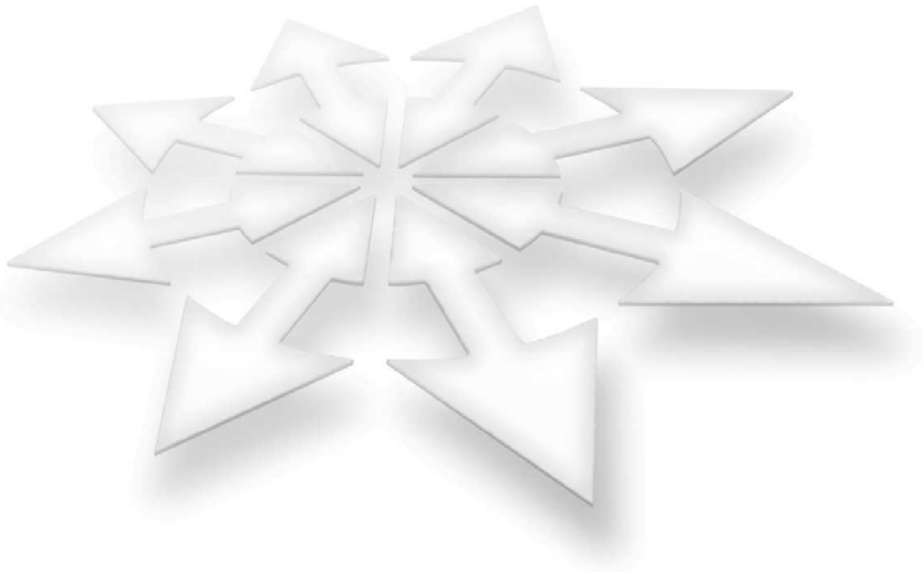
LSI / STYLUS

Validity and Reliability Research Paper



human synergistics®

Life Styles Inventory (LSI) and STYLUS

Introduction

Dr. Clayton Lafferty, founder of Human Synergistics International developed the LSI in the early seventies. The LSI is a self scoring instrument that allows individuals and their consultants to assess and interpret the results. STYLUS uses the same information, but the feedback comes in the form of a comprehensive, computer-generated report. This paper refers to both instrument, but only mentions LSI as a matter of convenience.

The product of extensive research into the behavioural effects of thinking patterns and self-concept, the LSI is based on the knowledge that in order to understand and change behaviour, we must first examine the feelings and thoughts that underlie and motivate everything we say and do. The LSI was developed to assist individuals in identifying and understanding their thinking patterns (or "styles") and self-concept (i.e., how they see themselves). Using this valuable information, LSI respondents can elect to change the way they *think* about themselves and others, and in turn improve the effectiveness of their *behaviour*.

The 240 single words or phrases that make up the LSI are designed to assess respondents in terms of either their *attitudes*, *behaviour*, or *reactions* (i.e., how the respondent perceives others' reactions to him/her, or how the respondent reacts to others). Respondents rank each item according to how accurately it describes them. By indicating which items are "Like me most of the time," "Like me quite often," or "Essentially unlike me," respondents generate patterns on paper that reveal their *thinking styles* and *self-concept*.

The LSI isolates and measures 12 specific "styles" of thinking and positions them on a circumplex, or circular graph. A thinking style is a set of thoughts, words and communication which produces a distinct pattern that determines one's behaviour.

Each of the 12 thinking styles identified by the LSI is either **constructive** and effective, or **defensive** and potentially self-defeating. *All 12 styles work together to influence individual behaviour*. Thus, the positive behavioural effects of a High-range score for one of the constructive styles can be easily overshadowed by a High-range score for one of the defensive styles.

When a respondent transfers his/her LSI scores to the circumplex, he/she creates a "profile" of his/her current thinking and behaviour.

Our *thoughts* characterize who we are and shape our lives. How we think determines how we perceive reality and relate to others, as well as how we solve problems and make decisions. Thus, how effectively we live our lives is directly related to the quality of our thoughts.

Our thinking styles influence:

- **Goals**

What we aim to achieve, how we accomplish it, and the quality we seek in results.

- **Ability to cope with stress**

The way we handle life's changes and demands, time pressures, and obstacles in our path.

- **Relationships**

Whether or not we are able to form healthy, positive relationships and gain satisfaction from our interactions with others.

- **Leadership effectiveness**

Our skill at gaining the enthusiastic cooperation and support of others.

Human Synergistics has further established that the quality of individual thinking styles correlates significantly with an organization's success. In organizations using the LSI, key members often report somewhat similar thinking styles. These similarities can be attributed to such factors as reward systems, personnel selection and retention practices, or informal pressures, and appear to be related to the organizations' ability to solve problems, initiate change, and perform effectively overall.

When grouped together, all the impressions and feelings we have about ourselves make up our *self-concept*, or *the person we believe ourselves to be*. Depending on how much we like and accept ourselves, our self-concept can be positive, negative, or somewhere in between. We always act in a manner consistent with this view of ourselves.

The term *self-concept* describes the image we have of ourselves — not only physically, but intellectually, socially, and psychologically.

> **Physically**, we may see ourselves as "short," or "tall." For example, a girl sees herself as "short" in relation to her older siblings, yet once she starts school, she finds she is the tallest girl in her class. This fact enables her to modify her self-concept to "tall."
>
> **Intellectually**, we may perceive ourselves to be "intelligent," or lacking in intelligence. A man tells himself that he will never be considered intelligent because he didn't attend college. Although his lack of college doesn't affect his success at work, he nonetheless continues to think of himself as deficient in this area. Because he sees himself inaccurately, he may have difficulty modifying his self-concept.

