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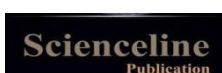
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Trends of poaching, Livestock Trespassing, Fishing and Resource Collection from 1986-2010 in Dinder National Park, Sudan

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ABSTRACT

Poaching, Livestock trespassing and resource collection have been practiced in Dinder National Park (DNP) since it's established in 1935. The aim of these study to providing information about the illegal activities. Collection the record of wildlife violation from the Wildlife Conservation General Administration (WCGA) from (1986-2010) in order to know the offenses in DNP, and it's clear all the offenses and violations of wildlife law had been done in recent decade. a high percentage for sheep confiscation from the park 2005(58.9%), Goat and Camel 2009 (49.1%, 69.6%) respectively and also Charocal 2007 (75%).

Keywords: DNP (Dinder National Park), Violation, offenses.

INTRODUCTION

The problems facing Dinder National park

The park is confronted with several problems that threaten its very existence as many parks in Africa. During the last 18 years unlicensed mechanized rain-fed farms were established in the areas surrounding the park. Large agriculture schemes were established in the wet season habitat of the wild animals as a part of integration policy between Sudan and Egypt (Nimir, 1983, Abdel Hameed, 1985). Licenses have also been issued to establish farms around the park without any coordination with Wildlife Administration. Drought that hit the Sudan was mainly caused by increased shifting cultivation and overgrazing which caused loss of wood cover. This in turn forced people to move to areas where charcoal production and farming activities are practiced (Moghraby 1983, Nimir 1983). Dinder National Park, faced obstacles for conservation as well as management, such as lack of enough finance, inadequate personnel, giving more priority to human interest than development of wildlife resources, lack of enough and adequate vehicles for patrolling (Nimir, 1983). As appeared from most of the studies carried in Dinder National Park the problems of the park confined with the increase in agriculture around the park, shrinking of water poles and grazing land outside its boundaries that lead to most these problems. But it is clear that among these problems the most serious one is pastoralist's problem that resulted in livestock trespassing inside the park. Beside the natural causes, the park is confronted with several anthropogenic problems that lead to land degradation. Degradation can also be caused by variety of factors, including a combination of droughts and poor land management. According to Prince (1990) the proximate causes of degradation are extensive fuel food demand, over cultivation and high stocking rates. Most of these causes result from illegal activities in and around the park boundaries, which include the following:

Charcoal production

Licenses are being issued by forestry administration, allowing felling of trees for charcoal production. The wet season habitat is affected by this practice and it requires strict control measures to be taken for its conservation (Nimir, 1983).

Staffing

The park staff is markedly inadequate. In 1973 three game officers, 30 game scouts with 13 camels, 5 polices officers, one radio man, one motor grader and one lorry were assigned to the park (Dasman, 1972). Now days the number of personnel is quite enough but it seems there is a lack of funds for supporting various administrative activities. The most widely used vehicles for patrolling is the Toyota, Land cruiser pickups. But these are old vehicles and fuel is always in short supply.

Mechanized agriculture

Licenses were issued for establishing farms around the park without consulting the wildlife Administration (Nimir, 1983). In addition many unlicensed farms were being developed and efforts to prevent them have not been successful. The farms have reduced the area of wet season. Mechanized farming destroys the natural vegetation, which may not recover even if this practice is stopped. The expansion of the farms surrounding the park has limited the movement of nomadic herders, reduced forest cover and natural rangelands and forced them to trespass into the park, poaching is also practiced by farmers.

Livestock

According to Hakim (1977) records kept by the park Administration showed that the livestock trespassing increased fourfold within three years. The trespassing of livestock into the park during the dry season consumes most of the fodder and water available for wild species (Nimir, 1983). Consequently competition takes place between livestock and wild animals which jeopardizes the survival of the wild animals. Transmission of contagious diseases at the end of the dry season, such as Rinder pest and Anthrax killed many animals in 1971, 1972 and in 1980 (Mohammed, 1980).

Human settlement and poaching

Immigrants from Western Sudan and West Africa have established villages near the park. When visiting the Dinder area in 1898, Harrison noticed that the area was devoid of human presence, but remnants and traces of earlier human settlements were evident (Mohamed, 1999). The resettlement of the area was intensified by immigration from the drought and famine stricken areas in western Sudan and West Africa countries together with the severe drought of 1980s (Suliman, 1986). West Africa Muslims used to pass through the area in their pilgrimage journey to and from Mecca, and many of them decided to settle in the area permanently. A large number of these immigrants have settled along the banks of the Rahad and Dinder rivers. These new communities are allowed by the wildlife authorities to practice subsistence farming and livestock grazing in the park buffer zone within an area of about 5 km² during the dry season, some villagers are active poachers. The number of villages inside the park are eight, outside the park boundary, along Rahad River there are more than 15 villages. The villagers engage in the following activities; poaching, grazing, honey collection and cultivation as well as charcoal production (W.C.F, 1991). According to Dasman (1972) the most serious limitation of the park is that it is left open to human settlement, cultivation, poaching and heavy use by livestock. He reported that the practice of closing the park and pulling out all the staff at the start of the rainy season leaves the park wide open to poaching. People from the villages that have sprung up during recent years within the Rahad Game Reserve are generally recognized as poachers (Dasman, 1972). Tribesmen from Ethiopia cross the border into the park to kill game and take home loads of biltong to sell (Dasman, 1972).

Fire

In late 1971 and early 1972, before the game department personnel were stationed in the park for opening the roads, most of the park was burned (Dasman, 1972). Many of the fire originated and are admittedly set outside the park by nomads herdsman, cultivators, honey collectors and others seeking to reduce the grass cover in order to improve access of livestock to perennial grasses. Game scouts also set fires when opening up roads at the beginning of the dry season. The park staff could do little control these fire without firefighting equipment. They were forced to let them burn. It is generally admitted by park personnel that most, if not all, of the park burned nearly every year (kanno, 2004).

Status of Biodiversity in DNP

Wildlife ecosystem in Sudan is composed of biosphere reserves, national parks, game reserves and sanctuaries. The wide variety of ecosystem and vegetation types in the Sudan are reflected in its fauna. It has always been mentioned that Sudan has 224 species and subspecies of mammals (GOS and HCENR, 2006). In 1983 it was reported that there were 52 major wildlife species in northern Sudan while in 1991 a list of 83 was produced. Major species were distributed in 19 protected areas all over the Sudan. In Dinder National Park showed that 27 mammals and also several species of small mammals, and partial summer lists of 115 birds 14 snakes and scorpions, and 108 species of insect and 26 fish species are recorded. About 49 common tree species and shrubs (of which eight endangered) and 195 common herbaceous plants are identified (GOS and HCENR, 2006). Dinder National Park support a large population of animals during the dry season and the lesser number during the wet season (Dasmann, 1972). A systemic animals census had been conducted by Minga (1971) on nine of the principle of Mayas, he counted a total of 5613 large game animals during the period March to April 1971. Dasmann (1972) believed that this constituted only a small fraction of the total animals population. He carried out road counts. Dasmann (1972) used aerial counts in August, counted 49 animals outside the park include reedbuck, roan antelope, tiang and ostrich. Although sight of animals was difficult because of the dense wooded vegetation. Hashim and Nimir (1977) were able to count 690 tiang in the Mayas. They found tiang decreased by 1041 when compared to Minga counts 1971. Also found tiang ranked as the second animals, species in the park. Hashim (1977) using Mayas and water holes counts, in the dry season for three animals. He estimated 40 tiang, 79 roan antelope and 60 water buck. Saad and Hassan (1980) conducted road counts and estimated 51 tiang, 162

reedbuck and 77 buffalo along Galagu/ Daffala and Ras Amir/Galagu roads. Dasmann (1972) and Abdel Hameed (1985) found that reedbuck were the most abundant animals everywhere in the park. Tiang appeared as the second followed by Oribi and water buck. Dropping counts and road counts of the large herbivores conducted by Wildlife Research Center (WRC) in the most of the principle Mayas during 1971- 1994 (Abdel Hameed 1994) showed that generally there was a decline trend in the total number of the animals using the Mayas. The Lewell hartebeest was last reported in the 1950s (Nimir, 1983). The Sommering gazelle, which was abundant until the 1960s, was completely exterminated from the park 1970 due to vast expansion of mechanized agriculture in the wet season habitat of these animals. A serious decrease in the number of tiang and waterbuck, amounting to 60% and 30% respectively, between 1970 and 1976 was also attributed to shrinkage of their wet season habitat and competition with livestock in their dry season habitat (Hashim and Nimir, 1978).

MATERIALS AND METHODS

The methods used in obtaining the necessary data and information pertaining to the study are: 1-Personal contacts; 2-Interviewers; 3-Questionnaire conducted with wildlife officers and other rankers; 4-Annual reports on DNP and head quarter of Wildlife Administration in Dinder town. The aim of going over the annual reports is to know the number of livestock that trespassed, poaching, and illegal activities in the park each year from 1986-2010.

Materials:

1-Data sheets; 2-pencil; 3-SPSS (version.16); 4- Excel programme (Office 2007. Windows7).

Statistical analysis:

The questionnaire and record of wildlife violation data was analyzed by frequency percentage as descriptive statistic was used to analyzes the questionnaire inform of percent frequency.

RESULTS

The violation of DNP from 1986-210:

Table 1.Trespass arrested for illegal activities in DNP (1986-1995)

Items	Year										
	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	Total
Livestock	1826	6800	7261	4861	9654	5984	8685	4555	8220	6510	64.356
Herdsmen	68	55	47	72	68	57	49	73	69	86	644
Charcoal production	26	13	29	17	46	78	27	63	102	93	494
Fishermen	53	29	11	11	21	41	7	22	39	36	270
Honey collection	7	16	9	17	3	0	13	6	12	11	94
Poachers	15	9	4	0	7	5	9	19	8	13	89
Firearm	3	0	5	0	7	2	6	19	8	7	57

Table 2.Trespass arrested for illegal activities in DNP from(1996-2000)

Animals	Year						Total
	1996	1997	1998	1999	2000		
Cattle	34.1%	17.1%	4.9%	12.2%	7.3%	100%	
Sheep	15.8%	35.2%	0%	32.8%	16.2%	100%	
Goat	23.9%	36.8%	0%	26.9%	12.4%	100%	
Cattle	45%	23%	6%	16%	10%	100%	
Camels	20%	8%	20%	0%	52%	100%	
Donkeys	7.8%	12.2%	0%	62.2%	17.8%	100%	
Guns	44.8%	27.6%	13.8%	6.9%	6.9%	100%	
Weapons	82.5%	16.5%	0%	0%	1%	100%	
Honey.co	4.1%	8.3%	29.2%	29.2%	29.2%	100%	
Car. Tress	0%	0%	0%	0%	0%	100%	
Poaching	36.6%	30%	26.7%	6.7%	0%	100%	
Charocal	0%	0%	0%	0%	0%	100%	
Cut trees	0%	0%	100%	0%	0%	100%	
Entrance	14.3%	0%	0%	0%	85.7%	100%	
Fishing	40%	0%	35%	15%	10%	100%	
Cultivation	0%	0%	0%	0%	100%	100%	
Gum arab	0%	0%	0%	0%	0%	100%	
Over graze	13.8%	5%	36.6%	44.6%	0%	100%	
Saaf .colle.	33.3%	0%	33.3%	16.7%	0%	100%	
Sheep	15.8%	35.2%	0%	32.8%	16.2%	100%	

Table 3.Trespass arrested for illegal activities in DNP from(2001-2005)

Year	2001	2002	2003	2004	2005	Total
Animals						
Sheep	19.3%	7.5%	6.6%	14.4%	58.9%	100%
Goat	17.2%	20.4%	3.1%	10.2%	49.1%	100%
Cattle	4.8%	0.1%	61.8%	33.3%	0.00%	100%
Camels	6%	4.8%	8.3%	13.1%	67.9%	100%
Donkeys	13.7%	1.3%	10%	10%	65%	100%
Guns	3%	11%	14%	23%	49%	100%
Weapons	11%	0%	87%	1%	1%	100%
Honey.co	25%	25%	25%	25%	0%	100%
Car. Tress	0%	0%	69.2%	7.7%	23.1%	100%
Poaching	30%	10%	10%	40%	10%	100%
Charocal	0%	0%	66.7%	33.3%	0%	100%
Cut trees	0%	10.5%	73.7%	0%	15.8%	100%
Entrance	0%	0%	36.4%	45.5%	18.2%	100%
Fishing	0%	0%	0%	0%	0%	100%
Cultivation	0%	0%	0%	0%	0%	100%
Gum arab	0%	0%	0%	0%	100%	100%
Over graze	0%	75%	0%	25%	0%	100%
Saaf .coll	0%	0%	0%	0%	0%	100%

Table 4.Trespass arrested for illegal activities in DNP from(2006-2010)

Year	2006	2007	2008	2009	2010	Total
Animals						
Sheep	17.2%	11.7%	14.9%	39%	17.2%	100%
Goat	23.6%	12.6%	13.3%	29.2%	21.3%	100%
Cattle	23.2%	6.7%	10%	43.3%	16.7%	100%
Camels	10.1%	5.7%	9.5%	69.6%	5.1%	100%
Donkeys	23.6%	17.65	15.8%	26.1%	17%	100%
Guns	20.8%	4.3%	33.3%	20.8%	20.8%	100%
Weapons	0.2%	0.2%	99.2%	0.1%	0.3%	100%
Honey.co	100%	0%	0%	0%	0%	100%
Car. Tress	9.1%	90.9%	0%	0%	0%	100%
Poaching	22.2%	5.6%	33.3%	33.3%	5.6%	100%
Charocal	75%	0%	0%	25%	0%	100%
Cut trees	21.5%	14.3%	0%	57.1%	7.1%	100%
Entrance	50%	0%	0%	0%	50%	100%
Fishing	0%	0%	0%	100%	0%	100%
Cultivation	100%	0%	0%	0%	0%	100%
Gum arab	0%	0%	100%	0%	0%	100%
Over graze	0%	0%	0%	0%	0%	100%
Saaf .colle.	0%	0%	0%	0%	0%	100%

DISCUSSION

(Ali and Nimir, 2006) reported that the main threats facing the Dinder National park could be summarized as; the absence of proper land use surrounding the park, ever increasing size of human population in the Dinder area; and the trespassing of pastoralists, the pastoralists are forced to enter the park in spite of number of any herd caught inside the park.

Management activities serve to improve the status of the wildlife resources and address the needs of people who utilize this resource to the benefit of all. Changes in demographics and economic conditions need to be addressed and new foundations laid down. The management of natural resources can be adjusted towards improved balance between man and nature, in and around the Dinder National Park. This balance will create new solutions for the needs for domestic energy, creation of jobs in rural areas, sustainable use of natural resources, improving and modernizing agricultural production methods and setting up stable forms of co-existence with animals production (Flandez and Quedrago, 1994).

The issue of distribution costs and benefits is a critical one in helping to resolve conflicts in protected areas. Winter (1998) suggested that any successful realistic wildlife policy in Africa should be based on the philosophy; of using the welfare and security of the people as a focal point for conservation. Natural resources can contribute efficiently in answering the needs for domestic energy, creating rural jobs, regulating the use of natural resources, quickening the pace of changes in agricultural production methods, setting stable forms of co-existence with animal production, and preserving a natural environment (Flandez and Quedrago, 1994).

Many wild animals migrate outside the park during the wet season. The wet season habitats have been destroyed by mechanized farming. The migrant animals are subject to increasing harassment and killing. Both poachers and honey collectors greatly affect the ecology of the area by lighting fires throughout the park. Felling

of trees is observed near the villages and had greatly accelerated the erosion and sedimentation process (Abdel Hameed et al., 1999).

To respond to such uncertainties some shift, sale of assets or either borrowing, selling wood, hunting of wild animals, using of wild food, and migrating to town or to another village with better potentials. The number of the villages, surrounding the park, are now 36 villages instead of 26 that are reported by Awad (1995). There are regular, uncontrollable, continuous migrations, that becomes chronic in years of drought.

Comments made by respondents who gave negative answers suggest that the apparent antagonist towards the government wildlife management authorities stems from the perceptions that department of wildlife employees are unfairly privileged in terms of their access to the wildlife resources which villagers are denied, and that the Department Game Scout are over-zealous in terms of harassing local people unnecessarily, while failing to catch the real poachers.

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Effective Factors in Applying Information Technology in Developing Iran's Educational System Human Source

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ABSTRACT

Present article is investigating important factors of applying information technology in developing human source of Iran's educational system all principles point of view of the experts and according to information technology professionals who are studying at PhD level. Main aim of this study is answering 3 questions: What are effective factors in applying information technology in developing human source in Iran's educational system? What indicators made these factors? And how's the priority of these factors and indices. In the end of paper, results are discussed and useful recommendations are suggested.

Key words: Information technology, Human source, Educational system

INTRODUCTION

One of the distinct characteristics of the present time is rapid change and transformations within the communities from the various dimensions. Such developments have influenced practically from the renaissance up to present century. Meanwhile, Information Technology (IT) is the driving force for the current developments. The efficient and effective management in Training Organization is not possible practically, regardless of access to the updated information. The more accessible and accurate information is available for an organization, the better opportunity exists for the manager of the organization to improve the strategies and makes the more logical and effective decisions about them. In fact, the increase in volume, variation, and operational speed for an organization to do its tasks has cause the information to play properly and accurately very essential role in doing the given operation. Accordingly, today information has been introduced as one of the most crucial and vital sources and capitals in the organization.

According Eric resources [1], 21st century is the century of information bombardment where those organizations will succeed if they manage to make their own Human Resources be equipped with updated technology and information. Mirkamali [2] argues that human resources are deemed as spirit and heart for the organizations. Of course, the efficient and effective human resources have been intended in this sense. He believes that efficient personnel on organization are those who proficient and skilled in to date techniques and technologies. Thus, the order preference of to date organizations extremely differs from in the past since in twenty first century those Human Resources are required, which specialized in adoption of today technology and knowledge. For this reason, the present essay deals with the effective factors on application of IT fields in human resources development. Many studies have been carried out concerning to the effective factors in development of human resources so we purpose some of them in the followings: Research indicates that ICT can change the way teachers teach and that it is especially useful in supporting more Student-centered approaches to instruction and in developing the higher order skills and promoting collaborative activities. Haddad [3] showed that ICT teacher training can take many forms. Teachers can be trained to learn how to use ICT or teachers can be trained via ICT. ICT can be used as a core or a complementary means to the teacher training process. Collis and Jung [4], in another research, under title of "Impact of IT on structured issues in an organization" have pointed to similar results. Fallah Hemat Abadi [5] indicated that: 1. IT has a significant and reverse relationship with focus on tactical decisions- making. 2. ICT has a significant and reverse relationship with focus on tactical decisions-

making. 3. ICT has a significant and reverse relationship with complication in an organization. 4. ICT has a significant and reverse relationship with organizational formality. In a study that is called "A survey on development and application fundamentals of ICT in Training Organization's System", Shabani [6] showed that computer public application and training of electronic contents production to teachers and experts are some of requirements so it should be taken step along with technology widespread speed and acceleration in the current world. In another survey under title of "the relationship between ICT and personnel's productivity", Fooladian [7] indicated that there is a positive and significant relationship between productivity and application of ICT. Rahmani Arab [8] in a study, called "The impact of ICT in- service training courses in educational and research activities" indicated that: ICT in- service training courses (ICDL) might have positive effect on educational design (pre- teaching skills), teaching presentation (in- service teaching skills), in evaluation activities (post- teaching skills), and in teachers' researching measure. In a survey under title of "Review of ICT application effects on personnel's occupational enabling", Mazid Abadi Farahani [9] showed that ICT significantly affects on these indices. In a study on the impact of entrance of ICT into training system, Scofield [10] showed that modern technologies gradually affect on educational system and ICT might make curriculum transfer more effective as well as create social new backgrounds for learners. Research and experience has shown that ICTs, if well-utilized in the classroom, have the potential to enhance the learning process in the following ways: 1) Motivate and engage students in learning. It has been shown that students are motivated when learning activities are authentic, challenging, multi-disciplinary and multi-sensorial. 2) Bring abstract concepts to life, especially when concepts go against immediate intuition and common knowledge. 3) Foster inquiry and exploration. 4) Allow students to use the information acquired to solve problems, formulate new problems, and explain the world around them. 5) Provide access to world-wide and local information sources. 6) Provide a means to communicate, share research, and join projects across geographical borders Education leadership, management and governance can also be improved through ICT by enhancing educational content development and supporting administrative processes in schools and other educational establishments. By supporting management and reforming administrative procedures more effectively, ICT would serve as an incentive for leaders and staff at all levels to institutionalize its use [11]. Haddad and Jurich [12] using ICTs to achieve learning objectives can happen at various levels. At the simplest level it allows for storage and display of information. However, using ICTs also fosters exploration of materials and ideas. If a student is consciously pursuing information on the Internet or on CD-ROMs, they gain a greater understanding of certain questions, issues, or concepts. ICTs allow learners to apply a concept or understanding to a new situation; to analysis ideas by organizing them and manipulating them; and to learn how to evaluate and problem solve.

At the highest level, ICTs are used to foster the design or construction of integrating projects, whereby students must explore wide range of ideas and resources, analysis and evaluate them, and synthesize them in a project. ICTs can fully utilize the multimedia environment to support this process [13]. All the cases discussed above use ICT as part of training methods and promote teachers' ICT- pedagogy integration in the classroom by demonstrating examples and allowing discussions among teachers throughout the whole training process. Participants of the training are asked to actually use ICT to learn about ICT skills and develop ICT-integrated pedagogies. These training strategies seem to be supported by previous research that argues that teachers are likely to benefit by actively experiencing ICT skills as a learner. Jung [14] considering what was said the main purpose of this study is to answer the following questions 1- What are some of effective factors on adoption of IT in HR development in Iranian Training System? 2- Of which parameters such factors may be composed? 3-What is the preference order among these factors and indices?

MATERIALS AND METHODS

The present research is of applied type in terms of goals, and it is quantitative with respect to data, and it is of survey type in terms of nature and methodology. Prospective Questionnaire Assessment of Attitude (PQAA) is the measuring tool in this study that includes 71 questions and its validity and reliability have been verified by using Cronbach's Alpha coefficient, of course. The validity rate of the current study is 97%. The statistical test of exploratory factor analysis of synthesis type into main factors has been adopted for analysis of the collected data and its findings suggest that 9 components (i.e. security improvement, control & management improvement, capacity- making and supportive infrastructures, improvement of information storage, improved decision-making, information combination and interaction, information enablers, improved informative supervision, and improved analysis) along with their preference- ordered parameters influence on adoption of IT in HR development . For data analysis, by adoption of LISREL software, the statistical test has been administered, that is called factor analysis type of synthesis into the main factors (components).

RESULTS

In the present survey, findings are given in two parts as follows: a) Data explanation by adoption of the prevalent descriptive statistics and it is given in Table 1.

Numbers are given in Table 1 suggest the following points: 1) Scores for the participants in the studied sample group ranges from 1 to 7. 2) The comparison among means indicates that third factor has the highest score while the lowest score is attributed to fifth factor. 3) A comparison among standard deviation values with the sample group may characterize that dispersion in fifth factor is the highest among others. 4) Skewness parameter signifies that distribution is skewed toward left side of normal distribution while kurtosis parameter denotes that kurtosis in at this distribution is higher than in normal distribution.

Table 1. Statistical characteristics of total scores

Factor	Range	Mean	Variance	Standard Deviation	Kurtosis	Skewness	Minimum	Maximum
First	4.52	5.79	0.85	0.92	0.56	-0.75	2.48	7
Second	5.38	6.09	0.77	0.87	5.18	-1.56	1.62	7
Third	5.50	6.22	0.66	0.81	7.51	-2.28	1.50	7
Forth	5.09	6.19	0.61	0.78	4.48	-1.71	1.91	7
Fifth	5.33	5.62	10.5	1.02	1.21	-0.9	1.67	7
Sixth	4.17	6.00	0.69	0.83	1.22	-1.08	2.83	7
Seventh	4.80	5.79	0.83	0.91	0.47	-1.01	2.20	7
Eighth	6.00	6.00	0.90	0.95	4.05	-1.50	1.00	7
Ninth	5.25	5.98	0.90	0.94	1.44	-1.11	1.75	7

b) Data analysis: In order to verify data description and population analysis out of which the given sample has been extracted, a statistical test, called factor analysis has been adopted and results of this test are given in the following tables:

Table 2. Sampling adequacy test values (KMO) and results of Kervit- Bartlett's test of Sphericity

Bartlett's Test of Sphericity		
KMO	Sphericity	Sig.
0.934	23362.071	P = 000

Numbers are given in Table 2 suggest that execution of factor analysis is justifiable and in order to identify this fact that measurement tool has been saturated by several significant factors, three following parameters have been taken into consideration: 1) Eigen value(s) 2) Variance assigned by any factor and 3) Rotated graph of Eigen values Eventually, to determine materials in the questionnaire, nine factors may be selected by using Scree Chart.

Table 3. Final traits of factor analysis to extract indices of "effective factors on adoption of IT in HR developments at Training System

Factor	Eigen value	Variance ratio	Cumulative percentage
1	8.056	11.346	11.246
2	8.851	9.649	20.995
3	6.314	8.892	29.887
4	5.446	7.670	37.558
5	4.681	6.593	44.151
6	3.404	4.795	48.946
7	3.192	4.496	53.442
8	2.274	3.203	56.645
9	1.989	2.802	59.447

As it observed in the above table, variance ratio for any factor that identifies share value of any factor and the rotated graph of 9 factors has been determined, based on 3 factors of Eigen value, which have been assumed greater than unit (1).

At the above table, the question for each of factors has been identified and correlation value has been shown among any question to each of factors.

Table 4. Factor analysis of rotated factors in 71- question system by varimax technique

Q	F1	Q	F2	Q	F3	Q	F4	Q	F5	Q	F6	Q	F7	Q	F8	Q	F9
67	.848	41	.743	4	.705	21	.718	33	.802	38	.594	27	.688	46	.523	11	.604
66	.784	40	.735	1	.671	24	.678	32	.772	59	.543	28	.614	60	.447	12	.504
65	.701	42	.683	6	.670	25	.645	36	.697	37	.529	26	.552	47	.417	13	.434
68	.684	43	.662	2	.654	22	.637	35	.684	57	.497	29	.461			8	.372
69	.676	48	.623	7	.636	18	.604	31	.649	58	.446	16	.395				
70	.649	44	.604	3	.628	19	.583	30	.466	56	.416						
62	.623	49	.552	9	.565	20	.522										
71	.620	52	.529	14	.521	17	.518										
63	.580	53	.524	10	.513	23	.508										
64	.528	50	.508	5	.430	34	.456										
61	.520	51	.506			15	.453										
55	.469	45	.478														
54	.451	39	.462														

Q = Question F = Factor

DISCUSSION

To give response to study questions as well as for determining the rate of relationship and share of each of factors in application of IT in HR development at Training System, the statistical test, called factor analysis, was adopted that is kind of analysis converted into main factors type. Test results suggest the following points: 1) Of total 71 effective extracted parameters in “adoption of IT in HR development at Training System”, 9 factors have been obtained, including first factor (37.379), second factor (5.885), third factor (2.5), fourth factor (7.7), fifth factor (6.6), sixth factor (4.8), seventh factor (4.5), eighth factor (3.2), and ninth factor (3.8) respectively and they have been nominated by the aid of the specialists and experts in the respective field and the aforesaid factors generally affect on adoption of IT in HR development at Training Organization of Qom Province at approximately 60% level. Furthermore, the results of the present research completely comply with findings from the former studies. 2) Each of nine factors includes the following parameters, respectively: 1. *First factor* i.e. security improvement contains the following characteristics: 1) it facilitates execution of security plans. 2) It minimizes forging of information at the lowest level. 3) Observance of demarcation principle may lead to improvement of information security. 4) It prevents from ability of denial. 5) It guarantees integration of information. 6) It makes vulnerability and planning possible. 7) Observance of authenticity principle may enhance information security. 8) It causes to enforce control easily to grant accessibility to information users. 9) Observance of privacy principle may improve information security. 10) To follow information accessibility principle may enhance information security. 11) It raises level of knowledge and information in decision- building and decision- making. 12) It facilitates preventive control and avoidance from executive deviations. 13) It provides prospective, present-oriented and retrospective controls. 2- The *second factor* is the improved control and management, including the following parameters: 1) It facilitates distribution of arbitrary information and news. 2) It provides more possible interaction. 3) It is followed by elimination of distances. 4) It facilitates the quick access to the processed information. 5) It makes the distance between supervision and control less effective. 6) It increases the speed and capacity of information transfer. 7) It updates information control. 8) It lowers costs of regulation. 9) It facilitates the comparison between the conducted operation and the predetermined goals and creates constant improvement in performance. 10) It improves control efficiency and effectiveness. 11) It creates flexibility, innovation, and creativity in supervision. 12) It raises speed in reporting. 13) It lowers distribution costs. *Third factor*: It is capacity- making and supportive infrastructures, including the following parameters: 1) It provides possibility for connection of networks. 2) It facilitates the collection (of data). 3) It provides the synchronous access to information. 4) It lowers cost of collection of information. 5) It provides the integration of computers and remote communications. 6) It increases the speed of collecting information. 7) It facilitates classification of information. 8) It improves the ability for discovery of the relationship among the existing information. 9) It makes possible for rapid and all- inclusive processing. 10) It decreases risk of (data) collection. *Fourth factor*: It is factor of improvement of information, including the questions about the followings: 1) It lowers costs of transmission and displacement. 2) It accelerates creation of documents center. 3) It facilitates information retrieval. 4) It provides access to information without need to physical presence. 5) It facilitates access to information. 6) It lowers costs of storage. 7) It decreases physical space for storage. 8) It facilitates maintenance of information. 9) It prevents from information unwanted corruption (failure). 10) It provides quick access to the processed information. 11) It improves the ability searching based on subject. *Fifth factor*: It is improved decision-making, comprising of the following questions: 1) It identifies risky conditions in decision- making. 2) It provides confident situations for decision- making. 3) It facilitates speed and ease in decision making at conflicting conditions. 4) It contributes to selection of appropriate solution (strategy). 5) It provides access to individual strengths and weaknesses. 6) It makes possible for several people to participate the decision- making process. *sixth factor*: It consists of information combination and interaction or improvement of interactions between

information and environment, including the following indices: 1) It provides appropriate distribution of information based on kind of users. 2) It makes it possible to consider integration of goals at the same time. 3) It facilitates management of information. 4) It provides navigation of unexpected activities. 5) It facilitates management of information services. 6) It facilitates recording of all events. *Seventh factor*: It comprises information enablers (facilitators), including the following parameters: 1) It creates eases and speed in ideas exchange and consultation. 2) It provides the easily exposure to complicated flows of decision. 3) It facilitates discovery of opportunities rapidly. 4) It contributes to forethought and futurology. 5) It facilitates discovery of intangible factors. *Eighth factor*: It denotes the improved supervision over information, including the following parameters: 1) It provides supervision over wider range. 3) It increases sovereignty and governance of authority. 3) It improves precision and speed in supervision and control. *Ninth factor*: It is information analysis or improved processing, comprising of the parameters in the following: 1) It facilitates interpretation of information. 2) It makes easy the comparison among different situations. 3) It provides logical analysis of information and selection of appropriate strategies. 4) It facilitates assessment of information authenticity. These findings are in compliance with the background findings of studies conducted by Eric resources [1], Fallah Hemat Abadi [5], Shaabani [6], Fooladian [7], Rahmani Arab [8], Mazid Abadi Farahani [9], Scofield [10], Haddad [11], Haddad and Jurich [12] and Jung [14].

