

Creatrix

History and Analysis: Current Status

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March 2004

Background

In 1971, Dr. Richard Byrd conducted pioneering research on the topic of creativity and risk taking. While much research and development has occurred during the intervening years, these definitions hold:

Creativity: The ability to develop new ideas. Those ideas may be as mundane as turning eggshells into little faces or as sublime as the great pyramids of Egypt. They may be as practical as the saltshaker or as absurd as a Pig-Latin alphabet. Regardless of scope, creativity is synonymous with new ideas (R. E. Byrd, A Guide to Personal Risk Taking, 1974, p. 97).

Risk taking: Risk taking means that a person is willing to push their ideas forward at some potential risk to their own security, career, reputation, or self-esteem. It is acting in the face of potential loss to realize potential benefits. Risk taking is the ability to drive new ideas forward in the face of adversity (J.L Byrd & P.L. Brown, The Innovation Equation, 2002, p. 17).

Further, creativity and risk taking include several components called Drivers:

Creativity consists of:

- Uniqueness
- Independence
- Inner Directedness
- Ambiguity

Risk Taking consists of:

- Authenticity
- Resiliency
- Self-acceptance

These definitions and the Drivers are discrete, measuring very different human characteristics. Yet they are compatible and when used together provide an interesting index of innovation. (See Definition of Drivers, Attached)

The development of the Creatrix Inventory, a self-assessment designed to measure individual creativity and risk taking plots creativity on a horizontal scale and juxtaposes risk taking on the horizontal axis. The combination of the scores places the result in one of eight areas labeled: Challenger (high risk taking and low creativity); Innovator (high risk taking and high creativity); Dreamer (low risk taking and high creativity); Sustainer (low risk taking and low creativity); Modifier (moderate risk taking and low creativity); Synthesizer (moderate risk taking and high creativity); Planner (low risk taking and moderate creativity); and Practicalizer (high risk taking and moderate creativity).

The Drivers are used when attempting to increase or decrease levels of creativity or risk taking. This practical application enables the users to move from one of the eight orientations to another. Although, it is not likely that an individual can or will be able to move from Sustainer to Innovator. It also allows individual users a clearer explication of why they may record a particular score.

Research Background on the Creatrix

Research on the Creatrix has been continuous with many different iterations of norming, testing validity and reliability.

Norms: The Creatrix has no right or wrong answers. There are 54 items on the Creatrix. Responses are scored on a Likert scale ranging from 1 to 9 with 1 representing complete disagreement, and 9 representing complete agreement. Scores for both creativity and risk taking are plotted on relative scales. In order to provide a context for interpretation of the results it was necessary to set norms for creativity and risk taking which reflect the general population. With this in mind, normative data needed to be collected, and over time reviewed, to ensure that the norms continue to reflect the population. Thus when scores are plotted on the Creatrix they are done so in context of a much larger population.

Continued development and refinement of the Creatrix, therefore, consists of several studies that provided necessary guidance over time. The norms for the Creatrix were originally developed from a sample of over 500 employees representing seven organizations.

In 1986 these original norms were retested based on a population of nearly 200 employees from several organizations, including manufacturing, consulting, and one architectural firm. Thirty-eight percent (38%) of the respondents were female, 61% were male and 1% did not state gender. Twenty-three percent (23%) were in technical support (engineering, research, and development), 18% were from salaried support (human resources, marketing and business development), and 7% were hourly support (secretary, clerk). Based on the results of the retest, the scales were adjusted to reflect the normative data.

Yet another sample was drawn in 2000 to re-examine the norms and calculate reliability for the risk-taking and creativity scales. Data from 279 subjects was used in this analysis.

The respondents were from several large manufacturing firms, government, a large university and several small organizations. The sample included: accountants, artists, educators, engineers, nurses, upper level managers, and people from sales and marketing. Slightly over 50% of the respondents were female (140) and slightly less than 50 % of the respondents were male (138). One respondent did not state gender.

The scores from this sample were quite similar to the results gathered in 1986. The following figures reveal the similarity. The scores plotted in Figure 1 Frequency of Creativity Scores (1986 Sample) are very much like the ones reported in Figure 2 Frequency of Creativity Scores (2000 Sample).