Socially, we might consider ourselves to be "outgoing" or "shy." The way we behave toward others is influenced by how we see ourselves. We base our social self-concept on the successes and failures we experience in relationships.

Psychologically, our self-concept reflects the emotions we feel, as well as the beliefs and values we learned while growing up.

The LSI enables respondents to engage in a *structured self-observation process*. The inventory taps the wealth of information individuals have available to themselves through seeing the effects of their own behaviour, having positive and negative experiences in life, and listening to feedback provided them by others. After scoring their inventories and interpreting their profiles using the *LSI Self-Development Guide*, respondents can judge the effectiveness of their thinking and behaviour by comparing their scores with those of 9,207 individuals from various organizations.

Using the LSI in a management development program enables organization members to regulate and take increased responsibility for their own behaviour. Providing these individuals with this valuable opportunity to assess, evaluate and improve themselves can result in better time utilization, increased productivity, higher-quality output, and other constructive changes that contribute to improving an organization's "bottom line" performance.

The Feedback Scales

There are 12 thinking styles derived from 240 items that are answered on a three-point scale. (Twenty items make up each scale.) The styles are grouped into three clusters. The styles are graphed on a normed circular graph, called a circumplex. Most people refer to the styles as clock positions. The clusters and their styles are:

Constructive Cluster

People who score high in this cluster are generally effective in most things that they do and develop effective relationships. They have a good self-concept, high levels of self - confidence and self-esteem. They typically derive a great deal of satisfaction from what they do and with whom they interact.

Humanistic-Encouraging (1 o'clock)
Individuals scoring high in this style have an unconditional positive regard for others. They are interested in people and enjoy taking an active part in the personal development of others. They typically treat people with dignity and respect.

Affiliative (2 o'clock)
People scoring high in this style enjoy working with others. They are comfortable in group problem-solving situations and make effective team players and team leaders. They are highly committed to developing and sustaining satisfying relationships.

Achievement (11 o'clock)
Those scoring high in this style understand the link between effort and outcome. They know that their efforts count. They are interested in accepting challenges and attaining results. They typically make very effective goal-setters.

Self-Actualization (12 o'clock)
People who score high in this style have a great deal of confidence in themselves and their ability to make things better. They consistently employ creative solutions to situations and derive enjoyment from their relationships and tasks.

Passive-Defensive Cluster

People who score high in this cluster are usually less effective than they could be. They prefer safe and secure situations and relationships that have little or no risk. They are interested in maintaining the status quo, preferring to allow others to make decisions for them.

Approval (3 o'clock)
Individuals scoring high in this style work hard to gain the approval of others. Their sense of self worth is dependent on the opinions of others. They therefore will say and do what they feel others want them to say and do.

Conventional (4 o'clock)
People who score high in this style will tend to blindly follow rules and procedures even when they don't make common sense. And, if there is no rule to follow, they will invent their own. Their tendency to act in a conforming way comes from a need for security and to reduce personal risk.

Dependent (5 o'clock)
Those scoring high in Dependence, prefer others to make decisions for them and to act on their behalf. This is derived from a feeling that "my efforts don't count". Again, the motivation behind this style is to reduce personal risk.

Avoidance (6 o'clock)
People who score high in this style avoid situations that may upset the status quo. They therefore tend to avoid conflict, change, threatening situations, and difficult relationships. They prefer to hide their feelings, rather than risk a confrontation.

Aggressive Defensive Cluster

People who score high in this cluster are usually less effective than they could be. They typically are overly critical or lack confidence in the contributions of others. They tend to concentrate on short-term results at the expense of long-term goals and the feelings of others. Their aggressive attitude and behaviour towards others usually has a negative effect on relationships.

Oppositional (7 o'clock)
Individuals who score high in this style tend to be overly critical of others, argumentative, and cynical. People who use this style choose to verbally assault others to gain feelings of importance and self-satisfaction, typically to compensate for self-doubt.

Power (8 o'clock)
Individuals who score high in this style feel that they should be the one in charge. This leads to a belief that they alone should make all of the decisions and would prefer to be domineering and controlling.

Competitive (9 o'clock)
People who score high in this style tend have their sense of self-worth connected to winning and losing. This leads them to view most situations as competitions that they must win in order to feel good about themselves. They typically view others as either winners or losers.

Perfectionistic (10 o'clock)
People who score high in this style have a strong need to be perfect or flawless. When these people are less than perfect at anything, they will tend to be overly critical of themselves. Thus, perfectionists seldom feel good about themselves. They also have this same viewpoint of others, demanding perfection and being intolerant of mistakes.

Feedback Methodology

After completing the 240 item assessment, individuals either score the results themselves (LSI) or have the results scored and reported by a Human Synergistics computer (STYLUS). The results are presented on a circular graph or circumplex. The raw data is converted on the graph into percentiles. The percentiles were developed using a data base of 9,207 individuals. The data pool is regularly updated. (See Figure 1.)

This study was completed by **Drs. J. Clayton Lafferty and Robert A. Cooke,** based on data collected from 1,000 respondents in 1979. The respondents were selected on a random basis from a wider population of 150,000 completed LSI's, without stratification or weighting. Their report was originally published in 1981.

