Influence of Psychological Distress and Gender on Creative Thinking Ability of Students in Tertiary Institutions in Ibadan, Oyo State Nigeria

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Abstract
Creative thinking ability is a key component in human development and has been elusive among undergraduates in Nigerian Tertiary Institutions. The ability to reflect and rationalize the thought process is a requisite for innovative research and entrepreneurial skill. This study examines the influence of psychological distress and gender on creative thinking ability of students in some selected tertiary institutions in Ibadan, Nigeria.

A cross sectional survey design and a purposive sampling technique was adopted to select 390 participants with age ranges between 15-40years, $\bar{x}=17.89$, $SD=7.86$ into the study. A structured questionnaire focusing on socio-demographic profile, psychological distress and creative thinking ability was administered to the participants. Two hypotheses were formulated, tested and confirmed. Data were analyzed using descriptive, independent sample t-test and multiple regression statistical tools. The results showed that gender $(388)=3.24, P<.01$)has significant influence on creative thinking ability, indicating males($\bar{x}=36.34, SD=4.44$)exhibit more creative thinking ability than females ($\bar{x}=34.78, SD=4.90$). Additionally, stress($B=.06, \beta=.37, P<.01$), anxiety($B=-.02, \beta=-.16, P<.01$)and depression($B=-.02, \beta=.02, P<.01$)independently and jointly ($F[3,390]=26.42, R=.41$, $R^2=.17, P<.01$) predicts creative

thinking ability. The study concluded that psychological distress (stress, anxiety and depression) and gender have significant influence on creative thinking ability of students. The implication and recommendation of study were discussed accordingly.

Keywords: Gender, Psychological Distress, Creative Thinking ability
Word count: 190

Introduction

Creativity can be defined from different perspectives, as some defined creativity as the creation of something new and innovative, different from the known and existence, which include individual ways of problem solving, discovery of the unknown (Ozimec 1987; Wang, 2011), others conceptualized creativity as the entire process through which ideas are generated, developed and transformed into value relevant; to innovation and entrepreneurship (Robinson 2001). In Torrance (2008), creativity is described in two folds; this include the verbal and figural, and the ability to sense problems and challenges in other to make deductions, produce new ideas, and communicate results to the wide community. Creative thinking according to Runco, Plucker, and Lim,(2001) is the idea generation which cuts across levels, and depended on the identity of an individual or the personality (Jaussi, Randel, & Dionne, 2007). However, this study is guided by the definition of Kaufman, Cole, and Baer, (2009) who conceptualized creative thinking ability as the everyday self and scholarly performance including writing and music, the mechanical or scientific, and artistic skills of an individual.

The process of adapting creative and innovative way of thinking among undergraduates is demanding, especially when students determines to be higher-flier, and as such faced with innovative challenges on the paths to achieve their academic objectives (Haijan, 1999). Extant studies on creativity (Chang &

Birkett, 2004; Vass, 2006; Matud, Rodrguez, & Grande, 2007; Dietrich, 2008; Olatoye, Akintunde, & Ogunsanya, 2010) have defined and advanced works and understanding on what creativity really represent, however, several factors are still left unexplored especially the socio-demographics and psychological distress factors (Naderi, Abdullah, TengkaAizen, Sharir, & Mallan, 2009).

The benefits of creativity to individuals, families, institutions as well as to the societies is imperative, because creative thinking ability is linked with productivity, adaptability, development, sustainability and good mental health (Runco, 2004; Kerr & Gagliardi, 2003). Indeed, creativity drives the economy, sustains development and at the same time, foster and work on preserving cultural and historical heritage of social community (Majstorivić, 2012). In the official reports of European Union (2007), it was presented that creativity is a major driving force of knowledge creation, social and economic advancement through the development of a knowledge and sound society. Thus, the quest to develop new products and services by business men and women, to create jobs and make our youth employable especially in Nigeria demands innovative ideas, in view of this, severe contemporary problems in this modern day can only be solved by creative people, which necessitate the need to build creative thinking ability, and as such, this concept is important in the area of education (Barta, Hokanson, Sahin, & Abdelsamea, 2015). In the theory of planned behavior, individual posits that intentions reflect the motivational and inspirational factors influencing behavior, which are reliable indicators of how person is willing to attempt to exact new behavior that include creative thinking ability (Ajzen, 1991). Moreover, despite the fact that creative thinking ability seems to be the most furtive human characteristics which improve and progress humanity (Simonton, 2002), the lack of ability to think creatively among youths form over one-third (31.6 percent) of the growing population in Nigeria is presently

