beliefs about the importance of their health, and also include a consideration of the adaptive value of internal as opposed to external beliefs over health control. Wallston⁵³, for example, notes that when faced with an acute or chronic illness, belief in 'Powerful others' may be advantageous; if there is little that 'Powerful others' can do to change the person's health then having a strong 'Chance' HLC belief may be adaptive⁵⁴. Interestingly, a *post hoc* analysis indicated that the degree of 'Powerful-others' HLC belief in the current group of pseudoseizure patients correlated significantly with the length of time for which they had been having their pseudoseizures ($r = 0.476$, $P = 0.039$). Thus how pseudoseizure patients arrive at their HLC beliefs may be a valuable source of enquiry, since it may help identify the extent to which such beliefs are truly associated with a tendency to dissociate.

Depression is regarded as common in dissociative disorders and pseudoseizures³. The results found in this study support this finding in that significant levels of depression were found in the pseudoseizure group compared to the control group. However, it should be noted that the mean depression score found was below the level for borderline depression. It was also expected that significantly higher levels of anxiety would be found in the pseudoseizure group, but although anxiety levels were higher than the control group's, they were not significantly so. Added to this, most of the participants in the experimental group were undergoing therapy and this may have led to reduction in depression and anxiety.

It is important to note that, in contrast to the control group, the majority of the current pseudoseizure

patients were female, which is in line with other data on the prevalence of pseudoseizures in males and females^{4,55}. However within the current control group no gender-related differences were found on any of the measures used and it is unlikely that current between-groups differences were a consequence of the different ratios of females to males in the two groups. Nevertheless, the gender distribution in the comparison groups should perhaps be matched in future studies.

In conclusion, it does seem that there are certain dimensions on which pseudoseizure patients differ significantly from the normal population. In particular they show higher scores on a measure of dissociation, greater relative use of escape-avoidant coping style, relatively less use of planful problem-solving coping style, lower levels of internal health locus of control and higher levels of depression than a healthy control group. They did not show a greater level of hypnotizability than the control group and the overall pattern of results therefore are more supportive of the findings of Litwin and Cardeña²³ than of Kuyk *et al.*^{16,17}. The key finding in the present study that pseudoseizure patients scored highly on dissociative tendencies but low on hypnotizability requires further investigation in order to determine whether these are truly different phenomena or whether the present measures of hypnotizability were not sufficiently direct.