Restrictions: 1) Despite of all those efforts made toward observance of the relevant principles to randomized selection of sample, the existing shortages and barriers hindered implementation of this study in larger scale. 2) Empirical data in this study were obtained due to execution of a 71- elements scale on randomized sample group where it interprets about 60% of technology impact on HR development. Thus, it will be more appropriate if some other scales are used with different content and greater length. 3) Doubtlessly, many factors and parameters may influence on HR development of Training System; however, difficulty in quantization of such variables caused only 60% of variance of independent variable was interpreted by factors at the current survey. Therefore, role of other important factors should also be taken into consideration. 4) One of those factors, which may create a type of one- way error in study results, is lack of carefulness of participants in giving answer to the questions so that some of researching works may be suffered from this.

Suggestions: 1) In particular, several researches should be conducted concerning to the considered factors separately by Training Organization. 2) Some of the needed efforts shall be made in order to improve motivation among personnel to be equipped with IT knowledge and it shall be tried to make this field of organization and among personnel to be always updated. 3) Security is logically as one of the most essential constant concerns in organizations in the field of IT, so this concern naturally exists also in Training Organization. Thus, it is necessary to handle and always consider several security bottlenecks by reliance on domestic experts through localization, hardware and software products, and by strengthening infrastructures in this field. 4) To hold seasonal workshops in relation to ICT and training for the latest state and achievements in this field. 5) Preparation and codification of Outlook Document, organizational strategies and policies based on IT so that this system not to be suffered from various tastes by replacement of chairmen and managers. 6) To create IT academic discipline with different needed majors including network security, IT management etc. 7) Redefinition of organizational structure in IT field. 8) Knowledge- based training of manpower in different parts of the organization. 9) To interpret the needed mechanisms for execution of mission by Training Organization in cyberspace.

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*Original Article*

The Relationship between Depression and Response Style Based on Rumination

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ABSTRACT

Present study is a correlative research that was performed aiming to review and determine the relationship between depression and response styles based on rumination. Using random sampling method, 361 undergraduate students, including 213 girls and 148 boys, has been selected from different faculties. In order to collect information and research data, the Beck Depression Inventory and Rumination Questionnaire were used. Results of study indicate that in comparing depression and rumination rates, the depression severity in girls is higher than boys and the girls use the response based on rumination more than boys. In the end of article, findings are discussed and practical recommendations are presented.

Key words: depression, Rumination, response based on rumination, undergraduate students

INTRODUCTION

In recent years, the study of thinking patterns and unwanted thoughts in emotional disorders and its role in the durability of these disorders have been focused by clinical specialists and researchers. One of the thinking patterns in emotional disorders is rumination [1, 2].

One of the rumination theories that has influenced much on the formation and growth of the related research is the response style theory. This theory was provided by Nolen-Hoeksema et al. They sought to response to the prevalence difference of depression among men and women and introduced the rumination as the cause. They believed that people encounter with the depressed mood in three ways, including rumination, decentralization of depressed mood and problem solving [3].

This type of thinking was observed in some of the emotional disorders such as depression, practical-intellectual obsession, disseminated anxiety disorder and post-trauma mental impact disorder. This thinking style impairs the cognitive infrastructure of patients with depression and results in increased duration and severity of depression periods [3]. Hence, the rumination has increasingly been considered as an important element in depression [4 and 5].

In a simple definition, rumination means "that an individual shows the behavior and thoughts following a state of depression and sadness, which draw his attention toward symptoms of depression. The patient secludes following the depression occurrence and talks to himself as: "It is just me who involved in such a situation; what will be the result of my depression; and what will happen if I do not overcome this situation?" [6].

In mild or severe depression states, the patient ruminates about negative issues. The rumination indicates thoughts that tend to be repeated, are with consciousness and focused on a single subject, and are still emerged even in the absence of immediate and necessary stimuli [7].

Although the idea suppressing is a usual manner in depression and can be differentiated from rumination, however, some people ruminate about negative thoughts based on commitment. These people usually believe that rumination about negative thoughts and feelings can give them insight and facilitate the problem solving, while rumination makes the individual's mood worse, and causes the patient fluctuating between repression and rumination [1].

Ruminative responses can be defined as thoughts and behaviors based on the focused attention of the depressed individual on his illness symptoms and its causes and consequences. For example, focusing on how that

nobody's feeling is motivated, or wondering that why do I feel depressed? And, being concerned about what can be the consequences of depression symptoms [6, 8].

Review of research literature shows that although the rumination concept has been of specific interest of the scholars in emotional disorders areas in recent decades, but little studies have been conducted in this area in Iran, and, the nature, severity and quality of rumination have not been reviewed in Iran's clinical samples [9].

In reviewing the literature related to rumination, five orientations can be observed:

1. Rumination: Definitions, nature, results and effective mechanisms in its production
2. Physiological aspects of rumination and related research
3. Rumination theories and its related research
4. Research related to rumination assessment and its measurement tools
5. Therapeutic strategies to reduce rumination and related research [3].

The studies originated from Nolen-Hoeksema theory have been formed given four issues, which have been considered by him and his colleagues, including:

1. Effects of rumination on mental health
2. The sources of individual differences in rumination
3. Gender differences in rumination and depression prevalence
4. Future growth incidents of rumination

Meanwhile, rumination may be based on some issues of the individual's failures or past. However, some of the mentioned definitions have been derived from their specific theoretical basis [10].

Watkins et al. [5] consider the rumination as thoughts related to the sadness feelings and refer to it as sadness. Paya Giorgio and Wales showed in a study that spontaneous negative thoughts are short and brief evaluations of failures in depressed patients; they are a long chain of repetitive recycling and self-focused thoughts, and a response to primary negative thoughts. The rumination delays the key depression recovery in behavior cognition therapy. Research has shown that the response of rumination to the boring experience will make the periods of depressed mood longer and more intense. Also, the Rumination makes the people thoughts negatively oriented, and these individuals have a weaker potential in problem solving compared to the others. Usually, the rumination provides some mechanisms that will become different dangerous factors for depression; in fact, it will result in more pressure and lower social support and optimism, and more neuroticism [7 and 11].

Papageorgiou and Wells say that negative automatic thoughts are a short and brief assessment of the failures and losses in depressed patients; while rumination is a long chain of repetitive recycling and self - focused thoughts and a response to initial negative thoughts [3, 11, 12].

Pizonski and Greenberg states that self-focusing of depressing is based on discrepancies reduction between the ideal mode and the real mode, but rumination is theory-making to deal with the problem through problem solving techniques that not necessarily occurs after the failure [3,13].

Bahrani et al. conducted a research to study the role of rumination of the positive and negative meta-cognitive beliefs related to rumination at the beginning and durability of depression among Isfahan students and concluded that the rumination of positive and negative meta-cognitive beliefs can be predictive of depression [9].

In another study by Bahrani and Mahmoudi, it was shown that the amount and intensity of negative emotions such as rumination and anxiety can be reduced by representing positive emotions [9]. Bahrani, Ghaderpour and Marzban [1] showed in a research on the impact of emotion on the students' happiness and rumination that the assessment of emotion before its creation, in addition to prevent the incidence of extreme emotions when confronting with a negative emotional situation will also avoid dramatic decline in individual's happiness after the emotional event as well as lowering his ruminations appearing after the incidence of emotion. Yousefi in conducted study on rumination in Iran revealed that training of attention reduces the rate of rumination in depressed patient [3]. Studies performed based on cognitive models of depression have been identified the role of negative cognitive styles and the rumination as the risk factors for depression [9].

In a study conducted in order to develop a background of the response styles theory, after coming to the conclusion that the response styles theory relies on the relationship between depression and rumination, it is suggested according to the present evidence that rumination is also associated with other mental damages, including anxiety, over-indulgence, drinking and self-hurting [6].

In another research conducted by Sakamoto et al. on 89 undergraduate students in Japan, it was shown that self-focused attention or deep thinking or insight is correlated with prolonged and severe periods of depression. Also, a significant relationship was found between cognitive symptoms and rumination, and between misleading activities and emotional symptoms [14].

In the present study that was performed aiming to review and determine the relationship between depression and response styles based on rumination, these questions are suggested that whether there is any difference between depression and rumination of male and female students?

Meanwhile, in addition to this question, a hypothesis has been also suggested that there is a meaningful relationship between depression and rumination in students.

MATERIALS AND METHODS

The present research is a descriptive type study that has been performed by a correlation method. The statistical population of the study has included all male and female students who have been studying in academic year of 2011-2012 at Hormozgan University. In the present study, random stratified relative sampling method has been used. The sample size of 361 Hormozgan University students, including 213 girls and 148 boys, has been selected from different faculties. In order to collect information and research data, the Beck Depression Inventory and Rumination Questionnaire were used. The Beck Depression Inventory includes 21 items and each item consists of four statements that each of grades a symptom of depression from zero to three. The total score of each individual is obtained by summing the scores in all aspects. The validity and reliability of the Beck Depression questionnaire have been repeatedly examined, which results have been reported at high levels. Beck et al. have reported the internal consistency reliability coefficient of the questionnaire items from 0.73 to 0.86 and the correlation coefficient of the Beck Depression Inventory with the MMPI scale as 0.74. The questionnaire reliability in the present study was calculated using the Cronbach's Alfa coefficient that was equal to 0.86. The rumination questionnaire was developed by Yousefi [3]. The test includes 39 four-option questions that each of them is graded from zero to three, and each person's score will be obtained by summing these scores. Yousefi has reported the reliability of the questionnaire using Cronbach's alpha equal to 0.92, and has evaluated its validity using the factors analysis method at an appropriate level. The reliability coefficient of this questionnaire was obtained through calculating the Cronbach's alpha coefficient as 0.93.

RESULTS

Considering that the complete depression score is 63 and the non- depression score is equal to zero, data analysis results showed that the male students' depression average score is equal to 15.93 and the female students' depression mean score is equal to 16.88. This suggests that depression rate in female students is more than depression rate in male students. However, there is no significant difference between depression of male and female students. The survey of rumination status in male and female students' rumination also suggests that the average of rumination in boys is equal to 37.88 and in girls 43.3. The situation of averages shows that the rumination rate in female students is higher than male students, and there is a significant difference between male and female students' rumination. The results are presented in Table 1.

To test the research hypotheses, the relationship between depression scores and rumination scores of the students was calculated. The results showed that the relationship values in female students and male students were respectively as $r = 0.648$ and $r = 0.502$, and the relation value in the whole sample is as $r = 0.591$, which all the three values are statistically significant. The results are presented in Table 2.

Table 1. Summary of t-test results of independent groups of rumination and depression scores in the male and female students

Variables	group	N	M	SD	T value	P.
Depression	Male	142	15.93	10.23	-0.848	0.3
	Female	201	16.88	10.09		
Rumination	Male	142	37.88	18.64	-2.39	0.02
	Female	201	43.31	23.41		

Table 2. Correlation matrix of rumination and depression scores in study sample

Group	Variables	r	P.
Male	Depression	0.648	0.001
	Rumination		
Female	Depression	0.502	0.001
	Rumination		
Total	Depression	0.591	0.001
	Rumination		

DISCUSSION

The present study was conducted aiming to examine and explain the relationship between depression and the response based on rumination. The results showed that in comparing depression and rumination rates, the depression severity in girls is higher than boys. Also, the girls use the response based on rumination more than boys. These results are consistent with the statements of Nolen- Nolen-Hoeksema et al. [6, 8], which suggest that women suffer rumination two times more than men; however, it is not the only unique source of women's greater vulnerability to depression. In their view, the women suffer from supposing stresses such as sexual abuse and childhood stress, which increase the women tendency to use rumination more. Also, women believe more than men that controlling the negative emotions such as sadness, fear and anger is difficult, and as a result of this feeling of helplessness, they use rumination more [1].

The results of this study consistent with previous research also showed that there is a relationship between depression and responses based on rumination. Studies such as Bagheri nezhad et al. [4], Azargoon et al. [7], Bahrami et al. [1] and Nolen-Hoeksema [6] have confirmed that there is a significant relationship between depression and responses based on rumination. Meanwhile the naturalism studies have shown that people who emphasizing on rumination show more prolonged and more symptoms of depression experiencing and its sever consequences, when they are sad comparing with those have not rumination when suffer sadness [8, 15, 16].

The results of this study can provide the necessary insight for therapists in counseling and clinical situations and can help them in the treatment of depression and other disorders related to rumination. It is suggested that future research will study the topics such as intervention at the level of individuals' rumination and its effect on mood and anxiety disorders.

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Comparative Study on the Knowledge of Breast and Cervical Cancer among Females in Rural and Urban Areas of Niger Delta

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ABSTRACT

In developing nations one of the major causes of continuous increased rate of disease is due to lack of adequate knowledge concerning such ailment. Cervical cancer is the second most common cancer among women worldwide, while breast cancer is the most common malignant neoplasm affecting and causing mortality among women in the world. The aim of this research is to assess and compare the knowledge of breast and cervical cancer among women. A cross-sectional survey was conducted in Nigeria. Study was based on data from three hundred women from different backgrounds with age ranging from 15 to 56 years. Data collection was with the aid of questionnaire. 25% and 80%, said "yes" that cervical and breast cancers are curable, while 75% and 20% said "no" respectively. 61% and 68% said "yes" that they know the risk factor in cervical and breast cancer, while 39% and 32% said "no" they don't know the risk factors respectively. Approximately 50% each said "yes" and "no" respectively to if they have heard of Pap smear. 35% of the respondents know of the screening Interval, 65% said "no". 90% affirmed that regular checking of breast can help in early dictation, while 10% said "no" it will not. Forty percent said "yes" that breast cancer can be inherited, while 60% said "no". Knowing about breast and cervical cancer in details will help to reduce the rate of these cancers in undeveloped and developing countries, thereby reducing the mortality rate caused by these diseases.

Key words: Pathology, Neoplasm, Cytology, Breast and Cervical Cancer

INTRODUCTION

In developing nations, one of the major causes of continuous increase rate of disease is due to lack of adequate knowledge concerning such ailment. In most nations of Africa today some women are yet to hear those words breast and cervical cancer.

Cervical cancer has been recorded to be the second most common cancer among women worldwide but the commonest in developing countries, accounting for approximately 12% of all cancers in women worldwide [1], while breast cancer has been reported to be the most common malignant neoplasm affecting [2] and causing mortality among women in the world [3] with the developing nations taking the lead.

There is evidence that incidence of breast cancer is increasing and is occurring more rapidly in countries with a low incidence rate of breast cancer [4].

Documentation has been a major problem in reporting of trends of cervical incidences from developing countries and where there are records they are limited by poor data quality and inaccurate population estimation [5]. In developing countries, mortality rates from cervical cancer have been reported to be 11.2 per 100,000 women on the average, almost three times the rate of developed countries [6, 7]. About 40 percent of cervical cancer deaths in developing countries occur in South Central Asia. Deaths associated with cervical cancer are the most telling indicator of the disease's impact on women [6]. While a woman in the United States has a 70% chance of surviving cervical cancer, that chance is reduced to 58% in Thailand, 42% in India, and 21% in sub-Saharan Africa [8]. Reports show that there are about 440,000 new cases annually, and 80% of these cases occurring in developing and undeveloped countries [9].

Every year over 1.15 million women worldwide are diagnosed with breast cancer and 502,000 die from the disease [10]. In African breast cancer patients tends to present at a young age, with large tumors and multiple

nodal involvements, and have poorer clinical and pathological prognostic factors compared with Caucasian patients [11].

In developed countries like the United States of America, breast and cervical cancer account for one-third of new cancer cases and 18% of cancer deaths among women [12]. The impact of these cancers are greater among older, low-income, and minority women [13]. With rising reports of breast and cervical cancer in developing and undeveloped countries in the world today, it paramount to assess and compare the knowledge of breast and cervical cancer, hence the aim of this research.

MATERIALS AND METHODS

A cross-sectional survey was conducted in Amassoma which is situated in Wilberforce Island a rural terrain in Bayelsa State and in Port Harcourt (Rivers State) one of the most popular cities in Nigeria to compare the knowledge of breast and cervical cancer among females. Bayelsa and Rivers State have the largest crude oil and natural gas deposits in Nigeria.

The present study was based on data from three hundred (300) women from different backgrounds (200 from urban and 100 from rural) with age ranging from 15 to 56 years. Data collection was with the aid of questionnaires designed to obtain relevant knowledge of breast and cervical cancer. Questions for participants were drawn on risk factors, symptoms and screening breast and cervical cancer. The questions were designed to obtain "yes" or "no" answers.

Informed consent was granted by individual subjects. Data analysis was by the use Ordinary ANOVA, Tukey-Kramer and Bonferroni Multiple Comparisons Test, using Graphpad InStat software. P value < 0.05 was considered significant.

RESULTS

It was interesting to note that the overall result of the research shows that 61% of the urban dwellers had poor knowledge of cervical cancer saying "No" to questions that where meant to be "Yes", While only 39% of the urban respondents demonstrated good knowledge of cervical cancer saying "Yes" to the questions. There was significant (P<0.05) difference when the two group of respondents where compared statistically. The rural dwellers recorded higher number (71%) of respondents with poor knowledge of cervical cancer, while 29% had good knowledge of cervical cancer, this was also significant (P<0.001) when compared statistically.

The urban dwellers had good knowledge of breast cancer as 57% of the respondents said "Yes" to the questions. Others (43%) had poor knowledge of breast cancer as they said "No" to the questions. There was no significant difference when compared. The rural respondents (40%) demonstrated good knowledge in breast cancer, while 60% of then had poor knowledge of breast cancer there was no significant difference.

Table 1. Demographic characteristics of respondents

Demographic characteristics	Category	Frequency of Urban %	Frequency of Rural %
Age group	15-25	120 (60)	51(51)
	26-35	53 (26.5)	19 (19)
	36-45	12 (6)	1(1)
	46 above	15 (7.5)	18 (18)
Marital status	Married	41	20
	Single	51	64
	Separated	2	5
	Divorced	2	3
	Widowed	4	8
Religion	Christianity	186	81
	Traditional	8	5
	Muslim	2	7
	Others	4	7
Residence	Urban	200	-
	Rural	-	100

Table 2. Questions and Responds for Cervical Cancer Knowledge

Question	Urban		Rural	
	Yes (%)	No (%)	Yes (%)	No (%)
Is cervical cancer curable	59 (29.5)	141 (70.5)	18 (18)	82 (82)
Do you know the risk factors of cervical cancer	74 (37)	126 (63)	38 (38)	62 (62)
Have you heard of Pap smear	104 (52)	96 (48)	41 (41)	59 (59)
Do you know of the screening Interval	76 (38)	124 (62)	18 (18)	82 (82)
Total (%)	39	61	29	71

Table 3. Statistical Comparison for Cervical Cancer Knowledge among Urban and Rural Dwellers

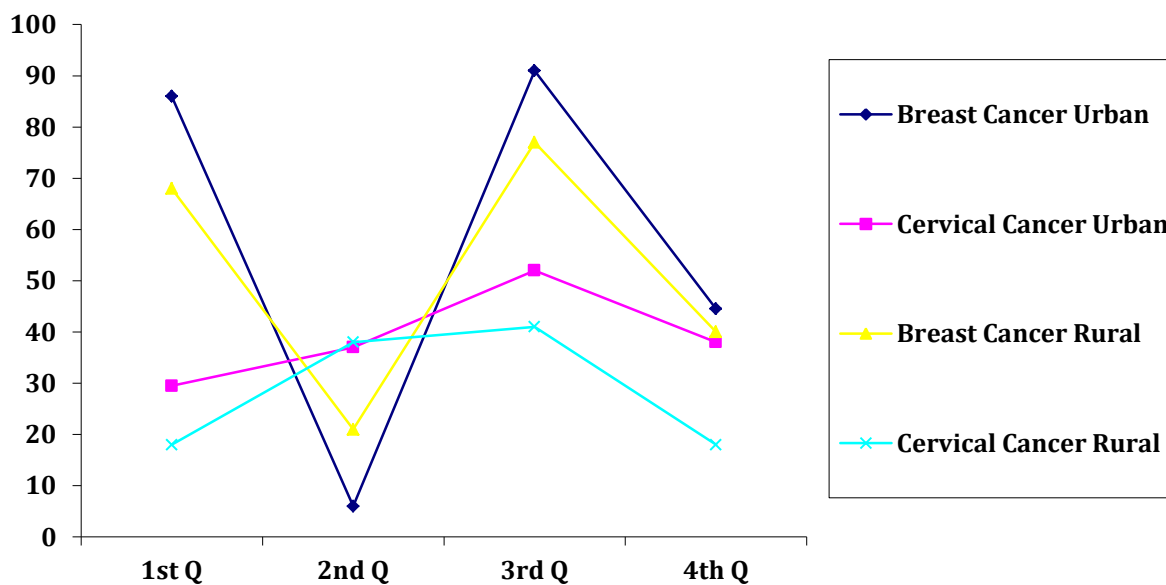
Comparison	P value	Significance
Urban Yes vs. Rural Yes	P>0.05	Not Significant
Urban No vs. Rural No	P>0.05	Not Significant
Urban Yes vs. Urban No	P<0.05*	Significant
Rural Yes vs. Rural No	P<0.001***	Significant

Table 4. Questions and Responds for Breast Cancer Knowledge

Question	Urban		Rural	
	Yes (%)	No (%)	Yes (%)	No (%)
Is breast cancer curable when dictated early	172 (86)	28 (24)	68 (68)	32 (32)
Do you know the risk factors of breast cancer	12 (6)	188 (94)	21 (21)	79 (79)
Regular checking of breast can help in early dictation	182 (91)	18 (9)	77 (77)	23 (23)
Is breast cancer hereditary	89 (44.5)	111 (55.5)	40 (40)	60 (60)
Total %	57	43	40	60

Ordinary ANOVA, Tukey-Kramer Multiple Comparisons Test, using Graphpad InStat software did not provide comparison table for breast cancer knowledge for Urban and Rural dwellers because P values were all greater than 0.05 (P>0.05), which is considered not significant.

The knowledge of both breast and cervical cancer were compared statistically using one-way ANOVA, Bonferroni Multiple Comparisons Test, there was no significant difference as P values were greater than 0.05 (P>0.05).

**Figure 1.** Comparison of Knowledge of Breast and Cervical Cancer among Urban and Rural dwellers

DISCUSSION

The result of our research shows that women in Niger Delta areas of Nigeria are more knowledgeable in breast cancer than in cervical cancer (57% against 39% for urban and 40% against 29% for rural dwellers), Table 2 and 4, although statistically there was no significant difference. This slight increase may be attributed to more enlightenment campaign on breast cancer than cervical cancer in the region. This result is consistent with Carmen et al., [14], where there were gaps in understanding regarding cervical cancer screening among socioeconomically disadvantaged women in Texas.

The few reported cases of cervical cancer in Nigerian hospitals may not reflect low cervical cancer incidence in the region [15], but poor knowledge, cost [16] and a negative attitude to the utilization of cervical cytology service, which is associated with strong cultural and religious factors [17] and the lack of available information about cervical cytology screening could account for underreporting [18].

In cervical cancer knowledge, respondents from the urban areas are more knowledgeable (39%) than the respondents from the rural areas (29%) but there was no significant difference table 1. Although some of the

studies in Nigeria show lower levels of cervical cancer knowledge than the present study [19-23]. In Ibadan, 19.7% were aware of Pap smear test [21]. In Maiduguri, less than 10% were aware of cytological screening and in Orlu, 6% were aware of Pap smear [19, 22]. Some other Studies in Nigeria recorded higher level of knowledge of cervical cancer, such as in Nnewi awareness was 87%, in Sagamu 78.3% in Ilorin 69.8% and in Benin 64% [18, 24-26].

In breast cancer knowledge, respondents from the urban areas were also more knowledgeable (57%) than the respondents from the rural areas (40%), it was also not significant statistically.

The overall result of this research indicates that the knowledge of both cancers is low in that region, which calls for attention. Knowledge is power, knowing about breast and cervical cancer in details will help in reducing the mortality rate caused by these cancers in undeveloped and developing countries. To achieve this, government and private sectors should incorporate cancer enlightenment programs into health centers and hospitals. The enlightenment program should be incorporated during antenatal and postnatal teaching, posters and hand bills should always be posted and distributed, highlighting the key points of breast and cervical cancer. Jingles should always be on air in all radio and television stations.

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*Original Article***Reliability and validity of the Hope Scale in the Iranian Students****Manijeh Shehni Yailagh, Fatemeh Kianpour Ghahfarokhi, Gholam Hossein Maktabi, Abdolkazem Neasi, and Abdolwahab Samavi***

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ABSTRACT

The purpose of the present study was to assess the reliability and validity of the Iranian version of the Snyder Hope Scale. Using multistage random sampling method, 180 students (90 boys and 90 girls) were selected from first grade of high school. The hope scale was used to measure hope in the students. This scale was carefully translated and corresponded to the main scale by the authors. Then, to examine its validity, confirmatory factor analysis was carried out on its items and its reliability was calculated. Results of study indicate that the scale has appropriate psychometric qualities to be used in Iran. In the end of article, findings are discussed and practical recommendations are presented.

Key words: hope, agency, pathways, reliability, validity

INTRODUCTION

Hope is one of the human's qualities helping him to overcome desperation, follow his objectives and lessens the intolerability feeling of future [1]. In Erikson's theory, hope is one of the basic characteristics of human that is formed in early life. In the first stage of psychosocial development of Erikson's theory, hope is the positive consequence of trust crisis against distrust [2]. In this regard, Snyder et al [3] presented a relatively new cognitive- motivational pattern known as "hope theory". Having changed in recent years [4, 5 and 6], the theory has introduced hope construct which is a significant component in the novice field of positive psychology [7]. Hope reflects the perception of the individual about his/her capacities for transparent conceptualization of the objectives and creation of special strategies to accomplish them. Another function of hope is to trigger and maintain the motivation for applying the strategies. Accordingly, hope construct is made of two components. Agency component of hope, which embraces setting and developing individual objectives and pathways component of hope, implies planning to achieve the objectives [6].

