The Role of Thinking Style and Innovative Intentions for Optimal Creativity and Innovation in Organizations

John E. Ettlie  Kevin S. Groves  Charles M. Vance
Rochester Inst. of Technology  Pepperdine University  Loyola Marymount University
jettlie@cob.rit.edu  kevin.groves@pepperdine.edu  cvance@lmu.edu

Abstract
This study represents the confluence of two research streams under the organizational change rubric: linear/nonlinear thinking style—that is the notion that people tend to be either linear, nonlinear or balanced thinkers—and innovative intentions and resulting behaviors in organizations. It was hypothesized that a balanced linear/nonlinear thinking style and the inclination towards more innovative intentions and resulting behaviors in organizations are strongly related. The results of an analysis of four French and American business course student populations (n = 73) found a significant relationship in the predicted direction between balanced linear/nonlinear thinking style and innovative intention measures. A second wave of data collection involved six sections of graduate project management classes with a majority of engineering students. The results of the combined sample (n=124) mirrored the first wave results. Balanced thinking style and occupation-free measures of innovative intentions were significantly related. Important implications of the results are discussed for cross-functional innovative teams and directions for future work.

1. Introduction

There seems to be an insatiable appetite worldwide for better understanding the process and outcomes of innovative solutions to today’s most pressing business and economic problems. This keen interest is widespread at the national or country level, industry focus, firm, group, and individual levels of analysis. In this study we examine the potential confluence of two related research streams—thinking style and innovation intention—primarily focused on individuals and groups embedded in the organizational innovation process. We examine the notion that the intention to be innovative will be manifest regardless of occupation, and that it is this intention, combined with balanced linear/nonlinear thinking style, that has the greatest impact on behaviors during the innovation development process for new firm offerings—new products and new services. Our improved understanding of the relationship between thinking style and innovative intentions and behaviors can be potentially useful in guiding individual and collective thought processes and resulting behaviors for enhancing productive innovation in organizations. Although the constructs of creativity and innovation are often distinguished in the literature, they are treated here on a general level as the same.

2. Linear and Nonlinear Thinking Style

Thinking style has been defined as one’s preferred approach in using mental abilities to direct daily activities, including understanding and solving problems and challenges [1]. Thinking styles are at least partially socialized and may vary according to the constraints and conditions of a given situation, and some current research suggests that specific thinking style patterns can be associated with different professions [2]. Prior theoretical and empirical research indicates that organizational members tend to adopt as a dominant approach one of two primary thinking styles or patterns of cognition and decision-making. Building on Kolb’s learning style model [3], Honey and Mumford identified distinct styles related to cognitive processes in managerial problem solving and decision-making: activist, reflector, theorist, and pragmatist; and emphasized the importance of versatility in using these styles as conditions warrant for generating solutions [4].

As one primary thinking style, linear thinking consists of the more traditional cognitive pattern of logical, rational, analytical, and data-driven decision-making that relies on conventional information sources or inputs such as logic, rational analysis, logic, reason, and cause-effect predictability. A complementary and increasingly valued thinking style or cognitive approach is nonlinear thinking, characterized as including intuitive and emotional assessments [5], creativity [6], lateral thinking [7], holistic/total systems appraisal [8], integrative and synergistic thinking, perceptual flexibility, imagination and visualization, and insight [9]. Below we review major components of nonlinear thinking,
namely, the distinct yet complementary nonlinear dimensions of intuition, creativity, and emotions.

Intuition has been defined as a holistic hunch or judgment obtained from a subconscious synthesis of information and knowledge across one’s diverse experiences, and has gained scholarly attention and broad support for its value in executive decision-making [10]. Miller and Ireland observed that intuition-related decisions involve “novel approaches, changes in directions, and/or actions that run counter to prevailing thinking or data” (p. 21), and frequently are described as “gut feelings” [11]. Intuition is holistic in nature, and often is the result of an unconscious, automatic scan of the interrelated parts of a complex, seemingly chaotic (i.e., nonlinear) system or environment resulting in an integrated “big picture” that informs intentions and guides behaviors rather than getting delayed and overwhelmed in detailed data analysis.