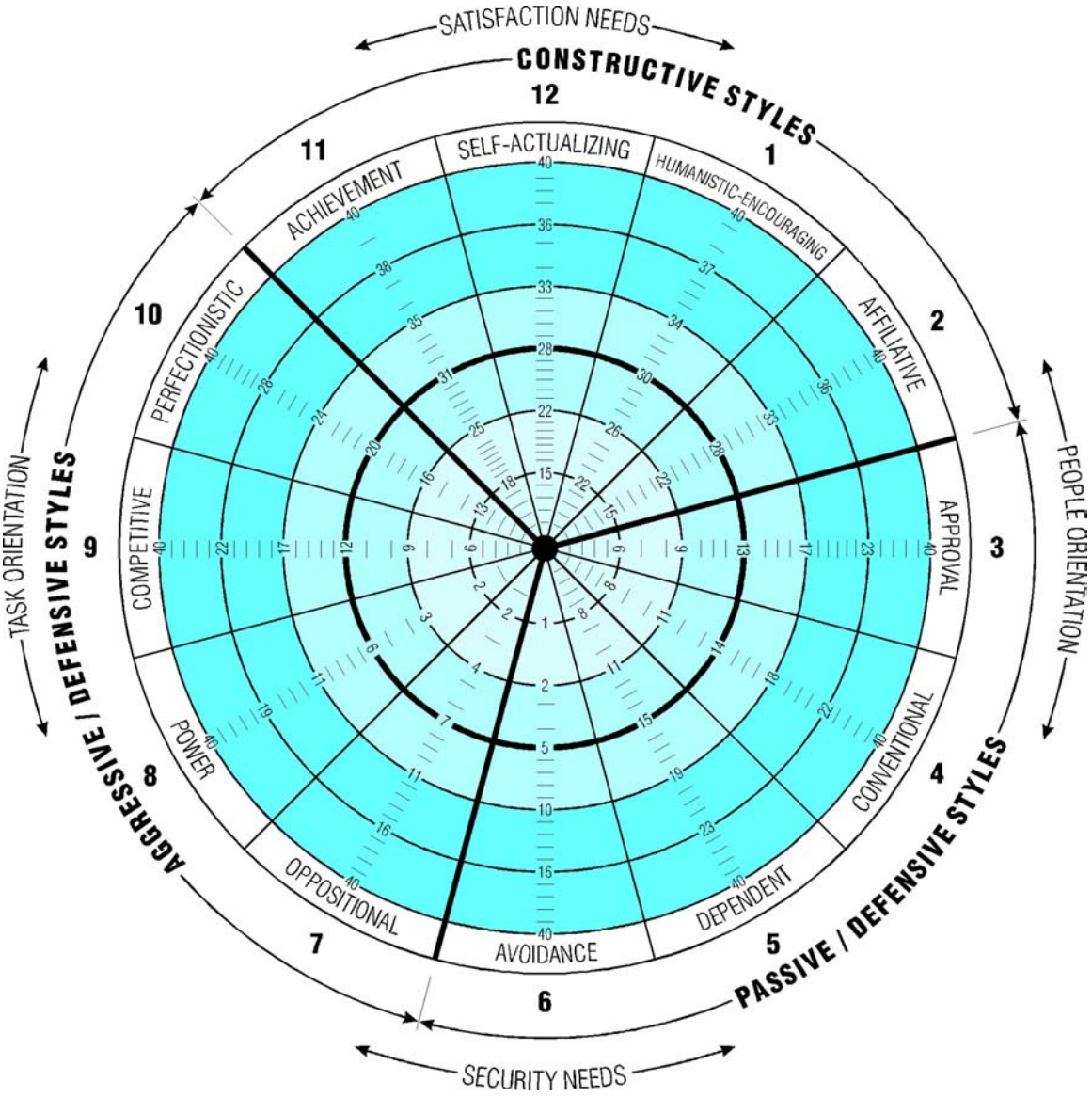
The following report has been updated to include changes in the style names (e.g., in 1981, the 1 o'clock style was called Humanistic Helpful, whereas it is now called Humanistic Encouraging. This name change came about as a result of ongoing research.) It also includes two post-script footnotes regarding subsequent research done on stress and perfectionism.

Various other studies have been conducted to assess the reliability and validity of LSI and STYLUS. [1]

[1] The results of these studies are reported in various Staff Research Reports and are available from Human Synergistics Canada.

Figure One

Human Synergistics LSI Circumplex



LSI Construction

LSI was designed maximize content validity – that is to adequately represent the concepts about which generalizations were to be made (*Bohrnstedt, 1970, pg. 91*). Each style was conceptually stratified into its major components to reflect the ways in which they (or closely related variables) were defined in the existing literature. Multiple items were then generated to capture the "shades of meaning" associated with each strata *(Bohrnstedt, 1970, pg. 92*). Finally, potential items were pre-tested in counseling settings to identify those which best reflected the styles being measured.

The use of this instrument development strategy had three implications for the content and structure of the survey that eventually emerged. **First**, a large number of items were needed to adequately measure each of the styles and to reflect the various meanings attached to each concept. **Second**, the items used to measure each style (though intended to correlate highly) were expected to fall into somewhat discrete factors or clusters. These clusters would reflect the sub-domains into which each style was conceptually stratified. The sub-domains for the achievement style, for example, include the concerns for understanding why things happen, attaining self-set goals and doing things well. **Third**, the items used to measure each style were intended to vary in their intensity (i.e., in the degree to which they reflect an extreme or moderate position along the particular style). For example, the achievement index includes the moderate item "enjoys a challenge" as well as the more extreme item "enjoys difficult tasks". Differences in intensity across items reflect differences in extremity between, and within the strata included in each style.