Figure 1. Frequency of Creativity Scores (1986 Sample)

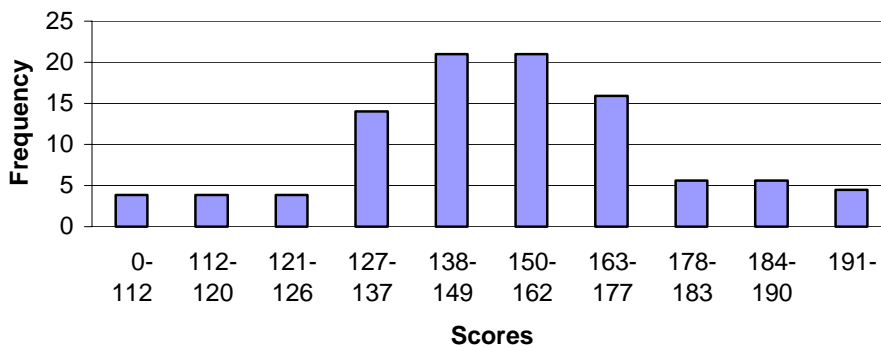
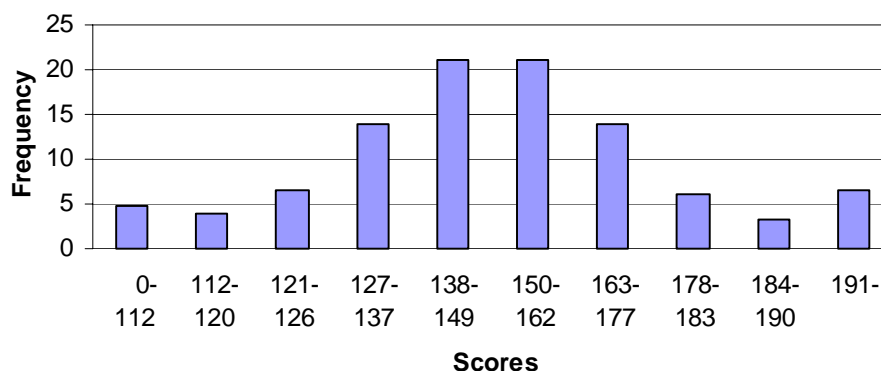


Figure 2. Frequency of Creativity Scores (2000 Sample)

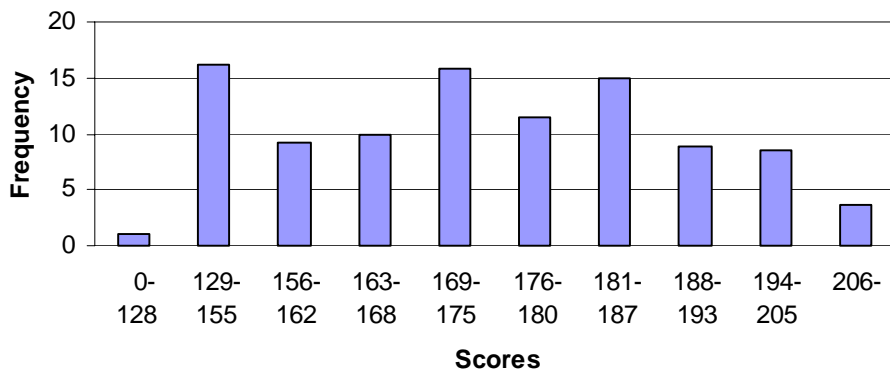


The scores for Risk Taking from the sample drawn in 2000 are highly similar to the 1986 scores as well.

**Figure 3. Frequency of Risk Taking Scores
(1986 Sample)**



**Figure 4. Frequency of Risk Taking Scores
(2000 Sample)**



The results of the sample drawn in 1986 (Figure 3) are quite similar to the results of the sample drawn in 2000 (Figure 4).

The high similarity between the two samples suggests that the norms established earlier are valid and still used to establish the baselines when graphing the creativity and risk-taking scores on the Creatrix.

General Considerations: An implicit assumption of this instrument is that over a lifetime people develop a general predisposition toward creativity and risk taking. Having no evidence to the contrary, these scales have been constructed with the assumption that individuals will take it when things are “going well” for them. Although

it is possible for a recent traumatic incidence in a respondent's life to impact the way her or she scores, the norms given here have been judged as accurate for interpretive purposes.

