

## Short scales for measuring schizotypy

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### Abstract

**Background:** This study reports short scales for measuring several dimensions of schizotypy in the normal population based on a large twin sample.

**Methods:** The four short scales use items drawn from a longer instrument, the Oxford-Liverpool Inventory of Feelings and Experiences. Using concordance estimates from MZ and DZ pairs, the items were selected both to have a high heritability and to offer broad coverage of each trait domain.

**Results:** Preliminary descriptive statistics are reported for the short scales and suggest adequate reliability.

**Conclusions:** New scales offer a time efficient and reliable method of studying proneness to psychosis in large N designs.

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### 1. Introduction

Over the past several decades many self-report scales have been developed for measuring schizotypal personality traits in non-clinical individuals (for reviews see [Chapman et al., 1995](#); [Mason et al., 1997b](#)). Factor analytic studies of these measures have most frequently supported either three or four components, depending on the number and item content of scales included in the analyses ([Claridge et al., 1996](#); [Vollema and van den Bosch, 1995](#)). The

Oxford-Liverpool Inventory of Feelings and Experiences (O-LIFE) is an instrument based on analysis of what is probably the largest single dataset of schizotypal measures ([Claridge et al., 1996](#)). It contains four sub-scales called ‘Unusual Experiences’, ‘Cognitive Disorganisation’, ‘Introverted Anhedonia’ and ‘Impulsive Nonconformity’. Since its introduction, the O-LIFE has enjoyed wide currency. Early work established its high internal consistency ([Mason et al., 1995](#)) and test–retest reliability ([Burch et al., 1998](#)). It has also been used in a variety of studies across many research domains, firmly establishing its construct validity as a genuine measure of schizotypal traits. Laboratory investigations have

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Table 1  
Items forming short scales

#### Unusual Experiences (12 items)

When in the dark do you often see shapes and forms even though there is nothing there?  
Are your thoughts sometimes so strong that you can almost hear them?  
Have you ever thought that you had special, almost magical powers?  
Have you sometimes sensed an evil presence around you, even though you could not see it?  
Do you think that you could learn to read other's minds if you wanted to?  
When you look in the mirror does your face sometimes seem quite different from usual?  
Do ideas and insights sometimes come to you so fast that you cannot express them all?  
Can some people make you aware of them just by thinking about you?  
Does a passing thought ever seem so real it frightens you?  
Do you feel that your accidents are caused by mysterious forces?  
Do you ever have a sense of vague danger or sudden dread for reasons that you do not understand?  
Does your sense of smell sometimes become unusually strong?

#### Cognitive Disorganisation (11 items)

Are you easily confused if too much happens at the same time?  
Do you frequently have difficulty in starting to do things?  
Are you a person whose mood goes up and down easily?  
Do you dread going into a room by yourself where other people have already gathered and are talking?  
Do you find it difficult to keep interested in the same thing for a long time?  
Do you often have difficulties in controlling your thoughts?  
Are you easily distracted from work by daydreams?  
Do you ever feel that your speech is difficult to understand because the words are all mixed up and don't make sense?  
Are you easily distracted when you read or talk to someone?  
Is it hard for you to make decisions?  
When in a crowded room, do you often have difficulty in following a conversation?

#### Introvertive Anhedonia (10 items)

Are there very few things that you have ever enjoyed doing?  
Are you much too independent to get involved with other people?  
Do you love having your back massaged?<sup>a</sup>  
Do you find the bright lights of a city exciting to look at?<sup>a</sup>  
Do you feel very close to your friends?<sup>a</sup>  
Has dancing or the idea of it always seemed dull to you?  
Do you like mixing with people?<sup>a</sup>  
Is trying new foods something you have always enjoyed?<sup>a</sup>  
Have you often felt uncomfortable when your friends touch you?  
Do you prefer watching television to going out with people?

Table 1 (continued)

#### Impulsive Nonconformity (10 items)

Do you consider yourself to be pretty much an average sort of person?<sup>a</sup>  
Would you like other people to be afraid of you?  
Do you often feel the impulse to spend money which you know you can't afford?  
Are you usually in an average kind of mood, not too high and not too low?<sup>a</sup>  
Do you at times have an urge to do something harmful or shocking?  
Do you stop to think things over before doing anything?<sup>a</sup>  
Do you often overindulge in alcohol or food?  
Do you ever have the urge to break or smash things?  
Have you ever felt the urge to injure yourself?  
Do you often feel like doing the opposite of what other people suggest even though you know they are right?