The items used to measure the styles are single words or short phrases no more than seven words in length. These words and phrases are designed to assess the styles in terms of attitudes, behaviours or reactions (i.e., The *perceived* reactions of other people to the respondent or the respondent's reactions to others.) Respondents are asked to write the number "2" next to an item if it is "like you most of the time"; the number "1"if it is "like you quite often"; and, the number "0" if it is "essentially unlike you".

Testing Methodology

Reliability was tested using Cronbach's (1951) alpha. Construct validity was assessed by means of an intercorrelation matrix and a cluster analysis. Convergent-discriminant validity was estimated by comparing the correlation of each item with its own index to its correlation with the other indices. Finally, criterion-related validity was tested by examining the relations of the styles to physiological strain.

LSI is administered with assurances of confidentiality and respondents are not required to provide information that might threaten their anonymity. Nevertheless, the large majority of the people in the present sample voluntarily answered a series of questions about themselves and their organization. Most of them held managerial positions in industrial or commercial organizations. The demographics of the test group is presented in **Table 1**.

Table 1

Demographics of the Sample Group

Table 1 (A)

Organizational Level	Percent of Total Group
Owners or officers	5.0%
Key level executives	4.2%
Middle managers	10.1%
Divisional or department heads	10.5%
Supervisors	14.5%
Forepersons	5.2%
Non-manager positions	28.1%
Did not respond	22.7%

Table 1 (B)

Salary	Percent of Total Group
< $18,000	29%
$18,000 - $25,000	29.5%
$25,000 - $50,000	18.2%
>$50,000	3.3%
Did not respond	20%

Table 1 (C)

Age	Percent of Total Group
20 – 29	16%
30 – 39	27.7%
40 – 49	22.1%
50 – 59	13.2%
60+	2.4%
Did not respond	16.6%

Table 1 (D)

Education	Percent of Total Group
Less than high school diploma	2.1%
High school diploma	47.6%
College / University degree	19.5%
Some graduate work	7.3%
Masters or other advanced degree	6.8%

The LSI data gathered included the results of the 240 items, the above demographics, information from the modified version of the Holmes and Rahe, "Schedule of Recent Experiences" (1967) and recent medical history.

For the data concerning recent experiences, respondents were asked to check each of 40 life events that have occurred within the past two years. They were summed without weighting to represent the number of potentially stressful situations to which the respondents were recently exposed. Medical information was gathered by asking respondents to review a list of twenty medical problems and to check those that they had experienced within the last two years. This list included illnesses such as colitis, ulcers, and coronary disease as well as problems such as excessive smoking and sleeplessness. The number of problems checked by each respondent was summed to represent physiological strain or the presence of medical symptoms potentially related to stress.

Test Results

Means and Standard Deviations

Descriptive statistics for the present sample of respondents are presented in **Table 1**. Mean scores for the LSI indices range from 6.32 (Power) to 28.23 (Achievement). These scores can potentially range from 0 to 40. In general, the mean scores for the more socially desirable Constructive styles (11, 12, 1, 2 o'clock) are higher than those for the defensive styles (3 – 10 o'clock).[2] The standard deviation for the indices range from 5.46 (Power) to 7.16 (Self-Actualizing). None of the indices exhibit an unusually restricted range of responses.

Reliability

Also shown in **Table 2** are the alpha coefficients for the LSI indices. These coefficients range from .80 to .88 and average at .846. These alpha scores, while generally acceptable, may be somewhat depressed due to variations in the intensity of the items (and strata) constituting each scale. Items that measure the same domain but which differ in intensity may not intercorrelate highly (*Guttman, 1944*) and thus, can limit the magnitude of coefficients such as the alpha. On the other hand, these alpha scores may be somewhat inflated due to the large number of items constituting each scale. In an attempt to check for this, a backward stepwise technique was used to systematically eliminate divergent items and to identify the final six items that together generate the highest alpa coefficient. The coefficients of these smaller indices range from .74 to .83. These alpha coefficients indicate that the measures of the LSI are reliable even based on relatively few items.[3]

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[2] Given these differences in mean scores, raw scores are converted into percentile scores on the circumplex to facilitate comparisons across life styles.

[3] This finding also suggests that an abbreviated version of LSI might be acceptable for research purposes. Nevertheless, the more complete and lengthy indices are desirable for the purposes of consultation and change initiation. The 20 items in each scale can help respondents to understand more fully the strata within the styles and provide them with a larger number of specific attitudes and behaviours that might be modified. (See Ilgen, Fisher, and Taylor, 1979, pg. 365.)

Table 2

LSI Descriptive Statistics and Reliabilities

Clock Position	Life Style	Mean	Std. Dev.	Alpha Coefficient
1	Humanistic-Encouraging	28.11	5.99	.85
2	Affiliative	28.22	6.92	.80
3	Approval	13.34	5.90	.82
4	Conventional	14.85	6.00	.83
5	Dependence	15.83	6.14	.82
6	Avoidance	6.93	6.18	.88
7	Oppositional	8.04	5.80	.85
8	Power	6.35	5.46	.86
9	Competitive	11.86	6.54	.85
10	Perfectionistic	17.31	6.56	.83
11	Achievement	28.23	6.92	.88
12	Self-Actualizing	25.09	7.16	.88

Construct Validity

The construct validity of the instrument can be tested, at least in part, by determining whether the empirical relationships between the styles are consistent with the hypothesized relationships. In **Figure 1**, the styles are placed in relation to one another in space to reflect their *theoretical* ordering. This ordering reflects differences in the degree to which each pair of styles is expected to intercorrelate in a positive direction. The matrix presented in **Table 3** shows the intercorrelations of the 12 styles for the present sample.

