

Assessment of Creativity and Job Satisfaction of Second Year Agricultural Education Teachers

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Abstract

“Teaching is an art.” This statement has been made for many years and by many people, but is there evidence to document this assertion? While there are many types of art, creativity appears to be a central tendency in all artistic endeavors. The purpose of this study was to assess the creativity and job satisfaction of a select group of second year secondary agriculture teachers (N=25). Creativity and job satisfaction scores of this group of teachers were compared to other groups. In addition, correlations between creativity and job satisfaction were investigated. This study used purposive sampling and two established measurement inventories, the Brayfield-Rothe Job Satisfaction Index and the Abbreviated Torrance Tests of Creative Thinking. The population was found to have varying levels of creativity and was found to be satisfied with their jobs. A positive, but weak relationship between job satisfaction and creativity was found.

Introduction -Theoretical Framework

“The best teaching is often both an intellectual creation and a performance art” (Bain, 2004, p. 174). Teaching may not receive adequate attention as an art form. However, according to Bain, “performance in front of students affects how well they learn, and it involves a kind of craft of teaching, techniques, and even physical abilities” (p. 117). Adler suggested “teaching, like farming and healing, is a cooperative art which helps nature do what it can by itself—though not as well without it” (2006, p.1). Teachers have been considered artists by researchers, including recent and quickly evolving research on this subject (Craft, 2005; Jeffery, 2005; Parkes, 2005). While there are arguably different types of art, creativity is a common factor found in many forms of artistic expression (Torrance, 1995).

Many researchers have noted the complexity in defining creativity (Hocevar, 1981; Baker, Rudd, & Pomeroy, 2001; Friedel & Rudd, 2005), yet we seem to be drawn to study creativity. Creativity may suggest multiple meanings, from complementary to suspiciousness. Creativity in education has been viewed since the late 1990s as globally relevant in ways never seen before (Craft, 2005). Once thought of only as an artistic quality, creativity has become sought after by engineers, executives, and researchers (Anastasi, 1976). Torrance, known as a leader in creative research, noted the changes made and calls it “A Quiet Revolution” (1995, p.3). Changes in the field of creativity research have inspired numerous definitions. Torrance defined creativity as “the process of forming ideas or hypotheses, testing hypotheses, and communicating the results” (p. 23). Other researchers have different terminology, but suggest

creativity is comprised of three components, including: novel, effective for others, and ethical or of some good for society (Fox, J., & Fox, R., 2000; Cropley, 2001).

If defining creativity is complex, assessing creativity may be an even greater challenge. In fact, Hocevar (1981) stated, “perhaps no psychological concept has proven to be as difficult to measure as creativity” (p. 450). As a result, a variety of assessments have been created using a wide selection of definitions for creativity. Historically, Guilford’s (1956) intellect model became a foundation for labeling components of divergent thinking as a means to assess creativity. In turn, divergent thinking has become a major component of many assessments (Guildord; Hocevar; Torrance, 1995). Some researchers have suggested that a creative individual should demonstrate attributes of divergent thinking therefore, tests for divergent thinking measure creativity (Guildord; Hocevar; Torrance).

Torrance (1995) suggested creativity is “a process of becoming sensitive to problems, deficiencies, gaps in knowledge, missing knowledge, missing elements, disharmonies, and so on” (p. 6). The Torrance Tests of Creative Thinking (TTCT) was created within an educational context (Anastasi). The TTCT contains 12 tests which are grouped into three specific batteries. The batteries include: Thinking Creatively with Words; Thinking Creatively with Pictures; and Thinking Creatively with Sounds and Words (Anastasi). Each activity has components to measure creativity. For example, Thinking Creatively with Pictures uses drawings to assess fluency, originality, elaboration, abstractness of titles, and resistance to closure.

An increased emphasis in creativity, especially in education, can be linked to “Sputnik Shock,” a time after the Russian *Sputnik* spacecraft was launched. Educators in the United States suddenly realized American students were falling behind (Torrance, 1995). More specifically, students were being taught to apply only what they had already learned (Cropley, 2001; Torrance). If artists are creative and teachers are artists, teaching may be impacted by creativity. Torrance described creative teachers as great teachers who are “involved in discovery, pushing the limits, taking a step into the unknown” (p. 107), and engaging students in the process. While literature appears to support the educational application of creativity and creativity testing (Cropley; Gowan, Khatena, & Torrance, 1981; Hocevar (1981); Torrance; Craft (2005), research on the evaluation of teacher creativity appears to be lacking. The connection between teacher creativity and environmental factors also appears to be absent. More specifically, the relationship of creativity and Frederick Herzberg’s (1959) motivation-hygiene theory does not appear to have been researched.