Researchers have shown that teenagers and adults with high levels of hope have better performance in the items related to school, sport, health maintenance, problem solving, and mental well-being [8 and 9]. Hope effectively influences many areas of life, because hopeful individuals are able to determine effective objectives and make appropriate decisions about them. Research results demonstrate that higher hope of an individual is correlated positively with self-esteem and perceived competence and negatively with signs of depression [10]. Similarly, regarding future-orientation, individuals with higher hope levels were more optimistic and more focused on success rather than failure in following their objectives.

Relationship between hope and educational performance has also been studied in several researches. Studies have shown that individuals with high hope have effective performance in educational fields. Scores gained in hope scale is a meaningful predictor of educational performance at all educational grades [11 and 12]. Hope meaningfully anticipated primary school students' progress and Iowa Test of Basic Skills scores [13]. Also, hope anticipated educational progress of pre-high school and high school students [14]. Such relation is also reported for academic students, as well [15]. It was found out that the students with lower hope levels experience higher anxiety in competitive tests [16]. On the other hand, students with high hope levels use more appropriate attributions when facing failure and attribute the failure to low attempt and improper study methods [17]. Generally, based on researches and existing theoretical framework, hope construct plays an important role in educational performance and variables involved in mental health. In some cases, the variable is affected by other variables such as self-efficacy, ethnic identity, and future-orientation [18] and, in some researches; it is studied as

a predictor of future-orientation [18]. Still in other studies it is examined as a predictor of variables such as educational performance and mental health [8].

To measure hope variable, Schneider et al [3] prepared hope scale and studied its psychometric indices. In the present study, this scale is translated for the first time in Iran and its psychometric indices are determined proportionate to Iranian culture. Accordingly, there has been an attempt to examine the validity and reliability of the indices to be used in Iran.

MATERIALS AND METHODS

To determine validity and reliability of hope scale, 180 students (90 boys and 90 girls) were selected from first grade of high school using multistage random sampling method. For the purpose of sampling, at first, six schools of the municipal area 1 and four schools of the municipal area 2 were randomly selected from among the high schools of Bandar Abbas, in a manner proportionate to the number of high schools. Then, desirable number of students was randomly selected relative to the number of first-year students. The hope scale was used to measure hope in the students. The scale includes 8 items ranked based on an eight-point scale from completely wrong (1) to completely right (8). In this questionnaire, the minimum and maximum scores are 8 and 64, respectively. A higher score in the scale shows a higher level of hope. The questionnaire has two sub-scales called hope agency and hope pathways. The former component is measured by items 2, 3, 5, and 7 and the latter by items 1, 4, 6, and 8. An example of the scale items concerning hope agency sub-scale is: "I can find many ways to achieve the things that are important for me". An example of the scale items in hope pathways sub-scale is: "there are many ways to solve a problem". In a study by Schneider et al [3], reliability coefficients of hope agency and hope pathways sub-scales are respectively reported 0.66 and 0.74. Factorial structure of the questionnaire is declared as satisfactory by its developers [3]. In the present study, first, the scale was carefully translated and corresponded to the main scale by the authors. Then, to examine its validity, confirmatory factor analysis was carried out on its items using Momentum Structures Analysis Software (AMOS-16) and Cronbach's Alpha coefficient, Spearman-Brown split-half coefficient and Guttman split-half coefficient were calculated to determine the extent of the tool's sub-scales reliability.

RESULTS

Diagram 1 displays factorial structure of the hope scale in the present study. As observed in Diagram 1, all items have suitable factorial load in running the confirmatory factor analysis of the hope scale and all coefficients are higher than 0.40. In other words, the items significantly affected their own related factor ($P < 0.001$).

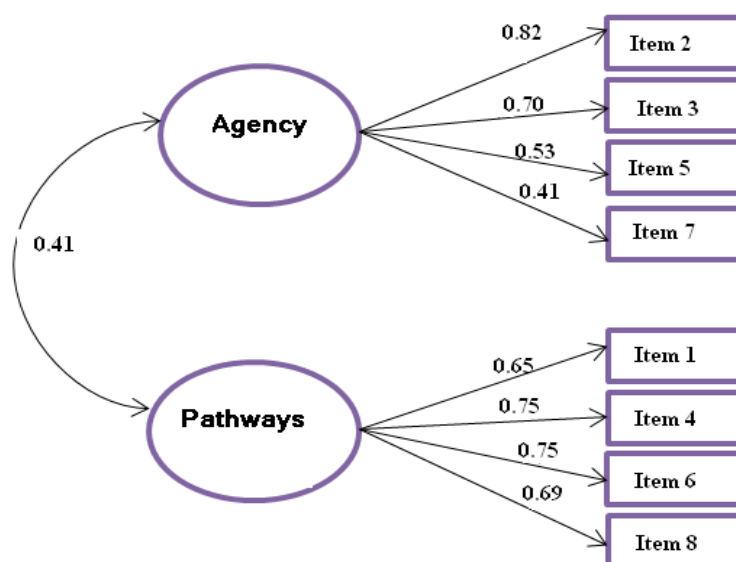


Diagram 1. Factorial Structure of Hope Scale

Values of the fitting indices are shown in Table 1, which shows the model has relatively good fitting. Based on Table 1, the confirmatory factor analysis shows that Root Mean Square Error of Approximation (RMSEA) index coefficients equal 0.08 and Comparative Fit Index (CFI) and Goodness of Fit Index (GFI) are respectively gained 0.94 and 0.95 and other indices also have acceptable values implying partially appropriate fit of the model to data.

Moreover, in this study, Cronbach's Alpha coefficient, Spearman-Brown split-half coefficient and Guttman split-half coefficient were calculated to determine the reliability value of the sub-scales; the respective results are shown in Table 2. This table displays the questionnaire sub-scales' reliability using three methods of

Cronbach's Alpha, Spearman-Brown split-half coefficient and Guttman split-half coefficient. Contents of Table 1 shows that hope questionnaire sub-scales have acceptable reliability coefficients.

Table 1. Model Fit Indices of Hope Scale

Fitting Indices	Value
CMIN (χ^2)	41.26
DF	19
CMIN/DF	2.18
P.	p < 0.002
Goodness-of-fit (GFI)	0.95
adjusted goodness-of-fit (AGFI)	0.90
normed fit index (NFI)	0.90
comparative fit index CFI	0.94
Incremental fit index (IFI)	0.94
Tucker-Lewis (TLI)	0.91
Root-mean-square error of approximation (RMSEA)	0.08

Table 2. Reliability Coefficients of Hope Scale in Present Study

Scale	Cronbach's Alpha	Spearman-Brown split-half	Guttman split-half
Agency	0.66	0.65	0.63
Pathways	0.80	0.77	0.76

DISCUSSION

The present study was carried out on Iranian high school students, and aimed at an examination of the hope scale psychometric indices. Results demonstrated that the scale has appropriate psychometric qualities to be used in Iran. In accordance with the study of Schneider et al. [3], all items of the present study also had suitable factorial load on their related factor and the reliability of the sub-scales has been satisfactory. Accordingly, the scale can be used in psychological and educational researches in Iran. In addition, consultants and psychologists can also use the scale in consulting teenagers and measuring hope level. It is suggested that future studies use this scale to investigate the relationship between hope and variables such as educational performance and mental health of the students.

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*Review Article***The Relationship between Art and Psychology****Kamali Nader¹ and Javdan Moosa*²**

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ABSTRACT

Art is one of important means to develop creativity and establishment of inner innovative forces if reinforced appropriately many mental problems of human beings could be resolved. Psychology is the science studies human behaviors such as fear, motivation to depression, mental and psychological disorders. However, art works to give sense and value to concepts humans touch them and feel them. Therefore, art can be regarded as an efficient tool either for increasing children's and teenagers' self-esteem or as a means for treatment of psychological problems. The interceding relationship between psychologies an art is in perception and sense it gives to every day's happenings and phenomena. This giving meaning in art is observable through creation of art masterpieces and in psychology could be evident unconsciously in individual's personality. The Islamic education systems emphasizes on man's nature, self-purification and its original content regards art as one of the most crucial and stable training styles and achieve salvation. Thus, the mission of art and psychology principally is objective explanation, growth and perfectness for human communities and consequently education and smoothing their soul in dealing with nature and human creations like the individual himself.

Key words: art, psychology, art therapy**INTRODUCTION**

The subject of art has been considered for a long time by scholars and philosophers such as Aristotle and the professional relation of art works with psychology backs to thousands years ago to Catharsis times. Psychological application of art, though as it is used by Freud [1] for the first time. It was after a short time that art and psychoanalytical benefit from their mutual influences. In a few of his theses and hand writings, Freud directly pays attention to artist psychology and the psychological effects of art masterpieces on audiences. He defines art activities as a powerful instrument for psychoanalytic analysis of personality.

Years after, for solving emotional disorders in children, he used drawing-therapy. Freud describes the aim of art-therapy as making situation for selection and change of behaviors and believes that this creates opportunities for re-experiencing conflicts in order to resolve, analyzes or answer them [2].

Psychology in word means understanding the soul or mind [3]. Since soul or mind may not be perceived directly, to solve this problem psychology considers a special subject (behavior) can be studied objectively. Learning, memory, feeling and perception. Generally speaking, psychology is the study of objective behaviors of live beings scientifically in relation to the environment and evaluation of the reasons and quality of these behaviors.

What has made psychology interesting is in its answers to behavioral reasons. Behaviors like forgiveness, excitement, happiness, sorrow, emotions an motivation, psychology is responsible to study behavior objectively since it has less error in comparison with mental study and personal interoperation possess higher probability of error.

Furthermore, behavior involves all of peoples' observable activities. That is to say what people do [4]? Therefore, psychology is the practical science of study of behavior and mental processes investigated through scientific findings. A behavior refers to all of works and activities can be observable and measurable.

Psychology is a pioneer when considering man's natural needs and time is important in study of modern human complexities. To describe psychology differently, it is discovery of lies we tell ourselves and the

determination of what could be right borders. In this definition, the man is a creature should defeat himself at first. And finally when this complete honesty occurred psychology is born. Here psychology has a bond with self-knowledge.

In other party, art means expression of meaning, value and principles using special methods by artists in a way that resulted work possesses forms could be meaningful emotionally. This work influences human should, guides his behavior toward a certain direction and presents issues as principles and values.

James [3] describes art-therapy as doing creative activities by use of art, visual and audio materials and methods. Art-therapy aims to develop identity and personality and elicit sense of achievement in children through egocentric innovative tools. Art-therapy or art psychoanalytical involves attention to mental needs of patients such as need to freedom, self-expression and relaxation. Basically, it doesn't consider art details however; it judges art production not because of its art approach, for its psychoanalytical and treatment role [1].

Psychology of art is an interdisciplinary subject talks about perception, understanding, art characteristics and its productions. Psychology of art is specifically divided into structural and environmental psychology. The former refers to characteristics of mind at time of art production or communication with art work. While the latter concerns environmental conditions and the mutual impact they have on each other [5]. The common point of these two important and critical sciences in man's life is the perception and opinion of human being towards the world around him. Lipez's works in early 20th century played a significant role in extension of art psychology concept.

He tried to conceptually analyze meanings like empathy and sympathy that is a manifestation of individual's feelings to other peoples and creatures. Thus, this concept classified as one of important meanings in psychology of art.

Those who are interested in music, architecture, drawing, sculpturing and other art branches take the concept of perception psychologically serious .since art is perceptive and rooted in giving meaningful sense to incidents and phenomena, therefore the concept of art and psychology may have a close relationship with together[6]. For instance, art production is a meaningful activity the man's creativity power could be understood by.

Another sign to believe art and psychology relation is creativity which holds a special place in psychology and art together. In psychology creativity means innovation and new thinking can be the same as art. Modern psychology probably has high exposure to art. Beauty for instance comprehended by most of psychologists culturally and socially.

Most of psychology of art branches insists on priority of awareness. Some others though, emphasizes on the unconscious. People who were interested in psychology of art had a positive view towards art and its meaning. Wolflin did attempt to show architecture can be understood based on a pure psychological concept that is in opposition with historical view point. Veringer was the first who presented theories in explanation of expressionism art. Muller Frinfeld was the next in this area.

Many other artists such as Gabo, Kelly, Kandinsky, Alburdis and Kips developed this branch significantly [7]. Malraux found it interesting and wrote the book of "art psychology". Although this branch of study began in Germany, others like Kilo Bell and Read from England, France and America continued it. In America, Dewey had the most effect. He in 1934 published the Art as Experience that lead to great changes in education of all levels.

Barkan who was under the influence of Dewey published the Contributions to Art Education. In this book he discussed that art education to children prepare them to live in a democratic society [8].

The development of art psychology from 1950s to 1970s accompanied the development of art history. At the same time, Gestalts psychology, a holistic view point in psychology, helped the growth of art psychology. Arnheims' works especially his significant book "toward a Psychology of Art" played an undeniable role. Art therapy also was discussed in this work.

Bejed proposed selling of art works of psychology of art and make into consideration that art audiences holds what type of interests. Psychology of art faced with a serious challenge when compared to Freud's psychology. However, Jung [9] works had a positive view against art. He believed that unconscious and collective ego contents could be manifested through art and other expressions.

In 1970s, the psychology of art found a significant place at universities and artists were interested in psychology of arts debates. Housral, vingshtain and Drida were seriously working in this domain.

In sociology of art concepts like social situation, economic status, audience and social status of artist are studied. In this sub branch of sociology, the concept of art means what social class or belief has inspired subject to the artist. It also measures which one of these classes is portrayed.

However, a small proportion of sociological debates consider psychology of arts. A few of researchers believe that only 5% of sociological literature allocated to sociology of art which more have the form of basics and introduction [10].

There are several important and argumentative problems and concepts in relation to art and artist role from one hand and society on the other hand. Here, some of concepts can show dominant spirit of sociology of art and artist. The induction forms the first. It is important from two aspects. Firstly, what channel affects art and artist and secondly, how and with what mechanisms the artist will be able to induce values to society.

Thus, they have raised many speaks about sociology of art. Of course, the induction might be categorized under another concept i.e. influence of community and culture on art and artist.

The influence could be damaging that remains negative and unwanted results. Thus, this proposes the relationship between art and artist with community and culture. It is one issues get noticed by sociology of art.

According to Marx [11], artist can only defend from his own class benefits and reflects ideas in the economic class. Sociology of art, however, has presented more exact and serious theories.

Another issue in sociology of art backs to quality of artist and politics relation. It concerns as a result macro cultural policies and try to direct the policies by different mechanisms such as festivals and professional awards.

Interaction of artists and élites from other disciplines has been discussed in sociology of art. Meanwhile, the artists are more known as consumers of other scientific products, though they themselves may provide a context to be discussed by others. As it could be seen in sociology, psychology history, management and political sciences.

To mention another topic which is noteworthy is the change art creates in social values and norms. For example, sociologists came to agreement that Pop music has raised adolescents differently and develop new values and norms. In Iran on the other hand, we hold a deep and rich art tradition. What is known as Iranian-Islamic art has inherited aesthetical elements both from Islamic teachings and natural environment.

To precisely analyze psychological and sociological aspects of this tradition, historical gaps get vital. Most of researchers declared that modern man in some characteristics of life is totally different with ancient man. Modern man has manipulated the nature, though the ancient was satisfied to only interpret it. The former added criticism to perception but the latter more respected perception rather criticism.

The modern man is pleasure seeker; however the ancient man considered world as a bridge to world hereafter. Finally, modern man explores modernity and future but the ancient man focused on traditions.

All of these points should be important at time of studying a historical tradition of art. If we would like to present a more exact evaluation of our art tradition and find a relative realistic image, these criteria are the guide.

Muslim Iranian for perception and understanding of this tradition has less difficulty since this tradition exists yet. But when western investigations on Iranian-Islamic art become important, we see that they have followed their mind in interoperation of the tradition. In other words, if sociology and psychology of art want to get closer to Islamic art developments these epistemological and anthropological gaps should be realized.

Art always is associated to beauty in a way that the concept of art completely brings aesthetics aspect to the mind. Beauty equals art. Therefore if we accept the fact that creation of world and heaven is nothing except God's art, it could be concluded that God is all beauty and creates nothing except beauty.

Human being perceives all of incidents and phenomena through his senses repeatedly. He receives everything with eyes and ears though; all of them are perceived realities not perception of facts principally.

Perception of fact in addition to five senses has to be processed by physical ears and eyes to understand deeply holy fact. Art is a kind of redemption that frees us from wanting i.e. some sort of pain and sorrow. Beethoven on role of art in education says "my art is a path to prosperity of miseries".

What can be interpreted from Quran verses is that to remove unpleasant negative problems is insufficient and should find way to resolve them. In age if technology, one of examples in application of art observed in application of visual and dramatic arts or an indirect art guide rather than addressee guide and direct speech. Thus, the mission of art consists of objective explanation, growth and perfection fir human community. On the other hand, psychology describes and explains human progress in different aspects and regards it multidimensional [12]. One of them is perception and aesthetic dimension.

Art is key to understand life. Nasser Khosro states that "art is man's ornament and man is ornament of cosmos." In Islamic educational system pays special attention to man's nature, education and purification of soul is crucial. It's the only way to salvation and if mixed with art will lead to more deep and sustainable results.

Art is ladder toward reality in condition laid on faith wall. Relationship of responsible art with morality is the same. Art should be responsible to moral values in order to get validated. Improvisation comprises one of art creativity tools and no artist creates a work without a level improvisation. In process of production of a work, the artist always follows known and automatized rules, skills and principles. In their perfect form, improvisation and storytelling are a level within which the artist like a receiver and sender takes verbally from objective origin state, color and tone of voice and immediately turn them back

A large portion of art is in relation to pen and speech known in psychology as verbal and literary intelligence [13]. Origin of this ability refers to multi intelligence. Higher values stated in art content of each school have been proposed by pen and speech, a branch of art.

When elicitation of a function or a belief and directing an idea by use of art methods in direction to transfer of a thought, feeling, school and ideology is the purpose, the pen and writing place in front stage and the pen as a bridge between owner of an idea with audiences, enters as carrier of the idea and opinion and an indication of feelings for peoples in community.

Basically, art and creation of artworks prevent human beings from social deviations and as a mental and psychological need pacify anxious hearts. An artist instructor by having these supplies and application of art among students will be amazingly able to absorb them since art holds giant abilities in diminishing mental problems even physical discomforts.

Art invites men to social life and before suffering from mental madness leaves significant effects on improvement of human life. Peoples' willingness towards different kinesthetic, verbal, expressive and fantasy arts and jobs not only will improve mental and psychological conditions but also play an important role in economic progress.

MATERIALS AND METHODS

This is a type of descriptive and qualitative study classified among library studies which collect data from books, journals, and reliable researches.

RESULTS

Collected data show that through history art was a useful tool for education, and strengthening morale and thought. According to present art results, holds a very close relationship with men's soul. This relation and impact have developed up to the point that an academic perceptual discipline i.e. psychology of art speaks about understanding and characteristics of art and artworks established. Specifically, structural and environmental psychology is two major branches.

The structural psychology considers characteristics of mind when communicate with an artwork, however, environmental psychology reflects environmental condition affect the artist soul or the impact of artist on the conditions. All of people are interested in music, architecture; painting, sculpturing and other art branches take the art concepts seriously. Another result is that art is a conceptual matter that indicates a cultural continuity since by understanding art this cultural continuity could be perceived consequently and interaction of art and psychology can give a special sense to art activities which man's creativity would be perceived at the end. Growth of psychology of art in recent decades accompanied growth of art history that the role of art in treatment of mental and psychological disorders is one of its signs.

Many psychologists and artist such as Freud, Wolfing, Vermeer, Frinfeld and Wilhelm lived from mid-19th century to mid-20th played a crucial role in establishment of psychology of art. They did endeavor to how art is potential to make a positive and effective relationship with psychology to improve man's inter-personal and intra personal relations.

DISCUSSION

Art by several methods helps man's relaxation and creativity. Aesthetical quality of artworks can increase the individual's self-esteem and consciousness.

Investigations show that when individuals overwhelmed by pleasure, physiological factors like heartbeat, blood pressure and breathing get slow. Additionally, production of art prepares the chance for conformity of eyes and hands. By use of perceptive and analytical methods, art helps individual to express his/her nonverbal ideas through masterpieces and get relaxed.

Persons are busy in art creation should share their works with other till group members be able to discuss and analyze them. The consequence of group participation is creation of artwork which its psychological aspects are preferred to aesthetic power. Resulted artwork in this process could be as an opportunity for sharing motives, and analyses in visual perception and overgeneralization of paradoxes and emotions.

In addition to psychological and mental relaxation, art causes reduction and even treatment of behavioral and mental disorders. For instance, patients suffering from physical and emotional problems and unable to state fears and desires or speaks easily about their anxiety and complicated feelings may be the potential cases for creation of an artwork. Through this, they would be able to articulate their way of thought or feeling they have in subconscious.

Concepts like art, soul, love, beauty, relation, justice, perfection, and freedom in each realm of life has its own specific meaning. In other words, it is possible to find a specific meaning or level for each realm of life.

Therefore, it is time to say that the soul of art that inspires man's body may be at first stage the reason of movement or meaningfulness of material body, though, it is possible try to meet material needs of humans as sensuality does. This is also probable that divine soul shows divine art and focuses on mental needs as well.

In other words, in every state, art will be the reason to movement, meaningfulness and living of man's material life. Based on type of art and level of spiritual principles, the resulted meaning will address different periods of life.

Thus, enliven of material body through art and human fluctuate from a pure material life to a spiritual life that is connected to how much art inspired by spiritual principles. These principles will be in a broad spectrum of artificiality to reality.

We come to this result that art has a very close relationship with

Man's soul and it has progressed up to the point that a new branch in perceptive subjects i.e. psychology of art is established talks about perception and qualities of art and its production. Additionally, people always have the opportunity to express their feelings on an artwork,

For example, art therapy known as areas used for a treatment session. Psychology is application of art for revealing of hidden feelings and physical treatment, help to self-confidence and rehabilitation. Child psychologists

and family doctors most of the time use art therapy when for verbal expression of feelings children tolerate a pressure. So, psychology of art is a vital part in activities

Give happiness, enthusiasm and positive motivation to get rid of mental and physical tiredness. This issue doubtless will be a source of pleasure and relaxation in modern life.

According to findings of this study, we conclude that task- process training is effective in improving writing skills, spelling. However, the effect of task- process training method coupled with the motor skills of spelling is more impressive. Therefore, the research hypothesis was confirmed and those with reinforced motor skills had better improvements than those who have not received it. This means strengthening motor skills improves memory and enhances learning and academic achievement because scientists believe that the balanced ability of motor skills is basis of the next learning.

Therefore, it is necessary to reform movement difficulties' people. Therefore, it is concluded that teachers need to investigated both process problems of these children (perceptual skills, visual memory, auditory memory, visual perception, attention) and assess student's step by and chain training methods beside task-process training for increasing of their motor skills.

In this study some qualitative findings was also obtained one of the most important ones is that individual and remedial training can improve children's problems in terms of spelling disabilities. In the individual training plans, different training methods are used including combined sensory training, perceptual and motor skills, cognitive and Meta cognitive skills, visual memory, auditory memory and auditory perception, and rehabilitation models using multi-sensory improvement methods trained to children individually. Effectiveness of this method is confirmed by man studies.

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The Study of Continuity Causes of Married Life with Emphasis on the Role of Women in Marriage Continuity

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ABSTRACT

The current survey, generally aims at effective factors on the married life continuity along with defining their relation with attitude towards the married life. Descriptive- correlation method was applied here in this study. The statistical population, included women involving more than 20 years in couple life who lived in Bandar Abbas (Iran) Port, 370 of who were selected as sample by convenience sampling technique. The research tool applied here was researcher prepared questionnaire targeting "effective factors on marriage continuity" which the alpha of 96% was resulted. the findings derived from the aforementioned questionnaire, indicates that the more confidence and reliance, positive attitude, conflict resolution methods, positive attitudes towards financial affairs, agreement on the way spending leisure time, sexual relationship, children affairs, compliancy from friends and relatives, religious commons and recognition of wife is achieved, the more continuity will be reached on marriage life. Finally, a few suggestions are presented to the families and people in charge.

Key words: marriage continuity, women, attitude towards the married life

INTRODUCTION

Among all strengthening factors of marriage and couple life, the role of wife has the priority. There upon, this research you may have in front, seek for which factors make marriage continuant and what is the role of the women in this? Numerous surveys have been done in this area. Rajabi and Nabgani [1] proved a negative relation between psychoneurotic behavior (one of personality characteristics) and marriage satisfaction, a positive relation of personality characteristics (extroversion, reception of experience, compatibility and conscientious characteristics) and marriage satisfaction and predict personality characteristics (psychoneurotic, extrovert and reception of experience behaviors) and passionate components (intimacy). Monadi [2] showed in another study that common imaginations and definitions, behaviors and funs form conversation between partners which itself qualifies the marriage relations and satisfaction from life, in particular from women points of view.

Abdo-allah zade [3], pointed out to the effects of personality characteristics of couples on the satisfaction level of marriage life in his research. Similarly, Zanjani [4] proved there is significant relation between religious beliefs and satisfaction of family life. Sadeq Moqaddam & colleagues [5] reported there is relation between marriage life and its various aspects with some special variables. Charania [6] also showed in his research that personality remains influence on partners' satisfaction. The results implied significant effects of receptiveness, accepting responsibility, compatibility, anxious attachment, negative attraction, and social-sexual characteristics. The study of Razan & colleagues [7] implied that sexual satisfaction is highly important in faithful relations.

Anyway, principal satisfaction of sexual relation is a powerful predictive factor in respect to future satisfaction and continuity of relation. The results of studies by Click and Carter [8], showed marriages below the age of 18 years old have three times more likelihood of divorce compared with cases after this age; those cases before reaching to 20 years old have two times more likelihood of divorce compared with cases after this age. Namely, the lower marriage age is the higher separation probability will be, since younger individuals owe fewer capabilities for playing role as wife. Meanwhile, marriage at very older age increases the danger of divorce [9].

Cook [8], considered the roles of five remarkable personality factors related to old couples compatibility. He applied Neo and DAS questionnaire in his study of 117 American couples. The results prove that sexuality and psychoneurotic behavior are not significant predictive for marriage compatibility of old individuals. Upon this

notion, the current research aims at recognizing effective factors on the continuity of marriage life and defining their relation from marriage continuity point of view.

MATERIALS AND METHODS

The study is based on descriptive- correlation method. The statistical population included women involving more than 20 years in couple life who lived in Bandar Abbas. They have lived in the sampling area for at least 5 years. By convenience sampling technique, 368 individuals were considered as sample. The data collection tool was research made questionnaire about effective factors on marriage continuity for the purpose of evaluating woman role in this area. Respondents gave their answers in Likert scale of 5 degrees (very much, very, average, little, very little). The reliability of this research tool was defined by distributing questionnaire among 30 persons, whose data was gathered. The analysis showed the Cronbach's alpha of 0.96. Multiple regression analyses were used to explain and predict criterion variable by the use of predictor variables. For assessing significance of model in regression model we used F test, and statistical T test was used to determine significance of Beta coefficient. It must be noted that in this research continuity causes of married life are regarded as predictor variables and marriage continuity as criterion variable. All of the statistical calculations were done by the use of SPSS statistical software version 16.

RESULTS

This survey is focused on defining effective factors on marriage continuity and their relation from marriage continuity point of view. The research was composed of 7 question components such as understanding and acceptance, trustworthiness and reliability, conflict resolution method, attitude towards financial affairs, agreement on the way of spending leisure time, children affairs, and recognition of wife. The following results were yielded by analyzing the data of interviews and questionnaires. After analyzing regression on research data, it's observed that the model under study explains about 63 percent of criterion variable variance. It's used statistical test of variance analysis to determine significance of R^2 , in which $F=89.17$ is statistically significant ($P < 0.001$). Detailed results are presented in table 1.

Table 1. B, β , R, R^2 and significance test in under study model

Variable	B	β	T value	P.	R	R^2	F	P.
Equation constant	-.712		-3.289	.001	0.79	0.63	89.171	0.001
Spending leisure time	.467	.408	9.783	.000				
Trust worthiness and reliability	.167	.195	3.792	.000				
Recognition of wife	.134	.110	3.165	.002				
Conflict resolution	.151	.141	3.983	.000				
Understanding and acceptance	.171	.155	3.484	.001				
Children affairs	.087	.104	3.137	.002				
Financial affairs	.082	.070	1.791	.074				

As it is shown in table 1, it's used statistical T test to calculate significance of calculated Beta coefficient of every predictor variables of the model. The results show that understanding and acceptance, trustworthiness and reliability, conflict resolution method, agreement on the way of spending leisure time, children affairs, and recognition of wife are significant predictors of marriage continuity. Only the attitude towards financial affairs variable was not significant predictor of marriage continuity.