<sup>a</sup> Score 1 for no, 0 for yes.

demonstrated predictable effects in relation to neuropsychological function (e.g. Avons et al., 2003); on several perceptual and attentional paradigms (e.g. Steel et al., 2002); in psychophysiological responding (e.g. Mason et al., 1997a); on reasoning tasks (e.g. Sellen et al., 2005) and in learning, notably on measures of 'latent inhibition' (e.g. Moran et al., 2003). Differences have also been found in hemispheric function: for language task performance (Nunn and Peters, 2001), face processing (Mason and Claridge, 1999), and handedness (Shaw et al., 2001). With clinical relevance, the O-LIFE has been used successfully to investigate schizotypy in relation to such topics as dissociative experience and childhood abuse (Startup, 1999) and paranormal beliefs and experiences as a function of mental health (Goulding, 2004). It is also important that there is evidence for a genetic basis as measures of this type are otherwise open to the criticism that they are merely phenomenologically or, in Meehl's (1993) terms, 'pseudophenotypically' related to schizophrenia. A recent large quantitative genetic analysis (Linney et al., 2003) has established convincing heritability estimates for the scales. However, at over 100 items, the full scales are arguably cumbersome and a shortened form is very desirable. We felt that it was very important to retain those aspects of schizotypy most relevant to 'true' proneness to disorder without losing the broad 'flavour' of each trait. By using a twin sample we aimed to retain, and even to maximise,

the degree of genotypic variance captured by items without compromising scale content.

## 2. Method

### 2.1. Participants

Nine hundred twenty-eight twin pairs (mean age 47) from the Institute of Psychiatry Volunteer Twin Register gave informed consent and completed the measure. None of the participants reported having had a psychotic breakdown. Zygosity was assessed using a series of questions that have been found to discriminate MZ from DZ twins with over 95% reliability (Cederlöf et al., 1961; Sarna and Kaprio, 1980). Seventy were monozygotic male pairs, 468 were monozygotic female pairs, 29 were dizygotic male pairs, 265 were dizygotic female pairs and 64 were dizygotic opposite sex pairs. The sample and its recruitment are described in greater detail in Linney et al. (2003).

### 2.2. Measure

The O-LIFE has four scales: the Unusual Experiences scale contains 30 items describing perceptual aberrations, magical thinking, and hallucinations. It is phenomenologically related to the positive symptoms of psychosis, and measures a trait often termed ‘positive schizotypy’. The Cognitive Disorganisation scale contains 24 items that tap aspects of poor attention and concentration, as well as poor decision-making and social anxiety. It can be seen to reflect thought disorder and other disorganised aspects of psychosis. The Introvertive Anhedonia scale contains 27 items that describe a lack of enjoyment from social and physical sources of pleasure, as well as avoidance of intimacy. It can be seen to reflect weakened forms of ‘negative symptoms’, so-called negative schizotypy,

or alternatively the schizoid temperament. The Impulsive Nonconformity scale contains 23 items describing impulsive, anti-social, and eccentric forms of behaviour, often suggesting a lack of self-control.

### 2.3. Procedure

Items were chosen using an estimate of genotypic variance in addition to considering individual items’ content so as to retain item content reflective of the trait in question. The present dataset approximates to a random sample of twins where the maximum likelihood estimate of pairwise concordances for both MZ and DZ twins can be calculated according to the formula of Witte et al. (1999; p. 294). The DZ concordance was then subtracted from the MZ concordance for each item to produce a discrepancy score. Thus a higher discrepancy score reflects a greater degree of unique shared variance in identical twins. Items were selected with a discrepancy score of 0.1 or more. Where two items with highly similar content were selected, only that with a higher discrepancy was retained. Five additional items were chosen for three scales to broaden their content so as to better reflect the trait (three for Cognitive Disorganisation, one each for Introvertive Anhedonia and Impulsive Nonconformity).

## 3. Results

The items selected for short scales are given in Table 1. An affirmative answer to each item contributes one point, with reverse scoring for those indicated. Descriptive statistics are reported in Table 2. Their internal consistency was calculated using the alpha coefficient with all four exceeding 0.6. While Nunnally (1978) suggests that coefficients of 0.7 are ideal, he describes 0.6 as an acceptable level of given measurement error in psychological/social science. The concurrent validity was calculated by correlating the new scales with the existing scales: all exceeded 0.9. The resultant

Table 2  
Descriptive statistics

Sub-scale	Male $x/s.d.$	Female $x/s.d.$	$\alpha$ coeff.	Validity	$h^2$
Unusual Experiences	3.17/2.92	3.39/2.92	0.80	0.94	0.66
Cognitive Disorganisation	4.28/3.00	4.44/2.88	0.77	0.93	0.60
Introvertive Anhedonia	2.80/2.16	2.40/1.98	0.62	0.91	0.73
Impulsive Nonconformity	2.70/1.99	2.59/1.99	0.63	0.90	0.46

scales reflect a trade-off between reducing the number of items and retaining acceptable psychometric properties. Finally, the heritability of the new scales was calculated using Falconer's estimation method ( $h^2 = 2 * [r_{mz} - r_{dz}]$ ). Unsurprisingly, given the item selection method these are substantial and tend to exceed those reported for the O-LIFE (Linney et al., 2003).