First, the matrix shows that, as predicted, there are strong positive correlations between styles that are close to one another on the circumplex graph. With some exceptions, the magnitude of these positive correlations decreases as the distance (on the circular graph) between the styles increases. **Second**, the styles that are strongly linked to *higher-order needs* correlate negatively with those strongly linked to *lower-order needs*. In particular, the Achievement (11), Self-Actualizing (12) and Humanistic Encouraging (1) correlate neagatively with the Avoidance (6) style. **Third**, the matrix shows that some of the correlations between the styles on the right side of the circumplex (*people oriented*) and those on the left side (*task-oriented*) are close to zero**.** Many of these correlations however, are positive and significant. Nevertheless, the magnitude of these correlations generally is lower than the correlation between styles that are closer to one another.

To further assess construct validity, a cluster analysis by variable was performed to empirically identify a pattern of the life styles for the present sample. Hierarchical clustering was based on the distance **1-r** where **r** is the coefficient of the product-moment correlation between a pair of indices. The correlation coefficient was used, rather than the absolute values of this coefficient so that a negative correlation would represent a greater distance than would a positive correlation of the same magnitude. The centroid method was used as the algorithm or combinational strategy for updating the distance matrix. (*Fox and Guire, 1976; Sneath and Sokal, 1973*)

The results of the cluster analysis are presented in **Figure 2**. The clusters identified at the first three steps each include a pair of styles, which in two cases, are contiguous on the circumplex. The fourth cluster reflects the general concern for people and security and includes the Approval (3), Conventional (4) and Dependence (5) styles. The next two clusters each include two contiguous styles on the left, task-centered side of the circumplex. The seventh cluster adds Avoidance (6) to the earlier people and security cluster. The cluster identified at the eighth step includes the styles that are strongly linked to higher-order needs and oriented toward satisfaction: Achievement (11), Self-Actualizing (12), Humanistic Encouraging (1), and Affiliative (2). The ninth cluster mainly includes styles concerned with task and security: Opposition (7), Power (8), Competitive (9), and Perfectionistic (10). At the tenth step, the cluster identified includes eight styles – most of which are security-oriented. The final cluster brings together the satisfaction cluster identified at the eighth step and the security cluster identified at the tenth step. The ordering of the styles resulting from this clustering procedure (1, 2, 11, 12, 3, 5, 4, 6, 7, 8, 9, 10) closely parallels their expected ordering.

Table 3

Intercorrelations of the Life Style Indices

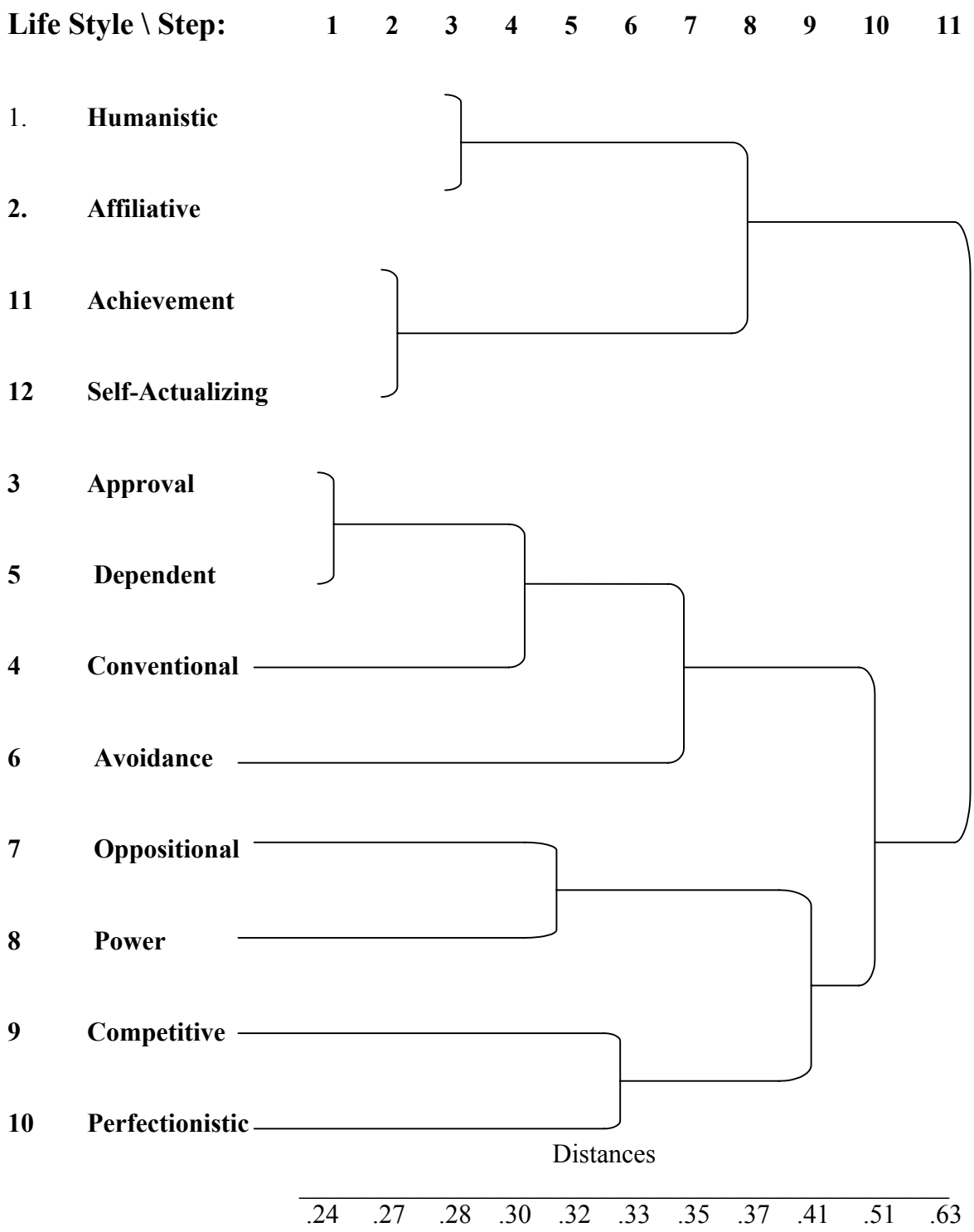
Life Style	1	2	3	4	5	6	7	8	9	10	11	12
1	**1.00**											
2	.72***	**1.00**										
3	.16***	.27***	**1.00**									
4	.12***	.28***	.66***	**1.00**								
5	.16***	.23***	.76***	.74***	**1.00**							
6	-.13***	-.08***	.59***	.70***	.68***	**1.00**						
7	-.11***	-.09**	.47***	.50***	.52***	.66***	**1.00**					
8	-.02	-.03	.29***	.35***	.29***	.48***	.68***	**1.00**				
9	.14***	.13***	.42***	.32***	.32***	.28***	.58***	.67***	**1.00**			
10	.25***	.22***	.29***	.39***	.32***	.31***	.48***	.65***	.67***	**1.00**		
11	.62***	.52***	.02	.02	.03	-.21***	-.00	.16***	.37***	.52***	**1.00**	
12	.67***	.73***	.05	.09**	.01	-.21***	-.06	.15***	.30***	.42***	.73***	**1.00**