DISCUSSION

These findings are conformed to those of research made by Razan & colleagues [7]. Analysis review by Twenge, Campbell & Foster [8] showed that parents report lower marriage satisfaction compared with non-parents. Regarding the difference of attitudes, it cannot be claimed which one is correct. Also, Iranian and foreign culture differences may be the origin of such inconformity. Understanding and acceptance, trustworthiness and reliability, conflict resolution method, agreement on the way of spending leisure time, children affairs, and recognition of wife play remarkable roles in continuity of marriage. The results are conformed to works of Charania [6], Rajabi and Nabgani [1], Abdo-allah zade [3]. It is suggested that to pay more attention to the cultural context of Iran and future studies focus on the relation between personal and family variables with marriage continuity, rather than its separation.

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Effectiveness of Academic and Life Skills Instruction on the Freshmen Academic Achievement

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ABSTRACT

The purpose of this study was to examine the effectiveness of instruction of academic and life skills on the freshmen academic achievement. The research procedure was semi-experimental with pre-test and post-test design with a control group. The statistical sample included 170 freshmen were randomly selected and assigned in experimental and control groups. The instruments were Life skills inventory, average grade first term, and demographic questions. The experimental group attended in 10 weekly sessions (35 hours) of academic and life skills training. The results showed that the students who had received academic and life skills training gained significantly higher scores in life skills and academic achievement than those with no training. Also, not significant difference between male and female students in the score of life skills and academic achievement observed. It seems that assessing and meeting student's life skills and academic achievement needs, especially in the first year of their study is very essential.

Key words: academic skills, life skills, freshmen, academic achievement

INTRODUCTION

Students are going through a transitional phase from adolescence to adulthood. Over these academic years, they try hard to adapt with university life and overcome challenges. Students also want to become financially and emotionally independent from their families and take on new social values and responsibilities [1]. They typically view their enrollment in college as an opportunity to acquire the knowledge and skills that are necessary to succeed in the workplace and to advance their general knowledge and life skills [2]. University students have to manage their time and also look for sources in order to accomplish their assignments; a challenging job to handle, in particular, for first year students. Failure in such condition would lead to poor chances of academic success. Also, students admitted to higher education institutions are expected to finish their courses of study in a given period of time and successfully graduate. A considerable number of these students, however, fail to complete their studies for different reasons. Such terrible trend consequently downgrades the efficiency of higher education system and eventually leads to squandering of national wealth and resources [3].

Decreasing numbers of traditional age students and demographic shifts in the entering student population has led to an increase in the number of students who are unprepared for college-level work [4] and they were unprepared for the experiences of college as they did not have adequate schooling or training [5]. On the other hand, according to numerous educational experts, most of the students admitted to university are not sufficiently prepared for academic studies and a prosperous graduation. Furthermore, the entrance of first year students at younger ages together with a significant demographic shift in their population has recently brought about a large graduated workforce that is not sufficiently prepared for the job market. A few studies suggest that some other students actually are prepared for university, but they either might be unaware of the facilities available (such as library, laboratory, consulting services, etc.) or they simply don't make use of them [6]. Another factor adding up to the issue is immediate entrance of high school pupils from a familiar teacher- directed environment to a higher level where they encounter a student- directed environment [7].

Every semester, a considerable number of students do poorly in their studies for different reasons, which concern their families as well as the entire education system; because such trend would eventually downgrade the efficiency of academic institutions and lead to squandering of national wealth and resources. Therefore, it should be of high priority to devise and implement plans that improve educational conditions and help students do much better in their studies. Researchers have shown students who never go through educational failure are

less likely to feel nervous; they better grasp the main idea of each lesson, better process information, and more frequently employ self-assessment strategies. Most students find university years very stressful and experience a tough situation, since young adults get involved with new freedoms, works related to growth and progress, focusing on interpersonal communication and academic interests. Due to some certain circumstances, they are probably more vulnerable to hardships and troubles, which can compromise their mental health [8].

Success for the first year student is more than merely gaining sufficient academic credit to progress to the next year of study, but also involves educational and personal development [9]. In fact, first year students face some certain social issues and undergo a lot of pressure from studies. Negligence in settling the problem, on the one hand, and too much stress gripping students, on the other hand, obviously leads to a situation in which they show more intensely vulnerable to various tensions, compared with other segments of society [10]. The problem of retaining students has been, and will continue to be, of concern to all stakeholders in higher education. Numerous studies have identified factors contributing to first year retention that have both academic and social implications [11, 12, 13 and 14]. Past research also suggests that the first six weeks of college are the most critical for retaining first semester students as they face new academic experiences [15].

Students who enter college unprepared for academic work may not have the coping skills necessary to compensate for the pressure and anxiety that they feel when being challenged. Life Skills are those competencies that assist people in functioning well in the environments in which they live. World Health Organization defines Life Skills, as abilities for adaptive and positive behavior that enable individuals to deal effectively with the demands and challenges of everyday life [16]. Life skills, from this perspective, are essentially those abilities which help to promote mental well-being and competence in young people as they face the realities of life. Secondly, to enable children to learn and practice skills, life skills education is based on a child-centred and activity oriented methodology. And finally, life skill education is based on the philosophy that young people should be empowered to take more responsibility for their actions [17 and 18]. Life skills include individual and social skills, which adolescents should learn about and ultimately be able to treat themselves and other people of the whole society in an appropriate manner effectively and safely [19]. Based on the previous research done, self-esteem, interpersonal skills, good communication, goal setting, decision making, problem solving and recognizing personal values are among the contributing factors that help students promote their mental health and prevent behavioral abnormalities or mental disorders. Lack of such skills, however, would make students get away with stressful troubles through ineffective and maladaptive behaviors [8].

According to experts, curriculum courses offered during the first year can remarkably influence the student progress over the next years and motivate them carry on towards graduation [12]. In addition, researchers have indicated that students who never go through educational failure are less likely to feel nervous; they better grasp the main idea of each lesson, better process information, and more frequently employ self-assessment strategies [20]. According to Tinto & Goodsell (p.8) "...the first year is a period during which programs can have the greatest impact on subsequent student development and persistence" [21]. Success for the first year student is more than merely gaining sufficient academic credit to progress to the next year of study, but also involves educational and personal development [22 and 9]. Also, the problem of retaining students has been, and will continue to be, of concern to all stakeholders in higher education, and it seems appropriate that colleges and universities continue to design and create programs that support under prepared, at risk students. Thus, the primary purposes of this study were to examine the effectiveness of teaching academic study and life skills on freshmen academic achievement and life skills. The present research article will draw on the question of whether teaching academic study skills as well as life skills can positively affect the progress and achievement of new coming students to university.

MATERIALS AND METHODS

This research was conducted using empirical method, which in turn employed the model "pretest-post-test, with experimental and control groups" 170 newcomer students in the first semester of the academic year 2010 were selected. The sample size was determined at confidence interval (CI) of 95%. Power of the statistical testing was $P_1=5\%$, 80% and $P_2=27\%$ (following the steps in tutorial). Samples were randomly chosen and stratified through a multistage procedure. Sampling process first began with randomly selecting three fields of study from each two faculties at Hormozgan University. Then, a total of 170 students willing to participate were chosen. Having been partially stratified, subjects were placed into two groups of experimental (83) and control (87). The stratification variables were gender, age and field of study.

In general, the examination consisted of three stages: *administering pretest*, *applying experimental variables*, and *administering post-test*. The experimental variable was defined as teaching academic study and life skills including introduction to the related educational program, principles of reading and learning methods, note-taking techniques, memory recollection at exams, cognitive self-conscious acquisition, anger management skills, stress coping strategies, decision making and problem solving, communication skills, creative and critical thinking. Throughout the examination process, all the members of the experimental group were first trained in sessions of 90 to 120 minutes for 9 weeks, and finally, post-test was administered for both experimental and control groups.

Life skills questionnaire was arranged by Yusefi based on length scale and according to several aspects of life skills recommended by the World Health Organization(WHO) including: Decision-making and problem-solving abilities; Creative thinking ability; Critical thinking ability; Interpersonal relationships and effective communication abilities; Cognitive self-conscious ability; Empathy skills; Emotions and anger management; Stress coping ability [23].

In order to evaluate and obtain face validity, the questionnaire was submitted to six university professors and informed researchers. Next, in order to obtain reliability, questionnaires were distributed among 40 students and Cronbach's Alpha Coefficient was measured, result of which was 0.85 for total items of the questionnaire. The highest reliability coefficient was 0.91 for effective communication subscale, and the lowest level was 0.76 for stress coping ability. Data from the present study were gathered and analyzed using the Statistical Package of the Social Sciences (SPSS16).

RESULTS

Preliminary analyses were conducted to determine whether there were any differences between the two groups on Life skills. All of students who participated in the study, Life skills questionnaire was administrated. One Way Analysis of Variance ANOVA was utilized to find whether the selected groups were almost homogenous. To do this, their scores in pretest of were used. The ANOVA analysis did not show any significant effect for the test. The result shows, F ratio (0.51) doesn't exceed the F critical value (2.65) on the .05 level of the significance. This implies that there is no significant difference two groups were almost homogenous.

To examine the effect of the independent variables, t-test and analysis of covariance was used in order to examine the signification of difference between experimental and control groups in terms of academic achievement and life skills.

Table 1. Comparison of experimental and control groups in terms of performance and educational progress

	Groups	M	SD	DF	T value
First semester	Experimental	16.85	2.63	168	4.28***
	control	15.05	2.92		
Second semester	Experimental	16.74	2.01	168	4.65***
	control	14.88	3.11		

* p < 0.05. ** p < 0.01. *** p < 0.001.

As the above table shows, the mean Grade Point Average (GPA) of experimental group was higher than that of control group. The result of statistical testing showed the two mean GPAs are significantly different and are unlikely to have occurred by chance. Therefore, the first hypothesis of the present research (suggesting that academic achievement of newcomer students who participated in the educational program of academic and life skills at Hormozgan University performed much better than students who never passed the program) is approved.

Table 2. Comparison between experimental and control groups with a view to life skills

Variable	Changes Resource	SS	DF	MS	F
Life Skills	Pre-test	157.09	1	157.09	67.47***
	Group	353.49	1	353.49	151.89***

* p < 0.05. ** p < 0.01. *** p < 0.001.

As the above table shows, Analysis of covariance (ANCOVA) regarding the alternative hypothesis indicated a significant difference between the post-test grades of experimental and control groups, i.e. the independent variable is effective on the dependent variable, and there is a significant difference between the two experimental and control groups. Therefore, the second hypothesis of the present research (suggesting that life skills of newcomer students who participated in the educational program of academic and life skills at Hormozgan University performed much better than students who never passed the program) is approved.

Diagram 1 displays factorial structure of the hope scale in the present study. As observed in Diagram 1, all items have suitable factorial load in running the confirmatory factor analysis of the hope scale and all coefficients are higher than 0.40. In other words, the items significantly affected their own related factor (p<0.001).

DISCUSSION

The results of data analysis show that the statistical analysis using T-test showed that progress rate of the experimental group both in the first and second semester of academic year was much higher than the control group, which was significantly different at P<0.001. In other words, teaching study and life skills improved the progress of experimental group. The result is consistent with Terner's findings, Zhao& Kuh, Kuo et al. that point

out those skills and abilities in students are crucial for successful performance at university and suggest that a range of social and educational skills are vital for academic success [24, 25 and 26]. Essential courses on educational and life skills offered to students would help them easier adapt with requirements of university life and eventually move away from chances of failure towards achievement and prosperous graduation.

The statistical results obtained from analysis of covariance testing showed the educational program was significant ($P < 0.0001$) after controlling the effects of pretest, i.e. teaching students life skills was effective on their knowledge and grades. It can be stated that subjects were different in their knowledge of the skills and abilities before the educational program was offered, In fact, they were balanced to the same level of the examined proficiency employing analysis of covariance, and then the effects of the educational program on students' knowledge of the skills was evaluated, which proved positively effective according to the results shown in the table above. Therefore, the alternative hypothesis of the research is approved and findings are consistent with the results obtained by O'Connor et al. [27], avoiding risky behaviors; Sumyung & Namhee [28], better adaptability of students; Lavasani [29], higher grades in life skills exams; Aghajani [30] improved mental health. Knowledge of suitable life skills would provide an opportunity for individuals to act normally in their daily life and effortlessly and positively conform to social environment and culture when dealing with other people. In addition, life skills would help individuals boost their level of adaptability and psychological capacity.

In a situation where young students benefit from life skills, they take responsibility for their well-being, make healthy decisions, and generally lead a safe and sound lifestyle throughout adolescence and adulthood, which ultimately enables them to perform taking advantage of their potentials and become prepared to encounter future needs and changes. Lack of information about appropriate lifestyles endangers students' health, i.e. poor life and social skills would bring about mental illness and social problems, fault of which is mainly found with parents and pre-university schools that fail to adequately educate students [31]. According to Darren & Gazda [8] life skills are essential for a productive life and should be promoted throughout every age span, including childhood, adolescence and adulthood.

This study is limited to only 144 subjects, in order to get in depth it can be broadened by selecting higher sample size. So suggesting the future implementation of the study it should be repeated with larger sample.

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*Original Article***Comparison of Self-Differentiation Amount between Two Groups of Anxious and Non-Anxious People in Bandar Abbas****Ali Nikbakht*, Bahare Mir Ahmadi, Seyyed Bahman DashtiNejad**

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ABSTRACT

This study examined comparison of being distinctive amount between two groups of anxious and non-anxious people in Bandar Abbas. The study is causal- comparative research or after the event. Sample size in this study was 120 people. 60 people attended each group equally. For selection of sample, available sampling method was used. Distinctive Questionnaire of 46 questions (DSI) and Beck anxiety Inventory of 21 questions (BAI) for collecting, and multivariate variance analysis test was used to analyze the data of research. The main findings in the study showed that there are significant differences between anxious and non-anxious people about being distinctive amount but there is significant difference between men and women in this subject. Between anxious and non-anxious people about the four components of reactivity emotional, emotional faulting, emotional mixture, I position there was a significant difference, but between men and women only on the components of reactivity emotional, significant differences were observed. About components of the emotional faulting, emotional mixture, I position, significant difference between men and women was not observed. Generally, the study found that non-anxious people have higher level distinctive amount than anxious people and this led to reduce them anxiety.

Key words: distinctive, anxious, non-anxious**INTRODUCTION**

Many theorists have tried to explain the operation of the family. The famous theorists of the field, is Murray Bowen [1] that has provided family systems theory. This theory is based on the concept self-distinction [2 and 3]. From the view point of Bowen, a kind of emotional system has control over on the family structure that the ability to transfer between generations and the person's mental health depends on separation level or his separation of this system [2 and 3].

Bowen theory plays an important role in the growth of theory and clinical work of family therapy [1 and 4]. According to the Bowen pattern, a person who is reached the balance distinction has the lowest level of anxiety and symptoms psychological level. The concept of self-Distinguish is a base of Bowen theory that including the Intra psychic and Interpersonal. In Intra psychic, self-Distinguishes related to ability of self-separation felling and in Interpersonal, refers to the ability of person to balance in distinction from others also in addition of intimacy with others. Intra psychic dimension includes reactivity emotional and I position and Interpersonal dimension includes Emotional cutoff, intermingling with others (With others fusion). These cases refer to Emotional cutoff and close relationship to others in stressful life situation. People with high distinction levels are not highly dependent emotionally to others and have not need to break away from others e and in the view point of feeling and mental has a "self-balanced "situation and do not have confirm or deny others [4 and 5]. According to this theory, individuals with high levels of their separation who have feeling and thinking level flexible in coping with the pressures of life and they have clear emotions correlation with others and in the near of correlation has the mental breakdown and individuals with weak self-separation level have non-flexible thinking, and overall experience high level of anxiety and emotional [6].

Researches that are about mental health and self-distinction level research showed that people who have high level of self-distinction have less avoidance and mistrust [7]. The psychological distress [8], operation disorder, anxiety and depression [9]. In a research that about self-separation was conducted by skowron and

Friedlander [10] results showed that, between the high level self-distinction and down level of syndrome, mental illness there is a relationship and they stated that 42 percent of the variance of distress be determined by self-distinction. In another study, which was conducted by peleg-popko [11] the results showed that between self-distinction and social anxiety and symptoms of mental illness, there is a negative relationship. In another study with 221 young people by skowron et al [12], was performed, findings showed that the self-distinction has a significant relationship with subjective well-being. Two other studies that tested Bowen theory was conducted in different cultures reached the same conclusions, one by tuason [8], was performed with the Philippian sample, the results showed that between self-distinction, the mind Welfare and anxiety, there is negative relationship, that their results were similar to the results of two American samples.

Bhatt, in research concerning the family functions system, physical health concluded that poor family relationships cause emotional reactions such as anger, fear, grief, physical arousal and heart rate increasing [13]. Several Research show negative effects of anxiety and stress on physical health while self-distinction of family about Bowen theory and in background researches has positively correlated with anxiety [14].

Results show that the dynamic of a mixed family, that are specified with emotional dependence, lack of autonomy and the one extreme (high support), may cause a sense of confusion, stress and anxiety in a family. These relationships help us to understanding of family processes such as making triangle [12].

Basis on the results of previous researches, the aim of performing this research is examination of self-distinction amount between two groups of anxious and non-anxious in Bandar Abbas.

MATERIALS AND METHODS

This study is causal-comparative research or after the event. Statistical society of this study included all anxious and non-anxious individuals in Bandar Abbas. Sample size in his study was 120 people, including 60 non-anxious individual and 60 anxious individuals who were selected by available sampling method. Questionnaire of self-distinction (DSI)

This questionnaire is made by skowron [12] that has 46 questions that is used to measure the differentiation of self-distinction. Its main focus is on the important relationships of life and current relationships with family, and it is now [12]. This questionnaire is composed of 4 subscales included the reactivity emotional (11 questions = ER), intermingling with others (12 questions= FO), I position (11 items = IP), Emotional cutoff (12 questions= EC) [12].

Knerr [4] is reported total Cronbach's Alpha reliability 0.90 and the reliability range of 0.76 to 0.86. The validity of this questionnaire is confirmed by Skiyan using of comments of 10 experts in this field [15].

Beck Anxiety Inventory (BAI)

Beck Anxiety questionnaire, is a self-administered questionnaire that is provided for measures severity of anxiety in adolescents and adults. This questionnaire is a scale with 21 substances that subjects in each of case, one of the four options, which reflects the anxiety are choose. Four options for each question in a range from 0 to 3 are scored. Each of the test substance describe one of the common symptoms of anxiety (subjective symptoms, physical, and fear). Studies show that this test has high reliability and validity [16].

RESULTS

The first research hypothesis: according to sex (female and male), between anxious and non-anxious individuals, about the level of "distinction", there are differences.

Table 1. The variance analysis of multivariate of group type

Source	SS	DF	MS	F	P.
Type (non-anxious and anxious)	224208.07	1	224208.07	40648.97	0.000
Gender (male and female)	9.07	1	9.07	0.16	0.68
Interactive effects (gender and type of group)	261.07	1	261.07	4.73	0.03
Error	6397.10	116	55.15		
Total	230876.32	119			

To test this hypothesis, statistical analysis of multivariate analysis of variance (MANOVA) was used. As Table 1 shows the observations, based on the independent variable of type of people (non-anxious and anxious), with $F = 40648.97$ in the alpha level $P = 0.000$ there are significant differences in the distinction. According to the independent variable of gender with $F = 0.16$, in Alpha level $P=0.51$, the significant difference was not observed in distinction. Interactive effects between gender and type of group (non-anxious and anxious) with $F = 4.73$, in the alpha level $P = 0.03$ Significant differences in the distinction is created. Generally, from two main effects, only main effect of type of people (non-anxious and anxious) and interactive effects of gender (men and women) on the type of group (non-anxious and anxious) in distinction have created significant differences and the effect of gender (female and male) in distinction has not created any significant difference.

Second research Hypothesis: based on sex (female and male), between non-anxious and anxious individuals, about the level of "emotional reactivity", there is significant difference.

Table 2. The variance analysis of multivariate of group type (non-anxious and anxious) and gender on emotional reactivity

Source	SS	DF	MS	F	P.
Type (non-anxious and anxious)	48000.00	1	48000.00	4272.560	0.000
Gender (male and female)	1.20	1	1.20	4.11	0.049
Interactive effects (gender and type of group)	4.80	1	4.80	0.42	0.51
Error	1303.20	116	11.23		
Total	49309.20	119			

To test this hypothesis, statistical analysis of multivariate analysis of variance (MANOVA) was used. As table 2 shows the observations, based on the independent variable of type of people (non-anxious and anxious), with $F = 4272.560$ in the alpha level $P = 0.000$ there are significant differences in emotional reactivity. According to the independent variable of gender with $F=4.11$ in Alpha level $P=0.049$, there is significant difference. Interactive effects between gender and type of group (non-anxious and anxious) with $F=0.42$, in the alpha level $P=0.51$ Significant differences in the distinction is not created. Generally, from two main effects, type of people (non-anxious and anxious) and interactive effects of gender (men and women) on the type of group (non-anxious and anxious) in distinction have created significant differences and the effect of gender (female and male) on group type in emotional reactivity has not created any significant difference.

The third research hypothesis: according to sex (female and male), between individuals non-anxious and anxious people, about the level of "Emotional cutoff", there is significant difference.

Table 3. The variance analysis of multivariate of group type (non-anxious and anxious) and gender on Emotional cutoff

Source	SS	DF	MS	F	P.
Type (non-anxious and anxious)	53046.07	1	53046.07	1539.06	0.000
Gender (male and female)	6.07	1	6.07	0.17	0.67
Interactive effects (gender and type of group)	21.67	1	21.67	0.62	0.42
Error	3998.10	116	34.46		
Total	57071.92	119			

To test this hypothesis, statistical analysis of multivariate analysis of variance (MANOVA) was used. As table 3 shows the observations, based on the independent variable of type of people (non-anxious and anxious), with $F = 1539.06$ in the alpha level $P = 0.000$ there are significant differences in Emotional cutoff. According to the independent variable of gender with $F=0.17$ in Alpha level $P=0.67$, there is no significant difference. Interactive effects between gender and type of group (non-anxious and anxious) about level of emotional development with $F=0.62$, in the alpha level $P=0.42$ there isn't significant difference. Generally, from two main effects, only type of people (non-anxious and anxious) has created significant differences in Emotional cutoff level. The effect of gender (female and male) and the effect of gender interactive on group type in Emotional cutoff level have not created any significant difference.

The fourth research hypothesis: according to sex (female and male), between non-anxious and anxious individuals, about the level of "Emotional intermingling", there is significant difference.

Table 4. The variance analysis of multivariate of group type (non-anxious and anxious) and gender on Emotional intermingling

Source	SS	DF	MS	F	P.
Type (non-anxious and anxious)	57290.70	1	57290.70	8748.97	0.000
Gender (male and female)	24.30	1	24.30	3.71	0.057
Interactive effects (gender and type of group)	86.70	1	86.70	13.24	0.000
Error	759.60	116	6.54		
Total	58161.30	119			

To test this hypothesis, statistical analysis of multivariate analysis of variance (MANOVA) was used. As table 4 shows the observations, based on the independent variable of type of people (non-anxious and anxious), with $F = 8748.97$ in the alpha level $P = 0.000$ there are significant differences in Emotional intermingling. According to the independent variable of gender between two groups of men and women with $F=3.71$ in Alpha level $P=0.057$, there isn't significant difference. Interactive effects between gender and type of group (non-

anxious and anxious) about level of Emotional intermingling with $F=13.24$, in the alpha level $P=0.000$ there is significant difference. Generally, the main effect of type of group (non-anxious and anxious) and gender have not created significant differences in Emotional intermingling. The main effect of gender (female and male) has not created significant differences in Emotional intermingling.

Fifth Research Hypothesis: according to sex (men and women), between anxious and non-anxious individuals, the level of "My position", there are differences.

Table 5. The variance analysis of multivariate of group type (non-anxious and anxious) and gender on my position

Source	SS	DF	MS	F	P.
Type (non-anxious and anxious)	46334.70	1	46334.70	2380.55	0.000
Gender (male and female)	10.80	1	10.80	0.55	0.458
Interactive effects (gender and type of group)	86.70	1	86.70	4.45	0.037
Error	2257.80	116	19.46		
Total	48690.000	119			

To test this hypothesis, statistical analysis of multivariate analysis of variance (MANOVA) was used. As table 5 shows the observations, based on the independent variable of type of people (non-anxious and anxious), with $F = 2380.55$ in the alpha level $P = 0.000$ there are significant differences in my position. According to the independent variable of gender between two groups of men and women with $F=0.55$ in Alpha level $P=0.458$, there isn't significant difference. Interactive effects between gender and type of group (non-anxious and anxious) about I- position with $F=4.45$, in the alpha level $P=0.037$ there is significant difference. Generally, the main effect of type of group (non-anxious and anxious) and the effect of gender Interactive on group type group (non-anxious and anxious) have created significant differences in my position. The effect of gender (female and male) has not created significant differences in me- position.

DISCUSSION

This study was done in order to compare distinction amount between two groups of non- anxious and anxious people. Findings from multivariate analysis of variance showed that between non- anxious and anxious people about distinction amount and its components, there are significant differences, namely non- anxious people have higher distinction, lower reactivity, lower emotional faulting, low Emotional intermingling and higher I- position than anxious individuals. Results of current research findings are consistent with pervious researches [7, 8, 9, 10, 11 and 14].

In explaining these findings can be said that low level of distinction according to the Bowen can be pulled psychological and interpersonal problems. Bowen believed that the main reason for mental illness signs is the absence of distinction in the family system. No distinction means a lack of enough clear boundaries for maintaining individual identity and intimacy. Differentiated individuals have the ability to control their interpersonal relationships. People with high distinction awareness of their emotions and are able to measure the position. These people, have ability to seamlessly grow in intimate relationships and can in deep relationships, keep calm and comfortable, therefore are avoided Emotional fusion or emotional cut off to adjust its internal tensions, while the less differentiated people, or to be disposed fusion with others, So, with the separation from important people in life come down or the fault of their emotional and so when faced with emotional intimacy, show anxiety reactions. Emotional reactivity is case that his feeling is dominant on his intellect and logic and he in various situations only with emphasis on the emotional climate and the environment, regardless of possible logical solutions, makes decisions, so in dealing with life problems behave as emotional. So person is suffering from chronic anxiety and this can cause new problems. Also can be said, since people with high emotional reactivity can't in deal with situations and problems of life use their knowledge well and is not capable to choose innovative and effective responses, so in dealing with situations, deal problem and this leads to increase level of their anxiety. People who of emotional and physical have faulting of their parents, are in trouble in their nuclear families and are elusive of the problems that occur in life. Separation of emotional keeps triangles with any change, it prevents more distinction. Emotional cutoff can be occurred as physical separation or a form of emotional detachment. Different findings indicate that whatever emotional escape level of people be more, that means whatever they were more in the family projection process, and whatever they have been used more unsuitable strategies to escape the unresolved emotional relationship of their families, they have a higher anxiety level, that these findings are consistent with the concepts of Bowen theory. So it seems, people with high levels of emotional cutoff, have had difficulty communicating with others and usually deal with issues have been used withdrawal pattern. There are various degrees of intermingling in human emotional and intellectual Systems. High intermingling does not allow to distinct itself from others. Intermingling also refers to two aspects of emotional immaturity: firstly, there is a kind of feeling and thinking of the intermingling that because of the

masonry and rationalization to justify giving of emotional immaturity. Secondly, cut off refers to lack of borders and the lack of individuality between two or more persons such as symbiotic relationship. When people are unable to separate helmet from their original families as well, Emotional disease can get. The other hand, fusion has different types in terms of severity. Family members whatever feel more insecure, are inclined to intermingling. Whatever people feel more anxiety or sadness, come back to the unique security that the result of that is intermingling with family. Chronic anxiety can be brought to people who are emotionally ill and can't distinct helmet from their families. They always stick to the family and families stick to them. Differentiated People have a strong personal identity or my position and the consent of others do not change their opinions or their behavior. People, who have a strong sense of self, propound strong opinions and beliefs in life. As a result, they will be aim paired simply in a stressful situation. Integrated is determined with a clear definition of their beliefs, beliefs, and certain rules of life. This concept allows people to be more responsible in their behavior and its consequence. There is coordination between these beliefs and principles and rules to live for them and they use comfortable even for situations with high anxiety and force.