As an appropriate thinking style for nonlinear systems that are by nature unpredictable, the nonlinear dimension of creativity or lateral thinking is characterized by spontaneity and flexibility, whereby individuals consciously and purposefully adopt new perspectives and reassemble interrelated parts or components of a system in novel ways leading to viable solutions. The use of metaphors also can be helpful in increasing flexibility and facilitating creative outcomes by making a comparison of a problem situation with a seemingly unrelated object or system, providing a new perspective for gaining a better understanding of a challenging problem, and generating a creative solution. A growing body of literature on the affective domain demonstrates that the nonlinear dimension of emotion, beyond linear rational thinking and logical reasoning, also can play a critical and productive role in individual and group decision-making. Recent theoretical and empirical research on emotions and emotional intelligence provides ample evidence that feelings and emotions affect thinking and decision-making at both unconscious and conscious levels [12].

There has been a growing interest in applications of the nonlinear dimension in general decision making contexts of leadership and entrepreneurship. There is increased attention devoted to examining emotional intelligence as a predictor of exemplary leadership [13]. Marcy and Mumford also have examined holistic and contextual-rich processes of leadership decision making in complex environments that involve the nonlinear dimension [14]. Moreover, there has been growing interest in balanced and flexible linear and nonlinear thinking as a strong predictor of exemplary leadership, as suggested by Rowe’s model of “strategic leadership,” featuring a blend of visionary (i.e., nonlinear) and managerial (i.e., linear) leadership efforts for creating value in organizations [15]. Besides creative idea generation, the effective calculated and planned implementation of creative ideas and directions for organizational innovation and change might also require complementary linear skills.

Often entrepreneurs, “intrapreneurs,” and others involved in the innovative process who face complex challenges with a seemingly endless array of data and probabilities utilize emotions to reduce the number of plausible options and inform behavioral intent. Aliston, Chell, and Hayes’ empirical study demonstrated that successful entrepreneurs were more intuitive in cognitive style than middle and junior managers, and did not differ in cognitive style from senior managers and executives [16]. Similarly, empirical studies by Blume and Covin [17] and Corbett [18] found that entrepreneurs demonstrate a greater intuitive thinking style, while general managers prefer an analytical approach to information processing and decision-making.

Recently, Cardon et al. identified enduring subconscious and cognized emotion as a primary source of entrepreneur persistence and perseverance, problem solving, and absorption of external market data toward successful decision-making [19]. These unconscious feelings-based mental processes, related to intuition, may scan an otherwise overwhelming presentation of data surrounding a difficult problem and help an individual to feel comfortable with focusing attention more deeply on a more realistic amount and assembly of data.

Despite the very widespread, popular notion that employee and managerial cognition associated with entrepreneurial behavior and innovativeness adopts a predominantly nonlinear thinking style framework, we argue that innovative intentions and behaviors are more likely associated with a thinking style that emphasizes a balance of both linear and nonlinear cognition and decision-making. Indeed, research on entrepreneurs and the entrepreneurial process suggests that successful innovations often are driven by individuals who demonstrate the ability to effectively utilize linear and nonlinear thinking in tandem. Besides linear, rational analysis, the new market opportunity recognition and realization process relies heavily upon such nonlinear thinking style patterns as intuition, insight, creativity, imagination, and optimism that support risk-taking and perseverance in the face of failure [20]. Simultaneously, the innovation process relies heavily upon highly rational, scientific skills that demand analytical, data-driven, linear thinking and decision-making. For example, Fiet suggests that entrepreneurs consistently apply rational and data-driven thinking to the opportunity discovery process. Despite the stereotypes of successful entrepreneurs as intuitive, independent, unconventional thinkers, careful analysis of successful innovations suggests that such individuals succeed “…not by bucking the
odds, but by selecting an environment that they view as having an appropriate set of security arrangements, which probably includes being in close proximity to an information channel” (p. 53). Fiet argues that entrepreneurial success cannot be attributed primarily to chance or luck since successful innovators are well aware of the types of information cues that have been historically useful, and based on attentive readings of these signals will make initial decisions and course corrections to the venture process as necessary. Indeed, such an incremental fine-tuning process suggests that entrepreneurs and innovators also benefit from a rational, analytical, and linear approach to thinking and decision-making.