#### 4. Discussion

The approach to item selection used Plomin's logic (2000, p.80) that 'to the extent that identical twin concordances are greater than fraternal twin concordance genetic influence is implied'. However, the method aimed to ensure good reliability, content validity and concurrent validity in addition to retaining heritability, and results supported these. The short scales are intended for research use in non-clinical samples and it is important to highlight that they are not intended diagnostically. In particular, they are aimed to facilitate large N designs such as epidemiological, survey or high-risk identification paradigms; or completion in naturalistic 'real world' and non-laboratory settings such as in studies of drug-takers (e.g. Curran and Morgan, 2000). We hope to facilitate such research by making the scales easily available for use by those suitably qualified.

#### References

- Avons, S.E., Nunn, J.A., Chan, L., Armstrong, H., 2003. Executive function assessed by memory updating and random generation in schizotypal individuals. *Psychiatr. Res.* 120, 145–154.
- Burch, G.S., Steel, C., Hemsley, D.R., 1998. Oxford-Liverpool inventory of feelings and experiences: reliability in an experimental population. *Br. J. Clin. Psychol.* 37, 107–108.
- Cederlöf, R., Fiberg, L., Jonsson, E., Kaij, L., 1961. Studies on similarity diagnosis in twins with the aid of mailed questioners. *Acta Genet. Stat. Med.* 11, 338–362.
- Chapman, J.P., Chapman, L.J., Kwapil, T.R., 1995. Scales for the measurement of schizotypy. In: Raine, A., Lencz, T., Mednick, S.A. (Eds.), *Schizotypal Personality*. Cambridge University Press, pp. 79–106.
- Claridge, G., McCreery, C., Mason, O., Bentall, R., Boyle, G., Slade, P., Popplewell, D., 1996. The factor structure of 'schizotypal' traits: a large replication study. *Br. J. Clin. Psychol.* 35, 103–115.
- Curran, H.V., Morgan, C., 2000. Cognitive, dissociative, and psychotogenic effects of ketamine in recreational users on the night of drug use and 3 days later. *Addiction* 95, 575–590.
- Goulding, A., 2004. Schizotypy models in relation to subjective health and paranormal beliefs and experiences. *Pers. Individ. Differ.* 37, 157–167.
- Linney, Y., Murray, R., Peters, E., MacDonald, A., Rijdsdijk, S., 2003. A quantitative genetic analysis of schizotypal personality traits. *Psychol. Med.* 33, 803–816.
- Mason, O., Claridge, G., 1999. Individual differences in schizotypy and reduced asymmetry using the chimeric faces task. *Cogn. Neuropsychiatry* 4, 289–301.
- Mason, O., Claridge, G., Jackson, M., 1995. New scales for the assessment of schizotypy. *Pers. Individ. Differ.* 18, 7–13.
- Mason, O., Claridge, G., Clark, K., 1997. Electrodermal relationships with personality measures of psychosis-proneness in psychotic and normal subjects. *Int. J. Psychophysiol.* 27, 137–146.
- Mason, O., Claridge, G., Williams, L., 1997. Questionnaire measurement. In: Claridge, G. (Ed.), *Schizotypy: Implications for Illness and Health*. Oxford University Press, Oxford, England, pp. 19–37.
- Meehl, P.E., 1993. Toward an integrated theory of schizotaxia, schizotypy, and schizophrenia. *J. Pers.* 4, 1–99.
- Moran, P.M., Al-Uzri, M.M., Watson, J., Reveley, M.A., 2003. Reduced Kamin blocking in non-paranoid schizophrenia: associations with schizotypy. *J. Psychiatr. Res.* 37, 155–163.
- Nunn, J., Peters, E., 2001. Schizotypy and patterns of lateral asymmetry on hemisphere-specific language tasks. *Psychiatr. Res.* 103, 179–192.
- Nunnally, J.C., 1978. *Psychometric Theory*, 2nd ed. McGraw-Hill, New York.
- Plomin, R., DeFries, J., McClearn, G., 2000. *Behavioral Genetics: a Primer*. W.H. Freeman, New York.
- Sarna, S., Kaprio, J., 1980. Use of multiple logistic analysis in twin zygosity diagnoses. *Hum. Hered.* 30, 71–80.
- Sellen, J.L., Oaksford, M., Gray, N.S., 2005. Schizotypy and conditioning reasoning. *Schizophr. Bull.* 31, 1–12.
- Shaw, J., Claridge, G., Clark, K., 2001. Schizotypy and the shift from dextrality: a study of handedness in a large non-clinical population. *Schizophr. Res.* 50, 181–189.
- Startup, M., 1999. Schizotypy, dissociative experiences and childhood abuse: relationships among self-report measures. *Br. J. Clin. Psychol.* 38, 333–344.
- Steel, C., Hemsley, D.R., Pickering, A.D., 2002. Distractor cueing effects on choice reaction time and their relationship with schizotypal personality. *Br. J. Clin. Psychol.* 41, 143–156.
- Vollema, M.G., van den Bosch, R.J., 1995. The multidimensionality of schizotypy. *Schizophr. Bull.* 21, 19–31.
- Witte, J., Carlin, J., Hopper, J., 1999. Likelihood-based approach to estimating twin concordance for dichotomous traits. *Genet. Epidemiol.* 16, 290–304.