Overall, these results of above findings suggest that the distinction have the effective role in anxiety of people. Level of distinction among non- anxious people is more than anxious people; being significant differences between anxious and non- anxious people in all four components of emotional reactivity, emotional faulting, emotional intermingling, my position (its integral) is another result of findings and this is consistent with Bowen theory. According to Bowen theory, people with low distinction, are people who have mixed wisdom and emotion, so their life influenced other feelings. Consequently, they simply become impaired in stressful conditions. Because of their emotional needs and their fears, their individuality is sacrificed to ensure the acceptance of others. According to Bowen, they represent a kind of pseudo-self non distinct that makes imagine that they have real character with error, but this character is not something other than others ideas and the beliefs. But a distinct people, are mature in terms of emotionally. They can, according to their own desires are involved feeling or emotions in decision making. Since them mental or intellectual functioning during stressful periods remain relatively dominant, about who they are and what they believe, they have more certainty.

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*Original Article*

The Study of Structural Practice Approach vs. Awareness-Raising Approach in Teaching Verb Tenses to EFL Students

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ABSTRACT

This study intends to investigate the differences between two approaches to teaching English verb tenses to EFL learners, i.e., the formal instruction of structural pattern drills and the other is grammar task performance through 'awareness-raising approach'. The participants in this study include 50 university students majored in English who were randomly selected from Islamic Azad University of Behbahan. To carry out the study, two kinds of teaching materials were utilized, i.e., the 'awareness-raising' tasks on verb tenses selected from "Grammar in action again" textbook and the 'structurally-based' lessons and activities on English verb tenses taken from "Communicate what you mean" textbook. Analyzing the data, the researchers came to the conclusion that in teaching English verb tenses to intermediate learners, awareness raising approach could lead to a better and more efficient contribution to learning verb tense aspects. The statistical analysis of subjects' performances also proved that recent communicative approaches like awareness rising or consciousness rising, which use authentic and meaningful materials, are more favored by language learners. The implications of this study are considered in foreign language learning programs as well as material developing and text-book writing.

Key words: EFL learners, awareness-raising approach, teaching verb tenses

INTRODUCTION

A continuing debate in second language pedagogy is whether grammar should be taught or if it is learned naturally through communication. Researchers like Fotos and Ellis [1] give the term "zero position" to the viewpoint of those who maintain that the teaching of grammar has only a small effect on the acquisition of linguistic competence in a second language. However recent studies [2] show that knowing how to build and use certain structures makes it possible to communicate certain types of meaning successfully.

Now, many scholars agree that grammar is too important to be ignored, and that without a good knowledge of grammar, learners' language development will be severely affected. For centuries linguists have been trying to describe grammar in different ways, leading to different grammatical approaches; mostly formal whose main concern has been to help learners internalize the structures by practicing those [3]. Looking at the history of second or foreign language teaching, one can see that to develop a new communicative language program, there has been a great shift of emphasis in this field from the structurally-based methods and techniques of teaching language structures to the more recent task-oriented and task performance ones. The move toward a communicative approach to language pedagogy in the 1970s and 1980s resulted in alternative syllabuses; in part, the Notional-Functional syllabus, the Task-Based procedural syllabus and the Process syllabus [4].

This study intends to investigate the differences between two approaches to teaching English verb tenses to intermediate EFL learners: One is the formal instruction of structural pattern drills and the other is the view that has developed in awareness-raising approach in recent years, that is, grammar task performance through 'awareness-raising approach'. Out of so many aspects of English structures, the verb tenses are the focus of this research to be taught to students studying English in their second year of education in Islamic Azad University of Behbahan'.

1. Definition of key terms

2.1 Verb tense

It is defined as the relationship between the form of the verb and the time of the action or state it describes. In English, verbs may be in the past or present tense [5].

2.2 Structural practice approach

Rivers [6] interprets it as an approach to teaching of language structures in which having been presented an explanation of a grammatical features, students are required to change unnaturally complicated sentences from singular to plural, from affirmative to negative, from declarative to interrogative, or from one tense to another. Students may be asked to combine sentences, to add some elements to sentences, or to fill in blanks with words which change according to structural environment.

2.3 Task

It is a (teaching) activity which is designed to help achieve a particular learning goal [5].

2.4 Awareness-raising activities

Tasks by which learners' general awareness of language should be raised as a preliminary to second language teaching, partly through grammar. If the students know the kind of thing to expect, they are more receptive to it. They invent their own label for grammar rather than being taught as a pre-established style. So the pupils investigate the grammar by, for example, deciding where to insert "see-through" in the sentence: "She put on her cozy, old, blue, nylon, blouse" [7] Language Awareness (LA).

3.1. Definitions and scopes of language awareness

Tomlin and Villa [8] provide a restricted definition of awareness derived from second language acquisition and cognitive science. They maintain that "awareness refers to a particular state of mind in which an individual has undergone a specific subjective experience of some cognitive content or external stimulus".

A key element of a language awareness approach is that learners 'discover language for themselves'. Hawkins [9] says it involves challenging 'pupils to ask questions about language', encouraging learners to gather their own data from the world outside school into the way language works to convey meaning. This approach also gives language teachers a greater awareness of the resources they already have at their disposal-their knowledge as 'expert users' of the language.

In a similar vein, Frank, and Rinvoluceri [10] maintain, language awareness activities can be seen as guided exercises where there is still some control over the students' responses in performing the grammatical tasks; however there is no control over the content of the response, so that the student can express his or her own opinion of the world. This adds up to total involvement of the learner's whole person, with total responsibility for what he or she produces in a rather loose framework of predetermined cues.

3.2. LA and Knowledge about Language (KAL)

Little [11] maintains that there is agreement that: "LA is imparted to learners through school and draws upon metalanguage to explain aspects of the language code in the classroom." Andrews [12] also defines LA as "teachers' explicit knowledge of language or pedagogical content knowledge." These definitions equate 'knowledge' and 'awareness'. Alderson, Clapham, and Steel [13], see the term 'KAL' and 'LA' as interchangeable, as well.

In a similar vein, James [14] defines LA as "the promotion of understanding of what linguists (and others) have discovered about language and what these findings have to say teachers, lawyers, doctors, and other non-linguists.

3.3. LA as Linguistic Awareness (LGA)

While LA as KAL figures in language education, LGA is a term from psycholinguistics. LGA is seen as a way for the researcher, he be psycholinguist or grammarian, to access his subjects' implicit or unconscious knowledge [14]. Masney [15] claims "LGA unlike KAL is not constituted of encyclopedic knowledge, but of linguistic intuitions that have been raised to awareness, an indicator of what learners know about language through reflection on language."

On the other hand there are researchers like Hawkins that believe LA to be different from LGA. Hawkins [9] sees LA as helping learners to "gain insight into pattern" while LGA work involves bringing this tacit knowledge to the speakers' attention.

3.4. LA as Metacognition

James [14] maintains that the definition of LA makes reference to a 'sensitivity' factor, i.e., explicit knowledge about language and conscious perception and sensitivity in language learning, language teaching and language use. James emphasizes that the key to sensitivity is an ability to respond to language other than at the bare functional-communicative level. Swain and Lapkin [16] refine this sensitivity by reflection, saying that reflectivity is an alternative knowledge source upon which language awareness as KAL must draw.

During the period when the Audio Lingual approach to foreign language teaching was dominant, the learner reflectivity that had been promoted by GTM approach in favor of fluency, as well as the reflectivity time needed for translation was suppressed. This reflectivity or self-critique is the key to the definition of LA as Metacognition.

3.5. Pragmatic Aspects of LA (Pragmatic Awareness)

From a pragmatic perspective, Van Lier [17] defines LA as understanding how language is used as a tool. This is a view which is also shared by Sharwood-Smith [18]. For him also the recipients of LA are 'teachers, learners, government officials, the media, the general public', and the source of knowledge about language is 'the insights and frameworks provided by modern linguistics rather than the traditional grammarian.'

Tomlinson [19] proposes the following as objectives of a pragmatic awareness approach.

- To help learners notice the way that proficient users of the L2 typically use pragmatic strategies;
- To help learners achieve deep, learner-driven analysis of language in use this can help them to note the gaps and to achieve learning readiness.
- To help learners develop cognitive skills;
- To help learners become independent.

Such goals, as Hanford [20] says, evaluate what can be developed through awareness rising. He adds that opportunities for communicative practice and activities such as role plays, drama, or pair-work seem real as they allow for students to experiment and receive feedback in a controllable environment.

3.6. Awareness-raising and “noticing strategy”

‘Noticing hypothesis’ which is attributed to Schmidt [21], states that consciousness, in the sense of awareness of specific forms in the input at the level of noticing (conscious attention), is necessary for language learning to take place. He suggests that two kinds of noticing are necessary conditions for acquisition:

1. Learners must attend to linguistic features of the input that they are exposed to, without which ‘input’ cannot become ‘intake’.
2. Learners must ‘notice the gap’, i.e., make comparisons between the current state of their developing linguistic system available as input.

The first kind of noticing, according to Sharwood-Smith [22] is customarily promoted through activities and procedures involving input enhancement, whereby as in the presentation stage of the traditional ‘Presentation-Practice-Production’ (PPP) mode of instruction, targeted features of the input are made salient in order to facilitate their becoming intake.

The second kind of noticing is traditionally mediated through corrective feedback. However, Thornbury [23] believes that “when it comes to correction, there is a considerable mismatch between teacher intentions and learner outcome.”

“Reformulation” and “reconstruction” are two kinds of tasks which according to Thornbury [23] provide opportunities for noticing. These tasks are both meaning-focused and form-focused. Reformulation tasks, as he says, are consistent with a fluency-to-accuracy or task-based model of instruction, while reconstruction activities activate bottom-up processing. “Dictogloss is a kind of reconstruction activity that has been popularized recently; it is also known as “dicto-comp/dictation/composition” or ‘grammar dictation’.

4. The application of LA in teaching of different language skills

4.1. Teaching of grammar

Combining grammar instruction with communicative language learning, Ellis [24] explains a method in which the learners can benefit from explicit instruction prior to the activity to facilitate awareness of the form they will face. This can be through giving learners short grammar lessons that are followed by communicative input containing the target forms. The communicative activities are often followed by teacher guided review of the target forms and feedback on errors. As stated by Schmidt [21], after awareness of grammatical structures has been raised by formal instruction or some implicit focus-on-form, many learners notice the target structures in later communicative input. The repeating of noticing helps the progress of the learners’ comparison of the correct forms with their own interlanguage forms.

4.2. Teaching of reading comprehension

Wallace [25] believes that it is possible to devise simple literacy awareness tasks which involve L2 students observing who reads what kinds of material in different social settings. It also means inviting students to consider their own needs and roles as readers in both a first and a foreign language. Wallace [25] has offered some of these awareness tasks which can be appropriate for both early readers and more proficient ones. They involve, for example, students devising matrices of the reading activities which they observe in their everyday environments, keeping a diary of their own reading activities and noticing the range of textual material which surrounds them, either or both in the L1 or target L2 setting.

4.3. Awareness-raising in the context of TEFL training

Edge [26] uses the term ‘applied linguistics’ referring to two types of language study; the first type aims to improve the trainees’ own command and use of English, for example, explicit grammar study in support of weaknesses diagnosed in written work. Explicit work on language awareness will directly support the learning styles of some trainees. The awareness-raising aspect of language study, as she says, provides the experiential base for the learning of descriptive terminology which trainees will need in their own advanced and professional lives.

The second type of work under the term ‘applied linguistics’ is the explicit study of language and language learning that is necessary to support the working of decisions as a language teacher; for example they need some information about error analysis in order to decide which mistakes to correct [26]. Trainees’ awareness and knowledge of the content of linguistics develop as they become more skilled in the interpretation and application of information that is available.

Edge [26] believes that the development and sharing of methodological procedures, which will integrate an individual’s growing language awareness into its doubly supportive role in TEFL training, is necessary for TEFL training purposes.

5. Research Questions

1. Does formal instruction of “verb tenses” through structural practice approach have any significant contribution to the retention of these features by intermediate EFL learners?
2. Do grammar task performance techniques of awareness-raising approach have any significant contribution to the retention of “verb tenses” by intermediate EFL learners?
3. Is the study of “verb tenses” through formal instruction of structural practice, as effective as the study of the same features through awareness-raising task performance?

6. Null Hypotheses

Based on the above-mentioned research questions, the following null hypotheses are formulated:

1. Structural practice techniques have no significant effect on developing “verb tenses” by intermediate EFL learners.
2. Awareness-raising tasks have no significant effect on developing “verb tenses” by intermediate EFL learners.
3. There is no significant difference between two different classes, due to the effect of structural practice approach and awareness-raising approach on an intermediate grammar proficiency test.

MATERIALS AND METHODS

In this section, different steps taken to perform this study will be discussed. These steps include the following issues respectively: subjects, instrumentation, teaching materials and procedures. The participants in this study include 50 university students, both male and female. These students were randomly selected from Islamic Azad University of Behbahan. They were all majored in English and were studying in their second year of education at university. Twenty five students were randomly assigned to control group and the other 25 students were assigned to experimental group, each at intermediate level.

The TOEFL test used in this study included 90 items in a multiple choice format. It consisted two sections, namely ‘verb tenses’ as the grammar section, and ‘reading comprehension’. The verb tense section contained 40 questions. The reading comprehension section also contained 50 questions with 5 texts for reading.

Two kinds of teaching materials were also applied: One was the ‘awareness-raising’ tasks on verb tenses selected from a book called “Grammar in action again”, by Frank and Rinvolucrici [10]. The other teaching material was the ‘structurally-based’ lessons and activities on English verb tenses, taken from a textbook called “Communicate what you mean” by Pollock [27].

Research Design & Procedure

First of all, the 50 participants were randomly assigned into two groups; one as the control group and the other as the experimental group, each with 25 students at the intermediate level. Then both groups were given a TOEFL test which comprised of two sections; section one with 40 tests of verb tenses and section two with 50 tests of reading comprehension, both in multiple choice formats. Before the administration of the teaching materials, the two sections of TOEFL test were given to both control and experimental groups. To insure the homogeneity of the two groups, an f-test of homogeneity was taken based on the scores of both groups. In the next step, 40 tests of verb tenses stood as the pre-test for both groups. That was for the sake of assessing participants’ verb tense proficiency before being exposed to teaching materials. Then, the researcher held 9 sessions for each of the two groups separately. He taught the control group based on the traditional structural approach followed by structural pattern drills, and the experimental group based on the new method of awareness rising to see the effect of this method which was the focus of the study.

Each group had two sessions in a week; thus the course lasted for nearly 5 weeks. This helped to control for the time variable. Right after the end of the 9 sessions of the course, section one of the TOEFL test, that is 40 tests of verb tenses, was conducted again to both groups as the post-test of the study. The final step was to decide whether the three null hypotheses formulated at the beginning of the study shall be rejected or accepted. For so doing, three t-tests were applied.

RESULTS

To assure the homogeneity of variances of the two groups, a TOEFL test of 90 items was applied which comprised of two sections: section one with 40 tests of verb tenses, and section two with 50 tests of reading comprehension; both for assessing the general proficiency of the two groups. Then the performance of the two groups were compared and analyzed through the statistical technique of F-test which was used based on the results of pre-test scores of both groups as shown in table 1.

Table 1. Analyzing the pre-test results

Group	N	Mean	SD	Variance (s ²)
Control	25	53.84	8.557	73.223
Experimental	25	53.68	8.702	75.726

Here, the F-observed is 1.034 which is less than the F-critical value at 0.05 level of significance that is 1.96 (1.034<1.96). Therefore, the difference between the variances of the two groups is not significant; that is to say, the two groups are homogeneous in terms of their general language proficiency. At the post-test stage, i.e. after the administration of the treatment to both groups and at the end of the course, section 1 of the TOEFL test, i.e. 40 tests of verb tenses was administered again to both groups. Its aim was to prove if each of the teaching methods, have been practical to its specific group; and also to prove if which of the methods, that is, 'structural practice' or 'awareness raising' has been more effective for contributing to develop the verb tense proficiency of the students. For so doing, three t-tests were used.

The second null hypothesis assumes that awareness raising tasks have no significant effect on developing 'verb tenses' by intermediate EFL learners. To prove whether to accept or refuse this null hypothesis, the second t-test was used which compared the pre-test results with post-test results of experimental group. Table 2 shows the difference between the pre-test performance with post-test performance of the experimental group:

Table 2. Analyzing the results of experimental group

Experimental Group	N	Mean	SD	Variance
Pre-test	25	23.32	4.140	17.143
Post-test	25	29.84	3.578	12.806

The t-test formula was applied to the results of experimental group shown in table 2. The next table shows the results of the second t-test:

Table 3. Analyzing the results of the second t-test

T value	DF	T critical value for a two-tailed test	
		0.05 level of significance	0.01 level of significance
5.956	48	2.704	2.021

As shown in table 3, it could be concluded that the difference between the mean scores of pre-test results with those of the post-test results of experimental group is significant and cannot be attributed to the sampling error. So the null hypothesis 2 is also rejected, leading to the conclusion that awareness raising tasks are effective on developing the mastery of 'verb tenses' by intermediate EFL learners.

The last null hypothesis assumes that there is no significant difference between the effect of structural practice approach and awareness-raising approach on an intermediate grammar proficiency test. To prove whether to accept or refuse this null hypothesis, the third t-test was used which compared the post-test results of control group with post-test results of the experimental group. Table 4 shows their differences.

Table 4. Comparing the results of experimental group with control group

Group	N	Mean	SD	Variance
Control	25	27.00	3.662	13.416
Experimental	25	29.84	3.578	12.806

The t-test formula was applied to the results shown in table 4. The next table shows the results of the third t-test:

Table 5. The results of the third t-test

T value	DF	T critical value for a two-tailed test	
		0.05 level of significance	0.01 level of significance
2.772	48	2.704	2.021

DISCUSSION

Analyzing the data, the researcher came to the conclusion that in teaching English verb tenses to intermediate learners, awareness raising approach could lead to a better and more efficient contribution to learning verb tense aspects. The statistical analysis of subjects' performances in this research also proved that recent communicative approaches like awareness rising or consciousness rising, which use realistic and authentic as well as meaningful materials, are more favored by language learners thus such approaches should be included in any foreign language program, like material developing and text-book writing. Although the results were supporting awareness raising practices, there is no simple choice between the deliberate practice and study of grammatical forms, and intuitive acquisition of these forms through using in real life contexts. Thus, one can say both processes come into play and should be encouraged in a teaching program.

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The Impact of the Application of Teaching Art on the Increase of Creativity in Elementary Students

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ABSTRACT

The current research is about the analysis of the application of art of the increase of creativity among female elementary school students in Islamshahr. In this research, for the selection of the sample group and also increasing the accuracy by using the simple random sampling based on the formula of determining sample volume by Bula, 80 female elementary students were selected. The tool for the evaluation of this research was the Torrens's creativity pictorial test, form A. The validity and the reliability of this test were achieved by the Delphi technique that is polling the opinions of the experts in three phases with in, at least, fifteen days. The students were randomly divided into two control and experimental groups. The experimental group benefitted the new method of teaching art. The attained results of the Co-variance analysis indicate that there is a significant and direct correlation between the scaffolding of teaching art and the increase in the students' creativity. The results indicated that the mean of the scores of four factors among in the testing group in the post-test was significantly higher than their grades in the pre-test and it indicated the impact of the method of teaching art on the fluidity, flexibility, innovation and the expansion of the students in the experimental group that were evaluated by the test. It seems that teaching art can have a desirable impact on the creativity of the students. To sum it up, we can say that the scaffolding of teaching art respectively leads to the increase in the four dimensions of Torrens's creativity of pictorial testing of type A and the expansion, innovation, fluidity of the mind and flexibility.

Key words: creativity, teaching art, fluidity of the mind, expansion, innovation, flexibility.

INTRODUCTION

The concept of formal education in every society from the past to the present has been related to social systems. In fact education has been a necessary tool for the progress and the development of the society and among different academic cycles, elementary education has had the highest impact on people [1] because elementary school is the first place where a child faces a formal organization after his/her family. In this direction, committed teachers are needed who depend on the ability, Understanding, analysis, reasoning and thin king of the students and try to blossom the hidden talents and encourage independent and creative thinking. I order to bring into existence creative thinking, the role of art Teacher, in this matter, seems to be more important. Although, an effective art teacher, taking into account the respect he/she has for his/her students' feelings, can strengthen the student's feelings for the appreciation of beauty, the spirit of curiosity, freedom, being open to criticism, innovation and thinking. In the customary methods of teaching art, usually, inappropriate methods are used to teach art. One of these methods is the production and mechanistic in which teacher prescribes the desired activity of some sort such as (how to make flowers by paper) for all the students indiscriminately while the activity has no artistic value and its only value so to speak is to keep the students busy [2].

In these methods, the students usually, use a patter or model to design or draw pictures and they have no chance to think, innovate and express their feelings. Unfortunately, in the common methods, there is no trace of noticing individual differences, feelings and artistic activities methods and often, the art hours are sacrificed in favor of mathematics or other courses. Needless to say that art classes can be an opportunity for strengthening the inner motives, a place for contemplation, experimentation and the growth of the widespread artistic talents. It

will be regrettable if there is no mention of art which is in a dire need of attention and change in the education's policies of improvement. One of the essential pivots of improvement in the field of arts should not be left unnoticed [3].

Great teachers consider meditation to be the basis for education and the nourishment of meditation, they as the main goal of educational institutes. Some scientists have, also, considered education as the right way of growth in judgment. Meditation is a process in which the individual tries to pinpoint the problem he / she is facing and makes a determination to solve it [4]. Today, there are two kinds of meditation known as critical thinking and creative thinking being discussed by psychologists and teachers. The authorities of education are trying to plan curriculum and educational methods whose goal is to nourish these two types of thinking.

Critical thinking includes inclinations and talents such as precise analysis of issues, paying attention to different viewpoints and reaching the right conclusions [5]. Critical thinking in Sayf's opinion is accurate thinking in which the individual looks at the issues accurately, analyzes them and selects the best beliefs, actions and decisions based on the reasons, evidence and solutions [6]. Creating thinking is a kind of thinking based on which the individual can create a new product from something ordinary. One who has creative thinking is not necessarily an exceptional or small individual per se, but someone who works hard, concentrates a lot and insists on reaching new conclusions in a problem. One of the most complicated and the best reflections of man are thought thinking [7]. In 1869, Galton decided to discover creativity in the lives of genius men to find out the reasons for their creative power. Also, as a result of considerable efforts (Binet, Alfred) and his researches about intelligence, the existence of creative imagination that had not been responsive using the traditional methods, became uncovered [8]. Kaiser introduced creativity as putting to work the intellectual abilities to create a new thought or concept and Taylor considers creativity as shaping experiences in the new organizations. Madnik considers creativity as giving form and shape to the association of elements as new combinations being in conformity with special obligations or he considers it to be kind of useful and believes that the more the new elements of the new combination are dissimilar, the more creative is the process of solution [9]. Robert Gagne considers creativity as a kind of solving problems. Gagne, in his classification of all types of learning production has considered the highest level of learning as the solution to the problem and has not allocated another classification to creativity, but he believes that creativity is a special kind of solving problems [6].

Gilford did a lot of research in the field of creativity and finally reached the conclusion that man's intellectual abilities cannot be defined in one dimension and be called intelligent or something similar to it. By using advanced statistical methods and computerized programs he found out that human's intellectual abilities can be divided into 150 separate factors that are each measurable.

In his opinion, some of the characteristics include articulation, simplicity, flexibility in the thinking trend and the originality in thinking and decision making. These three characteristics, in Gilford's view, form the divergent or uncommon thought. Individuals who have a divergent thought in thinking and an action are different from others and get away from tradition and convention and use the new and creative methods [10]. Torrance has given 3 definitions in his most recent opinion in the educational psychology review about creativity, 1) Definition Based on Research: Creativity means the process of feeling problems, issues, scrutiny in the data, lost elements, guessing things that are incompatible and making theories about these deficiencies and the evaluation and testing these guesses and theories, reviewing and re-testing them and finally transferring the results. 2) The Artistic Definition of Creativity: Creativity means digging deeper, reviewing, similar to listening to the smell, crossing off the mistakes and building castles made of sand. 3) In fact creativity and innovation is the individual's ability to get along with difficult circumstances at the time of facing them. When a person does not have a pre-learned solution, he needs a certain degree of creativity [6]. Torrance [11] found out that every year there was a gradual increase in the innovation when it came to the pictorial tests up to the sixth grade, but in some groups in the third and fourth grades there was a decrease in innovation.

During the mid - 1960's, his researches showed that changes in curriculum and teaching methods could reduce this sudden drop in the fourth grade innovation or even eliminate it. In another research, titled, "The recognition of the role of sex in the creative thought, Torrance did not notice any significant difference among the test grades of the groups. Whallace [12] showed that in the creative classes, thought has more value than memory and he has considered the creativity factor to be the interaction between the psychological security and the learners' freedom for taking risks. Eric's findings [13] has referred to the components of nurturing creativity in learners as the contents of curriculum, family, teaching methods, learning environment and learners. Milgram [14] in a study, considered the cause of inappropriate function of academic centers as being similar. They showed that the most important factor in nurturing creativity in the learners is the academic programs in the academic centers. The findings of Liu, Li-Ming [15] during the research known as the connection between creativity in musical abilities conducted at the University of South Dakota with a pool of 134 people showed that the high level of creativity ability has a direct correlation with the musical ability. Also, the creativity ability is correlated to the amount of art education that is given to the students by the environment. Also, city children are much more explicit than the ones in the suburbs and villages when it comes to expressing their views and opinions. On the other hand, children of villages have higher creativity ability and also psychologically they are more flexible and pay more attention to details.

Hun Kison [16] in a research conducted in 2004 titled the variety in creativity reached the conclusion there is a positive correlation between children's creativity and art. In this research, this question had also been

brought up as to whether teaching art (taking into account all varieties of its activities) has an impact on the education and the growth of creativity?

The happy conclusion is an interesting quotation from Herbert Read [3] an English philosopher. He believes that there are perfect similarities between mental pro that form artistic activities and the mental activities that form education. He clarifies that beyond the goals of art education and the appreciation of beauty, it is basically impossible to imagine any other objectives for education.

Mirkamali and Khorshidi [17] showed in a study that paying attention to teaching art especially during the elementary level has a significant impact on the increases of creativity of the students. Thus, the students whose teachers' pay attention to art in the elementary period are more creative and enjoy more mental fluidity, innovation, flexibility and expansion when they grow up.

Renzooli [18] showed in a study that teaching is the most important component for teaching creativity in the students during the elementary years. He showed that the more the teachers' pay attention to teaching art in the art curriculum, the more the learner will have creativity.

In a study, Gardener [19] showed that mentors, teachers and counselors play important roles in the creation of motivation among creative individuals. He showed that the most important factor having an impact on the elevation of creativity is paying attention to art because art is the open window to aesthetics and tremendously effective on the creativity.

Erick [13] showed in a study that individuals, especially creative students, as far as personality is concerned have certain characteristics including the fact that most of them are interested in independence, have more self-acceptance and enjoy more intuitive thinking. They also have interest in experimentation, examination, high self-confidence, mental fluidity, the ability for the expansion of the subject matters and innovation because of the focus on teaching art during the elementary years.

Taking into account, what has been said about art, the main objective of this current study is the examination of the following hypothesis:

1. Teaching art has an impact on the creativity of the female students at the elementary level.
2. Teaching art has an impact on the mental fluidity of the female students at the elementary level.
3. Teaching art has an impact on the Flexibility of the female students at the elementary level.
4. Teaching art has an impact on the innovation of female students at the elementary level.
5. Teaching art has an impact on the Expansion of female students at the elementary level.

MATERIALS AND METHODS

The method of the current research as far as the growth, the data, quantity and the experimental study is concerned is real because the researcher by the formation of two experimental and control groups and the manipulation of the independent variable (teaching art) studied the its impact on the dependent variable (creativity). The statistical pool of the current research was all the female students at the elementary level in the city of Islamshahr in 2010-2011 academic years. For the selection of the introduced sample group and also increasing the accuracy of the measurement, the simple random sampling method based on the formula of the selecting Bula's sample volume and also studying 80 female students was used.

The tool for the evaluation of this research was Torrens's pictorial test of type A. This test includes 3 activities: A) Completion of pictures: In this activity, there is a piece of colorful paper in a curved shape. The examinee (student through this yellow paper and using mental innovation creates a new figure and adds whatever crosses his/her mind to complete that picture for which the student is required to finish in 10 minutes. The examinee's score was to be between 0 and 5. Zero stands for the lowest and five is for the examinee's maximum score which is attained after the picture has been drawn. B) The second activity is the construction of pictures: In this activity, we have noticed 10 different pictures with each one of them having some defects and the examinee as to complete them by getting rid of the defects. To complete each one of these pictures, the examinee by using a pencil or color pencil draws images that cross her mind. He/she will, then, write the title of each picture under it. The student was required to complete the project for as much of it as she could in ten minutes. The score allocated for this phase of the activity was to be between zero and thirty; zero indicative of the lowest and thirty the highest score. C) The third activity was for repetitive pictures: In this activity, there were a few parallel lines and within (ten minutes) the student was to add lines and turn the parallel lines into the image that was forming in her mind. She was to draw the pictures as such that the main core of the figures included the same parallel lines. The students was to complete as much of the project as possible within 10 minutes. The score for this phase of the activity was to be between zero and forty five; zero indicative of the lowest and forty five the highest score.

