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Schizotypy, dissociative experiences and childhood abuse: Relationships among self-report measures

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Objectives. The traits and experiences that are seen as defining the schizophrenic and the dissociative disorders have been found to be present in continuously variable, non-pathological forms in the general population. Although the theoretical accounts that have been offered for the two kinds of disorder differ radically, there are reasons to expect that the measures that have been developed to assess schizotypal traits and dissociative experiences will be correlated. The aims of this study were to investigate the degree of correlation between measures and the extent to which the covariation can be explained by questionnaire items with similar content and experiences of childhood sexual and physical abuse.

Design. Cross-sectional data from self-report measures completed by 224 participants were subjected to multivariate analyses.

Method. The Dissociative Experiences Scale (DES), three subscales from the Oxford–Liverpool Inventory of Feelings and Experiences (O-LIFE) and two items assessing childhood abuse were mailed to all adult members of a volunteer participant panel.

Results. Moderately large correlations were found between the DES and both the *Cognitive Disorganization* and the *Unusual Experiences* subscales of the O-LIFE. These correlations were hardly affected when items with overlapping content were excluded. Hierarchical multiple regression analyses showed that the measures of abuse accounted for small but significant proportions of the variance in both the DES and the *Unusual Experiences* subscale, but large proportions of the covariation between the measures of dissociative experiences and schizotypy remained unexplained.

Conclusion. The substantial correlations between measures point to limitations in the discriminant validity of the DES and two of the O-LIFE subscales. Three possible explanations are offered for the observed associations between dissociative experiences and schizotypal traits.

There is a long tradition of research into possible predispositions to psychotic disorders which is generally referred to as the study of schizotypy. Although some researchers in this field, especially in North America, take a quasi-dimensional

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approach to schizotypy, most British researchers adopt a fully dimensional model of one kind or another (Claridge, 1994). That is, they assume that the temperamental predispositions exist as continuously variable characteristics in the general population which are transformed into signs of disorders only under certain conditions, most notably when the predispositions are great. According to this model, when disorders are not present, these predispositions can be regarded as healthy diversity of personality. Although most models of schizotypy allow that environmental factors have a role to play, especially in determining whether dispositions are transformed into disorders, it is generally assumed that the most important influences responsible for variations in disposition are genetic in origin (e.g. Claridge, 1985). This view has gained support from several studies of familial vulnerability to schizophrenia (Kendler, Thacker & Walsh, 1996). Indeed, Kendler *et al*. (1996) have gone so far as to suggest that, '… to be a valid measure of schizotypy, an instrument should measure a trait that is more common or prominent in relatives of individuals with schizophrenia than in relatives of matched controls' (p. 512).

One complication in this field that has emerged is that there are several, relatively independent schizotypal dispositions. Researchers have devised many questionnaires and structured interviews to measure schizotypal characteristics and, when various combinations of these measures have been subjected to factor analytic procedures, with either normal or clinical samples, three or four factors generally emerge (Battaglia, Cavallini, Macciardi & Bellodi, 1997; Chen, Hsiao & Lin, 1997; Claridge *et al*., 1996; Vollema & van den Bosch, 1995). Although findings differ in detail across analyses, they appear to converge on the following three dimensions (adopting the terminology of Mason, Claridge & Jackson, 1995): (a) Unusual Experiences, including aberrant perceptions and magical thinking, (b) Introvertive Anhedonia, including lack of enjoyment from social sources, solitariness and dislike of intimacy; and (c) Cognitive Disorganization, including attentional difficulties, social anxiety, odd behaviour and odd speech.

Definitions of dissociation vary but most include the idea of failures in the integration of memory, identity and perception. The dissociative disorders [dissociative amnesia, dissociative fugue, dissociative identity disorder and depersonalization disorder, according to DSM-IV (American Psychiatric Association, 1994)] are characterized by extreme failures of this kind, but it has been suggested that dissociative states are experienced to a greater or lesser extent in the general population. This suggestion has gained considerable support from research using self-report measures of dissociative experiences (van Ijzendoorn & Schuengel, 1996), chiefly the Dissociative Experiences Scales (DES; Bernstein & Putnam, 1986; Carlson & Putnam, 1993). It has been suggested that separable dimensions can be found in the DES but it now appears likely that these factors are an artefact of uneven item endorsement frequencies (van Ijzendoorn & Schuengel, 1996).