affecting the cultural, social and economic status of the country (National Population Commission, 2013; Hassan & Ogunyemi, 2008). Creativity has the potential to transform the nation; it is however disheartening, the underdevelopment of creativity in the developing societies including Nigeria is a growing concern. Meanwhile, before the independence of Nigeria, creative arts, pot making, gold smiting, to mention but a few, transmitted from one generation to the other; is increasingly dying out and grossly affecting the Nigerian society (Animasahun, 2013).

Creativity and Psychological Distress

Creativity and Stress

World Health Organization (2019) reports that about twenty percent of young adults experience one psychological health problem or the other, especially in the quest to achieve their academic goals. Such distress like anxiety, stress and depression thereafter limits their intellectual and emotional flexibility, weaken their creative thinking ability and undermine their interest in new ideas, knowledge and experiences (Sarah, Waseem, Satish, Mukthi, Rajashree, & Supreet, 2014).

Additionally, mental health of students has become a growing concern among teachers and mental health professionals because depression and anxiety are the two most widespread mental health problems found among college students (Council Report, 2003; Oliver, Reed, Katz, & Hagh, 1999). Poor academic performance has been linked to depression and serious health problems of the students (Dyrbye, 2006; Rana, & Mahmood, 2010). However, in Nandamuri, and Gowthami, (2011) it was revealed that several factors such as surprise quizzes, frequent assignments, financial constraints, semester/trimester system, fear of failure and competition among fellow students are factors, that limit student's creative thinking ability and performance. Unfortunately, these stressors have the capability to detract the student thereafter making them disorganize, disoriented, and

unable to cope with the academic situation which results to dropout. The processes have implications and ripple effects on the economy, such as increase in unemployment and criminal activities. Studies have shown that stress predicts creative thinking ability (Oliver, et al.,1999; Shanteau & Dino, 2002). An author revealed that stress might increase creative thinking ability by encouraging the use of creative thoughts and engage in a problem focused solving strategy that leads to enhanced creativity (Julie, 2009), it was also found out that students' under stress are left with fewer cognitive resources for other tasks and as such decrease their creativity (Byron, Nazarian & Khazanchi., 2010). In a meta-analysis conducted by Byron and Khazanchi, (2010), the authors discovered that there exist a curvilinear relationship between evaluative stress and creativity, as low evaluative contexts of stress increase creative performance over control conditions, whereas highly evaluative contexts of stress decreasecreative performance.

Creativity and Anxiety

Over the years, anxiety has formed parts of the most common mental, emotional, and behavioral complications in people across age grade and in many countries (Khouzam, 2009; Fiori, Wanner, Jomphe, Croteau, Vitaro, Tremblay, Bureau & Turecki, 2010), and this is characterized by most of the common symptoms like; unpleasant and vague sense of apprehension that is accompanied by autonomic symptoms such as palpitation, headache, perspiration, tightness of the chest, restlessness, mild stomach discomfort, coupled with inability to sit or stand still for a longer period of time (Sadock & Sadock, 2007). Study has indicated that many adolescents and youths do not have the capability to meet their daily life problems, thus, these people become vulnerable in their abilities to confront their daily realities of life (Family Education Association Teachers of Tehran City, FEATTC, 2009). Anxiety is seen as the positive attitude in finding new solutions to

problems which invariably influence creativity thinking ability (FEATTC, 2009), facilitate creative behaviour such as drawing and abstract thinking ability (Henderson, Rosen & Mascaro, 2007) and significantly correlates with creativity and entrepreneurial skills (Tabrizi, Talib & Yaacob, 2011), however, Faleye, (2010) discovered that there are no significant differences in anxiety between male and female students, where anxiety had no significant influence on creative thinking ability, as the daily problems is enough to stump creative ideas (Beghetto & Kaufman, 2007). However, Byron and Khazanchi, (2010) found out that anxiety and creativity have a negative implication among students in high school and also a significant linear prediction (Tabrizi, et al.,2011), whereby anxiety decrease the mental power of students (Passer, Smith, Holt, Bremner, Sutherland & Vliek, 2009).

