Thinking Styles Symposium

Thinking Styles: The design and development of a new psychometric instrument.

F. Beddoes-Jones, BJA Associates Ltd.

Abstract

The aim of this paper is to present the concept behind the design and development of Thinking Styles®, a commercially developed meta-cognitive instrument which takes its lineage from the discipline of Neuro Linguistic Programming (NLP), and which measures twenty-six conceptually independent cognitive styles. Designed for use within the field of human resources, business and education, some of the applications of Thinking Styles are briefly given, although these are not explored in depth. Dimension definitions are detailed, internal reliability figures and test-retest data are given and some of the implications of these statistics briefly reviewed. Comparisons with other cognitive style instruments are outside the specific scope of this paper.

Background

Thinking styles and cognitive styles can be described as preferred ways of processing information (6). As they are preferences, this suggests that they are not fixed, but rather modes of thinking that an individual will characteristically tend to use. Sternberg suggests that cognitive styles are a subset of the general personality construct of 'style' which Guralnik defines as "a distinctive or characteristic manner … or method of acting or performing" (16 & 8). Sternberg states that "styles are not abilities, but rather preferred ways of using the abilities one has" (16). Riding and Cheema, (12), cited by Zang, (19) have identified 30 cognitive "style" labels within psychological literature which suggests that a number of different style constructs exist within the field of psychology , and that these constructs may or may not overlap.

Sternberg (13) as cited by Zang (19), has made an effort to conceptually integrate the relationship between the different style labels and constructs by identifying the following three approaches to styles: cognition, personality and activity centred. The Activity centered approach views styles as mediators between aspects of cognition and personality. The Cognitive centred approach views styles as most closely resembling abilities, and the Personality centred approach views styles as most closely resembling personality traits. The instrument reviewed in this paper is a trait instrument designed within the general psychometric construct of personality which is consistent with Sternberg's Personality centred approach.

The original conceptual idea for a commercially developed psychometric instrument specifically designed to provide useful information to ordinary people about the ways in which they think came to Fiona Beddoes-Jones when she attended an NLP programme in 1993. This introduced her to the NLP 'meta-filters', conceptual categories which serve to assist individuals in the receipt, sorting and dissemination of information. A critical point to make is that these filters are 'perceptual' filters. For example, an issue that one person perceives as 'easy' to resolve may be perceived as 'difficult' to resolve by another person, even though both people are being presented with the same information regarding the issue. (6).

Introduction

Thinking Styles takes its lineage from neuro Linguistic Programming (NLP) which has its roots in its development by John Grinder and Richard Bandler in the early 1970's at the University of California in Santa Cruz where Bandler was a psychology student and Grinder had both a degree in psychology and a PhD in linguistics. Their early development of NLP occurred predominantly through their 'modelling' of the techniques of three psychologists: Fritz Perls the originator of Gestalt therapy, Virginia Satir a prominent family therapist and Milton Ericson the originator of Ericsonian hypnotherapy. (11) The NLP tool of modelling involves sub-dividing techniques and strategies down into their smallest constituent parts and carefully recording them so that they can be copied rather like a blueprint. In this way, if you want to be an excellent motorist for example, you find an excellent car driver and study them, modelling exactly what they do so that you can replicate it. Of course this is an over-simplification of a complex technique, and NLP now includes many more tools, models and ideas than those originally expressed by its developers. (1)

Design and Development

The development of Thinking Styles as a psychometric instrument took eight years from the initial concept in 1993 through the beta test phase to the current Version 2 which is supported by statistical data, and became commercially available in 2001. The beta instrument, Thinking Styles Version 1, comprised twenty-two cognitive dimensions. Four new cognitive styles, those of Simplicity,

Complexity, Competitive and Collaborative thinking were included in the Version 2 instrument when it was found that they met the criteria applied by Beddoes-Jones by which she identified a cognitive meta-filter.

Thinking Styles is not intended to be an exclusive or exhaustive list of all of the cognitive meta-filters that exist and it is possible, even likely, that other cognitive meta-filters will be identified in the future.

The criteria for inclusion within the Thinking Styles version 2 instrument are that each dimension:

1. Should achieve a good internal reliability figure
2. Has specific linguistic triggers which can be clearly identified and are recognizable
3. Has specific cognitive responses which are stimulated by the linguistic triggers

For example, item number 143 of the Thinking Styles instrument is, *'I am able to focus my attention on details when necessary'*. It relates to the cognitive style of Detail Conscious thinking, for which the internal reliability figure is .85. The linguistic trigger words within the statement are, *'focus', 'attention'* and *'details'*. These linguistic trigger words provide the brain with specific cognitive instructions relating to the way in which to respond, which is in this case is to focus on specific details.