Fiet moreover asserts that this linear approach to innovative thinking and decision-making is balanced by the ability to quickly recall previous relevant experiences and associated “deposits of specific information” (p. 58) from memory to inform an entrepreneur’s assessment of a discovery’s potential viability [21]. Such an emphasis on the rapid recall of relevant experiences to support the discovery process is consistent with the nature and utility of intuition in innovative thinking whereby intuition allows an entrepreneur to quickly and subconsciously recall previous experiences and transform signals into useful knowledge for arriving at innovative conclusions. Thus, based on the preponderance of research examining entrepreneurship and the new venture process, we argue that innovative intentions and resulting behavior should be associated with the tendency to utilize both linear and nonlinear thinking.

3. Innovative Intentions and Organizational Culture

We now examine the issue of innovative intentions and the influence of organizational culture in the new product and service development process. There is some evidence that program changes come more frequently in state agencies where key decision-makers have more innovative values [22], whereas other research has shown that innovative attitudes and intentions often are influenced by the situation rather than organization cultural values [23].

In an effort to search for a measure of individual innovative tendency, Ettlie and O’Keefe developed and validated a diagnostic instrument, based on both the academic and practice literatures, that identifies creative employees [24]. This measure incorporates consideration of such tendencies and actions as combining several known ideas into a new combination to solve a problem, seeking out difficult problems to solve, placing value on being first to try out a new use of an old method, and having a sense of humor.

One of the surprises of this line of research, and something that goes against common sense, is that when one evaluates the risk-taking culture of an organization or work group where innovative people work, there is no consistent relationship regardless of their occupation. That is, one would expect that only a work environment that supports risk-taking behavior would have many innovative people employed there. On the contrary, innovative people, regardless of their job—R&D scientist, software engineer, accountant, etc.—need to stand out in their workplace. A work environment culture that supports risk-taking is only half the answer. It is the blend of people working together—meshing their innovative gears, so to speak—with many roles for different kinds of personalities, and collaboration that converts good ideas into successful new products and services.

Glynn and Webster [25] have refined the concept of adult play and developed a measure of playfulness. They define adult playfulness as an “individual trait, a propensity to define (or redefine) an activity in an imaginative, non-serious or metaphoric manner so as to enhance intrinsic enjoyment, involvement, and satisfaction” (p. 85). They found scores on this scale to be significantly correlated with creativity and spontaneity, while the concept is not related to gender or age. In addition, playfulness was found to be positively related to work performance. Scores on the adult playfulness scale have subsequently been found to be significantly correlated with innovative intention attitudes as evaluated by Ettlie and O’Keefe, as well as intrinsic motivational orientation. This relationship suggests that there is a central core of personal value, validated by the playfulness characteristic and innovative acquired behavioral predisposition, which can have substantial practical importance regardless of the job that a person occupies [26].

Ettlie presents an empirical demonstration of the relationship between discipline culture and development behaviors during the new product development process [27]. It was the culture of the discipline that appeared to influence preferences in these situations in Western countries, regardless of nation. All professional discipline groups predicted the outcome of the new product commercialization process correctly (typically, the groups predicted a 60% or greater chance of commercial success, and the product was ultimately successful), but engineering and technically dominated professional discipline groups tended to be more pessimistic on average (based on median and mean scores) than mixed or blended classes of graduate student groups in MBA and related programs on management of the innovation process. These results are concordant with the treatments by Vance et al. showing balanced linear and nonlinear thinking style as the preferred approach in complex task development exercises [28].
Therefore, the following hypotheses are offered for testing:

**H1**: There is an inverse and significant relationship between linear thinking style and innovative intention.

**H2**: There is a direct and significant relationship between nonlinear thinking style and innovative intention.

**H3**: There is a direct and significant relationship between the extent of balanced thinking style and innovative intention, which exceeds the magnitude of the relationship predicted in **H2** for the nonlinear-innovation intention relationship.