Creativity and Depression

Evidences from several creative thinkers such as Sylvia Plath and Emily Dickinson who have suffered severer psychopathologies that include depression, suggests that depression with other cognitive distortions are linked with creativity (Thomas & Duke, 2007). In Akinola and Mendes (2010), it was found out that among participants during creative tasks, they exhibit depressive symptomatology (such like restlessness, sadness, depression, poor appetite, unfriendliness), additionally, the authors discovered that there is higher prevalence of depression among people working in the creative arts compare with scientists. In an experimental study conducted by Fong, (2006), the author discovered that individuals experiencing emotional ambivalence with simultaneous experience of positive and negative emotions show some creative ability to perform certain task. However, in Singh and Tung,(2013), it was shown that there is a significant negative relationship between psychological distress and creativity where the negative

direction of the correlation specifies that as creativity increases while psychological distress decreases.

On the other hand, Fialkoff, (2011) indicated that there was no overall significant relationship between depression and creative intelligence among undergraduates, even though a significant evidence suggest that higher depression scores signifies lower mathematical creative intelligence. Though, in the Existentialist Emotion Theory according to Sartre (2002), it was explained that the experience of emotion serves as an escapist choice to intentionally change one's perception of reality which can invariably influence the creative thinking ability of individuals.

Creativity and Gender

Creative thinking ability has been found to be inter-related with gender especially among the young individuals. Many times, individual's state of being male or female which is typically their social and cultural differences has been associated with creative thinking ability.

In Baer and Kaufman (2008), the authors established that, gender role in creative thinking ability still become an important concept among creative thinkers, psychology of entrepreneurial, economic and human development. Stephens, Karnes and Whorton, (2001) shows that gender differences havea significant influence on creativity, making gender a vital concept in the study of creativity among students. Similarly, Matud, and Grande, (2007) revealed that gender differences significantly influence dimensions of creativity such as figural fluency, figural originality, verbal fluency, originality, resistance to premature closure, figural creativity index, and the overall average standard score on creativity scale. Likewise in Barta *et al.,* (2015), gender significantly reflect difference on domains of creative thinking ability including their originality, elaboration, abstractness of titles and resistance to premature closure capacities but not on fluency domain of creative thinking ability.

On the contrary, finding has shown that male and female students were found not to differ on general creativity tests and it sub-domains including fluency, originality, flexibility and creativity motivation in a Nigerian sample (Oyundoyin & Olatoye, 2007). Similarly, Adekaye, (2016) discovered that no significant gender difference was uncovered in the constructs of creativity (appropriateness, consistence and effectiveness), as gender did not statistically and significantly influence creative thinking ability among the students of higher institutions. Equally, Ayyıldız-Potur and Barkul (2009) found out that, student's gender did not significantly differ in creativity.

Though, female participants were discovered to have higher creative thinking ability than their males counterpart (Anwar, Shamim-ur-Rasool, & Haq, 2012; Hong, Peng, O'Neil, & Wu, 2013), especially on fluency and flexibility (Awamleh *et al.* 2012; Hong *et al.* 2013). However, some researchers found out that male students significantly differ on creativity compared with female students in all the domains of creativity (He, Wong, Li, & Xu 2013). Naderi, *et al.,* (2009) revealed that there are significant differences between male and female students on the overall creative perception, with male scoring higher than female on perception of creativity.

Thus, the findings from previous literature on the influencing roles of socio-demographic factor (gender) and psychological distress (depression, anxiety and stress) on student's creative thinking ability are uncertain, as some studies established the influence of psychological distress and gender on creativity while others do not. This however, shows some inconsistency in the findings which might be due to cultural context, holistic approach or other limiting factors among students. In response to the identified gaps in knowledge of the previous studies, it is therefore imperative to further study the influence of psychological distress and gender on creative thinking ability.

Research Questions

In view of literature review, two research questions were raised:

- Will gender significantly influence creative thinking ability?
- Will psychological distress (stress, anxiety and depression) independently or jointly influence creative thinking ability of students of Tertiary Institutions?

