Available online at www.sciencedirect.com
ScienceDirect
Personality and Individual Differences 44 (2008) 1617–1623
PERSONALITY AND INDIVIDUAL DIFFERENCES
www.elsevier.com/locate/paid

Brief report

# Transliminality, thin boundaries, Unusual Experiences, and temporal lobe lability

Michael A. Thalbourne [a,*], John Maltby [b]

[a] *School of Psychology, University of Adelaide, Adelaide, SA 5005, Australia*
[b] *University of Leicester, UK*

Received 12 November 2007; received in revised form 18 January 2008; accepted 30 January 2008

**Abstract**

Transliminality is a perceptual-personality construct that in this study was measured using the Rasch Revised Transliminality Scale. The aim of the study was to examine the correlations between transliminality and three other measures with which it has previously correlated very highly, namely, Hartmann's Boundary Questionnaire (the Sumbound measure), the Unusual Experiences scale of the Oxford–Liverpool Inventory of Feelings and Experiences, and a measure of temporal lobe lability taken from Persinger's Personal Philosophy Inventory. It was predicted that these four measures would correlate positively, significantly, and highly with each other, and that factor analysis would yield a single underlying factor, though no prediction was advanced concerning which measures would have the higher factor loadings. The four scales were administered to 1368 participants. Correlation analysis showed that all four variables were significantly, positively and highly correlated with each other, Pearson *r*s ranging from .56 to .75. The factor analysis showed that, as predicted, there was a single underlying factor, accounting for 74.6% of the variance. It is suggested that the most appropriate representative of the four variables is transliminality: it is the shortest scale, it has been Rasch-scaled, and it is the only variable which has been examined and found to be significantly related to performance on psychophysical threshold tasks using visual and vibro-tactile stimuli.
© 2008 Published by Elsevier Ltd.

*Keywords:* Transliminality; Boundary Questionnaire; Temporal lobe lability; Unusual Experiences

* Corresponding author. Tel.: +61 8 8303 5230; fax: +61 8 8303 3770.
*E-mail address:* m.thalbourne@optusnet.com.au (M.A. Thalbourne).

0191-8869/$ - see front matter © 2008 Published by Elsevier Ltd.
doi:10.1016/j.paid.2008.01.022

## 1. Introduction

Transliminality has most recently been defined as a hypersensitivity to psychological material originating in (a) the unconscious, and/or (b) the external environment. "Psychological material" is taken to cover ideation, imagery, affect and perception, and thus is a rather broad concept. High transliminality tends to imply (alleged) paranormal experience, mystical experience, creative personality, fleeting manic experience, magical ideation, high absorption, fantasy-proneness, hypersensitivity to sensory stimulation, and positive attitude towards dream-interpretation. The variable has been measured in a variety of overlapping ways but is nowadays measured using the Revised Transliminality Scale, a 29-item scale derived from Thalbourne (1998) and subsequently Rasch-scaled (Houran, Thalbourne, & Lange, 2003; Lange, Thalbourne, Houran, & Storm, 2000).

The Transliminality Scale in one or other of several forms has been administered to a large number of people in a variety of contexts, so that we now have correlations some of which are weak, others moderate, and others strong. In the strong category are three distinct variables: high transliminality is strongly correlated with (1) thin boundaries, as measured by Hartmann (1991) Boundary Questionnaire (total score Sumbound): $r = +0.66$ (Houran, Thalbourne, & Hartmann, 2003); with (2) the schizotypy scale known as Unusual Experiences, taken from the Oxford–Liverpool Inventory of Feelings and Experiences: $r = +0.78$ (Thalbourne, Keogh, & Witt, 2005); and finally with (3) the reporting of signs of temporal lobe lability, $r = +0.70$, which can be measured using the Personal Philosophy Inventory (Persinger, 1984). All these correlations are highly significant, and are the highest ever found with transliminality. They are large enough for us to suggest that they may all be measuring the same thing, which is postulated to be neural interconnectedness or ungatedness (Thalbourne, Houran, Alias, & Brugger, 2001).