### 4. Method

The first wave of data collection consisted of students in four business classes who were given a questionnaire before class began which included measures of linear and nonlinear thinking style as well as innovation intentions. These classes were two MBA courses in Introduction to Technology Management and Project Management in the United States, and two advanced undergraduate classes in Paris and Grenoble, France (survey in English, as the classes were being taught in English). A total of 73 complete questionnaires were used, and only one was discarded as being incomplete. The first author was the instructor in all classes and, therefore, directions were standardized across the class sections.

A second wave of data was gathered from six additional MBA sections of the project management elective, which includes a majority of graduate engineering students, where questionnaires were distributed primarily for the purpose of group formation for the project simulation. Two instructors were involved in this data collection, led by the first author at Rochester Institute of Technology during the 2008-9 academic year. Only complete questionnaires were included, and six cases were eliminated for extreme outliers. A total of 51 complete data cases were added in this second wave of data collection, bringing the grand total to 124 complete data cases.

#### 4.1. Measures

**4.1.1. Linear/Nonlinear Thinking Style Profile (LNTSP).** Participants completed the Linear/Nonlinear Thinking Style Profile (LNTSP), a 26-item, four-dimensional, forced-choice self-report measure of decision-making style [29]. The four LNTSP subscales include external information sources (EIS, 8 items) and inner information sources (IIS, 8 items), which comprise the eight pairs of alternative words or phrases; and linear decision-making (LDM, 5 items) and nonlinear decision-making (NDM, 5 items), which comprise the five pairs of alternative behaviors.

Using a Likert-type scale (3 = “very strong influence on how I behave,” 2 = “strong influence on how I behave,” 1 = “moderate influence on how I behave,” and 0 = “little or no influence on how I behave”), respondents were asked to allocate exactly three points across each pair of alternative statements according to how frequently they perform such behaviors (LDM and NDM scales). LDM includes linear items that represent the mental processing of external sources of information, including verifiable facts and objective factors, for the purpose of rational decision-making and subsequent action, while NDM reflects the processing of internal sources of information, such as feelings and intuitive sense, for the purpose of guiding subjective decision-making and subsequent action. An example pair of statements includes, “I primarily rely on logic when making career decisions” and “I primarily rely on feelings when making career decisions.”

Also using a Likert-type scale (3 = “very strong influence on how I behave,” 2 = “strong influence on how I behave,” and 0 = “little or no influence on how I behave”), respondents again were asked to allocate exactly three points across each pair of alternative words or phrases (EIS and IIS scales). EIS reflects external sources of information, data, and influences that guide an individual’s decision-making and behavior while IIS represents inner or internal information sources such as feelings, sensations, and impressions that influence an individual’s decision-making and behavior. Example item pairs include “Feelings” and “Facts,” “Inner Knowing” and “Logic,” and “Felt Sense” and “Reason.”

Cross-correlations between the LNTSP scales, such as the balanced-linear and balanced-nonlinear relationships, were expected to be strong because the degree of balance is in part dependent on one's status on the linear dimension (and also dependent on the nonlinear dimension). The forced-choice, ipsative methodology will create higher inter-correlations among scales. The balanced score has been calculated in past research [30] as simply the absolute value difference score (linear versus nonlinear) with **higher difference scores meaning less balance** (note: this approach would produce a negative correlation as per hypothesis 3).