Satisfaction can be defined as the discrepancy between actual accomplishment and expectation of reward (Kelly, 1980). It can be measured using self-reported responses to Likert-type scales (Kyriacou & Sutcliffe, 1979). Job satisfaction is often viewed through Herzberg’s (1959) “two-factor” theory which identifies satisfiers and dissatisfiers (Nias, 1981; Bowen & Radhakrishna, 1991; Dinham & Scott, 1998; Bogler, 2001; Chapman & Lowther, 2001). Herzberg’s theory suggests that satisfying factors are motivators, which require higher order needs and that dissatisfying factors are “hygiene factors” which are associated with lower order needs (Dinham & Scott). Bogler further explained the satisfying and dissatisfying factors as follows:

The higher order needs, the satisfiers, apply to the intrinsic aspects of work, such as achievement, recognition, the work itself, responsibility, and opportunity for advancement. The lower order needs, the dissatisfying factors, correspond to extrinsic matters of work, such as working conditions, supervision, work policy, salary, and interpersonal relationships (p. 665).

Dinham and Scott (1998) confirmed the “two-factor” theory, finding that teachers “are most satisfied by matters intrinsic to the role of teaching” (p. 11). They also found teachers were dissatisfied by extrinsic factors, finding these are largely out of control of teachers and schools. However, Dinham and Scott suggested the possibility of a third or middle band of factors which they identified as school based factors. School leadership, climate and decision making, school reputation, and school infrastructure comprised the third band of factors and appeared to fall between the intrinsic rewards, found to be satisfiers, and extrinsic dissatisfies (Dinham & Scott).

The use of satisfiers and dissatisfies to identify job satisfaction has also been examined in specific content areas such as agricultural education. Researchers have found agriculture teachers are generally satisfied or at least not dissatisfied with their jobs (Beavers, Jewell, & Malpiedi, 1987; Berns, 1990; Cano & Miller, 1992; Bennett, Iverson, Rohs, Langone, & Edwards, 2002; Walker, Garton & Kitchel, 2004). Cano and Miller investigated satisfaction and dissatisfaction factors for agriculture teachers. They explored satisfier factors including achievement, advancement, recognition, responsibility, and the work itself. Interpersonal relations, policy and administration, salary supervision, and working conditions were considered to be dissatisfiers. Cano and Miller also found teachers were generally satisfied with their jobs of teaching agriculture. Cano and Miller warned “knowing whether or not employees are satisfied, however, does not provide sufficient information for dealing with the consequences of job dissatisfaction” (p. 40) However, Cano and Miller found no statistical significance between job satisfaction and job satisfier factors and dissatisfier factors. They also found no difference between males and females. These results are in contrast to research in other disciplines where differences in job satisfiers and dissatisfiers of job satisfaction occurred and differences were found between males and females (Chapman & Lowther, 1982; Dinham & Scott, 1998; Bogler, 2001). Cano and Miller did recommend “that the job satisfier and job dissatisfier factors as measured by the Woods Instrument should not be used to predict the job satisfaction of male and female agriculture teachers” (p. 45). Instead, Cano and Miller suggested using an instrument such as the Brayfield-Rothe (1951) “Job Satisfaction Index” to assess job satisfaction of agriculture teachers.

Purpose and Objectives

The purpose of this research was to determine if creativity of secondary high school teachers impacts their perceived job satisfaction. Specifically, the objectives were as follows:

1. Describe selected demographic characteristics (gender, experience, and educational level) of agricultural education teachers in their second year of experience.
2. Assess the creativity of agricultural education teachers in their second year of experience.
3. Compare the creativity of agricultural education teachers in their second year of experience to norm referenced group.

4. Describe the job satisfaction of agricultural education teachers in their second year of experience.
5. Describe relationships between creativity and job satisfaction for agricultural education teachers in their second year of experience.