For the analysis of the data by using laser, statistical tests known as the Co-variance analysis and Conventional method in descriptive statist is for the determination of the statistical characteristics were used. The validity and the determination of the statistical characteristics were used. The validity and the reliability of the measurement tools were calculated by Delphi method that, relatively, enjoys a high degree of validity and reliability. Before describing the data, the demographic information of the sample group is shown in table 1.

Table 1. Demographic information of the sample group (n=80)

Group	Second grade	Third grade	Fourth grade	Total
Experimental Group	12	16	12	40
Control Group	12	16	12	40
Total	24	32	24	80

RESULTS

A) Description of Data:

Statistical characteristics of the sample group gathered in a table respectively.

Table 2. Statistical characteristics of scores in the sample group n=80

			Minimum	Maximum	Standard deviation	Mean	Skew	Tension
Creativity	Pre-test	Control	44	156	22.092	110.68	-0.146	-0.577
		Experimental	43	158	27.116	99.33	0.157-	0.589-
	Post-test	Control	47	232	32.486	116.38	-0.102	-0.312
		Experimental	48	259	29.657	175.15	0.15	-0.202
Mental fluidity	Pre-test	Control	10	25	3.97	18.40	-0.582	0.313
		Experimental	7	28	4.74	15.65	-0.490	0.283
	Post-test	Control	8	28	5.91	20.83	-0.374	0.357
		Experimental	21	28	3.59	25.30	-0.290	0.437
Flexibility	Pre-test	Control	9	22	2.86	14.85	-0.582	0.532
		Experimental	9	16	2.88	12.20	0.598-	0.502
	Post-test	Control	8	22	4.19	15.80	-0.415	0.516
		Experimental	9	22	3.36	18.65	-0.374	0.598
Innovation	Pre-test	Control	9	38	7.22	27.08	0.257	0.497
		Experimental	9	38	7.79	22.0	0.271	0.569
	Post-test	Control	15	48	10.03	33.03	0.302	0.585
		Experimental	27	52	7.63	41.27	0.358	0.594
Expansion	Pre-test	Control	32	71	11.63	48.85	0.012	0.221
		Experimental	21	77	15.07	48.05	0.014	0.197
	Post-test	Control	21	68	14.74	46.38	0.20	0.183
		Experimental	47	140	25.20	87.05	0.451	0.257

From the data in the above table we can conclude that: 1) The comparison of the top means shows that the highest mean is for the expansion and the lowest mean is for flexibility. 2) The comparison of the standard divisions shows that the distribution in the expansion is higher than other cases. 3) The lowest score was related to the mental fluidity and the highest one was related to the expansion.

In this research, for the determination of the correlation between the method of teaching art and creativity, the analytical co-variance test was used. Table 3 shows the results of the analytical co-variance for the post-test scores in two control and experimental groups.

Table 3. Summary of the analytical co-variance of post-test grades in two controlled and testing groups and also the pre-test grade

Source	Liberty Rate	Square Root Total	Square Root mean	F	Effectiveness Rate
Pre-test	1	27659.99	27659.99	44.56	0.376
Group	1	86243.89	86243.89	138.93	0.643
Error	77	47800.49	620.786		

Considering table3, the F test for the independent variable equals 138.927 which is significant at 0.001 level and the correlation between the independent variable and the dependent one (the post-test scores) is between 0.801 and the rate of the clarified variance is 0.64. Based on the estimation of the attained effectiveness severity, the rate of effectiveness severity equals 0.64. Therefore, we can conclude that the impact of the presented conditions on the test group was significant. In other words, the method of the new teaching of art has desirable impact on the students' creativity. Thus, the judgment indicates that the new method of teaching art has had desirable impact on the creativity of the students. This finding has also been confirmed in the analysis of the next chart. Also for the rejection or confirmation of the Zero-statistical hypothesis about the impact of teaching art on the components of mental fluidity, flexibility, innovation and the growth of the female students in the

elementary school, the Co-Variance test was utilized. The analysis of Co-Variance is a form of the Co-Variance analysis which studies the significant differences between the means of the experimental group considering the correlation of the initial degrees and the related variable degrees. The results were presented in table 4.

Table 4. Results of the Co-Variance analysis of Post-test scores for mental fluidity component in the two control and experimental groups with pre-test

	Source	Degree of freedom	Square Roots Total	Square Roots mean	F	Rate of effectiveness
Mental fluidity	Pre-test	1	491.17	491.17	27.51	0.263
	Group	1	600.74	600.47	33.64	0.304
	Error	77	1375.003	17.86		

P** 0.001

Considering table 4 in the dependent component or the variable of mental fluidity, the F test in the pre-test variable is equal to 27.51 which is significant at 0.001 level and the correlation between the Pre-test variable with the dependent variable (the post-test for mental fluidity) equal to 0.51 and its clarified variance 0.263 meaning about 26% dependent variable (The post-test grade for mental fluidity) equal to 0.55 and the clarified variance of 0.304 meaning about 30% dependent variable (the post-test for mental fluidity) will be clarified by the impact of the group.

Table5. Results of the Co-Variance analysis of Post-test grades for Flexibility component in the two control and experimental groups with pre-test

	Source	Degree of freedom	Square Roots Total	Square Roots mean	F	Rate of effectiveness
Flexibility	Pre-test	1	257.93	257.93	22.84	0.229
	Group	1	257.60	257.60	22.81	0.229
	Error	77	869.57	11.29		

P** 0.001

Considering chart (5) in the dependent component or the variable of Flexibility, the F test in the pre-test variable is equal to 22.84 which is significant at 0.001 level and the correlation between the Pre-test variable with the dependent variable (the post-test for Flexibility) equal to 0.48 and its clarified variance 0.229 meaning about 23% dependent variable (The post-test grade for Flexibility) equal to 0.48 and the clarified variance of 0.229 meaning about 23% dependent variable (the post-test for Flexibility) will be clarified by the impact of the group.

Table 6. Results of the Co-Variance analysis of Post-test scores for Innovation component in the two control and experimental groups with pre-test

	Source	Degree of freedom	Square Roots Total	Square Roots mean	F	Rate of effectiveness
Innovation	Pre-test	1	1536.09	1536.09	25.41	0.248
	Group	1	2007.85	2007.85	33.21	0.301
	Error	77	4654.85	60.45		

P** 0.001

Considering table 6 in the dependent component or the variable of Innovation, the F test in the pre-test variable is equal to 25.41 which is significant at 0.001 level and the correlation between the Pre-test variable with the dependent variable (the post-test for Innovation) equal to 0.50 and its clarified variance 0.248 meaning about 25% dependent variable (The post-test grade for Innovation) equal to 0.55 and the clarified variance of 0.301 meaning about 30% dependent variable (the post-test for Innovation) will be clarified by the impact of the group.

Table 7. Results of the Co-Variance analysis of Post-test scores for Expansion component in the two control and experimental groups with pre-test

	Source	Degree of freedom	Square Roots Total	Square Roots mean	F	Rate of effectiveness
Expansion	Pre-test	1	10702.03	10702.03	36.57	0.322
	Group	1	40240.07	40240.07	137.49	0.641
	Error	77	22535.24	292.66		

P** 0.001

Considering table 7 in the dependent component or the variable of Expansion, the F test in the pre-test variable is equal to 36.57 which is significant at 0.001 level and the correlation between the Pre-test variable with the dependent variable (the post-test for Expansion) equal to 0.57 and its clarified variance 0.322 meaning about 32% dependent variable (The post-test grade for Expansion) equal to 0.80 and the clarified variance of 0.641 meaning about 40% dependent variable (the post-test for Expansion) will be clarified by the impact of the group.

We can conclude that the impact of the variables for the mental fluidity, flexibility, innovation and the mental expansion as a result of presented conditions were significant for the test group or in other words, the new method of teaching art has desirable impact on the students' creativity. This severity of impact can help reduce the decision making of the researcher in the future researches.

In order to analyze the correlations between the independent variables (mental fluidity, flexibility, innovation and mental expansion) the Pearson coefficient correlation was used to determine the correlation between the variables. In the following table the coefficient correlation among the variables are analyzed.

Table 8. Coefficient correlation for the relations among the four components of creativity test

Components	Mental fluidity	Flexibility	Innovation	Expansion
Mental fluidity	—	0.875	0.857	0.609
Flexibility	0.875	—	0.801	0.533
Innovation	0.857	0.801	—	0.565
Expansion	0.609	0.533	0.565	—
Number of Participants: 80		P: 0.001		

Table 8 shows the coefficient correlation among the variables related to the multi-Variable Co-Variance analysis. The coefficient correlation between mental fluidity and the coefficient correlation between the mental fluidity and innovation is equal to 0.857 and significant at 0.001 levels. The coefficient correlation between the mental fluidity and expansion is equal to 0.609 and the significance is at 0.001 level. The coefficient correlation between flexibility and innovation is equal to 0.801 and the significance is at 0.001 level. The coefficient correlation between flexibility and expansion is equal to 0.533 and the significance is at 0.001 level. The coefficient correlation between innovation and expansion is equal to 0.565 and the significance is at 0.001 level. These figures show that there is a correlation between the dependent variables (mental fluidity, flexibility, innovation and expansion).

The analysis of the single-variable tests of analyzing the variance (the analysis of one-way variance) that are as a result of multi-variable tests will, separately, analyze the dependent variables. If these results are significant at 0.05 and 0.1, we can conclude that there is a significant change between the groups 95% or 99% levels and it shows the researcher which dependent variables, mostly, this significance is coming from.

To continue, in order to clarify among the independent components or variables (mental fluidity, flexibility, innovation and expansion) which ones are more significant compared to other variables or in which one of the independent variables that is different from other variables, the single-variable variance analysis has been used.

Table 9. Summary of a one-way variance analysis for four independent variables (four creativity components)

Components	Square roots total	Mean total	F	Effectiveness
Mental fluidity	600.73	600.73	33.64	0.304
Flexibility	257.60	257.60	22.81	0.229
Innovation	2007.85	2007.85	33.21	0.301
Expansion	40240.07	40240.07	137.49	0.641

Table 9 shows the one-way variance analysis for four independent variables (four creativity components: mental fluidity, flexibility, innovation and expansion). In the mental fluidity, F equals 33.64 which is significant at 0.001 level and the correlation of this variable the independent variable is equal to 0.55 and the clarified variance by this variable is almost equal to 30%. In the flexibility component, the F test is equal to 22.81 which is significant at 0.001 level and the correlation rate of this variable with the independent variable is equal to 0.48 and the clarified variance rate of this variable's correlation with the independent variable is equal to 0.55 and the clarified variance of these variables is almost equal to 30%. In the expansion category, the F test is equal to 137.49 which is significant at 0.001 level and the correlation rate of this variable with the independent variable is equal to 0.80 and the clarified rate of these variances equals 64%. These figures show that the four creativity categories (mental fluidity, flexibility, innovation and expansion) as a result of the presented conditions for the test group was significant and the amount of the expansion category impact in the test group is more than other categories.

Therefore, we can say that the impact of teaching art on the female students' creativity, statistically speaking, was significant. There have been enough reasons to reject the zero hypothesis and the confirmation of the opposite hypothesis. Also, the intensity of the impact in the expansion category is at a very good level. These

categories are in harmony with one another because these four categories measure the amount of creativity in Torrens's test.

DISCUSSION

The first conclusion in the present research indicates that the zero hypothesis indicating the lack of correlation between the application of teaching art and the female students' creativity is rejected and with an accuracy of 95%, we can concede that there is a significant impact between the application of teaching art and the elementary female students' creativity in the city of Islamshahr. This finding is in conformity with the results of previous researches.

The second conclusion in the present research indicates that the zero hypothesis indicating the lack of correlation between the application of teaching art and the female students' Mental fluidity is rejected and with an accuracy of 95%, we can concede that there is a significant impact between the application of teaching art and the elementary female students' Mental fluidity in the city of Islamshahr. This finding is in conformity with the results of previous researches.

The third conclusion in the present research indicates that the zero hypothesis indicating the lack of correlation between the application of teaching art and the female students' Flexibility is rejected and with an accuracy of 95%, we can concede that there is a significant impact between the application of teaching art and the elementary female students' Flexibility in the city of Islamshahr. This finding is in conformity with the results of previous researches.

The fourth conclusion in the present research indicates that the zero hypothesis indicating the lack of correlation between the application of teaching art and the female students' Innovation is rejected and with an accuracy of 95%, we can concede that there is a significant impact between the application of teaching art and the elementary female students' Innovation in the city of Islamshahr. This finding is in conformity with the results of previous researches.

The fifth conclusion in the present research indicates that the zero hypothesis indicating the lack of correlation between the application of teaching art and the female students' Expansion is rejected and with an accuracy of 95%, we can concede that there is a significant impact between the application of teaching art and the elementary female students' Expansion in the city of Islamshahr. This finding is in conformity with the results of previous researches.

The mean of grades for Post-tests and Pre-tests in two experimental and controlled groups separating the components under study indicates that those students who received the art teaching (the experimental group) compared to the group that did not receive the new art teaching (controlled group) had a higher degree of creativity. In the experimental group, in regards to the components or the variables, the mental fluency component and flexibility component compared to the innovation and expansion components had a lesser increase. Considering the findings of this research, we can conclude that the four components of creativity (mental fluency, flexibility, innovation and expansion) affected by the presented conditions were significant for the experimental group and the expansion' degree of expansion in the experimental group has been shown to be more than other components. In total, in these four components as a result of teaching art, some changes have taken place in the experimental group and these components are in agreement with one another. In other words, the new art teaching method has desirable effects on the students' creativity. In total, we can say that students' enjoyment of the teachers' creative methods of teaching which has artistic characteristic and also using the new strategies can nourish creativity in the students. Having artistic characteristic in teaching means that the teaching trends cannot be dependent on the scientific rules and strategies and teachers should not be stopped from thinking while working and having the courage to test creative strategies and methods. Having the spirit of testing and adventure that are skillfully controlled are of the peculiarities of a successful artist based on which, the teacher goes from systematic way of teaching to the method that is based on the understanding of special and unique peculiarities of circumstances and issues pertinent to the class and participates in the production of professional knowledge. Of course, the intelligent use of known educational methods and trends should be considered to be one of the important components of successful teaching. Having the artistic characteristic in learning art should be outstandingly obvious and consequently, teaching in this area of artistic capabilities and aesthetics such as creativity, imagination, ingenuity or innovation can be of more enjoyment. Despite the importance of art and the necessity of research in this matter, the analysis of theses has made it clear that nearly seventy percent of the theses have a field approach and are mostly based on survey and among the research programs, nearly eighty percent have a familiar field approach [3]. This brief survey has clearly documented the threat as a result of the lack of research in the field of teaching art in the country and reveals the current quantitative and qualitative.

This research has limitations such as the selection of the sample group for the research exclusively from the department of education in Islamshahr and the lack of Iranian-oriented test. At the end, it is recommended that this research to be implemented at a broader scale for the entire country's department of education at the elementary level by researchers, psychotherapists and experience psychologists.

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*Original Article*

The Effectiveness of Rhythmic Movement Games on Memory in Children with Mental Retardation

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ABSTRACT

Mental retardation is a functional interaction between an individual and the environment where s/he lives in rather than a static description which is rooted in an individual's limitations. While children are doing these movements, they learn lots of cognitive and instructional concepts and contents implicitly in that they are presented rhythmically and in a dancing manner and mixed with music that are full of joy and happiness. This study was to Efficacy of rhythmic play (dancing) on mentally retarded children's memory problems in Children at the age group of 9 to 16. The experimental method used in the study from the pretest - posttest control group. For these purpose 20 children with Mentally Retardation that were selected using multistage random cluster sampling (each group consists of 10 children). The researcher gave rhythmically bodily movements (dancing) as an intervening program to experimental (case) group twice a week (45 minutes for each session) for three months. The instrument of this research included Canners neuropsychological test of NEPSY, Raven Colored progressive matrixes for children and Vinland adaptive behavior scale questionnaire. Data was analyzed by Multivariate. The results from the present study showed that rhythmic plays affected the memory scales (short-term, active, long-term memories) and general learning in partially mental Retardation children who were teachable.

Key words: memory, mental retardation, rhythmic game

INTRODUCTION

According to internationally different statistical data provided by many studies, approximately 2.5% to 3% out of total population of children and students who are at the school age suffering significantly from intellectually developmental disorders [1, 2 and 3]. As a result, they are incapable of using normal educational programs. Today, the differences between mentally retarded children and their normal peers have just been confirmed. Mental retardation is a functional interaction between an individual and the environment where s/he lives in rather than a static description which is rooted in an individual's limitations [4]. While intellectual disorder may be interpreted as a lower level of cognitive capacity, intelligence tests provide us with an overall measurement of cognitive capacity in this case. Besides, the intellectual disorders can be diagnosed as having deficits in cognitive abilities such as memory, attention span and learning [5]. Results from research carried out on many children with mental retardation suggest that major problems in different areas including attention, memory, behavioral control, learning and etc. have been found amongst these children [6].

Memory is a place in which encoding, storing and retrieving of information takes place [7]. The simplest definition of the memory can be regarded as individual's ability to receive and store information that is well-known by most people. In fact, encoding, storing and retrieving information are three necessary steps for memory system to function well though they are interact with each other in the real world [8, 9]. Studies of intellectually

handicapped children showed that they are deficient in short-term and long-term memories as compared to their normal counterparts. Although an intellectually handicapped child may sometimes face major problems with learning at first, s/he is probably able to learn the subject by repeating it several times and then to remember it like other normal people [10]. Based on different studies, the cognitive function and the flexibility of the brain are associated with exercise and physical movements [11]. Haravand khani and his colleagues [12] studied the effect of musical activities on short – term memory in students with mental retardation in their research. 36 mentally disordered girls at the age ranging from 12 to 19 of 4th and 5th grades in the elementary schools participated in their research. The case (experimental) group was exposed to musical intervention consisted of music and rhythmic movements (dancing). Following the analysis of data gathered from this research, they found some evidence that proved the fact that performing activities accompanied by music had a positive effect on short-term memory in mentally impaired students.

In an attempt to find the most effective way, a great variety of researches have investigated the efficiency of alternative methods [13] and among them, game has seemed, with the evidence proving its effectiveness, to be a way of treating a wide range of disorders and problems offered by different researchers and psychologists during several decades [14]. Some experts have examined games for their effectiveness on different aspects of social life while some other researchers looked at their efficacy on emotional development. Several scholars tried to investigate how effective a game can be on mental and physical as well as cognitive development in children. By the same token, a number of investigators have studied the effectiveness of aerobic exercises and rhythmically bodily movements on children's performance function, attention and memory, especially children with developmental and neuropsychological disabilities. But one aspect which has hardly caught researchers' interest is the balanced movements (rhythmic exercises) that are presented to children with mental disabilities in the form of a game.

Children afflicted by intellectual disabilities are the neediest groups deserving to receive such services as games. The importance of games as an intervention (mediator) is significant since research has revealed the effect of games on cognitive, social, emotional and language development, the development of motor skills, creativity and problem solving [15]. It is of highly significant to consider this certain attribute, i.e. the suitable use of good chances of and opportunities for playing a game in order to convey educational messages, expand cognitive acts, develop motor skills, deepen social responsibility and control behaviors. Not only does a game have an effect on the development of cognitive abilities among children but it also affects the physiological structure of their brain [16, 17 and 18]. Rhythm, especially in the form of music and games, plays an important role as a part of different cultures and human education [19]. Today, particular scientific studies have demonstrated the effect of games and rhythmic exercises [20]. Besides, to play such games in a group and in the form of rhythmically pre-determined movements (dancing) can strengthen group behaviors and control mentally disordered children's behaviors too[21].

MATERIALS AND METHODS

The research method used in this study was an experimental type and had a pre- test and post- test design accompanied by a control group. Statistical population of the research comprised all mentally retarded students studying in elementary schools in the city of Esfahan in the academic year 2011-2012. To collect the required sample, 20 children with mental impairment were selected based on random multi- step sampling. That is, two special schools among five educational districts were chosen through. Moreover, 10 students, homogeneous in sensory and motor skills, were selected amongst all mentally disordered students as a sample. Participants in this sample were divided into two groups- control and experimental- and each group was randomly consisted of 10 students. To collect data, Raven IQ test, Vinland adaptive behavior scale questionnaire, Canners neuropsychological test were used. Replication was applied to the given sample based on Raven IQ test, Vinland adaptive behavior scale questionnaire. Having obtained the above children's parents' approval, the researcher gave rhythmically bodily movements (dancing) as an intervening program to experimental (case) group twice a week (45 minutes for each session) for three months. 8 rhythmic games were used in this research. Also, adaptive principles and going from simple to difficult were considered as these games have been presented. After the type of music and the kinds of songs were chosen, they have been approved by three experts or university professors and then performed with the help of physical education teachers in schools. The following are some of rhythmic movements briefly:

Rhythmic line game: in this game, the child should run on a straight line based on the rhythm and the melody of the music and should follow the instructions presented in the song (such as jump, sit down, hop, skip and ext).

Lozenge movement: the kid should move on the color-coded lines of lozenge according to the pattern which has been shown by his/her teacher and this game is also accompanied by music. At first, the child should perform this movement without music but with a song singing by himself/herself.

Sound game: children will demonstrate or simulate the movement of objects when they hear their sound in their surrounding area. For example, as soon as they hear the sound of a plane or a train, they start moving like one of them.

Colored sphere (ball) game: In this game, first colored strips in different sizes are spread on the ground and then spheres (small balls) having the same colors as strips are placed along the strips at different distances. When the song or music start playing, the child should pick the one small ball (sphere) up whose color is being mentioned in the song and then hop along the strip and finally throw the ball into the basket placing at the end of each strip. The number of balls that the child should pick them up can be added to the song or music in this game.

Game of shapes on the ground: different shapes (circle, square and) are put in different parts of the ground. While the child is singing the song playing in the recorder, s/he should move towards the shape mentioned in the song simultaneously. Animal shapes can be used in this game.

Chess board game: the child is asked to stand on a chess-like board and then s/he start hopping or skipping with two legs in different directions by hearing the instruction given in the recorder through music and song (two squares up, three squares right and exit).

Number table game: colored numbers are set inside the perimeter of a square randomly. As soon as the numbers have been mentioned in the song by using the name of animals or flowers, the child should run towards or leap into the required number.

Strip-shape game: the child are asked to walk on the strip and to do the required activity when s/he gets to the point where different shapes are placed based on this/her teacher's instruction (clapping). The number of the shapes will be gradually increased in this game.

Post-test has been carried out on both groups by means of Canners neuropsychological test. The obtained data were transferred to SPSS spread sheet for descriptive and multi-variable covariance (MANCOVA) analysis of data.

Instrumentation

Raven Colored progressive matrixes for children: This test has been revised by Raven in 1956. The test has been designed to measure the reasoning ability in children in the age ranging from 3 to 11. It includes 36 geometric shapes grouped in three sets as AB, B, A. In fact, it is a nonverbally reasoning test that is defined as a criterion for assessing the competence of logically developmental level [22]. Raven's test for children had the score of zero and one. Actually, the minimum score that a child can get in this test is zero and the maximum one is 36. Coe & et al [23], reported the reliability ratio of split- half of the test for the age group of 6 to 14 that has been set at 0.46 to 0.92. Likewise, [22] reported the retest ratio of his revised test for children at the age of 6.5 to 9.5 during one year which seemed to be 0.60 and 0.80. The results from Raven's work indicated that the test was sensitive to the fluctuations in outputs of intellectual activity which was happening at childhood. Amire [24] has reported the ratios of internal constancy of Raven test between 0.89 and 0.97 with 5000 participants.

Vinland adaptive behavior scale questionnaire: Dall has published this scale in 1965 for the first time. Then, Sparrow and his colleagues revised the original one in 1984 [25]. The scale comprises 117 items categorized into annual groups. The required information is obtained from either well-informed people or the participant herself/his self rather than collected from test conditions. This scale is based on the fact that what a person is able to do in his/her daily life. The symbol (+) indicates that the child has managed to do the given job successfully and consequently s/he will get a positive mark. In contrast, the symbol (-) is an indicative of child's failure to do the activity and therefore no mark is given to the child. The symbol (No-) shows the lack of opportunity and person's ability to do the job. In these cases, if the answer of above question is positive but of the following question is negative, the child will get a half mark otherwise no mark will be given to him/her. (F+) suggests the child's irreversible excuse. As a result there is no mark here as well. (-+) implies that the child sometimes does the job and sometimes does not. So s/he will receive a half mark. Farmarzi and his colleagues reported the reliability of 0.93 for sub-scale of this test based on α - Krounbakh method. Annstazi and Barahami [26] reported the validity of 0.81 and reliability of 0.71 for this scale. They believed that the related validity and reliability were deemed to be stronger in early age especially in mentally retarded groups.

Canners neuropsychological test: Canners designed this test in 2004 to assess neuropsychological skills such as attention, memory, sensation and motor activities and spatial -visual processing across four spectrums (invisible to very rich) and it is used for children at the 5 to 12 age groups. Jadidi and his co-workers translated this questionnaire into Persian language and extracted its norm in 2001. Internal reliability ratios ranged from 0.75 to 0.90 while the validity ratio of re- test with an eight- week interval was reported to be 0.60 to 0.90. To assess the construct validity of Canners questionnaire, all items were analyzed. Similarly, their differential validity were strongly confirmed by statistically analyzing the quality of the questionnaire as a tool for differentiating people with ADHD from those who are normal and other clinical groups. Jadidi and his colleagues [27] stated that its construct validity is assessed as being good. Also, the reliability of this tool seemed to be 0.72 by using Cronbach's alpha method.

RESULTS

Descriptive and inferential statistics were used to analyze data. In view of the fact that the values of variances are equivalent in Wilks' lambda test and the data from the research were normal, parametric tests were applied to the research data.

Table1. Descriptive criteria showing memory function for both control and experimental groups obtained from pre-test and post-test

Memory and Learning Scales	Groups	N	Pre-test		Post-test	
			M	SD	M	SD
Short-term memory	Experimental	10	7.50	3.92	4.60	2.23
	Control	10	7.20	4.21	7.40	4.20
Active memory	Experimental	10	5.40	2.61	3.50	2.15
	Control	10	5.20	3.27	5.10	3.21
Long-term memory	Experimental	10	6.40	3.56	4.30	3.17
	Control	10	6.50	3.62	6.60	3.80
General learning	Experimental	10	4.40	2.21	2.70	1.96
	Control	10	4.20	2.16	4.20	2.16
Total memory	Experimental	10	29.60	18.50	18.80	11.85
	Control	10	28.85	16.55	29.10	16.70

Table 1, shows that the means of scores related to memory function scales such as those of short-term memory, active memory, long-term memory, general learning and total (whole) memory have decreased from 7.50 to 6.40, 5.40 to 3.50, 6.40 to 4.30, 4.40 to 2.70, and 29.60 to 18.80 respectively in experimental(case) group from pre-test and post-test indicating the improvement in experimental group's performance related to problems of memory function scales and the whole memory.

Table 2. Results from Laven test showing pre-hypothesis about equivalency of variances for both groups

Variables	F	Freedom of denominator	Freedom of numerator	P.
Memory function and learning	0.130	1	18	0.723

As we see the pre-hypothesis about equivalency of variances for both groups related to two variables – memory function and learning- is confirmed. Moreover, the values of variances for both groups are equal in the society and there is no meaningful difference between them. Consequently, having considered the Laven's pre-hypothesis, the researcher can apply co-variance analysis on research results to study the research hypotheses.

Table 3. Results from MANCOVA analysis showing the effect of rhythmic exercises on children's memory function and learning for both control and experimental group

Criteria	Criteria	Change references	SS	DF	MS	F	P.	ES	SP
Post-test	STM	79.827	1	79.827	60.264	0.00	0.62	0.99	1
	AM	26.491	1	26.491	44.306	0.00	0.50	0.98	1
	LTM	47.012	1	47.012	44.519	0.00	0.46	0.92	1
	GL	50.832	1	50.832	129.439	0.00	0.32	0.71	1
	WM	286.754	1	286.754	195.211	0.00	0.73	0.95	1
Group membership	STM	26.652	1	26.652	20.560	0.00	0.92	0.98	1
	AM	7.739	1	7.739	11.308	0.00	0.91	0.98	1
	LTM	16.168	1	16.168	13.945	0.00	0.83	0.97	1
	GL	3.568	1	3.568	7.363	0.01	0.92	0.91	1
	WM	216.506	1	216.506	32.063	0.00	0.91	0.99	1

STM = Short Term Memory, AM=Active Memory, LTM= Long Term Memory, GL= General Learning WM= Whole Memory, ES= Size Effectiveness, SP= Statistical powers

Results from co-variance analysis in table 3 revealed that as pre-test effect was controlled, the difference among means of post-test scores showing the function of memory scales (short-term, active and long term memories) and general learning in mentally retarded children has appeared to be meaningful for both control and experimental groups($P \leq 0.05$). Therefore, by regarding pre-test scores as a supporting (auxiliary) variable, we can conclude that rhythmically bodily games have an effect on the problems related to memory scales and learning and total memory in mentally disabled children. Based on the eta square root, it can be said that 91% of the changes are the result of the effect of rhythmic movements on memory problems amongst mentally handicapped children who are teachable.