* p< .05

** p< .01

*** p< .001

Figure 2 - Cluster Analysis *



* Hierarchical clustering based on the distance 1-r with the centroid method used as the combinational strategy for updating the distance matrix.

Convergent and Discriminant Validity

These types of construct validity optimally are tested through factor analysis (*Kerlinger and Kay, 1959*) or multitrait-multimethod approaches (*Campbell and Fiske, 1959*). However, factor analytic techniques are inappropriate for LSI because it is not hypothesized to be orthogonal and multiple measures of all twelve life styles are not currently available to generate Campbell and Fiske's matrix. Therefore a modified and somewhat less rigorous strategy was adopted to assess convergent and discriminate validity. Correlations were run between each of the 240 items on the LSI and the twelve styles. The correlations of each item to the twelve styles then were compared to determine whether the item correlated more strongly with its own style than with any of the other eleven styles.

The results of this analysis are summarized in **Table 4**. The large majority of the items (89.6%) correlate most strongly with their own indices. Furthermore, many of the remaining items correlate most strongly with contiguous or conceptually close life styles. The LSI items that perform most adequately on this test are those intended to measure the Achievement (11) style. The Affiliative (2), Avoidance (6) and Self-Actualizing (12) also perform well. However only 15 of the 20 Conventional (4) items and Perfectionistic (10) items correlate most strongly with their own index. Examination of the columns in **Table 4** shows that eight items designed to measure other styles correlate more highly with the Avoidance (6) index than with their own indices. In contrast, very few items designed to measure other styles correlate more strongly with the Humanistic-Encouraging (1), Approval (3), Conventional (4), Dependent (5), Oppositional (7), Power (8), Competitive (9), and Self-Actualizing (12) indices that with their indices.

Criterion-Related Validity

The criteria used in previous tests of the inventory's concurrent and predictive validity has included the promotability and problem-solving effectiveness of managers. In one test, for example, the promotability of 26 line managers was predicted in consideration of their Achievement, Self-Actualizing and Humanistic-Encouraging scores. The predictions were consistent in 82% of the cases, with the judgements of a three-person assessment team on the basis of interviews, test of intelligence and managerial skills, and other "assessment centre" techniques.[4] In another test, 108 managers with Oppositional, Approval, Dependent styles were placed into teams to compete in a simulation against 102 managers with Achievement, Self-Actualizing and Humanisitc-Encouraging styles. As predicted, the former teams were significantly less likely than the latter to cooperate, pool resources and perform effectively (*Morris, 1980*).

[4] Lafferty, J.C. Avalidation of (LSI) Level 1 Against Assessment Center Techniques, Plymouth MI: Human Synergistics, undated

Recent validation tests[5] have used stress-related medical symptoms as the criteria. It has been proposed *elsewhere (Human Synergistics, 1980, pg. 36*) that certain medical problems are, at least in part, the result of the type and frequency of stressful life events and the individual's method of thinking about these events (i.e., life styles and thinking patterns). Life styles are expected to be related to medical problems or physiological strain for two reasons. First, certain life styles reflect what McGrath has called "stress within the system, which the focal *person brings with him to the situation.* (*1976, pg. 1369*). The security-oriented styles in particular are indicative of this type of stress and may be directly related to strain. Second, people reporting different life styles are likely to react in different ways to the same stressful situations and to vary in their ability to cope with stress (*Katz and Kahn, 1978*). Satisfaction styles are expected to reduce the negative effects of stressful events and security styles are expected to increase these effects. In general, satisfaction life styles should correlate negatively, and the security styles positively with the number of medical problems reported by respondents (*Human Synergistics, 1980*).