Thus, there are similarities in the models that have been offered for schizotypy and dissociation in that traits and subjective experiences that are seen as defining the schizophrenic and the dissociative disorders have been found to be present in continuously variable, non-pathological forms in the general population. However, although measures of schizotypy are considered to be indications of vulnerabilities which are largely inherited, measures of dissociative experiences are normally treated

merely as screening instruments for the dissociative disorders. Although a disposition to dissociative experiences may be inherited (Kihlstrom, Glisky, & Angiulo, 1994), preliminary data suggest that there is very little genetic contribution to normal dissociation (Putnam, 1996), nor even to pathological dissociative experiences (Waller & Ross, 1997). Instead, dissociative experiences are associated, theoretically and empirically, with histories of trauma and maltreatment (van Ijzendoorn & Schuengel, 1996) and adverse family environments (Draijer & Langeland, 1999; Nash, Hulsey, Sexton, Harralson & Lambert, 1993). Furthermore, indices of severity of trauma, such as duration or age of onset of sexual abuse, or measures of combat intensity, are usually correlated significantly with degree of dissociation (Putnam, 1996). Thus, measures of dissociative experiences might be considered as measures of some of the results of environmental events rather than measures of a predisposition or vulnerability.

Despite these differences in conceptualization, there are some reasons to expect that measures of schizotypy and measures of dissociative experiences would be correlated: (a) Schneiderian 'first-rank symptoms', which were once thought to be pathognomonic for schizophrenia, have been found to be common among women who identify themselves as survivors of sexual abuse (Anderson, Yasenick & Ross, 1993) and among people with multiple personality disorder (the earlier name for dissociative identity disorder) (Fink & Golinkoff, 1990; Kluft, 1987; Ross, Miller, Reagor, Bjornson, Fraser & Anderson, 1990); (b) quite high rates of post-traumatic stress disorder, which has dissociative experiences among its diagnostic criteria (van der Kolk, Pelcovitz, Roth, Mandel, McFarlane & Herman, 1996), are found among people suffering from schizophrenia (Mueser *et al*. 1998); (c) items enquiring about daydreams, hallucinations, and disturbances of identity and body image are found in self-report measures of both dissociative experiences and schizotypy.

The frequency of dissociative experiences (as measured by the DES) has previously been found to covary with the severity of schizotypal characteristics, as measured by the MMPI-2 among women with eating disorders (Gleaves & Eberenz, 1995), as measured by the SCID-II PQ (Spitzer, Williams & Gibbon, 1987) among consecutive admissions to psychiatric hospital (Modestin, Ebner, Jungham & Erni, 1996), and as measured by the Rust Inventory of Schizotypal Cognitions (RISC: Rust, 1988) among disturbed but non-psychotic adolescents from a residential programme and day treatment centre (Altman, Collins & Mundy, 1997). In this last study the DES was better than the RISC at discriminating those adolescents who reported experiencing auditory hallucinations from those who did not. However, it is not possible to tell from these studies how much the associations were due to the presence of psychological disorders, nor can one tell if the schizotypal dimensions are differentially related to dissociative experiences. The aims of the present study were (a) to determine to what extent commonly used measures of dissociative experiences and of schizotypal dimensions are related in a general population sample and to what extent the covariations, if any, can be explained by (b) questionnaire items with similar content, and (c) experiences of childhood sexual or physical abuse.

Method

Participants

Packs of questionnaires were mailed to all 450 adult members of the volunteer participant panel of a university psychology department and 224 were returned. The volunteers were told that the research concerned spiritual experiences, personality and religious commitment. No payment was offered to the volunteers but they were told that their names, if they gave them, would be entered for a prize draw worth £100.

Measures

Packs mailed to volunteers contained the following questionnaires (plus measures of spiritual experiences and life attitudes, which are not analysed here).

Dissociative Experiences Scale (*DES; Carlson & Putnam, 1993*). The DES is a 28-item, self-report measure of the frequency of dissociative experiences. Participants are required to rate the percentage of time in their daily lives that they have the dissociative experiences that are described. The response format ranges from 0% to 100% in 10% increments, with 0 representing that the experience never happens and 100 indicating that it happens constantly. The scale score is determined by calculating the average score across all items. Favourable analyses of the psychometric properties of the DES have been published by Dubester & Braun (1995) and by van Ijzendoorn & Schuengel (1996).