The question we asked initially was what would be the outcome if these four measures were administered together? We predicted that they would all correlate significantly, positively, and highly.

We also predicted that when the four measures were subjected to factor analysis, a single factor would emerge. If this in fact occurred, we were interested in seeing whether any measure(s) yielded exceptionally higher factor loadings, as an indicator of the importance of those measures.

## 2. Method

### 2.1. Participants

A total of 1368 persons participated in this study, 57% of them female. Their age ranged from 18 to 76 yrs with a $M$ of 27.62 (SD = 9.06). The age distribution was significantly skewed towards the younger end, and was significantly flatter than the normal distribution. Students comprised 32% of the sample.

### 2.2. Materials

A single questionnaire was collated containing in a counterbalanced order (1) the Revised Transliminality Scale, (2) the Unusual Experiences Scale, (3) Persinger's Temporal Lobe Scale, and (4) Hartmann's Boundary Scale:

- The Revised Transliminality Scale presents 29 true/false items to the participant, just 17 of which are scored in a raw-score to Rasch-score transformation.
- The Unusual Experiences Scale derives from a multidimensional measure of schizotypy, the Oxford–Liverpool Inventory of Feelings and Experiences (the O-LIFE: Claridge, 1997; Mason, Claridge, & Jackson, 1995; Mason, Claridge, & Williams, 1997). One of four scales, the Unusual Experiences Scale normally contains 30 yes–no questions said to measure "perceptual, hallucinatory and magical thinking items". However, the Revised Transliminality Scale and the Unusual Experiences Scale happen to contain two of the same items: "Often I have a day when indoor lights seem so bright that they bother my eyes" (Transliminality Item 13; cf. O-LIFE Item 117), and "I sometimes have a feeling of gaining or losing energy when certain people look at me or touch me" (Transliminality Item 26; cf. O-LIFE Item 102). If these items were kept in, the correlation between transliminality and unusual experiences would be spuriously high. It was therefore decided to remove these two items from the Unusual Experiences Scale, thus slightly abbreviating it to a 28-item scale.
- Hartmann's Boundary Questionnaire consists of 146 Likert scaled items, and is "... an instrument developed to measure personality differences in boundary structure; the concept of thick and thin boundaries involves the degree of separateness (thick boundaries) versus connection (thin boundaries) between a broad range of mental functions, processes, and entities..." (Hartmann, Rosen, & Rand, 1998, p. 32). Though the items can be scored for 12 subscales, in the present study we were interested only in the overall score, called Sumbound.
- Finally, the Temporal Lobe Scale was derived from Persinger's (1984) Personal Philosophy Inventory, the responses to which are true/false. The measure used was the 56-item All Signs Involving Temporal-Lobe-Like Factors, which is the sum of 30 items measuring General Temporal Lobe Epilepsy and 16 items measuring Complex Partial Epileptic Signs.

### 2.3. Procedure

Participants were recruited from over 40 workplaces, colleges and community groups in the North of England. Respondents were approached beforehand to ask whether they would like to take part in the study and the questionnaire was provided at a later date. Overall 1800 questionnaires were distributed. A total of 432 questionnaires were either not returned or incomplete (a 76% return rate).

## 3. Results

### 3.1. Descriptive statistics and Pearson correlations

Descriptive statistics for the four scales administered may be found in Table 1.

Table 1 also displays the correlations between the four scales. It can be seen that, as predicted, all four scales correlated significantly, positively and highly with each other.

Table 1
Descriptive statistics and inter-correlations for the four questionnaire scales used in this study ($N = 1368$)

| Scale | Min | Max | *M* | SD | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|---|---|
| 1. Revised Transliminality Scale | 13.7 | 37.3 | 20.96 | 4.88 | – | .56 | .67 | .75 |
| 2. Unusual Experiences | 0 | 28 | 7.57 | 6.03 | | – | .63 | .63 |
| 3. Temporal lobe lability | 0 | 55 | 15.19 | 10.64 | | | – | .73 |
| 4. The Boundary Questionnaire | 220 | 560 | 341.94 | 56.23 | | | | – |

*Note:* All the Pearson correlations are significant at better than $p < .001$.