Table 5 shows:

- Column One: Zero-order correlations of life events and life styles with the number of self-reported medical problems;
- Column Two: The correlation of life events (partialling out life styles) with self-reported medical problems and the correlations of life styles (partialling out life events) with medical problems;
- Column Three: The coefficients derived from the regression of medical problems on life events and life styles.

The zero-order correlations indicate that the number of reported medical problems is positively related to various security styles (including Dependent, Avoidance, Oppositional, and Power) and to only one style, which is oriented toward satisfaction (Perfectionistic). Medical problems are negatively related to two satisfaction styles (Achievement and Self-Actualizing). The partial correlation coefficients are similar to the zero-order coefficients. The regression results indicate that life events, two security styles (Avoidance and Oppositional) and one satisfaction style (Perfectionistic) are positively related to medical problems; one satisfaction style (Self-Actualizing) and one security style (Conventional) are negatively related to medical problems. The **r-squared** for this regression is .12 ($F = 10.47$, $n=1000$, $p<.001$).[6]

[5] Human Synergistics. Summary of preliminary research for International Institute of Stress. Plymouth, MI: Human Synergistics, undated.

[6] The r-squared for the regression with the life styles, omitting the life events is .07 ($F=6.28$, $n=1000$, $p<.001$.) The r-squared for the regression including life events, but excluding the life styles, is .06 ($F=60.25$, $n=1000$, $p<.001$).

Table 4

Convergent and Discriminant Validity Analysis *

Styles	1	2	3	4	5	6	7	8	9	10	11	12
Humanistic (1)	19	1	0	0	0	0	0	0	0	0	0	0
Affiliative (2)	0	19	1	0	0	0	0	0	0	0	0	0
Approval (3)	0	1	18	0	0	1	0	0	0	0	0	0
Conventional (4)	0	1	0	15	0	4	0	0	0	0	0	0
Dependent (5)	1	0	0	0	17	1	0	0	0	0	1	0
Avoidance (6)	0	0	0	1	0	19	0	0	0	0	0	0
Oppositional (7)	0	0	0	0	1	1	17	0	1	0	0	0
Power (8)	0	0	0	0	0	1	0	18	0	0	0	1
Competitive (9)	0	0	0	0	0	0	0	0	18	0	2	0
Perfectionistic (10)	0	0	0	0	0	0	1	1	0	16	2	0
Achievement (11)	0	0	0	0	0	0	0	0	0	0	20	0
Self-Actualizing (12)	0	0	0	0	0	0	0	0	0	0	1	19

* The figures shown reflect the number of items in each scale (rows) that correlate most highly with each of the twelve styles (columns).

Table 5

Life Events, Life (Thinking) Styles and Medical Problems [a]

	Medical Problems [c]		
	Zero-order Correlation	**Partial Correlation**	**Beta Coefficient**
Life Events [b]	**.24****	**.23****	**.09****
Life Styles:			
Humanistic (1)	**-.05**	**-.06***	**.01**
Affiliative (2)	**-.06**	**-.08****	**.02**
Approval (3)	**.11****	**.10****	**.01**
Conventional (4)	**.05**	**.05**	**-.04****
Dependent (5)	**.09***	**.09***	**-.01**
Avoidance (6)	**.19****	**.19****	**.04****
Oppositional (7)	**.20****	**.19****	**.03***
Power (8)	**.15****	**.15****	**.01**
Competitive (9)	**.10***	**.08***	**-.01**
Perfectionistic (10)	**.10***	**.09***	**.02***
Achievement (11)	**-.06***	**-.07***	**-.01**
Self-Actualizing (12)	**-.10***	**-.11****	**-.03***

*p< .05; **p < .01

a – Medical problems are measured in terms of the number of 20 different problems experienced by respondents during the last two years.

b – Life events are measured in terms of the number of 40 different events experienced by respondents during the last two years.

C – R-squared equals .12.

Discussion

Reliability and Validity

The results of this study indicate that the Life Styles Inventory (LSI) is a reliable and valid instrument for measuring self-concepts and thinking styles. The reliabilities of the twelve styles are all acceptable, with alpha coefficients ranging from .80 to .88. Similarly, LSI performed adequately on a test for convergent and discriminant validity, with over 90% of the items correlating more strongly with their own indices than with any of the other indices.

The results of both the intercorrelation matrix and the cluster analysis provide evidence for the construct validity of the instrument. Indices measuring life styles that are conceptually close to one another (i.e., linked to similar needs and directed toward similar concerns) exhibit strong positive intercorrelations. In a manner consistent with the underlying framework, the magnitude of the positive correlations decreases as the styles become progressively more differentiated in terms of needs and concerns. Additionally, negative correlations are found between those life styles strongly linked to needs at the opposite extremes of Maslow's hierarchy. This finding is noteworthy since, contrary to previous empirical studies, (*Hall and Nougaim, 1968; Rauschenberger, Schmitt, and Hunter, 1980*) it provides at least some indirect support for the need hierarchy theory and the need dominance concept.