Oxford–Liverpool Inventory of Feelings and Experiences. (*O-LIFE; Mason* et al., *1995*). The O-LIFE was initially developed from a factor analysis of scales that had previously been developed to assess aspects of schizotypy. The results of this factor analysis were then used to select the items that best represented the resulting factors. All items have a yes/no response format. Three of the subscales of the O-LIFE were included in the present study: Unusual Experiences (UNEX) comprises 30 items chiefly assessing perceptual aberrations and magical thinking; Cognitive Disorganization (COGDIS) comprises 24 items describing difficulties with attention and decision-making, a sense of lack of purpose, moodiness and social anxiety; Introvertive Anhedonia (INTANH) comprises 27 items describing a lack of enjoyment from social sources, dislike of emotional and physical intimacy, and a preference for independence and solitude. The Lie scale of the Eysenck Personality Questionnaire (Eysenck & Eysenck, 1975) was also included. Scores on these subscales consist of the total number of items endorsed in the target direction.

Modified scales: The DES contains one item assessing the frequency of auditory hallucinations, which is normally considered to be a schizotypal trait. The O-LIFE, on the other hand, contains three items which refer to daydreams and five items which appear to describe the experience of depersonalization. As daydreaming and depersonalization are normally considered to be aspects of dissociation, these items (shown in the appendix) represent content overlap between the measures. All of these items were therefore excluded for some of the analyses of the relationship between the measures.

Childhood abuse. Two questions previously employed by Bryer, Nelson, Miller & Krol (1987) in a study of female psychiatric inpatients were used to assess childhood abuse. In order to assess sexual abuse, participants were asked 'Before you were 16 years old, did anyone ever pressure you into doing more sexually than you wanted to do (by sexually we mean pressured against your will into forced contact with the sexual parts of your body or his/her body)?' In order to assess physical abuse, participants were asked, 'Everyone gets into conflicts with other people and sometimes these lead to physical blows such as hitting really hard, kicking, punching, stabbing, throwing someone down, etc. Before you were 16, did this happen to you?' Yes/no response formats were supplied for each question.

Results

Completed questionnaires were returned by 80 male and 144 female participants (49.8% return rate) with an average age of 39.1 years (SD = 18.5). Of the participants 100 were single, 67 married, 27 co-habiting, 13 divorced, 7 separated and

10 widowed. Seven participants had no educational qualifications, 31 had 'O' levels or equivalent, 58 had 'A' levels or equivalent, 95 had first degrees, and 26 had postgraduate qualifications (data missing for 7 cases). Using the Registrar General's classification of occupations (O.P.C.S., 1970), 13, 120, 45, 29, six and one belonged to social classes I, II, IIIA, IIIB, IV, and V, respectively (data missing for 10 cases). Thus, the sample belonged to higher social classes, were better educated, and were more likely to be unmarried than the population as a whole, as is usual with volunteer participant panels.

The participants' mean scores on each of the measures are shown in Table 1 together with the results of one-sample *t*-tests comparing these means with published norms. It can be seen that the participants' means were significantly higher than the norms on the DES and the Unusual Experiences subscale of the O-LIFE and significantly lower than the norms on the lie scale. Sexual abuse alone was reported by 14 participants, physical abuse alone by 37 participants and both kinds of abuse by 10 participants.

Table 1. Means and SDs for variables and *t*-tests for comparisons with norms

	Mean	SD	Effect size[d]	*t*	*p*
DES[a]	13.1	10.3	1.51	2.20	.03
UNEX[b]	10.5	6.6	2.16	4.92	< .001
COGDIS[b]	11.0	6.3	0.60	1.44	.15
INTANH[b]	6.4	4.8	− 0.14	− 0.43	.67
Lie[c]	6.0	3.7	− 0.22	− 3.24	< .001

Norms from: [a] van Ijzendoorn & Schuengel (1996); [b] Mason, Claridge & Jackson (1995); [c] Eysenck & Eysenck (1975).

[d] Effect size calculated as the mean for the sample minus the normative mean, divided by the normative standard deviation.

Note. DES, Dissociative experiences scale; UNEX, unusual experiences; COGDIS, cognitive disorganization; INTANH, introvertive anhedonia; Lie, Eysenck Personality Questionnaire lie scale.