Methods and Procedures

Sample Selection and Analysis

Twenty-five second year agricultural education teachers in the state of Missouri were selected to participate in this research. This group composed a convenient sample. The population was chosen because the participants had teaching experience and were accessible. All twenty-five teachers were participating in a workshop which was part of an induction teacher program. One hundred percent of the convenient sampling population agreed to participate in the study.

Instrumentation

Creativity of the teachers was assessed using an abbreviated version of the Torrance Tests of Creative Thinking (TTCT). The TTCT was developed within an educational context to test for creativity (Anastasi, 1976). Although some have questioned the reliability of the Torrance Test, (Anastasi ; Akien, 1996) Torrance himself address some of these concerns, offering the possibility of misuse of the instrument (such as adding time limits) or limiting the testing to only one battery component as possible explanations (Torrance, 1995). Nevertheless, the TTCT is still considered a reliable measure of creativity (Baker, Rudd, & Pomeroy, 2001; Cropley, 2001; Friedel & Rudd, 2005). In fact, Cropley stated, "The best known and most widely used of the tests based on divergent thinking, however, are the Torrance Tests of Creative Thinking (TTCT)" (p. 106). The test manual (Torrance) indicated that recent studies assert the TTCT has a median inter-rater reliability of .97. Cropley further discussed the reliability as follows:

Other research (see for instance Sweetland and Keyser, 1991) indicates that the figure is commonly greater than .90. According to Treffinger (1985), test-retest reliabilities of the various subdimensions commonly lie between .60 and .70. In the case of validity Plucker (1999) concluded that verbal scores on the TTCT (but not the figural) accounted for about 50 per cent of the variance of scores on two real-life criteria of creativity; publicly recognized creative achievement and participation in creative activities. This corresponds to a validity coefficient of about .7 (page 106).

A shortened version of the TTCT was developed for adults in 1980 and became known as the Abbreviated Torrance Test for Adults (ATTA) (Goff & Torrance, 2002). Although the authors did not directly identify the process undertaken to establish validity, they did suggest the extent to which the test has been used suggests validity (Goff & Torrance). The ATTA version of the Torrance test was used in this study. The ATTA measured creativity in a variety of areas. Fluency, originality, elaboration and flexibility are specific creativity indicators which were scored and then converted into a scaled score. The total for these indicators are referred to as norm-referenced scores. The ATTA also assessed the criterion-referenced creativity indicators,

which include both verbal responses and figural response. The creativity index, or overall creativity score, was determined by summing the norm-referenced and the criterion-referenced scores.

The Brayfield-Rothe Job Satisfaction Index, as modified by Warner (1973), was used to assess job satisfaction of the teachers. The Index was previously used in agricultural education research (Bowen & Radhakrishna, 1991; Bruening & Hoover, 1991; Walker, Garton & Kitchel, 2004) and was considered both valid and reliable. When tested on secondary agriculture teachers, Cano and Miller (1992) reported a reliability of .94 (Cronbach's Alpha). The Job Satisfaction Index contains 14 questions related to job satisfaction using Likert-type scaled response choices.

Data Collection and Analysis

Each participant received a coded ATTA corresponding with a coded Job Satisfaction Index. The data were collected using convenient sampling of the population (N=25). Responses for the Job Satisfaction Index ranged from Strongly Agree (scored as 5 points) to Strongly Disagree (scored as 1 point) using real limits. These descriptions were used to identify strongly satisfied (M>4.1), satisfied (M= 3.1-4.0), undecided (M=2.1-3.0), dissatisfied (M=1.1-2.0) and strongly dissatisfied (M=0-1.0). The responses from the ATTA were collaboratively scored by three persons, in accordance with instructions for the ATTA inventory. The ATTA assessed areas of fluency, originality, elaboration, flexibility, verbal and figural responses. Fluency assessed the number of responses. Originality scored the participant responses against established responses. Elaboration scored the quality and details of responses. Flexibility scored the ability to use established drawings in non-traditional ways. Fluency, originality, elaboration and flexibility were converted to scaled scores and summated to obtain a norm-referenced measure. Verbal responses assessed the "richness and colorfulness of imagery, emotions/feelings, future orientation, humor: conceptual incongruity, provocative questions" (Goff & Torrance). Figural responses analyzed "openness: resistance to premature closure, unusual visualization or different perspective, movement and/or sound, richness and/or colorfulness of imagery; abstractness of titles, articulateness in telling story, combination/synthesis of two or more figures, internal visual perspective, expressions of feelings and emotions and fantasy" (Goff & Torrance, 2002). Verbal and figural responses were summated to establish criterion-referenced creativity indicators. Finally, the norm-referenced measures and the criterion-referenced creativity indicators were summated to establish the Creativity Index. The results were entered into SPSS 14.0 for analysis. Data were summarized by comparing each individual component on the ATTA with the total Job Satisfaction Index. The correlations for both the ATTA and the Brayfield-Rothe Job Satisfaction Index were compared using conventions established by Davis (1971) to describe the magnitude.