Another way to approach coding the thinking styles is to create three groups (linear, nonlinear, and balanced) based on the spread of the difference scores (linear - nonlinear). For example, difference scores of 8 or greater are coded as linear (1), difference scores of -8 or less are coded as nonlinear (2), and difference scores of -7 to 7 are coded as balanced (3). This approach seems best when there are roughly equal sized groups in the sample (e.g., the difference scores create three groups to examine
across outcome variables). Both methods were adopted and reported in the results section.

4.1.2. Innovative Intentions Measure. The construct of innovative intentions was measured using the original scale by Ettlie and O’Keefe [31]. The scale items and format are indicated in Table 1. Summed scores were used in this study. This scale demonstrated acceptable reliability (Cronbach alpha = .635 and .642 using standardized item calculation), even without using factor structure, for 71 complete data cases in our sample.

Before proceeding to hypothesis testing, we conducted a confirmatory factor analysis using AMOS software [32] to verify the factor structure of the LNSTP and innovative intent scales. The measurement model was constructed by postulating that the linear thinking items (EIS and LDM items), nonlinear thinking items (IIS and NDM items), and innovative intent items would load onto their respective dimensions.

According to common indices of model fit, this measurement model only fit the data moderately well: $\chi^2 = 402.11$ ($df = 70$, $p < .001$), GFI (.85), AGFI (.80), IFI (.82), CFI (.80), and RMSEA (.14). Analysis of the path coefficients indicated that three innovative intent items did not significantly load onto their respective dimension. After removing these three items from the measurement model, the overall fit indices were significantly improved: $\chi^2 = 211.68$ ($df = 73$, $p < .05$), GFI (.93), AGFI (.91), IFI (.92), CFI (.92), and RMSEA (.08).

Table 1. Innovative Intentions Scale

Please indicate the extent to which each of the statements below is true of either your actual behavior or your intentions at work. That is, describe the way you are or the way you intend to be on the job. Use the following for your responses:

5—Almost always true
4—Often true
3—Not applicable
2—Seldom true
1—Almost never true

1. I openly discuss with my boss how to get ahead.
2. I try new ideas and approaches to problems.
3. I take things or situations apart to find out how they work.
4. I welcome uncertainty and unusual circumstances related to my tasks.
5. I negotiate my salary openly with my supervisor.
6. I can be counted on to find a new use for existing methods or equipment.
7. Among my colleagues and co-workers, I will be the first or nearly the first to try out a new idea or method.
8. I take the opportunity to translate communications from other departments for my work group.
9. I demonstrate originality.
10. I will work on a problem that has caused others great difficulty.
11. I provide critical input toward a new solution.
12. I provide written evaluations of proposed ideas.
13. I develop contacts with experts outside my firm.
14. I use personal contacts to maneuver myself into choice work assignments.
15. I make time to pursue my own pet ideas or projects.
16. I set aside resources for the pursuit of a risky project.
17. I tolerate people who depart from organizational routine.
18. I speak out in staff meetings.
19. I work in teams to try to solve complex problems.
20. If my co-workers are asked, they will say I am a wit.

Table 2: First wave data correlation tests for linear, nonlinear, balanced thinking and innovative intentions

<table>
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<tr>
<th></th>
<th>Linear</th>
<th>NonLinear</th>
<th>Balanced</th>
<th>Absnegative balance</th>
<th>newbalance</th>
<th>Innovative Intentions</th>
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<td>-.777(**)</td>
<td>-.518(**)</td>
<td>.754(**)</td>
<td>-.651(**)</td>
<td>-.380(**)</td>
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<tr>
<td>NonLinear Pearson</td>
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<tr>
<td>Balanced Pearson</td>
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<td>.393(**)</td>
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<td>-.725(**)</td>
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<td>.152</td>
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<tr>
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<td>.152</td>
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** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

The standardized path coefficients for all items were significant and loaded onto their respective dimension. Specifically, the range of path coefficients for the linear (13 items), nonlinear (13 items), and innovative intent (17 items) were the following: .420 to .726 (linear), .427 to .753 (nonlinear) and innovative intent (.290 to .539). Cronbach alpha reliabilities for the final linear, nonlinear, and innovative intent scales were .84, .86, and .73, respectively.