The zero-order correlations among the questionnaire measures and the age and sex (1 = male, 2 = female) of the participants are shown in Table 2. The correlations for the unmodified scales are shown as these have the most relevance for the discriminant validity of the scales as they are used in practice. It can be seen that the measure of Introvertive Anhedonia had only very small correlations with the other measures of schizotypy, the DES and the measures of abuse. The partial correlation between Introvertive Anhedonia and the DES, controlling for age and lie scale scores, although larger than the zero-order correlations, was still non-significant ($pr = .13$, $p = .06$). Therefore, this variable was not analysed further. However, the correlations between the DES and both the Unusual Experiences and the Cognitive Disorganization subscales were moderately high. When these correlations were re-computed after overlapping items had been excluded, the coefficients were only slightly smaller; the correlation between the DES and Unusual Experiences was

reduced from .58 to .55, and the correlation between the DES and Cognitive Disorganization was reduced from .45 to .42. Only the distribution of the DES showed any marked departures from normality. However, when the positive skew of the DES was brought closer to a normal distribution with the square-root transformation, the changes in the correlations between the DES and the other variables were negligible.

The relationships between the measures were explored further in three multiple regression analyses, with the DES, the Unusual Experiences subscale and the Cognitive Disorganization subscale serving as dependent variables in turn. For these analyses, overlapping items were excluded from the scales and the square-root transformation was applied to the DES. These analyses were conducted in a hierarchical manner in order to test the hypothesis that childhood abuse has a causal influence on each of the dependent variables. Because age was moderately correlated with each of these variables and the lie scale was significantly correlated with two of them, these variables were entered in the first step of each analysis to control for their effects. Three dummy variables were created to represent sexual abuse alone, physical abuse alone, and both kinds of abuse (coded 1 = abused in this way, 0 = not abused, in each case). As the hypothesis suggests that childhood abuse may have causal influences on the dependent variables, these dummy variables were entered as a set in the second step of each analysis. When the DES served as the dependent variable, the Unusual Experiences and Cognitive Disorganization subscales were entered together in a third step, and when the schizotypy subscales served as dependent variables, the DES was entered in a third step. The partial correlations from the final equations of these analyses are given in Table 3. They show the associations between the predictors and the criterion measures while holding constant the influence of the other predictor variables.

When the DES served as the dependent variable, the multiple correlation for the final equation was .66 (Adjusted $R^2 = .41$, $F(7,211) = 22.7$, $p < .0001$), and entry of the abuse variables (R^2 change = .08, $F(3,216) = 6.95$, $p = .0002$) and of the schizotypy subscales (R^2 change = .24, $F(2,217) = 44.0$, $p < .0001$) led to significant increases in R^2. Both of the schizotypy subscales had significant partial correlations in the final equation (Table 3) but, of the abuse variables, only the combination of sexual and physical abuse had a significant partial correlation. When Unusual Experiences served as the dependent variable, the multiple correlation for the final equation was .60 (adjusted $R^2 = .35$, $F(6,212) = 20.3$, $p < .0001$) and entry of the abuse variables (R^2 change = .04, $F(3,215) = 3.4$, $p < .02$) and of the DES (R^2 change = .24, $F(1,217) = 78.5$, $p < .0001$) led to significant increases in R^2. However, in this case only age and the DES had significant partial correlations in the final equation (Table 3). In the third analysis, when Cognitive Disorganization served as the dependent variable, the multiple correlation for the final equation was .50 (adjusted $R^2 = .23$, $F(6,212) = 11.6$, $p < .0001$). Entry of the DES (R^2 change = .14, $F(1,217) = 38.3$, $p < .0001$) led to a significant increase in R^2 but entry of the abuse variables did not (R^2 change = .01, $F(3,215) = 0.92$, $p = .43$]. Only age and the DES had significant partial correlations in the final equation (Table 3).