The cluster analysis generates a pattern of life styles consistent with that suggested by the intercorrelation matrix. The clusters identified at the early steps of the analysis include pairs of life styles, which in most cases, are contiguous on the feedback circumplex. Later steps identify clusters, which include styles located primarily in specific quadrants or in the top or bottom half of the clock. Additionally, the way in which the styles are ordered by the hierarchical clustering procedure closely parallels their predicted ordering. One difference is the empirical placement of the Achievement (11) and Self-Actualizing (12) styles between the Affiliative (2) and Approval (3) styles. This placement might indicate that the Achievement and Self-Actualizing styles reflect a greater concern for people than initially expected. Another difference is the reversed placement of the Conventional (4) and Dependent (5) styles. This reversal suggests that the Conventional style is more strongly linked to security needs than is the Dependent style, as measured by LSI. Despite these differences, the results of the cluster analysis generally provide support for the construct validity of the instrument.

Finally, a test for criterion-related validity shows that the life styles are significantly related to the number of medical problems reported by respondents. As in other studies (*e.g., Graham and Stevenson, 1963*), medical problems were found to be related to stressful experiences; they were found also to be related to security-oriented styles such as the Avoidance and Oppositional styles. Furthermore, satisfaction styles such as Self-Actualizing were found to be negatively related to the number of reported medical problems. The relations between medical problems and certain life style however, were not in the predicted direction.

The security-oriented Conventional style correlated negatively and the satisfaction-oriented Perfectionistic style correlated positively with medical problems. This might indicate that the Perfectionistic style is based partly on security needs. This possibility is suggested also by **Figure 2** which shows that Perfectionistic clusters with security styles. Alternatively, these results may be due to the measure of physiological strain used for this study. Other studies that have focused on particular medical problems and their duration and severity have shown that the Conventional style is related, in the predicted direction, to depression and nervousness (*Human Synergistics, note 4*).

With the exception of these two styles, the correlations between the LSI indices and medical problems were in the predicted directions and, in many cases statistically significant. This finding not only supports the validity of the instrument but also underscores the importance of "person-stressors" in explaining physiological problems (*Ivancevich and Matteson, 1980*). The various life styles may directly lead to or reduce strain; or, may positively or negatively buffer the impact of environmental stressors on strain. In either case, future research on stress, as well as stress management programs should consider the ways in which life styles can affect physical and mental health.

Conclusion

The results of the reliability and validity tests discussed above indicate that LSI is a useful instrument for the self-assessment of life styles. The instrument taps the large amount of information individuals have available to themselves as a result of their observations of the effects of their own behaviours, their vicarious experiences, and the feedback provided to them by others (*see Bandura, 1978; Levine, 1980*). This information is collected by the LSI in a way that allows respondents to compare their profiles to those of the general population. Thus, LSI enables the respondent to engage in a structured self-observation process and provides data that is useful in the judgmental process – both of which are critical for the self-regulation of behaviour (*Bandura, 1978*). In organizational settings, these processes are critical to self-management which, according to Luthans and Davis (1979) can lead to better time utilization, decreased dependence of subordinates on their managers, and other constructive changes in organizations. While various benefits of self-management to organizations have been delineated, these benefits will not be realized unless members are provided with opportunities to systematically gather data about themselves, set personal goals, and rehearse new behaviours. Self-assessment instruments such as the LSI, potentially provide members with such opportunities.

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Postscript

As a result of this research paper, Human Synergistics altered the styles orientation from the original four intuitive clusters (People-Satisfaction, People-Security, Task-Satisfaction, Task-Security) to a three cluster model (See Figure Two). The three clusters are, as mentioned in the introduction; Constructive, Passive Defensive, and Aggressive Defensive.

Further research by Drs. J. Clayton Lafferty and Lorraine F. Lafferty did prove that the Perfectionistic Style was not a satisfaction style, but one that is based in a defensive or security orientation. (See *Perfectionism: A Sure Cure for Happiness, J. Clayton Lafferty and Lorraine F. Lafferty, 1996.*)

Additional research by Drs. J. Clayton Lafferty and Lorraine F. Lafferty has also been done around stress and health. This has resulted in the development of the Human Synergistics assessment instrument, Stress Processing Report and Self-Development Guide. Their research has been published. (See *A Rational Approach to Stress and Health, 1989*.)

Additional development / research using the twelve styles from the LSI circumplex includes:

1. STYLUS. STYLUS was developed as means to computer score the LSI against a normative group of managers and then produce a computer-generated report (based on text blocks written by Dr. J. Clayton Lafferty). Because STYLUS uses the same 240 items and twelve thinking styles, it carries the same validity and reliability as LSI.
2. Group Styles Inventory (GSI). The GSI is designed to measure group styles used in group problem-solving situations. (See *The Impact of Group Interaction Styles on Problem-Solving Effectiveness, by Robert A. Cooke and Janet L. Szumal, 1994*.)
3. Organizational Culture Inventory and Report (OCI). The OCI is designed to measure the culture of organizations (what it takes to "fit in") and the effect of those cultural styles on measurable outcomes such as customer service, employee satisfaction and message consistency. (See *Measuring Normative Beliefs and Shared Behavioural Expectations in Organizations: The Reliability and Validity of the Organizational Culture Inventory, by Robert A. Cooke and Janet L. Szumal, 1993*.)
4. Leadership / Impact (L/I). L/I measures the impact that a leader has on those people around him/her; the strategies used by the leader to encourage or inhibit that impact; and, the overall effectiveness of the leader. (See An International Study of the Reliability and Validity of Leadership/Impact (L/I), by Janet L. Szumal, Draft – 1992.)