5. Results

The results of testing the first three hypotheses using the first wave of data are presented in Table 2. All three hypotheses were supported. Hypothesis one, which predicted a significant inverse relationship between linear thinking scores and innovation intentions, was strongly supported with a Pearson r = -.38 (p = .001, n = 73). All of these are two-tailed tests. Hypothesis two, which predicted a direct relationship between nonlinear thinking and innovative intentions, also was supported by a Pearson r = .249 (p = .035, n = 72).
Hypothesis three was evaluated in three ways, using the three different coding schemes for balanced thinking scores. For the dichotomous scoring method, the Pearson $r = .152$ ($p = .202$, $n = 72$) was not significant. However, for the absolute value method of score (which produces higher scores for less balance and lower scores for greater balance), the results were significant as predicted: Pearson $r = -.371$ ($p = .001$, $n = 73$); as well as for the categorical balance scores: Pearson $r = .266$ ($p = .023$, $n = 73$). The magnitude of these last two correlations exceed the coefficient value produced to test H2 ($r = .249$), lending strong support for H3.

The total sample ($n=124$) was analyzed and results are presented in Table 3. Results of hypothesis testing generally mirror the first wave data analysis. H1 again was supported. The Pearson $r = -.209$ ($p=.20$, $n=124$) for the relationship between linear thinking and occupation-free innovation intentions (Table 3). Hypothesis 2 predicts a direct relationship between nonlinear thinking and innovative intentions, but this relationship, although in the predicted direction, was not statistically significant for the total sample (Pearson $r = .139$, $p=.122$, $n=124$).

Hypothesis 3 predicts a direct and the strongest relationship in the model between balanced thinking style and innovative intentions. This hypothesis also was supported. For the dichotomous method of scoring balance thinking, Pearson $r = .172$ ($p=.054$, $n=124$), and readers may recall that this relationship was not statistically significant in the first wave of data analysis (Table 1). For the linear minus nonlinear scoring method of scoring balanced thinking (which produces lower scores for balanced thinking) the Pearson $r = -.180$ ($p=.045$, $n=124$) the relationship was significant as predicted. For the absolute value method of scoring balanced thinking (which also produced negative scores for balanced thinking), the Pearson $r = -.156$ ($p=.084$, $n=124$), the relationship also was significant as predicted. And finally, the categorical method of coding balanced thinking ("new-balance in Table 3), which produces positive scores for balanced thinking, resulted in a significant Pearson $r = .225$ ($p=.012$, $n=124$).

An analysis of the full sample demonstrated strong support for the Hypotheses. Linear thinking was negatively associated with innovative intent ($r = -.25$, $p < .01$) while nonlinear thinking was positively related to innovative intent ($r = .18$, $p < .05$). These results offer support for Hypotheses 1 and 2. Furthermore, the categorical method of coding balanced thinking, which produces positive scores for balanced thinking, was strongly associated with innovative intent ($r = .25$, $p < .01$). The balanced thinking-innovative intent relationship was significantly stronger than the nonlinear thinking-innovative intent relationship, providing support for Hypothesis 3.

To further test the differences in innovative intent for those with linear, nonlinear, and balanced thinking profiles, we tested the between-group effects using one-way ANOVA and Tukey’s HSD post-hoc tests. The thinking style difference scores (linear thinking–nonlinear thinking) were used to create three groups: linear thinking (difference score $\geq 4$), nonlinear thinking (difference score $\leq -4$), and balanced thinking (difference score = -3 through 3). A one-way ANOVA test using innovative intent as the dependent variable and thinking style as the group variable demonstrated a significant difference between group effect ($F = 5.19$, $p < .01$). Tukey’s HSD post-hoc tests assessing between group differences demonstrated significant effects comparing the linear and nonlinear groups (mean difference, $=-.21$, $p < .05$), and the linear and balanced groups ($-.22$, $p < .05$). There were no observed significant differences between the nonlinear and balanced thinking groups.
Table 3: Test of hypotheses on full sample (n=124)