Table 2. Intercorrelations among variables ($N = 224$)

	1	2	3	4	5	6	7	8	9
1. Age	–	−.03	−.30***	−.33***	−.30***	.32***	.36***	−.07	−.11
2. Sex		–	.03	.07	.03	−.27**	.12	.11	−.28***
3. DES			–	.58*****	.45*****	.01	−.18**	.25*****	.22****
4. UNEX				–	.55***	.02	−.12	.14*	.11
5. COGDIS					–	.16*	−.20**	.06	.07
6. INTANH						–	.22**	−.10	.02
7. Lie							–	−.10	−.16*
8. Sexual abuse								–	.18**
9. Physical abuse									

*$p < .05$; **$p < .01$; ***$p < .0001$ (two-tailed). ****$p < .001$; *****$p < .0001$ (one-tailed).
Note. For abbreviations see Table 1.

Table 3. Partial correlations in the final equations of three hierarchical multiple regression analyses

Dependent variable	Predictor variables	Partial correlation	*t* ratio	*p*
DES	Age	−.13	−1.83	.07
	Lie	−.08	−1.10	.27
	Sexual abuse	.03	0.40	.69
	Physical abuse	.06	0.90	.37
	Sexual and physical abuse	.23	3.40	.0008
	COGDIS	.18	2.70	.008
	UNEX	.41	6.50	< .0001
UNEX	Age	−.15	−2.24	.03
	Lie	.06	0.88	.38
	Sexual abuse	−.01	−0.16	.87
	Physical abuse	−.01	−0.09	.93
	Sexual and physical abuse	.06	0.91	.37
	DES	.52	8.85	< .0001
COGDIS	Age	−.15	−2.21	.03
	Lie	−.09	−1.27	.21
	Sexual abuse	−.07	−1.00	.32
	Physical abuse	−.05	−0.69	.49
	Sexual and physical abuse	−.03	−0.48	.63
	DES	.39	6.19	< .0001

Note. For abbreviations see Table 1.

Discussion

The correlation between the DES and the Introvertive Anhedonia subscale was negligible but, as expected, the correlation between the DES and the Unusual Experiences and Cognitive Disorganization subscales were moderately high. Indeed, the correlation between the DES and Unusual Experiences (.58) was similar to the correlations that have been found between the DES and several other measures that have been designed to assess some aspects of dissociation (van Ijzendoorn & Schuengel, 1996). Indeed, it was slightly larger than the meta-analytic correlation (.54) calculated by van Ijzendoorn & Schuengel (1996) between the DES and the Tellegen Absorption Scale (Tellegen & Atkinson, 1974). This correlation is also only slightly lower than some of the correlations that have been found between different measures of putatively similar aspects of schizotypy. For example, Balogh, Merritt & Steuerwald (1991) found a correlation of .60 between the RISC (Rust, 1988) and the Perceptual Aberration scale (Chapman & Chapman, 1985). Thus, if dissociation and the dimensions of schizotypy are indeed phenomenologically distinct and have different origins, as theory suggests, these results point to limitations in the discriminant validity of these measures.

The zero-order correlations between the DES and the abuse variables were significant but modest. Converting the correlations into *d*, using Cohen's (1977)

method, gives $d = .52$ for sexual abuse and $d = .45$ for physical abuse. The measures of abuse that were used produced coherent results in the study for which they were developed (Bryer *et al*., 1987) but they are clearly far too simple to capture the complexities of childhood abuse. Nevertheless, the correlations that were obtained were similar to the meta-analytic effect sizes reported by van Ijzendoorn & Schuengel (1996), which were $d = .42$ for the DES and sexual abuse and $d = .42$ for the DES and physical abuse. Moreover, in their meta-analysis, van Ijzendoorn & Schuengel (1996) found there was no significant difference in effect sizes between studies that used questionnaires to assess abuse and those that used interviews. Therefore, there is no obvious reason to suspect that the associations between the DES and childhood abuse in the present study were restricted by the simplicity of the abuse assessments.

When the abuse variables were entered as a set in the multiple regression analyses, they accounted for only 8% of the variance of the transformed DES scores. To some extent, the modest size of their effect is guaranteed by the skewness of the abuse items, which limits the possible size of the correlations. However, the partial correlations from the multiple regression analyses showed that it was only the combination of sexual and physical abuse that was related to DES scores. Considering that only 10 of the participants acknowledged that they had suffered both kinds of abuse, the partial correlation of .23 is striking. It might indicate that suffering both kinds of abuse in childhood is especially likely to lead to dissociative experiences in later life but it is more plausible that suffering both kinds of abuse merely indicates more severe abuse.