Findings

Objective one was to determine the demographic characteristics of the population. Twenty-five second year agriculture teachers participated in the study. Nine were female and sixteen were male. The average education background was found to be a Bachelors Degree. Due to the confidentiality of the assessment, no further demographic data were collected.

Objective two sought to determine the creativity of the sampled second year teachers using the ATTA. The creativity index with the highest average score for this group was in the area of elaboration. The group scored lowest in the area of verbal criterion. The overall creativity for each participant was determined by adding the components of the ATTA (see Table 1).

Object three sought to compare the participant results with the norm referenced group provided by the ATTA (see Table 2). Collectively, the participants were 4 times the percentage of the norm referenced group for minimal creativity. However, the participants were also three times the percentage of the norm reference group for substantial creativity. Fewer participants were found in the low category (4%) compared to the norm referenced group; yet, participants were twice as likely as the norm referenced group to be considered high in creativity. In addition, 66% of the norm referenced group was average to above average while only 44% of the participants in this study were in the same range. This study had a slightly higher percentage of people in the lowest two levels of creativity (4%) compared to the norm; however, this study had 20% more individuals in the highest two levels of creativity.

Table 1
Results of the Abbreviated Torrance Test for Creativity (N=25)

Measurement of ATTA	Mean	Standard Deviation
Fluency	14.80	2.35
Originality	14.60	5.54
Elaboration	15.64	4.21
Flexibility	14.04	5.61
Scaled Creativity Ability	59.08	14.18
Verbal Criterion	3.08	1.73
Figural Criterion	6.04	3.34
Total Criterion Referenced	9.12	3.94
Creativity Index ^a	69	15.06

Note. Possible ranges for each indicator: Fluency (0-), Originality (0-), Elaboration (0-), Scaled Creativity Ability (0-), Verbal Criterion (0-10), Figural Criterion (0-30), Total Criterion Referenced (0-40) and Creativity Index (0-85+)

^a Scaled Creativity Ability results from summing Fluency, Originality, Elaboration and Flexibility. Total Criterion Referenced results from summing Verbal and Figural Criterion. Creativity Index results from summing Scaled Creativity Ability and Total Criterion Referenced.

Table 2
Total Creativity (N=25)

Creativity Index	1-50	51-59	60-67	68-73	74-77	78-84	85+
Verbal Assessment	Minimal	Low	Below Average	Average	Above Average	High	Substantial
Norm Reference Group	4%	12%	20%	26%	20%	12%	4%
2 nd Year Agriculture Teachers	16%	4%	20%	16%	8%	24%	12%

Objective four sought to identify the job satisfaction of the sampled teachers using the Brayfield-Rothe Job Satisfaction Index (see Table 3). Collectively, second year teachers displayed a moderate level of job satisfaction. Specifically, 36% were highly satisfied (M>4.1), 56% of the participants were satisfied (M= 3.1-4.0, and 8% were undecided (M=2.1-3.0) (see Table 4). None of the respondents were dissatisfied (M=1.1-2.0) or strongly dissatisfied (M=0-1.0) rankings.