The study therefore sets to answer the research questions.

Research Hypotheses

Based on the reviewed literature and the research questions, the following hypotheses were formulated:

Gender will significantly influence creative thinking ability, with male students performing better in creative thinking ability than female students.

Psychological distress (depression, anxiety and stress) will significantly predict creative thinking ability of students

Methodology

Design

The study adopted a cross sectional survey research design. The independent variables are: psychological distress (depression, anxiety and stress) and gender (male and female) while the dependent variable is creative thinking ability.

Study Setting

The settings for this study include three higher institutions in Ibadan, Oyo State, Nigeria. Institutions include: University of Ibadan (Federal), The Polytechnic, Ibadan (State) and Lead City University, Ibadan (Private).

1. **Participants and Procedure for Selection**

Purposive sampling method was employed to recruit participants into the study; having identified the paucity in

previous studies on creative thinking ability of students as such larger percentage of the participants could be found in these settings. The researcher located the student in their respective classes after their lectures and sought their consent for voluntary participation. The researcher explained the purpose of the study to them and strictly followed other ethical regulations in this study. The same procedure was followed in other locations of the study. Data collection lasted for two weeks in each selected institution. 400 questionnaires were administered, 394 were returned across the institutions while 390 were good for the analysis.

Among the recruited participants, about 130 (33.3%) were Lead City University students, while 180 (46.15%) University of Ibadan students and 80 (20.1%) were Polytechnic of Ibadan students at the time of the study. Their age ranges between 15 and 40 years with mean of 17.89 and standard deviation of 7.86. About 240 (61.5%) males and 150 (38.5%) females participated in the study. At the time of the study, about 100 (25.6%) students were in 100 Level, 227 (58.2%) students were in 200 Level, 47 (12.1%) students were in 300Level, 6 (1.5%) students were in 400 Level while 10 (2.6%) students were in 500 Level.

2. **Research Instrument**

A structured self-report questionnaire was employed as instrument for data collection. The questionnaire gathered information on both the dependent and independent variables from the participants. In this study, the demographic information were age, gender, school type, level of study, and the previously attended secondary school.

Creative thinking ability was measured using abridge version of Kaufman Domains of Creativity Scale (K-DOCS), the 50-items scale was developed by Kaufman (2012) to measure individual's potentials based on his /her performance. The K-DOCS was in 5-likert response format ranges from, much less

creative=1, less creative=2, neither more nor less creative=3, more creative=4, much more creative=5; example of the items are*: "Finding something fun to do when I have no money"* all scored directly with scores ranges from 50-250. Higher scores indicate higher creative ability and vice-versa. The scale has five broad domains: Scholarly, Mechanical/Scientific Self/Everyday, Performance (encompassing writing and music), and Artistic. The author reported high internal consistence and convergent validity with Big Five Personality Factors (Kaufman, 2012), while in this study the Cronbach alpha for K-DOCS was 0.75 which was moderately reliable.

Additionally, depression, anxiety and stress scale (DASS-21) was utilized to measure psychological distress. The scale was developed by Lovibond, and Lovibond, (1995). The 21-items scale was developed to measure emotional states in terms of three domains: depression, anxiety and stress with seven items in each. The DASS-21 was in 4-likert response format ranges from, did not apply to me at all=0, applied to me to some degree =1, applied to me to a considerable degree= 2, and applied to me very much=3. Example of the items is*: "I found it hard to wind down" "I couldn't seem to experience any positive feeling at all"*. Items were scored based on each domain with each domain score multiply by 2, the scores ranges between 0-42 in each domain. Higher scores indicate tendency to the symptoms of that domain. The author reported effective validity (Lovibond & Lovibond, 1995), The researcher documented 0.86 Cronbach alpha in this study.

3. **Data Collection**

All completed questionnaires were analyzed using Statistical Package for the Social Sciences (SPSS^{v20}) software. Independent sample t-test analysis was employed as a statistical tool for the first research hypothesis, because the independent variables: gender (male and female) was dichotomous. While, multiple regression was utilized to analyze the second hypothesis since

the domains of the psychological distress (depression, anxiety and stress) appears in interval measurement.