When the abuse variables were entered as a set they also accounted for a significant proportion (4%) of the variance in the Unusual Experiences subscale even though items normally thought of as reflecting dissociative experiences had been removed from the subscale. This result is compatible with the idea that childhood sexual and physical abuse have small causal effects on this aspect of schizotypy. That the partial correlations for the abuse variables in the final equation of this analysis were all non-significant ($t < 1$ in each case) does not indicate that these variables have no causal effects. It probably merely reflects the fact that the DES is a better index of the effects of childhood abuse than the Unusual Experiences scale. That is, the small partial correlations for the abuse variables can be explained as the result of the DES removing that part of the variance in Unusual Experiences which had been accounted for by the abuse variables in the second step. Nevertheless, when the DES was entered in the final step of this equation, it accounted six times as much of the variance (24%) as the abuse variables and still showed a partial correlation of .52. Thus, much of the covariation between the DES and the Unusual Experiences scale remained unexplained.

When the Cognitive Disorganization subscale served as the dependent variable, entry of the abuse variables did not lead to a significant increase in the proportion of variance accounted for and only age and the DES had significant partial correlations in the final equation. This suggests that childhood sexual and physical abuse have no causal effects on this aspect of schizotypy.

Much of the covariance between the DES and the O-LIFE subscales remained in these analyses after the removal of items with overlapping content and the removal of variance associated with age, social desirability (the lie scale), and the abuse

variables. What then could account for the unexplained covariation? One possibility is that schizotypy and dissociation, though both affected by childhood sexual and physical abuse, for the most part have different origins and are phenomenologically distinct but it is difficult to convey the distinction in questionnaire items. For example, it has been suggested that auditory hallucinations in schizophrenia are distinguishable from those in dissociative identity disorder in that the former are highly constrained, repeated and composed of short strings of words while the latter are less constrained, non-random and associated with particular personalities (Hoffman, Oates, Hafner, Hustig & McGlashan, 1995). Another possibility is that, although schizotypy and dissociation mostly have different origins, they share some final common pathways. Thus, for example, Frith's (1992) theory that passivity experiences result from a failure to monitor intentions to act might be equally true of schizophrenia and of severe dissociative disorders although the causes of the failure in monitoring might be different in the two kinds of disorder. A third possibility is that dissociation and some dimensions of schizotypy share one or more common causes in addition to childhood sexual and physical abuse. It is unlikely that a common diathesis would be inherited as there appears to be very little genetic contribution to dissociative experiences (Putnam, 1996; Waller & Ross, 1997). Furthermore, self-report measures of the positive schizotypal symptoms, such as magical ideation, are poor at indexing familial vulnerability to schizophrenia (which is much better indexed by negative schizotypal symptoms, such as social anhedonia: Kendler *et al*., 1996). However, such a shared diathesis could be established by environmental effects; it could derive from other forms of childhood adversity which were not assessed, such as early familial loss, neglect or emotional abuse, all of which are known risk factors for adult dissociation (Nash *et al*., 1993; Draijer & Langeland, 1999), or from perinatal damage, which has been implicated in the aetiology of schizophrenia (Geddes & Lawrie, 1995). Further research will be required to test these various possibilities.

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Appendix
Items of the O-LIFE showing overlap with items of the DES

O-LIFE items	DES items
Day-dreaming:	
Are the sounds you hear in your day-dreams really clear and distinct?	Some people have the experience of sometimes remembering a past event so vividly they feel as if they were reliving the event.
Do the people in your day-dreams seem so true to life that you sometimes think they are real?	Some people sometimes find that they become so involved in a fantasy or daydream that it feels as though it were really happening to them.
Are you easily distracted from work by day-dreams?	Some people find that they sometimes sit staring off into space, thinking of nothing, and are not aware of the passage of time.
Depersonalization:	
Does your voice ever seem distant or far away?	Some people sometimes have the experience of feeling that they are standing next to themselves or watching themselves do something and they actually see themselves as if they were looking at another person.
Have you occasionally felt as though your body did not exist?	Some people sometimes have the experience of feeling that their body does not belong to them.
Do you often have an overwhelming sense of emptiness?	Some people have the experience of looking in a mirror and not recognizing themselves.
Have you ever felt as though your head or limbs were somehow not your own?	
When you look in the mirror does your face sometimes look different to usual?	