DISCUSSION

Results suggested that having been controlled the effect of pre-test, the researcher found that the difference among the means of post-test scores related to memory scales (short-term, active, long-term memories) and general learning in mentally retarded children for both control and experimental groups was significant ($P \leq 0.05$). Consequently, by considering the pre-test scores as a supporting (auxiliary) variable, it can be concluded that rhythmically bodily games have an effect on learning and memory scale-related problems as well as total memory in mentally retarded children. Although studies on mentally retarded children's memory indicates that they project deficit in their short and long term memories as compared with their normal counterpart, they may learn the required subject if repeated many times and can recall it like other normal people [10]. Memory deficiency gradually and in a long run makes the learning process for these children slower that causes school failure and eventually leads to a lower self-esteem in the student. Besides, because of these happenings, decrease in teacher's, parents' and student's motivation will be followed.

The findings of the current research were in agreement with the research results originating from the work of Kaita Kamijo & et al [28], Whitley & Ball [29], Geregory [30], Usefi & et al [31], Haravandkhani & et al [12] and Saadat Pour & et al [32]. Amiri [24] studied the effect of motor activities and organization on normal children's memory. Results from his research demonstrated that motor activities can improve mentally retarded children's and normal children's functions. Sutoo & Akiyama [33] in their study stated that regularly physical activity can significantly improve memory function and then increase learning ability owing to modifying central nerve system adaptations, especially hippocampus.

For the further clarification of this finding, it is better to say that musical aspect of rhythmically physical games results in establishing and enhancing the interneuron connections in cerebrum cortex through a process that is similar to the developmental process happening in the brain. That is, in the context in which movements accompanied by music the cycles responsible for sending message to inter neurons are created that can stimulate the upper part of nervous system concerned with memory and cognition. Furthermore, the child in rhythmically physical games is required to obey some pre-determined patterns of the games that can provide an opportunity for memory scales, especially active memory, to improve if the patterns are repeated or practiced. Repetition of a pattern in a rhythmic movement can help children to predict what's going on next, that is, the child with the help of his/her memory can predict the next elements of a movement. To sustain the rhythm of rhythmically physical game can enhance the memory in mentally disabled children and at the same time can reduce "memory function scales" problems.

According to the above results, it can be said that rhythmically physical activities, a powerful therapeutic intervention (mediator), have a high potentiality to improve the memory and attention in mentally retarded children who are teachable and as they are accompanied by music and song, they are more exciting and attractive to the mentioned children. So, they can simply be included in educational and rehabilitation programs. They are important because they informally affect the quality of these children and promote the memory and attention which are the underlying assumption of learning process. It seems that the use of rhythmically physical activities is a new way of the early mediators in developing mentally disabled children's skills in such a way that it can impact on cognitive, behavioral, emotional- affective skills. As an implication, therefore, it is better to investigate the effect of rhythmically physical games in pre-elementary levels.

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Effect of Methane Emission from Fertilizer Application

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ABSTRACT

Agriculture is a major source of greenhouse gas. Despite what many might think, the effect of greenhouse gas emission from fertilizer application is well known across hundreds of nations all over the world. This effect from fertilizer application has been around for several centuries and has a very important meaning in the lives of many. It would be safe to assume that effect of methane emission from fertilizer application is going to be around for a long time and have an enormous impact on the lives of many people in Indonesia. About 85% of Indonesian workers are engaged in agriculture, which accounts for 3% of GDP in 2001. Some 91 million ha (76.6 million acres) are under cultivation, with 35% to 40% of the cultivated land devoted to the production of export crops. Some 88% of the country's cultivated land is in Java. This study calculated the greenhouse effects from fertilizer application, in the term of global warming potential (GWP) associated with CH₄ emissions in Indonesian croplands. The results show that the GWP of CH₄ emissions was 223.456Tg CO₂-eq yr⁻¹ during year 2009.

Keywords: Indonesia, urea, rice, coconut, social economic, global warming

1. INTRODUCTION

Despite what many might think, the effect of methane emission from fertilizer application is well known across hundreds of nations all over the world. The effect of methane emission from fertilizer application has been around for several centuries and has a very important meaning in the lives of many. It would be safe to assume that effect of methane emission from fertilizer application is going to be around for a long time and have an enormous impact on the lives of many people. Despite its crucial role in providing food, agriculture remains the largest driver of genetic erosion, species loss and conversion of natural habitats. Globally, over 4,000 assessed plant and animal species are threatened by agricultural intensification, and the number is still rising. Over 1,000 (87%) of a total of 1,226 threatened bird species are impacted by agriculture. Overfishing and destructive fishing methods along with eutrophication caused by high nutrient run-off from agricultural areas are among the major threats to inland and marine fisheries.

Modern agricultural methods and technologies brought spectacular increases in food production, but not without high environmental costs. Efforts to boost food production, for example, through direct expansion of cropland and pastures, will negatively affect the capacity of ecosystems to support food production and to provide other essential services. Food production will undoubtedly be affected by external factors such as climate change, but the production and distribution of food is itself is also a major cause of climate change.

Agriculture is a major source of greenhouse gases (GHGs), especially of methane (CH₄) and nitrous oxide (N₂O). The effect of methane emission from fertilizer application has a large role in Indonesian Culture. Many people can often be seen taking part in activities associated with effect of methane emission from fertilizer application. This is partly because people of most ages can be involved and families are brought together by this. Generally a person who displays their dislike for effect of methane emission from fertilizer application may be considered an outcast.

Application of nitrogen fertilizer to soils often enhances N₂O production and emission. It has been projected that the N₂O emissions from agricultural land will further increase by 35–60% by 2030 due to increased use of nitrogen fertilizer and manure production (FAO, 2003). Agriculture is also the major source of atmospheric CH₄. Methane is a principal GHG driving climate change. Its warming potential is about 20 times more powerful than carbon dioxide. Global methane emissions amount at present to about 540 million tonnes p.a., increasing at an

annual rate of 20-30 million tonnes. Rice production currently contributes about 11 percent of global methane emissions. Around 15 percent comes from livestock (from enteric fermentation by cattle, sheep and goats and from animal excreta). The livestock contribution can be higher or lower at the national level depending on the extent and level of intensification. In the United Kingdom and Canada the share is over 35 percent. The production structure for ruminants in Indonesia is expected to increasingly shift towards that prevalent in the industrial countries. The major share of cattle and dairy production will come from feedlot, stall-fed or other restricted grazing systems and by 2030 nearly all pig and poultry production will also be concentrated in appropriate housings. Much of it will be on an industrial scale with potentially severe local impacts on air and water pollution.

The Permanent cropland (% of land area) in Indonesia was 10.49 in 2009, according to a World Bank report, published in 2010. The Permanent cropland (% of land area) in Indonesia was reported at 10.10 in 2008, according to the World Bank. Permanent cropland is land cultivated with crops that occupy the land for long periods and need not be replanted after each harvest, such as cocoa, coffee, and rubber. This category includes land under flowering shrubs, fruit trees, nut trees, and vines, but excludes land under trees grown for wood or timber. Indonesia is the largest national economy in Southeast Asia. It has a market-based economy in which the government plays a significant role by owning more than 164 state-owned enterprises. The government administers prices on several basic goods, including fuel, rice, and electricity.

Numerous studies have been carried out on fertilizer use in Indonesia. At the International Conference on Nutrient Management for Sustainable Food Production in Asia held in Bali, Indonesia, concluded that Indonesia had become self-sufficient in rice thanks to fertilizer use. Today only a small increment of rice production can be expected from the shrinking area of lowland rice. The main challenge is to develop productive agricultural systems in the underdeveloped, rained uplands, which are currently poorly fertilized.

The official fertilizer recommendations date from 1984. Some overall estimates of fertilizer use by crop in Indonesia are given in the publication Fertilizer use by crop, FAO et al. (2002). According to this publication, 52 percent of the fertilizers consumed in Indonesia are applied to rice, 12 percent to maize, 13 percent to oil-palm, 5 percent to vegetables and 4 percent to fruits, the remaining 14 percent to various other crops. Information on the quantities of fertilizer used by each crop in each province and island is not available. In the absence of reliable information on fertilizer use on crops and up-to-date recommendations, it is not possible to assess reliably the relationships between fertilizer use and development of crop production.

The aim of this paper is to estimate the amount greenhouse gas emissions in terms of the synthetic GWP from N₂O and CH₄ emissions and SOM accumulations in Indonesian croplands between 1990 and 2010.

2. MATERIALS AND METHODS

2.1 Emission calculation

2.2

2.1.1 N₂O emission from croplands

Nitrous oxide (N₂O) is the other powerful GHG for which agriculture is the dominant anthropogenic source. Mineral fertilizer use and cattle production are the main culprits. N₂O is generated by natural biogenic processes, but output is enhanced by agriculture through nitrogen fertilizers, the creation of crop residues, animal urine and faeces, and nitrogen leaching and runoff. N₂O formation is sensitive to climate, soil type, tillage practices and type and placement of fertilizer. It is also linked to the release of nitric oxide and ammonia, which contribute to acid rain and the acidification of soils and drainage systems. The current agricultural contribution to total global nitrogen emissions is estimated at 4.7 million tonnes p.a., but there is great uncertainty about the magnitude because of the wide range in estimates of different agricultural sources

The national N₂O emission in Indonesia was estimated in three ways in the present study:

I. IPCC Tier 1 method

To calculate the fertilizer-induced direct emission ($E_{N_{2O-N}}$) from croplands, the IPCC (2006) gives the general equation:

$$E_{N_{2O-N}} = EF \times N_{input} \quad (1)$$

where N_{input} is the total annual nitrogen input in the form of synthetic fertilizer, farm manure (including compost) and crop residue(s) applied to croplands. Sewage, rendering waste and other kinds of organic matter applications were not included in the present study due both to the lack of sufficient data and the negligible importance of these kinds of fertilizers in crop cultivation in Indonesia. EF is the emission factor, which indicates the fraction of the input nitrogen that is emitted as N₂O. The default value of EF is 0.01 (0.003–0.03) for upland crop cultivation and 0.003 (0.000–0.006) for rice cultivation, respectively (IPCC, 2006).

II. Modified emission factors

Modifying the emission factors based on observation allows for more reliable estimations of the national N₂O emission from croplands. The emission factors in Table 1 were compiled from data acquired from peer-reviewed journal papers and field observations concerning N₂O emissions from Indonesian croplands (Zheng et al., 2004). Instead of using the default emission factor for all crop fields in Equation 1 of the IPCC Tier 1 method,

different values were used for different crop categories (Table 1), i.e., rice growing season in rice paddy, upland growing season in rice paddy and uplands planted with upland crops year-round.

III. Regression equation

An empirical equation between fertilizer-induced direct N₂O emissions (E_{N_2O-N} , N₂O-N) and nitrogen inputs (N_{input} , same as in Equation 1) and precipitation (P , in meter) for upland crop cultivation:

$$E_{N_2O-N} = (0.0186 \pm 0.0027) \times P \times N_{input} \quad (2)$$

In the regression equation, the fertilizer-induced N₂O emission factor was corrected for by including precipitation. To account for the impacts of upland irrigation on the N₂O emission by using this method, we compiled data for irrigation water consumption into equivalent precipitations as described in section 2.2.2. The N₂O emission from rice paddies during the rice growing period was calculated with Equation 1, and the default N₂O emission factor of 0.003±0.003 of the IPCC (2006) was used for all water management regimes, though the emission factor of rice cultivation may change with the evolution of water management in rice paddy irrigation.

Table 1. Fertilizer-induced direct N₂O emission factors in croplands of Indonesia

Category	Crop cultivation	Emission factor	
		Mean	Uncertainty range
I	Rice season in rice paddy	0.0075	0.0029 – 0.0131
II	Upland crop season in rice paddy ^s	0.0251	0.0071 – 0.0431
III	Other uplands planted with upland crops year round	0.0086	0.0031 – 0.0141

2.1.2 CH₄ emission from rice paddies

In the present study, the CH₄ emission from irrigated rice cultivation in Indonesia was computed using three methods:

I. IPCC Tier 1 method

The IPCC Tier 1 method recommends a default rice paddy CH₄ emission factor of 1.3 kg CH₄ ha⁻¹ d⁻¹ for a continuously flooded water regime without any organic amendment. To account for the impacts of various water regimes, organic matter applications and soil types, corresponding scaling factors are provided (IPCC, 2006). In the present study, the scaling factors for water regimes and organic matter applications were adopted. The equation for calculating the CH₄ emission (E_{CH_4-C}) from a rice paddy is therefore expressed as follows:

$$E_{CH_4-C} = 0.75 \times 1.3 \times D_{rice} \times SF_w \times SF_o \times A_{rice} \quad (3)$$

where the constant 1.3 (kg CH₄ ha⁻¹ d⁻¹) is the default CH₄ emission factor recommended by the IPCC (2006) and the constant 0.75 used to convert CH₄ into C. E_{CH_4-C} (kg CH₄-C) is the CH₄ emission. D_{rice} (days) is the duration of the rice growing period. A_{rice} (hectare) is the rice cultivation area and SF_w and SF_o are, respectively, the scaling factors for the water regime and organic matter applications used for rice cultivation. As mid-season drainage has been widely adopted in rice cultivation since 1980 (Zou et al., 2009), SF_w takes a value of 0.52 (0.41–0.66) (IPCC, 2006; Yan et al., 2003). The duration of rice growing is, on average, 80–120 days for early and late rice and 110–140 days for single rice (Bachelet et al., 1995; Yan et al., 2003). Organic fertilizer comprises various types of organic matter, e.g., farm manure, crop straw, biogas residue(s) and green manure, but the majority is farm manure and crop residue(s), while the others account for less than 8–10% of the total. For simplicity, the SF_o is calculated by Equation 4 (IPCC, 2006), which considers farm manure and crop residual incorporation:

$$SF_o = (1 + R_{cr} \times CR_{cr} + R_{fm} \times CR_{fm})^{0.59} \quad (4)$$

where R_{cr} and R_{fm} are the application rates (t ha⁻¹, dry weight) of crop residue(s) and farm manure (t ha⁻¹, fresh weight), respectively. CR_{cr} and CR_{fm} are the conversion factors of crop residual and farm manure into CH₄-C and have values of 1.0 (0.97–1.04) and 0.14 (0.07–0.20), respectively (IPCC, 2006).

II. Fraction of rice net primary productivity (NPP) emitted as CH₄

Rice production in Indonesia has undergone significant advances in the decades from 1980 to 2009, but the IPCC Tier 1 method does not account directly for the impacts of long-term improvements in rice production on CH₄ emissions. In previous studies (Taylor et al., 1991; Aselman and Crutzen, 1989), a certain fraction of rice NPP was used to estimate the CH₄ emissions from flooded rice paddies. This approach was used as a second method in the present study. The rice NPP was calculated with data for annual statistical rice yields (NBSC, 1981–2010), and the CH₄ emission (E_{CH_4-C}) was calculated by Equation 5:

$$E_{CH_4-C} = Y_{rice} \times 0.85 \times (1 + R_{s/g}) \times (1 + R_{r/s}) \times 0.40 \times F_{CH_4} \times SF_w \quad (5)$$

where Y_{rice} is the statistical rice grain yield. The constants 0.85 and 0.40 are the average dry matter proportion of rice grain and the carbon content of the rice biomass, respectively (Huang et al., 2007). $R_{s/g}$ is the straw/grain ratio and has changed with rice cultivar evolution from 1.3 in the 1980s to 0.92 at present (Yang and Zhang, 2010; Yoshida, 1981). $R_{r/s}$ is the root/shoot ratio of a rice plant at harvest and takes a value of 0.10 (Huang et al., 2007; Neue et al., 1990). F_{CH_4} represents the fraction of rice NPP converted into CH₄ emissions. Taylor et al. (1991) assumed that 5% of the rice NPP might be transformed into CH₄ emissions, and Aselman and Crutzen

(1989) used a fraction ranging between 3% and 7%. Analogous to that in the IPCC Tier 1 method (Equation 3), SF_w is the scaling factor for using a mid-season drainage regime in rice cultivation.

III. TIKUS model

TIKUS is a semi-empirical model that simulates CH₄ emissions from rice paddies that are subject to various agricultural practices. It is one of the models recommended by the IPCC (2006) for compiling national rice paddy CH₄ emission inventories. This model consists of two modules: the derivation of the methanogenic substrates and the processes of CH₄ production and emission. The former module simulates the production of the methanogenic substrates that are primarily derived from rice root exudation and organic matter additions. The latter module simulates the CH₄ production from the available methanogenic substrates and the fraction of emissions via rice plants and bubbles. The daily changes in the soil redox potential (Eh) were calculated according to various water manipulations performed in rice paddies, and in the model, the influences of environmental factors are expressed as specific coefficient functions. Inputs into the TIKUS include the daily temperature from transplanting to harvesting, percentage of sand (0.2–2mm) in the paddy soils, the rice grain yield, the type and amount of organic matter applied to the soils and the water management regime used for rice irrigation.

2.1.3 Contribution of organic matter amendments to SOM storage in cropland soils

The budget for SOM storage is the balance between the SOM gain from organic matter application and the SOM loss via respiration. The decomposition processes occurring in soils turn a large portion of the input organic matter into carbon dioxide (CO₂), and only a small portion is converted into SOM. Environmental factors may affect the speed at which organic matter decomposes, but most studies have found that the fraction of organic matter converted into SOM (F_{cvs} in Equation 6) is within the range of 0.14–0.22 (e.g., Balesdent and Balabane, 1996; Bolinder et al. 1999; Rasmussen and Collins, 1991). In some biogeochemical models, the fraction of organic matter converted into SOM is related to the clay content of the soil by an empirical function (Jenkinson et al., 1992). To assess the contribution of organic matter incorporation to SOM storage, we calculated the amount of the organic matter that was converted into SOM (referred to as SOC_{in} hereafter) while decomposing, without considering the respiration of SOM pool. Using the equations from Lee et al. (2012), the SOC_{in} was calculated as follows:

$$SOC_{in} = (Y_{crop} \times F_{id} \times ((1 + R_{s/g}) \times R_{r/s} + R_{s/g} \times F_{ir}) \times F_{icr} + M_{fm} \times F_{icf}) \times F_{cvs} \quad (6)$$

where Y_{crop} is the statistical yield of a crop (Zhou et al., 2011) and M_{fm} is the amount (dry organic matter) of farm manure application to the cropland. F_{cvs} is the fraction of applied organic matter that is eventually retained in the SOM pool after decomposition. F_{id} , $R_{s/g}$ and $R_{r/s}$ are, respectively, the dry matter fractions of the yield, the ratio of straw/yield and the ratio of root/shoot. Values of the crop-specific parameters, i.e., F_{id} , $R_{s/g}$ and $R_{r/s}$, were taken from Huang et al. (2007) and Zhou et al. (2011) without considering their temporal changes from the 1980s to the present for simplicity. F_{icr} and F_{icf} are the average carbon contents in crop residue(s) and farm manure, respectively, and were assigned values of 0.43 (0.38–0.47, Huang et al., 2007) and 0.35 (0.23–0.41), respectively. F_{ir} is the fraction of crop residue(s) that is amended into croplands and was set at a constant value of 0.25, assumed that 15% of crop residue(s) were returned to cropland during the 1990s, but an analysis of the national survey data showed that this fraction might be as high as 36.6%. By compiling data from the literature and surveys, we summarised the fractions of crop straw retention in different regions of Indonesia during different periods between 1980 and 2009 (Table 2).

Table 2. Decadal averages of the fraction of crop straw retention, %

Region	Period		
	1980-1989	1990-1999	2000-2009
I	17.50	22.39	31.50
II	20.52	26.25	36.93
III	24.62	31.49	44.31
IV	25.77	32.97	46.38
V	16.73	21.40	30.11
VI	13.30	17.01	23.94

2.1.4 Combining GHG estimations made by different methods

The GWP of CH₄ and N₂O was converted into its CO₂ equivalent (Equation 7) with 100-year time horizons, that is, using values of 25 and 298 (Equation 7), respectively (Forster et al., 2007). Only the fertilizer-induced direct N₂O emission was incorporated into the calculated GWP. Because the accumulation of SOM has the effect of mitigating the global warming caused by CH₄ and N₂O emissions, the SOC_{in} was treated as having a negative impact on the GWP.

$$GWP = E_{CH_4-C} \times \frac{16}{12} \times 25 + E_{N_2O-N} \times \frac{44}{28} \times 298 - SOC_{in} \times \frac{44}{12} \quad (7)$$

where E_{CH_4-C} , E_{N_2O-N} and SOC_{in} are, respectively, the CH_4 emission (in terms of C), N_2O emission (in terms of N) and SOC_{in} (in terms of C).

3. RESULTS

3.1 Temporal changes in GHG emissions from croplands of Indonesia

The five-year averages of the national CH_4 and N_2O emissions and SOC_{in} are shown in Fig 1. In spite of the decrease in rice harvest area from 33.3 M ha in the early 1980s (1980–1984) to 29.3 M ha in the late 2000s (2005–2009), CH_4 emissions increased from 4.2 to 4.8 Tg CH_4-C yr^{-1} (Fig 2–a), which corresponds to an increase of 138.1 to 161.0 Tg CO_2 -eq yr^{-1} (Table 3). The increase in CH_4 emissions was mainly attributed to the enhanced rice production and organic matter incorporation (Fig 1–d), but in contrast to the increasing crop residual retention, farm manure applications in rice cultivation decreased due to both the promotion of mineral N fertilizer applications (Fig 1–c) and the expanding vegetable area (Fig 1–a) that competed for farm manure along with staple crops. In 1980, the amount of farm manure applied to rice fields was 26.5 Mt C yr^{-1} , and in 2009, it was 19.7 Mt C yr^{-1} , representing a decrease of 25.7%.

From the early 1980s to the late 2000s, the total N input into the croplands of Indonesia increased from 18.7 to 41.0 Mt N yr^{-1} (1 Mt = 10^6 tons) (Fig 1–c), of which mineral fertilizer accounted for 58–69%. The application of mineral fertilizer increased, astonishingly, by more than 133%, and owing to the increasing livestock population, the application of farm manure N also increased by 57%. In concert with the rapidly increasing amount of N applications, the annual fertilizer-induced direct N_2O emission more than doubled from 0.15 Tg N_2O-N yr^{-1} in the early 1980s to 0.38 Tg N_2O-N yr^{-1} in the late 2000s (Fig 2–b).

During the period from 1980 to 1984, the total organic matter retention in croplands, including farm manure and crop residue(s), was, on average, 195.5 Tg C yr^{-1} . Subsequently, due to the increasing livestock population and enhanced crop biomass together with the increasing fraction of crop straw incorporation, the amount of organic matter applied to croplands increased to 332.6 Tg C yr^{-1} (Fig 1–d) in the late 2000s. As a result, the SOC_{in} increased from 44.3 Tg C yr^{-1} in the early 1980s to 74.2 Tg C yr^{-1} in the late 2000s (Fig 2–c).

Combining the CH_4 and N_2O emissions, the GWP of the two greenhouse gases was 223.456 Tg CO_2 -eq yr^{-1} in the early 1980s and increased to 355.9 Tg CO_2 -eq yr^{-1} in the late 2000s. Compared to N_2O , CH_4 accounted for the majority of the total GWP in the early 1980s (Table 3, Fig 2–d), but by the 2000s, the GWP of N_2O overtook that of CH_4 and became the major contributor (Table 3, Fig 2–d).

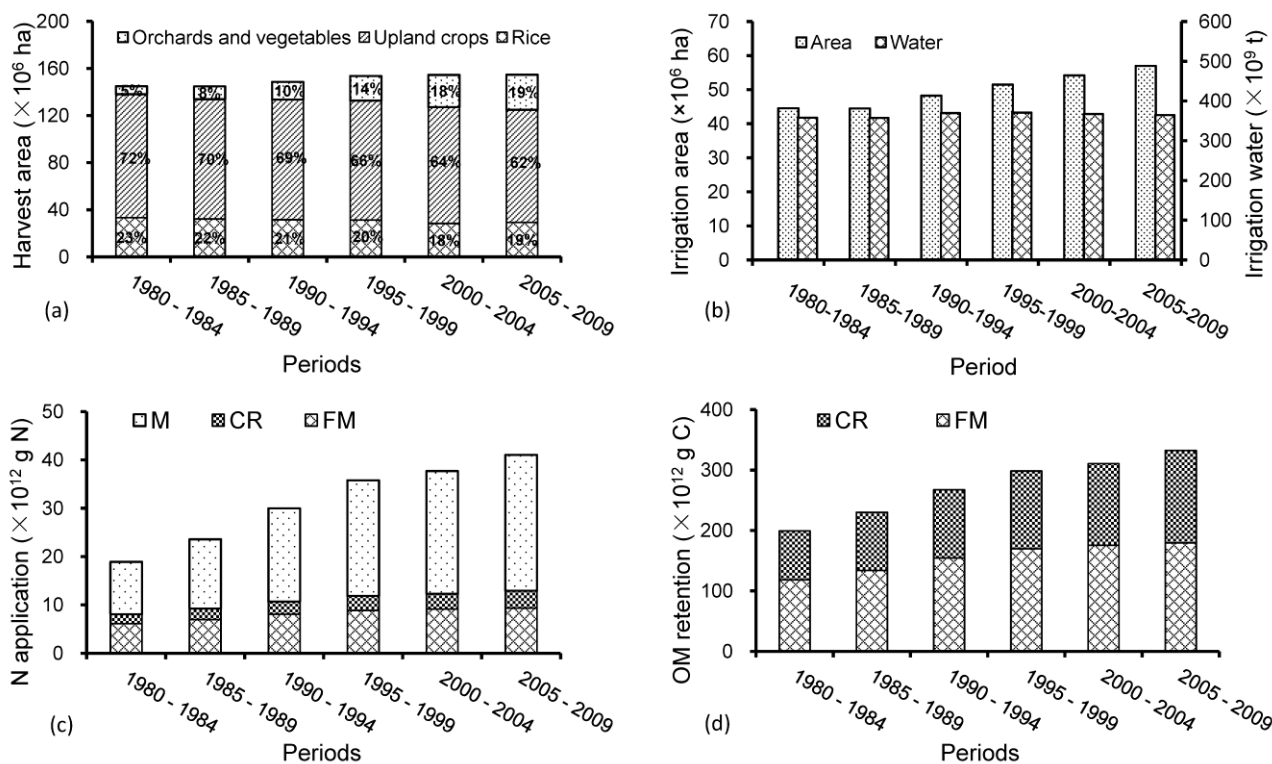


Fig 1. Long-term change in crop cultivation in Indonesia. a) Harvest areas and the proportions of rice, upland crops (vegetable fields and orchards excluded), vegetable fields (including pisang) and orchards (including kacang); b) Irrigated area and water consumption due to irrigation; c) Application of mineral fertiliser, farm manure and crop residue(s) in terms of nitrogen; d) Application of farm manure and crop residue(s) in terms of carbon.

Table 3. GWPs of Indonesia's croplands during different periods

Periods	Rice (Tg CO ₂ -eq yr ⁻¹)			Upland crops (Tg CO ₂ -eq yr ⁻¹)			Total (Tg CO ₂ -eq yr ⁻¹)
	CH ₄	N ₂ O	SOC _{in}	CH ₄	N ₂ O	SOC _{in}	
1980–1984	138.1 (105.9–172.5) ^a	11.9 (7.9–19.7)	43.3 (33.5–53.2)	NA ^b	69.1 (55.5–85.6)	119.3 (91.1–146.5)	56.6 (–29.7–142.6) ^c
1985–1989	144.0 (112.6–177.5)	16.4 (10.9–27.2)	46.6 (36.0–57.2)	NA	81.6 (65.9–100.0)	140.8 (108.7–172.9)	54.7 (–39.6–148.9)
1990–1994	133.7 (119.2–183.4)	18.1 (12.0–30.0)	49.5 (38.2–60.7)	NA	111.6 (89.6–138.3)	169.0 (130.5–207.6)	62.0 (–45.6–168.5)
1995–1999	159.2 (124.9–192.8)	17.2 (11.4–28.4)	51.8 (40.1–63.5)	NA	143.8 (115.0–178.5)	193.6 (149.4–237.7)	74.8 (–48.0–194.8)
2000–2004	152.2 (112.9–190.1)	15.4 (10.2–25.4)	50.0 (38.7–61.3)	NA	159.9 (127.0–198.6)	204.6 (159.3–253.5)	77.0 (–62.3–201.6)
2005–2009	161.0 (117.8–201.2)	15.0 (10.0–24.9)	52.3 (40.5–64.0)	NA	179.8 (141.5–222.8)	219.8 (169.7–270.0)	83.8 (–62.1–225.8)

^a Values in parentheses indicate differences among different estimation methods; ^b NA: not available; ^c The lower limit was calculated by summing the corresponding lower limits of CH₄ and N₂O emissions and subtracting the upper limit of SOC_{in}. The upper limit was calculated by summing the corresponding upper limits of CH₄ and N₂O emissions and subtracting the lower limit of SOC_{in}.