REFERENCES

- Chalder, T. Non-epileptic attacks: a cognitive behavioural approach in a single case with a four-year follow up. *Clinical Psychology and Psychotherapy* 1996; **3**: 291–297.
- Frances, P. and Baker, G. A. Non-epileptic attack disorder (NEAD): a comprehensive review. *Seizure* 1999; **8**: 53–61.
- Kuyk, J., Leijten, F., Meinardi, H., Spinhoven, P. and Van Dyck, R. The diagnosis of psychogenic non-epileptic seizures: a review. *Seizure* 1997; **6**: 243–253.
- Betts, T. and Boden, S. Pseudoseizures (non-epileptic attack disorder). In: *Women and Epilepsy* (Ed. M. R. Trimble). Chichester, John Wiley and Sons Ltd, 1991: pp. 243–258.
- Lesser, R. P. Psychogenic seizures. In: *Recent Advances in Epilepsy No 2* (Eds T. A. Pedley and B. S. Meldrum). Edinburgh, Churchill Livingstone, 1985: pp. 273–296.
- Davison, G. C. and Neale, J. M. *Abnormal Psychology*. 7th Edition (Eds G. C. Davison and J. M. Neale). New York, John Wiley & Sons, 1998.
- Williams, D. T., Walczak, T., Berten, W., Nordli, D. and Bergtraum, M. Psychogenic seizures. In: *The Neurobehavioral Treatment of Epilepsy* (Eds D. I. Mostofsky and Y. Løyning). Hillsdale, Lawrence Erlbaum Associates, 1993: pp. 83–106.
- Oakley, D. A. Hypnosis and conversion hysteria: a unifying model. *Cognitive Neuropsychiatry* 1999; **4**: 243–265.
- American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*. 4th Edition, Washington, DC, 1994.
- Kuyk, J., Van Dyck, R. and Spinhoven, P. The case for a dissociative interpretation of pseudoepileptic seizures. *Journal of Nervous and Mental Disease* 1996; **184**: 468–474.
- Porter, R. J. Epileptic and non-epileptic seizures. In: *Non-epileptic Seizures* (Eds A. J. Rowan and J. R. Gates). Boston, Butterworth-Heinemann, 1993: pp. 9–20.
- Collins, F. E. and Ffrench, C. H. Dissociation, coping strategies, and locus of control in a non-clinical population: clinical implications. *Australian Journal of Clinical and Experimental Hypnosis* 1998; **26**: 113–126.
- Minter, R. Can emotions precipitate seizures—a review of the question. *Journal of Family Practice* 1979; **8**: 55–59.
- Spiegel, H. The grade 5 syndrome: the highly hypnotizable person. *International Journal of Clinical and Experimental Hypnosis* 1974; **22**: 303–319.
- Bliss, E. L. *Multiple Personality, Allied Disorders and Hypnosis*. New York, Oxford University Press, 1986.
- Kuyk, J., Jacobs, L. D., Aldenkamp, A. P., Meinardi, H., Spinhoven, P. and Van Dyck, R. Pseudo-epileptic seizures: hypnosis as a diagnostic tool. *Seizure* 1995; **4**: 123–128.
- Kuyk, J., Spinhoven, P. and Van Dyck, R. Hypnotic recall: a positive criterion in the differential diagnosis between epileptic and pseudoepileptic seizures. *Epilepsia* 1999; **40**: 485–491.
- Barry, J. J., Atzman, O. and Morrell, M. M. Discriminating between epileptic and non-epileptic events: the utility of hypnotic seizure induction. *Epilepsia* 2000; **41**: 81–84.
- Frischholz, E. J., Lipman, L. S., Braun, B. G. and Sachs, R. G. Psychopathology, hypnotizability, and dissociation. *American Journal of Psychiatry* 1992; **149**: 1521–1525.
- Tellegen, A. and Atkinson, G. Openness to absorbing and self-altering experiences ('Absorption'), a trait related to hypnotic susceptibility. *Journal of Abnormal Psychology* 1974; **83**: 268–277.
- Kirsch, I. and Council, J. R. Situational and personality correlates of hypnotic responsiveness. In: *Contemporary Hypnosis Research* (Eds E. Fromm and M. R. Nash). New York, Guilford, 1992: pp. 267–291.
- Bowman, E. S. The etiology and clinical course of pseudo-seizures: relationship to trauma, depression and dissociation. *Psychosomatics* 1993; **34**: 333–342.
- Litwin, R. and Cardeña, E. *Dissociation and Reported Trauma in Organic and Psychogenic Seizure Patients*. 101st Annual Convention of the American Psychological Association, Toronto, 1993.
- Spanos, N. P., Gabora, N. J., Jarrett, L. E. and Gwynn, M. I. Contextual determinants of hypnotizability and of relationships between hypnotizability scales. *Journal of Personality and Social Psychology* 1989; **57**: 271–278.
- Wilson, S. C. and Barber, T. X. The creative imagination scale as a measure of hypnotic responsiveness: applications to experimental and clinical hypnosis. *American Journal of Clinical Hypnosis* 1978; **20**: 235–249.
- Gross, M. The clinical diagnosis of psychogenic seizures. In: *Pseudo-epilepsy. The Clinical Aspects of False Seizures* (Ed. M. Gross). Lexington, Lexington Books, D.C., Heath and Company, 1983.
- Frances, P. L., Baker, G. A. and Appleton, P. L. Stress and avoidance in pseudoseizures: testing the assumptions. *Epilepsy Research* 1999; **34**: 241–249.
- Devinsky, O. Non-epileptic psychogenic seizures: quagmires of pathophysiology diagnosis and treatment. *Epilepsia* 1998; **39**: 458–462.
- Alper, K., Devinsky, O., Perrine, K. and Luciano, D. Psychiatric classification of nonconversion non-epileptic seizures. *Archives of Neurology* 1995; **52**: 199–201.
- Mitchell-O'Malley, S., Mellers, J., Deale, A., Goldstein, L. H. and Toone, B. Cognitive behavioural treatment of non-epileptic attacks. *Epilepsia* 1999; **40** (Suppl. 2): 102.
- Carlson, E. B. and Putnam, F. W. An update on the dissociative experiences scale. *Dissociation* 1993; **6**: 16–25.
- Waller, N. G. and Ross, C. A. The prevalence and biometric structure of pathological dissociation in the general population: taxometric and behaviour genetic findings. *Journal of Abnormal Psychology* 1997; **106**: 499–510.
- Sanders, S. The perceptual alteration scale: a scale measur-