Demographic Population of the Development Sample
The sample population consisted of 142 adults with an approximate mean age of 36. The youngest participant was 18 and the oldest contributor 64. All were in work at the time of completing the questionnaire with approximately 60% being employed within public sector organizations. Academic achievement of the sample followed a normal distribution curve and varied from nothing to doctorate level. A wide variety of job roles and levels of responsibility were represented. All participants spoke English as a first language regardless of their country of birth and cultural heritage. Approximately equal numbers of men and women completed the questionnaire. (6)

Internal Reliability
Internal Reliability figures are shown in Table 1. The achievement of good levels of internal reliability was critical to the development of the instrument. A figure of .6 was the minimum figure the development team decided to accept after discussions with other test developers, most notably NFER Nelson. (6) In order to identify the specific items relating to each of the twenty-six dimensions, statistical analysis using Chronbach's alpha was employed. In total 184 item statements are included in the instrument, with each dimension being made up of between 5 and 9 items. The 184 items relate to 91 surface traits, with each dimension being made up of between 2 and 5 surface traits (see Appendix 1 for Dimension Definitions). Good internal reliability figures were achieved of between .60 and .95 (see Table 1). The mean figure is .75. These figures provided evidence that the dimensions are independent scales.

Some of the internal reliability figures achieved by the instrument are so high that there was some concern by the development team that some of the dimensions could have been 'bloated specifics', i.e. a narrow dimension which measures only one surface trait. However, after double checking the content of the specific statements and the number of items pertaining to each dimension, it was proven that this concern was unfounded. For example, Complexity thinking has an exceptionally high internal reliability figure of.95. The dimension of Complexity thinking comprises nine items measuring three surface traits: a preference for a degree of difficulty within tasks at work, motivation by complexity and a tendency to perceive things as being 'difficult' rather than 'easy'. (6)

Although much of the initial statistical analysis has now been completed in order for the instrument to be recognized as statistically valid and reliable, (6) more work remains to be done on such aspects as congruent validity studies with other instruments.

Test-Retest Data
Test-retest figures are shown in Table 2. The demographic population used was the same as for the Internal Reliability sample. The time lapse between completing the questionnaire for a second time was between three and six months and varied between participants. Overall, the figures achieved ranged from .54 for Options thinking to .74 for Digital thinking. The mean figure is .66. These results are considered to be good particularly when the number of surface traits for each dimension and the six point response scale are also taken into consideration.

Applications
Many researchers such as Sternberg, (13-16), Zang (18-19), Felder (7) and Grigorenko (15) have focused on the academic and educational applications of cognitive style and meta-cognitive awareness as opposed to exploring their benefits and applications within the areas of human resources and business. Thinking Styles has been used within the fields of both education and business and it is important to make the distinction between the applications of a cognitive instrument at a relationship level and its applications in the areas of teaching and learning (5).

The former includes uses within HR and within any organisation, regardless of sector, where relationship dynamics and communication are important. For example, Thinking Styles has been used in personal development and management development programmes, in customer relationship and supply chain management initiatives, in team working and leadership programmes and as one element within the recruitment process. Some of the implications within the areas of teaching and learning include Thinking Styles' use with undergraduate students (9) and at sixth form level (10) where the focus has been on assisting students develop more effective learning strategies and on helping tutors support students in their learning through developing greater cognitive flexibility.

Conclusions
Thinking Styles is a psychometric instrument that has its roots very firmly in Neuro Linguistic Programming (4). It is an example of how the rigorous approach required by psychology has been applied to the area of NLP. With the notable exception of Sternberg's Thinking Styles Inventory (14), it is one of the few psychometric instruments to focus exclusively on identifying and measuring individual preferences for a number of different cognitive styles as opposed to measuring behavioural or motivational characteristics. Although a relatively new instrument, it already has a proven track record of beneficial application within the fields of both education and business.

Fiona Beddoes-Jones, June 2002.
email address: fiona.bj@thinkingstyles.co.uk
telephone: 0044 – 1476 – 861010

Tables 1 and 2: Thinking Styles Paper 1

Table 1
Internal Reliability Data

Sensory Focus

Visual	0.86
Auditory	0.68
Kinaesthetic	0.78
Digital	0.73

People Focus

Internal	0.68
External	0.64
Self	0.73
Others	0.90
Match	0.66
Mismatch	0.72
Collaborative	0.89
Competitive	0.60

Task Focus

Detail Conscious	0.85
Big Chunk	0.82
Left Brain	0.65
Right Brain	0.71
Procedural	0.88
Options	0.76
Away From	0.73
Towards	0.80
Reactive	0.68
Proactive	0.76
Sameness	0.73
Difference	0.66
Simplicity	0.62
Complexity	0.95

Table 2
Test-retest Data

Sensory Focus

Visual	.71
Auditory	.69
Kinaesthetic	.63
Digital	.74

People Focus

Internal	.72
External	.72
Self	.68
Others	.59
Match	.62
Mismatch	.72
Collaborative	.71
Competitive	.69

Task Focus

Detail Conscious	.62
Big Chunk	.66
Left Brain	.69
Right Brain	.73
Procedural	.65
Options	.54
Away From	.57
Towards	.57
Reactive	.58
Proactive	.65
Sameness	.73
Difference	.60
Simplicity	.59
Complexity	.63