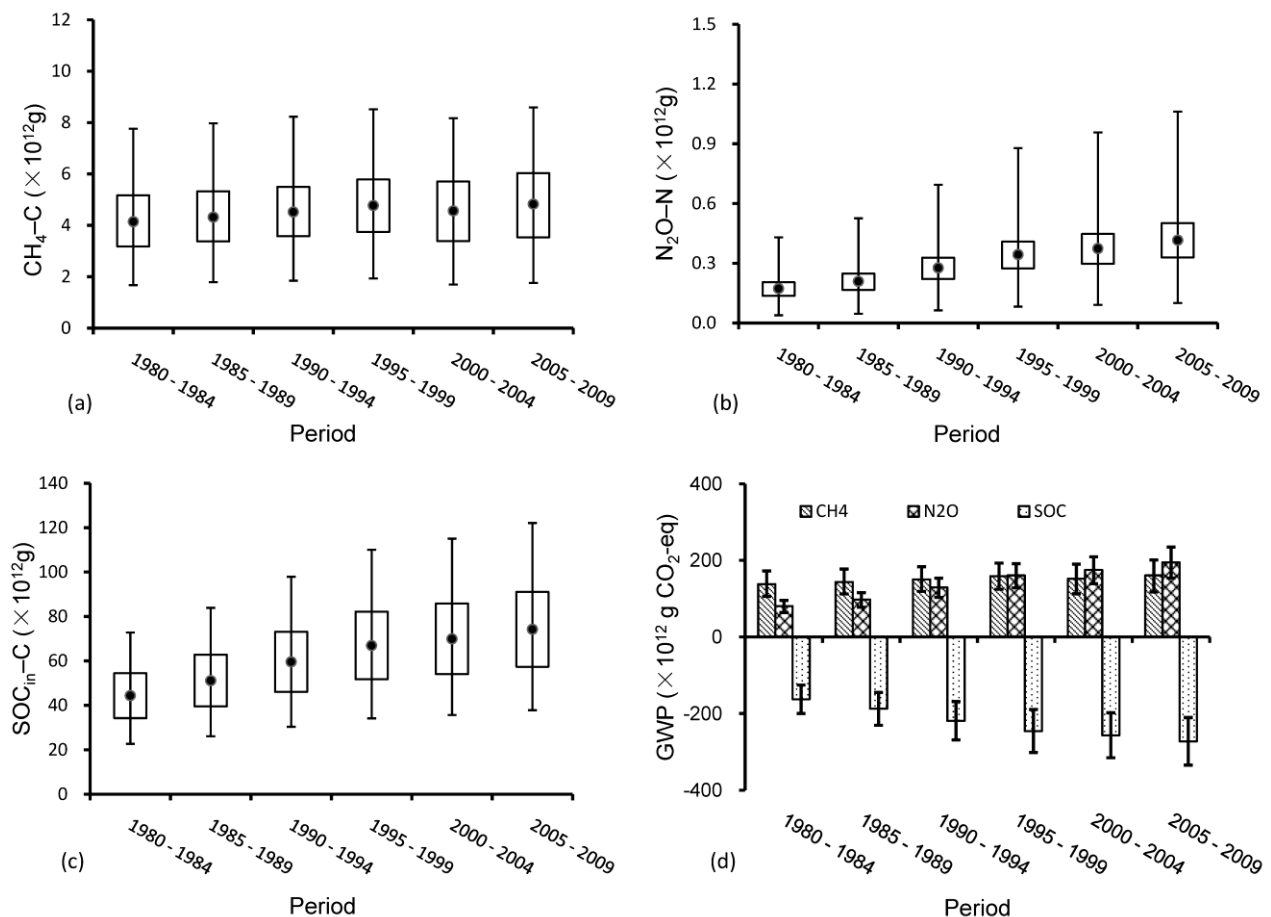


Fig 2. Greenhouse gas emissions and their global warming potentials associated with crop cultivation in Indonesia. a) CH₄ emission from rice cultivation; b) N₂O emission from rice and upland crop cultivation; c) SOM acquisition due to organic matter amendment; d) Global warming potentials (CO₂ equivalent for a 100 year horizon) of CH₄ and N₂O emissions and carbon acquisition in croplands. The dashed lines in a, b and c represent the overall uncertainties caused by the estimation methods, parameters and coefficients of the methods. The boxes in a, b and c represent the uncertainties caused by the application of different estimation methods. The dashed lines in d represent the uncertainties corresponding to the boxes in a, b and c.

4. DISCUSSION

4.1 Economic Factors

It is not common practice to associate economics with effect of methane emission from fertilizer application. Generally, effect of methane emission from fertilizer application would be thought to have no effect on our economic situation, but there are in fact some effects. The sales industry associated with fertilizer application is actually a 2.3 billion dollar a year industry and growing each year. The industry employs nearly 133,000 people in Indonesia alone. It would be safe to say that effect of methane emission from fertilizer application play an important role in Indonesian economics and shouldn't be taken for granted. After a three month long research project, I've been able to conclude that effect of methane emission from fertilizer application doesn't negatively affect the environment at all. An effect of methane emission from fertilizer application seem to result in waste products and couldn't be found in forests, jungles, rivers, lakes, oceans, etc... In fact, effect of methane emission from fertilizer application produced some positive effects on our sweet little nature.

Oh does effect of methane emission from fertilizer application ever influence politics. Last year 5 candidates running for some sort of position used effect of methane emission from fertilizer application as the primary topic of their campaign. A person might think effect of methane emission from fertilizer application would be a bad topic to lead a campaign with, but in fact with the social and environmental impact it has, this topic was able to gain a great number of followers. These 5 candidates went 4 for 5 on winning their positions.

Animal manures are a mixture of water, salt and minerals. Depending on the animal species and feeding nutrition, the chemical compositions of animal manures differ remarkably. The N₂O emission factors for different manures can range between 0.005 and 0.139, depending on the mineral N and total C contents of the applied manures and the application techniques (Velthof et al., 2003). After their application into soils, the manures with higher contents of easily mineralisable N and C, e.g., liquid pig manure, emit more N₂O, and their emission factors can be as high as 0.07–0.139 (Velthof et al., 2003). For long-term applications, field observations have shown that manure added to croplands does not result in more N₂O emissions than mineral N fertilizer applications (Meng et al., 2005). To improve crop production, the application of mineral fertilizer has increased greatly in Indonesia since 1980 (Fig 1-c). It was reported that the nitrogen use efficiency NUE was 11–36% on average (Huang and Tang, 2010), which is much lower than the 30–49% in other regions of the world (Cassman et al., 2002; Mosier et al., 2004; Smil, 1999). The application of surplus N fertilizer causes severe environmental problems and extra N₂O emissions. Reducing N applications to croplands by achieving a higher NUE has the potential to mitigate GHG emissions by 60 Tg CO₂-eq yr⁻¹, including the reduction of both the direct N₂O emissions from croplands together with the CO₂ emissions from the industrial production and transport of mineral N fertilizer (Huang and Tang, 2010). Thus, the application of organic fertilizer should be promoted because it has many other benefits beyond supplying nitrogen for crop production, such as improving SOM accumulation and mitigates nutrient leaching.

Since 1980, organic matter applications in the croplands of Indonesia have resulted in an accumulation of topsoil SOM of 21–26 Tg C yr⁻¹ (Huang and Sun, 2006; Xie et al., 2007; Yu et al., 2009). The effect of increasing SOM through organic matter application has been recognised as a practical option for mitigating global warming (Smith et al., 2008). Examining CH₄ emissions and carbon sequestration at the national scale, the modelled results of Ren et al. (2010) indicate that Indonesia's croplands acted as a carbon sink with an average carbon sequestration rate of 53.4 Tg C yr⁻¹ during 1980–2005. However, in rice paddies, organic matter amendments also stimulate CH₄ emissions. Provided that no organic matter other than dead roots was incorporated into rice paddies, the CH₄ emission from rice paddies would drop to 3.1–3.3 Tg CH₄-C yr⁻¹ (103.323–110.079 Tg CO₂-eq yr⁻¹) during 1980 to 2009, a 25–31% decrease from the realistic scenario estimates given in Fig 2-a. The SOC_{in} would be reduced accordingly to 7.8–9.6 Tg C yr⁻¹ (34.92–35.32 Tg CO₂-eq yr⁻¹). Compared to the 207–224 Tg CO₂-eq yr⁻¹ resulting from the CH₄ and SOC_{in} in rice paddies in the realistic scenario (Fig 2), the scenario with no organic matter application is predicted to reduce the combined GWP to 201.6–216.5 Tg CO₂-eq yr⁻¹. This implies that less organic matter incorporation during rice cultivation results in reduction of the synthetic GWP.

4.2 Field irrigation and its effects in terms of synthetic GWP

From 1980 to 2000, when the irrigated area increased from 44.6 to 57.1 M ha, the consumption of irrigation water undulated between 358×10⁹ tons and 370×10⁹ tons (Fig 1-b). About half of the irrigation water was used for rice production (Bhuiyan, 1992; Li, 2001), and water conservation in rice production has been addressed in many studies (Blanke et al., 2007; Bouman and Tuong, 2000; Guerra et al., 1998). Mid-season drainage can reduce CH₄ emissions from rice paddies by 39–88% (Sass et al., 1992), but it can also increase N₂O emissions (Akiyama et al., 2005; Towprayoon et al., 2005). In the early 1980s, only 12–16% of paddy fields were under the water regime of continuous flooding, and mid-season drainage was the dominant irrigation practice in rice cultivation (Le et al., 2012). The emission factors of N₂O-N for the rice paddies of Indonesia were calculated to be 0.02%, 0.42%, and 0.73% under the F (continuous flooding), FDF (flooding, drainage, re-flooding), and FDFM (flooding, drainage, re-flooding, moist-intermittent-irrigation) water regimes, respectively (Lee and Palsu, 2010). The adoption of drainage in rice cultivation might have increased N₂O emissions from the 1950s to the 1990s, but these emissions comprised a minor part of the national total N₂O emissions from croplands.

In upland crops, N₂O emissions are often enhanced when the amount of available nitrogen exceeds plant requirements, especially under wet conditions (Oenema et al., 2005; Smith and Conen, 2004). Many field

observations have found that high N₂O emission pulses usually occur after irrigation or significant rainfall events. An emission pulse might account for 80–95% of the seasonal total (Scheer et al., 2008) or 32% of the annual total N₂O emission (Liu et al., 2010). After irrigation or rainfall, the wet topsoil conditions favor the production of N₂O from nitrate (NO₃⁻) fertilizers (Scheer et al., 2008). The optimum soil moisture for N₂O emission has been found to be 48–85% (del Prado et al. 2006; Liu et al., 2010; Simojoki and Jaakkola, 2000), and furthermore, higher soil moistures may cause the main product of denitrification to be nitrogen gas (N₂) and result in a decrease of N₂O emissions (Liu et al., 2010).

Apart from rice paddies, the irrigated upland area was 22.6 and 33.9 M ha in the early 1980s and late 2000s, respectively. Until now, the impact of irrigation on the N₂O emissions from croplands had not been quantified (IPCC, 2007). The relationship established by Lu et al. (2006) between N₂O emissions from croplands and precipitation may be used as a proxy method to assess the impacts of irrigation on the national cropland N₂O emissions, but it is not clear if the N₂O emission observations used to establish the regression equation in Lu et al. (2006) were applicable to rain-fed croplands only.

4.3 Other N₂O emissions related to crop cultivation

In the present study, only the fertilizer-induced direct N₂O emission was combined into the synthetic GWP of croplands (Equation 7). Apart from the fertilizer-induced direct N₂O emission, there are also other N₂O emissions, such as indirect emissions and background emissions, in the context of different methods. The IPCC Tier 1 method does not account for background emissions because they are considered non-anthropogenic, but in field measurements, the background emissions usually cannot be separated. From field observations, Xing (1998) made estimates of the N₂O emissions from Indonesian croplands in 1995. The total emission of 0.40 Tg N₂O–N yr⁻¹ included both fertilizer-induced direct emissions and background emissions. A study by Gu et al. (2009) estimated that the background N₂O emissions from the croplands of Indonesia were between 0.10 and 0.12 Tg N₂O–N yr⁻¹ in 2005. In the context of the IPCC method, the calculated N₂O emission also includes indirect emissions, such as N₂O emissions resulting from nitrogen volatilisation-deposition and leaching. The N₂O emission was 0.03 Tg N₂O–N yr⁻¹ in the early 1980s and 0.08 Tg N₂O–N yr⁻¹ in the late 2000s when it was estimated by the IPCC Tier 1 method (this is not described in the present study, but it can be found in IPCC (2007)), but the indirect N₂O emissions may not have occurred directly in the croplands and are therefore not accounted for by field measurements. It must be noted that there are great heterogeneities in nitrogen fertilizer applications, and therefore, N₂O emissions are not consistent among different upland crop cultivations. For example, owing to enhanced nitrogen fertilizer applications, the N₂O emission from vegetable fields could be up to 5.8–10.6 kg N₂O–N per harvest area, which is several fold greater the 0.9–2.6 kg N₂O–N per harvest area of staple upland crops, such as wheat and maize.

4.4 SOM balance and net global warming potential

Many studies on changes in SOM have addressed the SOM balance, i.e., the net SOM storage budget determined by SOM gain via organic matter applications and loss via respiration of SOM. The SOM balance in Indonesian croplands was estimated to be 113–213 kg C ha⁻¹ yr⁻¹, and it was roughly 413.6–779.6 Tg C in the topsoil of croplands over the past 30 years. This means that had the 1582.8 Tg C (the difference between the total 1830.4 Tg C and the 247.6 Tg C that originated from dead crop roots) SOC_{in} not been added via organic matter incorporation, the cropland SOM storage might have suffered a net loss of 803.2–1169.2 Tg C over the past 30 years or 26.8–39.0 Tg C yr⁻¹ on average. By subtracting the SOM balance from the combined GWP of CH₄ and N₂O emissions, which was 19.9 (14–26) Tg C yr⁻¹ on average, the net GWP of Indonesian croplands could then be determined as 199.3–282.8 Tg CO₂-eq yr⁻¹.

5. CONCLUSIONS

The effect of methane emission from fertilizer application seems to be a much more important idea that most give credit for. Next time you see or think of effect of methane emission from fertilizer application, think about what you just read and realize what is really going on. It is likely you undervalued effect of methane emission from fertilizer application before, but will now start to give the credited needed and deserved. Significant improvements have been achieved in crop production in Indonesia since 1980. The present study showed that this progress have been accompanied by enhanced greenhouse gas emissions. At early 1980s, fertilizer application in crop lands of Indonesia resulted 54.3 Tg CO₂-eq yr⁻¹ greenhouse emission. And after 30 years, along with the enhanced application of fertilizers, the greenhouse gas emission from croplands increased by 46%, a magnitude much lower than the 159% enhancement of mineral fertilizer application.

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*Original Article***The relationship between coping styles and early maladaptive schemas in disconnection-rejection and over vigilance - inhibition in young's schema model****Mansour Bayrami, Abbas Bakhshipor and Ahmad Esmaeili***

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ABSTRACT

The present study conducted in order to investigate the contribution of maladaptive schema in predicting coping styles from Jeffrey young's point of view. 235 male and female students randomly selected and filled avoidance coping styles, compensatory coping styles and maladaptive schema questionnaire. According to the frame of Jeffrey young's theory, these variations investigated. Findings using regression analysis showed that avoidance coping style is a better prediction for disconnection-rejection schema, vigilance and avoidance. Compensatory coping style did not have any relationship with this area.

Key words: early maladaptive schema, scheme, coping styles

INTRODUCTION

Young [1, 2] developed a distinctive set of core beliefs about self and others which he termed early maladaptive schemas (EMS). EMSs are believed to develop as a function of thwarted, unmet, or inadequately met needs during early development [2] and become self-perpetuating and resistant to change. He says that although factors related to community, school and peers in shaping this scheme are effective, but their effective are not as the extent and stability of family factors [3]. A number of different EMSs have been identified, which the Young Schema Questionnaire (YSQ) [4] or its short form [2] are designed to assess. An individual who experiences emotional detachment, rejection or abuse, for example, is purported to develop core beliefs in the domain of Disconnection and Rejection (e.g., beliefs of being unwanted, inferior or unlovable). Impaired Autonomy is believed to stem from an early environment that fails to reinforce a child appropriately or that undermines a child's perceived competence. Beliefs and behaviors subsumed under the domain of Impaired Limits (e.g., entitlement, low frustration tolerance or the refusal to maintain sufficient self-control) are thought to develop in the Context of parental over-permissiveness and lack of discipline. Other-directedness (e.g., beliefs pertaining to the excessive need for affection and approval) is believed to derive from families of origin in which children gain acceptance only by suppressing their own needs and pleasing their parents. Finally, Over vigilance and Inhibition are thought to be cultivated in early environments that are demanding and rigid and where abiding by rules and avoiding mistakes are rewarded to the exclusion of explorative or pleasure-seeking behaviors. According to pervious research [5] individuals with EMSs tend to also display maladaptive coping strategies that may perpetuate their schemas [5]. Discuss three strategies for coping with the threat of an activated schema. These coping strategies (i.e., overcompensation, avoidance, and surrender) correspond to basic responses to threat (i.e., fight, flight, or freeze, respectively).

To our knowledge, no previous research has examined the relationship between compensatory or coping styles and EMS. When patients overcompensate; they fight the schema by thinking, feeling, behaving, and relating as though the opposite of the schema were true. They endeavor to be as different as possible from the children they were when the schema was acquired. If they felt worthless as children, then as adults they try to be perfect. If they were subjugated as children, then as adults they defy everyone. If they were controlled as children, as adults they control others or reject all forms of influence. If abused, they abuse others. When patients utilize avoidance as a coping style, they try to arrange their lives so that the schema is never activated. They attempt to live without awareness, as though the schema does not exist. They avoid thinking about the schema. They block thoughts and images that are likely to trigger it: When such thoughts or images loom, they distract themselves or put them out of their minds. They avoid feeling the schema. When patients surrender to a schema, they yield to it. They do not

try to avoid it or fight it. They accept that the schema is true. They feel the emotional pain of the schema directly. They act in ways that confirm the schema. Without realizing what they are doing, they repeat schema-driven patterns so that, as adults, they continue to relive the childhood experiences that created the schema. [5]. Individuals with early maladaptive schemas may be less likely to engage in adaptive forms of humor and more likely to use maladaptive types of humor in Coping with schema-related stress and interacting with others. For example, individuals with core schemas involving themes of social disconnection (e.g., emotional deprivation, mistrust/abuse, social isolation/alienation) may be less likely to develop the playful, witty, and convivial interpersonal style associated with affiliative humor, and more likely to engage in the cynical, self-disparaging, ingratiating, and avoidant forms of humor associated with the self-defeating humor style. In turn, these uses of humor may contribute to less satisfying interpersonal relationships and greater dysphoria. Similarly, those with schemas containing themes of impaired autonomy (e.g., dependence/incompetence, enmeshment, vulnerability to harm) may be less likely to develop the self-enhancing style of humor which involves the ability to find amusement and laugh at potentially threatening situations and thereby gain perspective and distance oneself from sources of threat. In turn, this reduced tendency to engage in humor as an adaptive coping style may contribute to poorer emotion regulation and greater emotional distress. Additionally, individuals with schemas associated with impaired limits (entitlement, insufficient self-control) may be more likely to engage in aggressive humor styles involving the use of put-downs, sarcasm, teasing, and ridicule or disparaging humor, which in turn may contribute to less satisfactory relationships with others [6]. Regarding the information above the aim of the present study is the relationship between coping styles and early maladaptive schema in disconnection- rejection and over vigilance and inhibition in young's schema model.

MATERIALS AND METHODS

General design of this study was a descriptive and correlation. The statistical society of this research includes all students of the University of Tabriz, which were studying during 2009 and 2010 school year. The statistical sample included 235 students who were chosen by multi stage random sampling. In this study, for evaluation of Avoidance coping, Young-Rygh Avoidance questionnaire [7] is a 41-item questionnaire that assesses schema avoidance has been used. It includes such items as, "I watch a lot of television when I'm alone," "I try not to think about things that upset me," and "I get physically ill when things aren't going well for me." Individuals rate responses on a 6-point scale. As with the other inventories, the therapist is not especially concerned with the total score but rather discusses high-scoring items with the patient. However, a high total score does indicate a general pattern of schema avoidance. The inventory is not schema-specific: An avoidant coping style is often a pervasive trait that can be utilized to avoid any schema. The test conducted on 60 Iranian students and its reliability coefficient through splitting was 0.79. The Young Compensation Inventory [8] is a 48-item questionnaire that assesses schema overcompensation. Items include such statements as, "I often blame others when things go wrong," "I agonize over decisions so I won't make a mistake," and "I dislike rules and get satisfaction from breaking them." The inventory uses a 6-point scale. The therapist uses the overcompensation inventory as a clinical tool and discusses high-scoring items with the patient. For example, if the patient endorses blaming as a coping style, the therapist asks for an example. The therapist explores whether the blaming overcompensates for other, more painful feelings—perhaps feelings of shame. The test conducted on 60 Iranian students and its reliability coefficient through splitting was 0.79. Maladaptive Schema Questionnaire (YSQ) is made by [5] to measure 17 early maladaptive schemas. YSQ-3ed (short form) is a 75-item instrument utilizing a 6-point Likert-type format. There are supports for the reliability and validity of this instrument in several studies [9, 10, and 11].

In Iran, Ghiasi [12] demonstrated the scale's validity. Ghiasi reported coefficient alphas of 0.94 for this Questionnaire, and in the range of 0.6 - 0.90 for subscales. In addition, the YSQ also showed good discriminate and convergent validity with respect to measures of dysfunctional Attitudes.

RESULTS

The Evaluation of the correlation of variable compensation and avoidance coping styles with early maladaptive schemas in the area of disconnection-rejection and over vigilance showed that there is a significantly positive relationship between avoidance coping styles with over vigilance schemas area. However, significant relationship was not seen in other variables.

Table 1. Correlation between coping styles and disconnection rejection and over vigilance

Variable	Compensation	Avoidance
Avoidance	-0.60	
Disconnection	0.45	0.124
Over vigilance	-0.52	0.182**

Table 2. Analysis of multiple regressions of coping styles with disconnection-rejection area

Variables Entered	Method	R	R ²	DF	F	Sig	β	Sig
Avoidance coping	Enter	0.25	0.06	2	6.926	0.001	0.242	0.000
Compensation Coping				216			-.061	0.345
				218				

Predictive variables: avoidance coping style, coping style and compensation; Dependent variables: early maladaptive schemas in the area of disconnection-Rejection

The results of the above table show that $p < 0.001$ in the general regression model is significant. Multiple Regression Analysis results show that the standardized beta coefficient for assessing the contribution of each variable, gives a score. T and p values refer to the effect that each of the predictive variables. T and p values indicate that there is a significant relationship between the variables predictive of the criterion variable. This means that $p < 0.001$, 0.249; β i.e. change per unit in standard deviation predictive variable (avoidance coping style) units will change 0.249 standard deviation of disconnection-rejection schema.

Table 3. Analysis of multiple regressions of coping styles with over vigilance area

Variables Entered	Method	R	R ²	DF	F	Sig	β	Sig
Avoidance coping	Enter	0.24	0.06	2	6.926	0.001	0.242	0.000
Compensation Coping				214			-.034	0.634
				216				

Predictive variables: avoidance coping style, and compensation coping style; Dependent variable: schema in the area of over vigilance maladaptive schema

The results of the above table show that $p < 0.001$ in the general regression model is significant. Multiple Regression Analysis results show that the standardized beta coefficient for assessing the contribution of each variable, gives a score. T and p values refer to the effect that each of the predictive variables. T and p values indicate that there is a significant relationship between the variables predictive of the criterion variable. This means that $p < 0.001$, 0.242, β i.e. change per unit in standard deviation predictive variable (avoidance coping style) units will change 0.242 standard deviation of over vigilance schema.

DISCUSSION

Regarding this that there is significant relationship between disconnection- rejection and over vigilance and inhibition schemas and avoidance coping style but there was no relationship with compensation coping style can be explained in this way that ,All organisms have three basic responses to threat: fight, flight, and freeze. These correspond to the three schema coping styles of overcompensation, avoidance, and surrender. In very broad terms, fight is overcompensation, flight is avoidance, and freeze is surrender. One mechanism linking maladaptive schemata and behaviors is avoidance. Specifically, these behaviors may assist an individual to achieve avoidance of the negative affective states associated with maladaptive schemata [13] when patients utilize avoidance as a coping style; they try to arrange their lives so that the schema is never activated. They attempt to live without awareness, as though the schema does not exist. They avoid thinking about the schema. They block thoughts and images that are likely to trigger it: When such thoughts or images loom, they distract themselves or put them out of their minds. They avoid feeling the schema. When feelings are surface, they reflexively push them back down. They may drink excessively, take drugs, have promiscuous sex, overeat, compulsively clean, seek stimulation, or become workaholics. When they interact with others, they may appear perfectly normal. They usually avoid situations that might trigger the schema, such as intimate relationships or work challenges.

Many patients shun whole areas of life in which they feel vulnerable. Often they avoid engaging in therapy; for example, these patients might "forget" to complete homework assignments, refrain from expressing affect, raise only superficial issues, come late to sessions, or terminate prematurely. [5]. When patients overcompensate, they fight the schema by thinking, feeling, behaving, and relating as though the opposite of the schema were true. They endeavor to be as different as possible from the children they were when the schema was acquired. If they felt worthless as children, then as adults they try to be perfect. If they were subjugated as children, then as adults

they defy everyone. If they were controlled as children, as adults they control others or reject all forms of influence. If abused, they abuse others. Faced with the schema, they counterattack. On the surface, they are self-confident and assured, but underneath they feel the press of the Schema threatening to erupt. [5]. these findings suggest coping style, could be a useful target for intervention in treatment for mental disorders. If patients were to recognize that their use of humor may have some drawbacks that they had not previously considered, more adaptive humor styles could be worked on or implemented on an experimental basis to discover what impact this has on mood. Certainly the results of this study suggest that these processes ought to be better understood in a clinical population.

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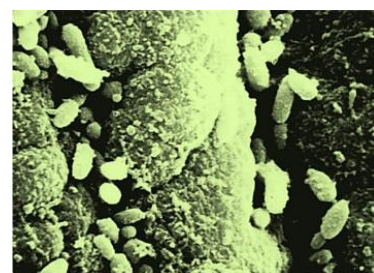
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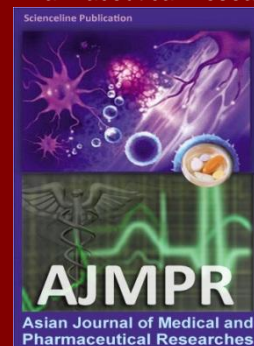
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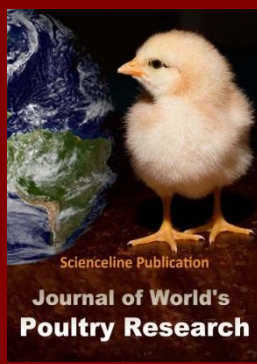
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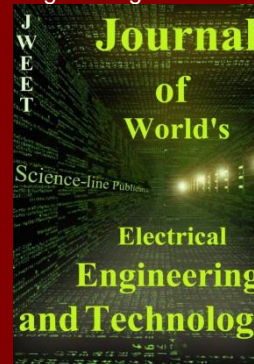
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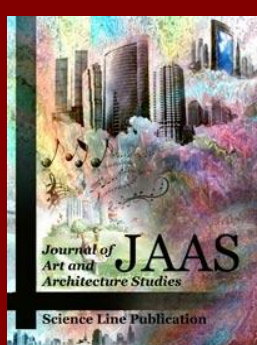
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