Table 3
Job Satisfaction (N=25)

Job Satisfaction Questions	Frequencies					Mean	Standard Deviation
	1	2	3	4	5		
1. My job is interesting enough to keep me from being bored.	-	-	-	13	12	4.80	.51
2. My friends seem more interested in their jobs than I am.	3	12	7	3	-	2.40	.87
3. I consider my job pleasant.	-	-	4	18	3	3.96	.54
4. I am often bored with my job.	10	14	1	-	-	1.68	.69
5. I feel satisfied with my job.	1	3	16	5	-	4.00	.71
6. Most of the time, I have to force myself to go to work.	7	15	1	2	-	1.92	.81
7. I definitely dislike my work.	12	10	2	1	-	1.68	.80
8. I feel like I am happier in my work than most other people.	1	5	16	3	-	3.84	.69
9. Most days I am enthusiastic about my work.	1	4	17	3	-	3.88	.67
10. Each day of work seems like it will never end.	4	15	3	3	-	2.20	.87
11. I like my job better than the average worker does.	1	3	19	2	-	3.88	.60
12. My job is uninteresting.	11	13	-	1	-	1.64	.70
13. I find real enjoyment in my work.	-	1	3	14	7	4.08	.76
14. I am disappointed that I ever took this job.	13	10	2	-	-	1.56	.65

Note. 5=Strongly Agree; 4=Agree; 3=Undecided; 2=Disagree; 1=Strongly Disagree.

Table 4
Summated Job Satisfaction (N=25)

Job Satisfaction	Minimum	Maximum	Mean	Standard Deviation
Total Satisfaction	3.07	4.93	4.07	.48

Note. Negative questions (2, 4, 6, 7, 10, 12, 14) were coded to achieve summative data.

Finally, objective five sought to compare the creativity scores rendered from the ATTA with the Brayfield-Rothe Job Satisfaction Index (see Table 5). The Job Satisfaction Index was compared to each area of the ATTA. The Pearson correlation between the creativity index and job satisfaction was found to be .30.

Table 5
Creativity and Job Satisfaction Correlation (N=25)

Measurement	Average Job Satisfaction
Creativity	.30

Using conventions established by Davis to describe magnitude, correlations were analyzed. There is a non-significant relationship between fluency and job satisfaction ($r = .38$), originality and job satisfaction ($r = .15$), elaboration and job satisfaction ($r = .35$), flexibility and job satisfaction ($r = .29$), scaled creativity ability and job satisfaction ($r = .33$), figural criterion and job satisfaction ($r = .29$), total criterion referenced and job satisfaction ($r = .20$), and creativity index and job satisfaction ($r = .30$). There is a non-significant relationship between the verbal criterion indicator and job satisfaction ($r = -.12$),

Conclusions and Recommendations

The population of secondary agriculture teachers for this study has greater ranges of creativity than the norm referenced group. An implication for teacher educators is to acknowledging the wide range of creativity found within our students. Because creativity is recognized as an important trait in teachers, teacher educators should find ways to enhance and promote the development of creativity in pre-service teachers. Further research should be conducted on larger groups of secondary agriculture teachers with more diverse teaching backgrounds. In addition, future research should seek to determine if differences in creativity in agriculture teachers are based upon demographic characteristics such as teaching experience and gender.

Teachers in this group are satisfied with their jobs,. This conclusion agrees with previous research on the job satisfaction of agricultural education teachers (Beavers, Jewell, & Malpiedi, 1987; Bennett, Iverson, Rohs, Langone, & Edwards, 2002; Berns, 1990; Cano & Miller, 1992; Grady & Burnett, 1985; Walker, Garton & Kitchel, 2004).

Creativity is not related to job satisfaction of this group of agricultural education teachers. No area addressed by the ATTA indicated a significant relationship with the Brayfield-Rothe Job

Satisfaction Index. While slight, mostly positive correlations were found, the relationships were weak. Creativity does not appear to be a strong indicator or predictor of job satisfaction. Further research and exploration of creativity indicators in agriculture teachers should be conducted. Further research should be conducted into creativity assessments and different creativity indicators evaluated for similar findings. In addition, creativity should be looked at as a factor in other aspects of teaching agriculture. For example, does creativity correlate to self-efficacy?

Teaching is considered by many researchers and practitioners to be a performance art (Craft, 2005; Jeffery, 2005; Parkes, 2005). If teachers must perform, they must also exhibit some degree of creativity. How creativity impacts teaching is a relatively new area of research which may impact agricultural education. If creativity is a desired trait of agricultural teachers, then further research is needed to determine the impact of this trait upon teachers and their students.

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