References: Thinking Styles Paper 1

1. Association of Neuro Linguistic Programmers, United Kingdom, http://www.anlp.org

2. Beddoes-Jones, F. (2001) Thinking Styles Questionnaire, BJA Associates Ltd. and Consulting Tools Ltd. www.thinkingstyles.co.uk

3. Beddoes-Jones, .F (1999) 'Thinking Styles – Relationship Strategies That Work!', BJA Associates Ltd., Grantham, UK.

4. Beddoes-Jones, F. (2002) 'NLP and Psychology: A bridge too far?', from www.thinkingstyles.co.uk

5. Beddoes-Jones, F. Learning to think: Learning to learn, *Training Journal* (October, 2001) Fenman Press, U.K. pp. 8-12

6. BJA Associates Ltd, (2001) Thinking Styles Facilitator Training Manual, Grantham, U.K.

7. Felder, R. M. and Silverman, L. K. (1988), 'Learning Styles and Teaching Styles in Engineering Education', *Engineering Education,* 78 (7), 674-681.

8. Guralnik, D. B. (ed.) (1976), Webster's new world dictionary (2nd college ed.): Classics edition. Akron, OH: William Collins.

9. Halstead, A. (2002) An evaluation of the thinking preferences of engineers to assist personal and professional development, (in press).

10. Hill, J. (2002) Thinking Styles in the sixth form: an exploratory study using a new psychometric measure, (in press).

11. O'Connor, Joseph and Seymour, John, 1990, 'Introducing Neuro-Linguistic Programming', pp.22-23, Harper Collins, London.

12. Riding, R., and Cheema, I. (1991), Cognitive styles – An overview and integration, *Educational Psychology,* 11, 193-215.

13. Sternberg, R. J. (1997) 'Thinking Styles', New York: Cambridge University Press

14. Sternberg, R. J., & Wagner, R. K. (1992), 'Thinking Styles Inventory' (unpublished test). New Haven, CT:Yale University.

15. Sternberg, R. J., & Grigorenko, E. (1995). Styles of thinking in the school. *European Journal for High Ability,* 6, 201-219.

16. Sternberg, R. J. (1997), 'Are cognitive styles still in style?' *American Psychologist,* 52 (7), 700-712.

17. Thinking Styles web site, http://www.thinkingstyles.co.uk

18. Zang, L., (2001) 'Do Thinking Styles Contribute to Academic Achievement Beyond self-Rated Abilities?' *The Journal of Psychology,* 135 (6), 621-637.

19. Zang, L., (2001) 'Approaches and Thinking Styles in Teaching', *The Journal of Psychology,* 135 (5), 547-561.

Appendix 1: Dimension definitions for each of the cognitive styles:

Sensory focused dimensions; exploring sensory representational systems:

1. **Visual thinking**: the use of pictures, diagrams and visual imagery internally and externally.
2. **Auditory thinking***:* a focus on the use of words and language, listening and talking things through.
3. **Kinaesthetic thinking***:* the use of feelings, emotions, intuition and physical exercise.
4. **Digital thinking***:* involves a focus on the facts, and/or the use of data and statistics.

People focused dimensions; exploring interactions with people:

5. **Internally referenced thinking***:* relies on their own judgements and standards, believes oneself to be right, ignores feedback.
6. **Externally referenced thinking:** relies on feedback from others, believes that others are right.
7. **Self referenced thinking***:* puts their own needs first and ignores the needs of other people.
8. **Others referenced thinking***:* responsive to the needs of others and willing to help other people.
9. **Matching thinking***:* wants to fit in, dislikes confrontation and takes a non-challenging approach.
10. **Mismatching thinking:** dislikes being told what to do, will challenge and confront.
11. **Collaborative thinking***:* involves others, shares information, prefers a team environment.
12. **Competitive thinking***:* wants to win and better either the competition or ones' own performance.

Task focus dimensions; exploring approaches to tasks and problem solving:

13. **Detail Conscious thinking***:* believes details are important and attends to detailed information.
14. **Big Chunk thinking***:* focuses on general principles and summary information often in terms of key points.
15. **Left Brain thinking***:* processes systematically in sequence, ordered, completes one task at a time.
16. **Right Brain thinking***:* creative, naturally multi-tasks, has an untidy workspace, works backwards.
17. **Procedural thinking***:* procedures are important, follows instructions and the correct way of doing things.
18. **Options thinking***:* explores opportunity and possibility, seeks choice and alternatives, adds to work.
19. **Moving Away From thinking***:* focuses on problems, makes contingency plans, may worry.
20. **Moving Towards thinking***:* focuses on goals and targets, says what they want and has a positive attitude.
21. **Reactive thinking** waits, analyses and plans, reviews all the relevant information and considers consequences.
22. **Proactive thinking** *:* initiates action, gets on with things, proactive approach.
23. **Sameness thinking***:* seeks stability and the familiar, prefers gradual change, notices similarities.
24. **Differences thinking***:* notices what is different, seeks variety, has a high capacity & tolerance for change.
25. **Simplicity thinking***:* often simplifies complex issues and prefers things to be easy.
26. **Complexity thinking***:* enjoys the challenge of difficulty and of complex issues.