<table>
<thead>
<tr>
<th></th>
<th>Linear</th>
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<td>LinearMinusNonlinear Pearson Correlation</td>
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<td>-0.962**</td>
<td>-0.422**</td>
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<td>-0.799**</td>
<td>-0.651**</td>
<td>-0.180*</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>0.000</td>
<td>124</td>
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<td>0.000</td>
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<tr>
<td>AbsoluteValue Pearson Correlation</td>
<td>0.797**</td>
<td>-0.736**</td>
<td>-0.594**</td>
<td>0.799**</td>
<td>1.000</td>
<td>0.000</td>
<td>-0.156</td>
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<tr>
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<td>0.000</td>
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<td>NewBalance Pearson Correlation</td>
<td>-0.650**</td>
<td>0.599**</td>
<td>0.898**</td>
<td>-0.651**</td>
<td>-0.699**</td>
<td>0.225*</td>
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<tr>
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<td>0.000</td>
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<td>inoInt Pearson Correlation</td>
<td>-0.209*</td>
<td>0.139</td>
<td>0.174</td>
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<tr>
<td>Sig. (2-tailed)</td>
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**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

6. Discussion

We tested the thesis that the constructs of linear/nonlinear thinking style and innovation attitudes, intentions, and behaviors are related. In particular, we found support for the idea that balanced linear/nonlinear thinking style is significantly related to the likelihood of innovative intentions, regardless of occupation. Although promising, these results should be considered with caution due to the need for more carefully controlled research validation. For example, future research should employ the use of split-halves or completely separate samples for cross-validation purposes, unlike was done in this study that employed an approach of a second wave retest using an expanded sample. Caution also should be made with research such as this based on a student sample rather than one in a more realistic workplace context with working professionals.

Nevertheless, the implications of these preliminary findings are important. First, these results further support the concept of linear/nonlinear thinking style balance and increase the potential robustness of this construct for organizational change and innovation processes management. Second, the persistence of the concept of occupation-free, reliable measures of innovative attitudes and intentions in organizations for over 25 years is noteworthy. Innovation among individuals is prized even more now than it was two decades ago, and opens the doors to new research avenues that portend great value in managing this process and predicting the outcomes of significant investments in new product and new service development programs.

One of the important implications of this work is that it matters little what function in which the organization sends representatives to the development process, but it does matter who is sent to represent that function. This finding is especially important in guiding the formation of cross-functional teams for new product development and integrated value chain planning in support of successful innovation. The results presented here suggest that balanced thinkers, regardless of function, are more likely to make significant contributions to this process. In addition, although cross-cultural comparison wasn’t the focus of the present study, no evidence was found that French or American students differed in terms of the relationship between linear/nonlinear thinking style and innovation intention. Future research should continue to examine the influence of national culture on linear/nonlinear thinking style and innovative intention. If our results continue with a
larger sample and across multiple cultures, these results would point to an important convergent effect (i.e., linear/nonlinear thinking style balance) that can help global innovation teams transcend cultural differences and collaborate for optimal innovation performance.

The important implications for higher education seem clear. Predominantly linear and nonlinear thinkers might not perform as well in ultimate job placements that require innovative and creative behavior as balanced thinkers. Promotion of balanced thinking through curriculum and development program changes might well be informed by these results. Popular notions that effective innovativeness depends upon nonlinear thinking styles that emphasize creativity and intuition at the neglect of linear thinking may be inaccurate according to our results that point to a significant link between linear/nonlinear thinking style balance and innovative intention. Future studies also should include longitudinal qualitative research designs in which the thinking styles of individuals on project teams are assessed throughout the new product and service development process. In particular, the predictive validity of our assertions should be assessed to see whether, for example, those measuring balanced linear/nonlinear thinking style and strong innovative intent actually provide more viable innovative contributions.

7. References


[29]. Ibid.