- ing dissociation. *American Journal of Clinical Hypnosis* 1986; **29**: 95–102.
34. Barber, T. X. and Wilson, S. C. The Barber suggestibility scale and the creative imagination scale: experimental and clinical applications. *American Journal of Clinical Hypnosis* 1978/9; **21**: 84–108.
 35. Tellegen, A. *Brief Manual for the Multidimensional Personality Questionnaire*. University of Minnesota, 1982.
 36. Folkman, S. and Lazarus, R. S. *Ways of Coping Questionnaire Test Booklet*. Palo Alto, CA, Consulting Psychologists Press, Inc., 1988.
 37. Vitaliano, P. P., Maiuro, R. D., Russo, J. and Becker, J. Raw versus relative scores in the assessment of coping strategies. *Journal of Behavioral Medicine* 1987; **10**: 1–18.
 38. Vitaliano, P. P., Katon, W., Russo, J., Maiuro, R. D., Anderson, K. and Jones, M. Coping as an index of illness behaviour in panic disorder. *Journal of Nervous and Mental Disease* 1987; **175**: 78–84.
 39. Zigmund, R. and Snaith, R. P. The hospital anxiety and depression scale. *Acta Psychiatrica Scandinavia* 1983; **67**: 361–370.
 40. Wallston, K. A., Wallston, B. S. and De Vellis, R. Development of the multidimensional health locus of control (MHLC) scales. *Health Education Monographs* 1978; **6**: 161–170.
 41. Nelson, H. E. and Willison, J. National adult reading test (NART). In: *Test Manual*. 2nd Edition, Windsor, NFER-Nelson, 1992.
 42. Norussis, M. *SPSS for Windows: Base System's User's Guide: Release 6.0*. Chicago, SPSS, 1993.
 43. Fisher, D. G. and Elnitsky, S. A factor analytic study of two scales measuring dissociation. *American Journal of Clinical Hypnosis* 1990; **32**: 201–207.
 44. Wood, B. L., McDaniel, S., Burchfiel, K. and Erba, G. Factors distinguishing families of patients with psychogenic seizures from families of patients with epilepsy. *Epilepsia* 1998; **39**: 432–437.
 45. Lancman, M. E., Asconapé, J. J., Craven, W. J., Howard, G. and Kiffin Penry, J. Predictive value of induction of psychogenic seizures by suggestion. *Annals of Neurology* 1994; **35**: 359–361.
 46. Flügel, D., Bauer, J., Käseborn, U., Burr, W. and Elger, C. Closed eyes during a seizure indicate psychogenic etiology; a study with suggestive seizure provocation. *Journal of Epilepsy* 1996; **9**: 165–169.
 47. Stagno, S. J. and Smith, M. L. Use of induction procedures in diagnosing psychogenic seizures. *Journal of Epilepsy* 1996; **9**: 153–158.
 48. Dericioğlu, N., Saygi, S. and Cığır, A. The value of provocation methods in patients suspected of having non-epileptic seizures. *Seizure* 1999; **8**: 152–156.
 49. Braffman, W. and Kirsch, I. Imaginative suggestibility and hypnotizability: an empirical analysis. *Journal of Personality and Social Psychology* 1999; **77**: 578–587.
 50. Kirsch, I. Suggestibility or hypnosis: what do scales really measure? *International Journal of Clinical and Experimental Hypnosis* 1997; **45**: 212–225.
 51. Kirsch, I. and Braffman, W. Correlates of hypnotisability: the first empirical study. *Contemporary Hypnosis* 1999; **16**: 224–230.
 52. Weitzenhoffer, A. M. and Sjöberg, B. M. Suggestibility with and without 'induction of hypnosis'. *Journal of Nervous and Mental Disease* 1961; **132**: 204–220.
 53. Wallston, K. A. Assessment of control in health care settings. In: *Stress, Personal Control and Health* (Eds A. Steptoe and A. Appels). London, Wiley, 1989: pp. 85–105.
 54. Burish, T. G., Carey, M. P., Wallston, K. A., Stein, M. J., Jamison, R. N. and Lyles, J. N. Health locus of control and chronic disease: an external orientation may be advantageous. *Journal of Clinical and Social Psychology* 1984; **2**: 326–332.
 55. Kristensen, O. and Alving, J. Pseudoseizures—risk factors and prognosis. A case-control study. *Acta Neurologica Scandinavica* 1992; **85**: 177–180.