Validity: In assessing the validity of this instrument, it is important to consider its intention. The Creatrix is not designed to be a test. No attempt to avoid the "halo effect" in the construction of the instrument and, consequently, if it were a test, it might be possible for respondents to determine the "right" answer. The Creatrix is designed for self-assessment and educational purposes. Since the practitioners we have interviewed have confirmed this as a purpose, we have no reason to doubt its validity if respondents use it honestly – which they should in an educational/self-assessment situation.

As an educational instrument, users have reported a new or greater understanding of the following:

- The underlying determinants of creativity and risk taking;
- Themselves and their own career needs;
- People for whom they have worked;
- How to deal effectively with individuals whose orientations are different from their own;
- The satisfaction or dissatisfaction they have had in their own careers;
- How to effectively manage a diversified group in order to best utilize their talents.

These user reports establish face validity. In addition, the results are consistent with what researchers tell us are typical of individual's behaviors in organizations. New organizational members tend to be greater risk takers than those who have been in organizations for more years. The salaried support staff made up of human-resource, business-development, and marketing professionals scored the highest on risk taking, with top management scoring to lowest on risk taking. After age fifty-five, risk-taking scores decreased in this sample. Newcomers to the organization scored highest on risk taking, with a large drop in these scores for organizational members who had been in the firm for over five years. As was verified in the initial norms assessment, women tended to score higher on risk taking than did men.

Creativity measures suggest that creativity decreases in the first year a person is in an organization. Hourly support, secretaries, and hourly administrative personnel scored much lower on creativity than did any other group. Creativity was highest in people 26 to 35 years of age, and men scored higher on creativity than did women. The most recent analysis revealed that men scored higher on creativity than did women, but no significant differences with age.

Reliability: Reliability is defined as the level of consistency of the measuring device. That is, can the results of creativity and risk taking be replicated consistently (across individuals and populations). The primary assumption of the Creatrix is that Creativity and Risk Taking are discrete notions. Further, these primary categories can be sub-

divided into constructs called Drivers. Thus, we begin with several iterations of factor analysis. Factor analysis helps us understand whether people are reading an item the same way, whether they give a similar interpretation and have a similar perception of what the item is about. Factor analysis is used when we wish to investigate the underlying structure or basic dimensions of a set of variables or when we wish to reduce a set of variables to a smaller set. (Basic Statistical Concepts in Testing and Assessment, Walsh and Betz, 2000). The most recent (2003) and largest (N=1,530) reliability study for the Creatrix was conducted as a part of Paul Brown's dissertation (2003). We will use these results here.

Factor analysis revealed two clear constructs: Creativity and Risk Taking. Twenty-one (21) items loaded on factor 1 and nineteen (19) items loaded on factor 2 which explained 64% of the variance (3-factor solution, varimax rotation; maximum likelihood). Factor one consisted of creativity items and factor 2 consisted of risk taking items. Further iterations of factor analysis of Creativity items identified four (4) factors: these were labeled Ambiguity; Independence; Inner-Directed; and Uniqueness. Risk taking items revealed three (3) factors: these were labeled Authenticity; Resiliency; and Self Acceptance.

Reliability coefficients suggest that we can place high confidence in the results of the Creatrix.

Creativity	alpha = .83
ambiguity	.59
independence	.59
inner-directed	.50
uniqueness	.68

Risk Taking	alpha = .89
authenticity	.80
resiliency	.79
self -acceptance	.62

Therefore, the Creatrix as now constructed is a reliable instrument that yields a clear index of creativity and risk taking.

We found no gender or age bias in the results. In other words, people answered the questions the same way whether they were male, female or members of a certain age group.



Definitions Used

The Seven Drivers of Creativity & Risk Taking

Creativity Drivers

- Ambiguity:** Able to operate with uncertainty and vagueness—don't require highly-structured organizations, goals or objectives to accomplish or create things, ideas, services or products
- Independent:** Not subject to the control or influence or determination of another or others—will not subordinate themselves—don't like to be managed
- Inner-Directed:** Determine their own expectations and norms—march to the beat of their own drummer
- Uniqueness:** Appreciate and value differences—value uniqueness in both self and others

Risk-Taking Drivers

- Authenticity:** Being what you purport to be: genuine—"walk your talk"—"tell it like it is"
- Resiliency:** The capacity to spring back, rebound and to successfully adapt and learn even in the face of adversity and stress
- Self-Acceptance:** Approving and/or satisfied with your behaviors or actions—"like yourself"