### 3.2. Factor analysis

The data were first examined using Bartlett's Test of Sphericity: the Chi-Square was 3108.07, df = 6, and significance was less than .001. Thus, the test statistic for sphericity was large and the associated significance level is small, "so it appears unlikely that the population correlation matrix is an identity" (Norušis, 1988, p. 128).

The Kaiser–Meyer–Olkin Measure of Sampling Adequacy was .825, which Kaiser (1974) calls "meritorious".

Thus, on both measures, the data in the present study were deemed suitable for factor analysis. This analysis was therefore performed, using principal components analysis, and resulted in a single factor that had an Eigenvalue of 2.99, accounting for 74.63% of the variance. The factor loadings and communalities are given in Table 2.

It can be seen from Table 2 that the Boundary measure gave the highest factor loading, but that transliminality and temporal lobe lability were not far behind. Unusual Experiences gave the lowest factor loading.

The question may be asked, is there a significant difference between the factor loadings? There seems to be no test that would answer this question. Exploratory Structural Equation Modelling was carried out, but it was shown that the variables have only a poor fit to the single-factor model, and thus we could not look further at differences between factor loadings.

### 3.3. Factor analyses by gender

In order to explore the generality of the total-sample results, further factor analyses were run for each gender separately. The two sets of inter-correlations—one for females, one for males—are presented in Table 3.

Table 2
Factor loadings and communalities for the four test variables

| Scale | Factor loading | Communality |
|---|---|---|
| The Boundary Questionnaire | .90 | .82 |
| Temporal lobe lability | .88 | .77 |
| Revised Transliminality Scale | .87 | .75 |
| Unusual Experiences | .81 | .65 |

Table 3
Inter-correlations for four variables, for males and females

| Scale | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| *Males (n = 590)* | | | | |
| 1. Revised Transliminality Scale | – | .61 | .70 | .74 |
| 2. Unusual Experiences | | – | .69 | .69 |
| 3. Temporal lobe lability | | | – | .74 |
| 4. The Boundary Questionnaire | | | | – |
| *Females (n = 778)* | | | | |
| 1. Revised Transliminality Scale | – | .52 | .65 | .76 |
| 2. Unusual Experiences | | – | .58 | .58 |
| 3. Temporal lobe lability | | | – | .71 |
| 4. The Boundary Questionnaire | | | | – |

Males: Single factor, Eigenvalue = 3.08, percentage variance = 77.00.
Females: Single factor, Eigenvalue = 2.91, percentage variance = 72.69.

All the correlations in this Table are positive, large and significant. A factor analysis for the males alone yielded a single underlying factor accounting for a large amount of the variance. The same conclusion can be drawn for the females alone, a result that demonstrates the between-gender generality of the total-sample result.

### 3.4. Factor analyses by age

Likewise, the total sample was split into two groups—those persons whose age was *below* the median of 26 years, and those participants whose age was *above* the median. The inter-correlations for the two groups are shown in Table 4.

All the correlations in Table 4 are positive, large and significant. A factor analysis focusing on just the "younger" participants yielded a single underlying factor accounting for a large amount

Table 4
Inter-correlations for four variables, younger adults and older adults

| Scale | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| *Younger adults (n = 683)* | | | | |
| 1. Revised Transliminality Scale | – | .60 | .67 | .78 |
| 2. Unusual Experiences | | – | .66 | .66 |
| 3. Temporal lobe lability | | | – | .75 |
| 4. The Boundary Questionnaire | | | | – |
| *Older adults (n = 632)* | | | | |
| 1. Revised Transliminality Scale | – | .52 | .68 | .72 |
| 2. Unusual Experiences | | – | .59 | .58 |
| 3. Temporal lobe lability | | | – | .68 |
| 4. The Boundary Questionnaire | | | | – |

Younger participants: Single factor, Eigenvalue = 3.07, percentage variance = 76.7%.
Older participants: Single factor, Eigenvalue = 2.89, percentage variance = 72.30.

of the variance. The same conclusion can be drawn when we consider just the "older" participants, again yielding a single underlying factor. The two results suggest the generality of the total-sample result across different age-groups.