Results

The result for the first hypothesis which stated that gender will significantly influence creative thinking ability, with male students performing better in creative thinking ability than female. The hypothesis was tested using t-test for independent sample. The result is presented in table 1.

Table 1: Summary of t-test for independent sample showing the differences in the levels of gender on creative thinking ability

Variables	Gender	N	$\bar{x}$	SD	t	df	F	P
Creative thinking ability	**Male Students**	240	36.34	4.44	3.24	388	1.89	**<.01**
	Female Students	150	34.78	4.90				

From the table 1 above, it was revealed that, gender significantly influence creative thinking ability ($t(388)=3.24$, $p<.01$). This implies that the gender of the student significantly influence their creative thinking ability. Further observation showed that, male students ($\bar{x}=36.34$, $SD=4.44$) significantly different on creative thinking ability than female students ($\bar{x}=34.78$, $SD=4.90$). This result suggests that, male students involved more in creative thinking ability than female. The research hypothesis was therefore accepted and confirmed.

Additionally, the second hypothesis stated that, psychological distress (depression, anxiety and stress) will significantly predict creative thinking ability of students. This

was tested with multiple regression analysis. The results are presented in table 2.

Table 2: Summary table of multiple regressions showing the joint and independent predictive strengths of depression, anxiety and stress on creative thinking ability.

Predictors	B	***β***	**T**	Sig	**R**	R^2	**Δ $R^{2(\%)}$**	F	p
Depression	-.02	.02	2.02	**.001**					
Anxiety	-.02	-.16	2.45	**.001**	.41	.17	16.4	26.42	**<.01**
Stress	.06	.37	2.09	**.001**					

Dependent variable: creative thinking ability

From the table 2 above, it was showed that psychological distress (depression, anxiety and stress) [F (3,390) =26.42, R =.41, R^2 =.17, P <.01] jointly predict creative thinking ability of students. That is, the multiple regression coefficients of psychological distress including depression, anxiety and stress of the students shown the relationship strength of .41(41%) on their creative thinking ability, with coefficient determination of about .17(1.7%) that occurred in creative thinking ability of the students that is due to the joint relationship of the psychological distress. Moreover, there was an independent prediction of depression (B=-.02, *β*=.02, t=2.02, P<.01) on creative thinking ability. This simply showed -.02 unstandardized regression coefficients which is the negative variance in the students creative thinking ability; also depression accounted for about .02 changes that occurred in students creative thinking ability. Additionally, Anxiety (B=-.02, *β*=-.16, t=2.45, P<.01) independently predict creative thinking ability. Which implies that the anxiety level of student accounted for -.16(16%) negative changes that occurred in students creative thinking ability; and stress (B=.06, *β*=.37, t=2.09, P<.01) also independently predict creative thinking ability; where stress

level of the student accounted for .37(37%) positive changes that occurred in students creative thinking ability. From the above results, depression and stress accounted for positive changes that occurred in student's creative thinking ability, while levels of anxiety accounted for negative changes that occurred in student's creative thinking ability. More so, some levels of student psychological distress (depression, anxiety and stress) significantly and independently predict creative thinking ability among students. The research hypothesis was therefore accepted and confirmed.

Discussion of Findings

This study examined the influence of psychological distress (depression, anxiety and stress) and gender (male and female) on creative thinking ability of students in tertiary institutions in Ibadan, Oyo State, Nigeria. The result shows that gender (male and female) significantly influenced creative thinking ability of students, with male students reporting more of creative thinking ability than their female counterpart. The result depicts that gender of the students in tertiary institutions significantly influence their creative thinking ability. This result supported the Stephens *et al,'s* (2001) findings on the gender role in creativity, the authors found out that gender difference significantly influence creativity and as such become important concept among creative thinkers and societies aiming to build entrepreneurial skills and human development. More so in Hong, *et al.'s* (2013) study where gender differences was revealed to significantly influenced dimensions of creativity supported the result of the present study. Specifically in this study, male students of the higher institutions significantly reported more creative thinking ability than their female counterparts. This result buttressed gender-dependent biological variations that emphasized the cognitive differences between male and female; such as in genetic differences, brain differences and hormonal differences in context of overall size,

variability and organization, with males contributing more than females (Carrel & Willard 2005). These differentiations are possibly due to their early developmental phase (Lentini, Kasahara, Arver, & Savic, 2013). Moreover, the result of this study aligned with the idea submitted by Abraham, (2015) that both sexes do not differ in terms of generic/specific intellectual abilities but differs in the functional task sets or cognitive styles and cognitive strategies which creative thinking ability is the byproduct. Likewise, the result of this study sustained findings by He, *et al.,* (2013) where male and female students were significantly different on creativity, with male students reporting higher scores than female.