## 4. Conclusion

The evidence suggests that there is a single factor underlying the four variables, but it cannot be said *for certain* that the four variables are each interchangeable with each other. It seems—focusing on the total sample—that the best measure of this underlying factor is Sumbound, derived from the Boundary Questionnaire. However, in view of the fact that this Questionnaire contains over 140 questions, and the fact that the factor loadings for the other, much shorter, measures are very close to that for Sumbound, it seems reasonable to us for researchers to use one of these other scales, and the shortest and most psychometrically sophisticated measure of these is the Rasch Revised Transliminality Scale. It may also be pointed out that only the Transliminality Scale has been shown to be related to performance on psychophysical threshold tasks: first, Crawley, French, and Yesson (2002) obtained a significant correlation between scores on the Transliminality Scale and performance on a subliminal primes visual detection accuracy task; and secondly, Houran, Hughes, Thalbourne, and Delin (2006) found vibro-tactile sensitivity to be higher in persons who were high in transliminality. None of the other three scales that we administered has this kind of supporting evidence. Therefore, on both practical and construct validity grounds, we believe that the Revised Transliminality Scale is to be preferred.

## References

Claridge, G. (Ed.). (1997). *Schizotypy: Implications for illness and health*. Oxford: Oxford University Press.

Crawley, S. E., French, C. C., & Yesson, S. A. (2002). Evidence for transliminality from a subliminal card-guessing task. *Perception, 31*, 887–892.

Hartmann, E. (1991). *Boundaries in the mind. A new theory of personality*. New York: Basic Books.

Hartmann, E., Rosen, R., & Rand, W. (1998). Personality and dreaming: Boundary structure and dream content. *Dreaming, 8*, 31–39.

Houran, J., Hughes, L. F., Thalbourne, M. A., & Delin, P. S. (2006). Quasi-experimental study of transliminality, vibrotactile thresholds, and performance speed. *Australian Journal of Parapsychology, 6*, 54–80.

Houran, J., Thalbourne, M. A., & Hartmann, E. (2003). Comparison of two alternative measures of the boundary concept. *Perceptual and Motor Skills, 96*, 311–323.

Houran, J., Thalbourne, M. A., & Lange, R. (2003). Methodological note: Erratum and comment on the use of the Revised Transliminality Scale. *Consciousness and Cognition, 12*, 140–144.

Kaiser, H. F. (1974). An index of factorial simplicity. *Psychometrika, 39*, 31–36.

Lange, R., Thalbourne, M. A., Houran, J., & Storm, L. (2000). The Revised Transliminality Scale: Reliability and validity data using a top-down purification procedure. *Consciousness and Cognition, 9*, 591–617.

Mason, O., Claridge, G., & Jackson, M. (1995). New scales for the assessment of schizotypy. *Personality and Individual Differences, 18*, 7–13.

Mason, O., Claridge, G., & Williams, L. (1997). Questionnaire measurement. In G. Claridge (Ed.), *Schizotypy: Implications for illness and health* (pp. 19–37). Oxford: Oxford University Press.

Norusˆis, M. J. (1988). *SPSS-X™ advanced statistics guide* (2nd ed.). Chicago: SPSS Inc..

Persinger, M. A. (1984). People who report religious experiences may also display enhanced temporal-lobe signs. *Perceptual and Motor Skills, 58*, 963–975.

Thalbourne, M. A. (1998). Transliminality: Further correlates and a short measure. *Journal of the American Society for Psychical Research, 92*, 402–419.

Thalbourne, M. A., Houran, J., Alias, A. G., & Brugger, P. (2001). Transliminality, brain function, and synesthesia. *Journal of Nervous and Mental Disease, 189*, 190–192.

Thalbourne, M. A., Keogh, E., & Witt, G. (2005). Transliminality and the Oxford–Liverpool Inventory of Feelings and Experiences. *Psychological Reports, 96*, 579–585.