However, the result of this study disconfirmed the findings of Oyundoyin and Olatoye, (2007); and Adekaye, (2016) who discovered in their study that male and female students were not significantly different on general creativity tests and its subdomains; the differences in the instruments and methodology of these studies and the present study may possibly be responsible for these variations in results even though Nigerian samples were used.

Furthermore, levels of student's psychological distress (depression, anxiety and stress) independently and jointly predict creative thinking ability. In this result, depression contributed little changes that occurred in creative thinking ability of the students. This result upholds the findings of Thomas and Duke, (2007), where it was discovered that psychopathology including depression is linked with creativity. More so, in Thomas and Duke's (2007) research discoveries supported this submission, that depression significantly predict creativity especially during the creative task (Akinola & Mendes, 2009), similarly, the result supported Akinola and Mendes's (2010) research result who found out among their participants of study that some depressive symptoms such as sadness, poor appetite and unfriendliness were shown during creative task. The result also buttressed the findings of Verhaeghen, *et al.,*

(2005) where the authors found out that there are significant interactions between depression and creativity, and controlling for extraneous factors depression significantly predict creative thinking ability. However, anxiety negatively predicts creativity thinking ability as students' creative thinking ability increases, level of their anxiety decreases. The student's autonomic arousal and subjective experience of anxious feeling negatively improves their creative abilities. As participants become anxious the level of their creative thinking ability and ideas decreases. This result held the position of Singh and Tung, (2013), in their study, anxiety significantly has negative prediction of creativity. Surprisingly, stress which is the other component of psychological distress significantly predict more than one-quarter of their creativity thinking ability of the selected students. This result showed that stress encounter by students which may have many sources positively predict their creative thinking ability. The result further revealed the joint prediction of psychological distress (including depression, anxiety and stress) on creative thinking ability. This result buttressed the existentialist emotion theory according to Sartre (2002), the experience of emotion serve as an escapist choice to intentionally change one's perception of reality; since psychological distress is mostly emotional reactions that is shown in behaviors, this significantly determines the students' creative thinking ability.

Conclusion

The study examined the influence of psychological distress (depression, anxiety and stress) and gender on creative thinking ability of students of tertiary institutions in Ibadan, Oyo State, Nigeria. Gender significantly influenced creative thinking ability, with male participants show more creative thinking ability than female students. Furthermore, psychological distress which include depression, anxiety and stress independently and jointly predict creative thinking ability of student, as depression and

stress positively and independently predict creative thinking ability in little and average level respectively; while anxiety negatively predict creative thinking ability of students of selected higher institutions in Ibadan, Nigeria.

Implication and Recommendations

From this study, it was observed that gender significantly influence creative thinking ability, with creative thinking ability documented among males than females. This result implies that male students who are supposedly the future generation of the country have the higher tendencies to be innovative and engage in entrepreneurial programs to enhance their human capital than females. Also, since there are gender differences in creative thinking ability, the government, academic institutions, non-governmental organizations and other concerned bodies should consider gender when administrating programs that enhance creativity and entrepreneurial skills.

In addition, the study revealed that psychological distress significantly predict creative thinking ability, as depression and stress positively predict creative thinking ability, anxiety negatively predict creative thinking ability among students of tertiary institutions. The result indicates that the emotion affects and experiences include their state of depression and stress, coupled with various stressors significantly important to their creative thinking ability. The students tend to perform creatively when faced with stressful or demanding activities. As such, authorities of the tertiary institutions, concerned authorities and possibly the government should consider the student's psychological state when programs introduced to improve creative and entrepreneurial skills development are implemented, in the quest to reduce poverty and improve quality of life.

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