

Leisure and Perceived Wellness of Nursing Students: A Canonical Correlation Analysis

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Abstract—The purpose of this study was to explore the correlation between leisure participation and perceived wellness, with the students of a nursing college in southern Taiwan as the subjects. One thousand six hundred and ninety-six (1,696) surveys were sent, and 1,408 surveys were received for an 83.02% valid response rate. Using canonical correlation analysis to analyze the data, the results showed that the linear combination of the two sets of variable produces five significant canonical variates. Out of the five canonical variates, only the first has sufficient explanatory power. The canonical correlation coefficient of first canonical variate is 0.660. This indicated that leisure participation and perceived wellness are significantly correlated.

Keywords—Leisure, perceived wellness.

I. INTRODUCTION

ADOLESCENCE is an important developmental stage of life. Whether adolescents succeed in their studies at this stage can have important influence on the development of their characters and their attitude on life. However, according to report of John Tung Foundation on depression of college students in Taiwan for the fall semester of 2008, 22.2% of respondents were depressed; these included those with feelings of depression and frequent unhappiness with life which became the source of life pressure and negatively impacted bodily and mental health [1]. This showed that a higher percentage of college students has high degree of depressive emotions and severely lacks perceived wellness.

Perceived wellness is related to what people actually believed about their health. This perception is often not a factual picture of the individual's health, but rather how the individual sees the individual self as being well or unwell. Wellness is to find a balance in life that allowed an individual to give freely to themselves and others in their life. Holistic wellness has been identified with many dimensions, and it is related to health. It is subjective, and focuses on the individual's total life experience with all facets of life, inner feelings, physical and mental health, emotional reaction, and so on [2], [3]. Therefore, wellness is a way of life which health and happiness of the body, mind and spirit are at the optimum level; the individual lives with wholeness and fulfillment.

Leisure is activities that people freely choose and engage which are not related to their work. Therefore, it is defined as any activity that people participate during their free time when they want to enjoy themselves, have a good time, and increase personal growth [4]. Leisure is also viewed significantly as an

influential factor in maintaining vitality and health in later life. Participation in leisure activities helps reduce the stress in life and strengthen feelings of well-being, and produce importance influence on promoting psychological and physical well-being [5], [6]. In addition, satisfaction with leisure experience can elevate perceived wellness and self worth, and that leisure is an important factor influencing the quality of life [7]. These studies imply that leisure is a critical link in contributing to wellness.

There is a nursing college in Tainan, Taiwan. Students have achieved exceptional performance in profession certification and educational testing. However, high pressure from the student's workload and poor conditions in student life has caused students' inclination to depression. Students feel unhappy in their life. This can easily creates negative impact in students' learning. Solutions to the problem are not only to eliminate factors causing unhappy life, but also promote students' feel of life wellness. Wellness is intimately connected with personal health and lifestyle, and leisure participation is believed to be a factor that positively influences health and impacts the wellness of adolescents [8], [9]. Therefore, the purpose of this study was to explore the relationship between leisure participation and perceived wellness.

II. METHODOLOGY

The purpose of this study was to examine the correlation between leisure participation on outdoor, mechanical, cultural and artistic, service, fitness and social dimensions, and perceived wellness on psychological, emotional, social, physical as well as intellectual and spiritual dimensions among a sample of students of the nursing college in Tainan, Taiwan.

A. Data Collection

In this study, all the participants were day-time students (almost all female students) in the nursing college, who enrolled in the college during spring semester in 2012. Surveys were sent to all of these students in the nursing college for collecting data.

B. Instrumentation

In order to measure the factors influencing leisure preferences and types of leisure activities frequently participated by the participants, and measure the extent of individuals' perceive wellness of nursing students, this study employed the University Student Leisure Interest Scale and the University Student Perceived Wellness Scale as survey instruments.

The first scale was created by Wu [10] by modification of the Leisure Interest Measure of Ragheb and Beard [11]. After creation, it had been tested by item analysis, reliability test, exploratory factor analysis, and confirmatory analysis. The

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results showed that the Cronbach's alpha coefficients of all dimensions are greater than 0.70. The overall coefficient is 0.88 – meaning that the internal consistency is good, and the reliability of the instrument is high. This scale contains 23 statements and six dimensions as follows.

1. Outdoor: activities in open space or natural environment
2. Mechanical: practical or creative activities using machines or related to machines
3. Cultural and artistic: cultural or artistic activities with visual or audio expression
4. Service: activities with concern for the interest of others or with ability to help or serve others
5. Fitness: activities requiring physical exertion
6. Social: activities that aid in relationship building or interpersonal development.

The second scale was developed by Tsai and Wu [12] by modification of the Perceived Wellness Scale of Adams, Bezner and Steinhardt [13]. After creation, it had been tested by item analysis, reliability test, exploratory factor analysis, and confirmatory analysis. The results showed that the Cronbach's alpha coefficients of all dimensions are greater than 0.70. The overall coefficient is 0.90 – meaning that the internal consistency is good, and the reliability of the instrument is high. This scale includes 25 items and six dimensions as follows.

1. Psychological: the positive feelings from personal experience of situation and location
2. Emotional: possession of a secure self-identity and a positive sense of self-regard, both of which are facets of self-esteem
3. Social: the support from friends and family in the time of need, and the valuable support the individual give to others
4. Physical: the positive consciousness and expectation of bodily health, and is related to health and high level of physical activity
5. Intellectual: having optimal stimulating activity that provides inner liveliness
6. Spiritual: the merging of beliefs and psycho-physical forces that gives positive meaning and direction to life.

All of these scales use the Likert 5 point scale, with the responses “definitely disagree”, “somewhat disagree”, “not sure”, “somewhat agree” and “definitely agree” valued from 1 to 5 points. A high score on the first scale equates to a high level of leisure participation, and a high score on the second scale equates to a high level of wellness.

C. Data Analysis

The data were analyzed statistically by using SPSS utilizing various descriptive and inferential statistical techniques. Means, frequencies, and percentages of participants' demographic information, including participants' year of school attendance, residence location, levels of monthly spending on leisure, and average academic grade, were produced after the variables went through descriptive statistical analyses. In this manner, current situations of leisure participation and perceived wellness of students in the nursing college could be analyzed.

Then, reliability analysis was conducted on the data by computing the Cronbach's alpha coefficient to test the reliability of survey instruments. The Cronbach's alpha coefficients should be higher than 0.7 for each survey

instrument and higher than 0.6 for every dimension in the instrument to prove good reliability.

Canonical correlation analysis was employed to test the canonical correlation of the variables by using the SPSS. The analysis was conducted by using leisure participation set including outdoor (Out), mechanical (Mec), cultural and artistic (Art), service (Ser), fitness (Fit), and social (Lso) as independent variables (X variables), and perceived wellness set containing psychological (Psy), emotional (Emo), social (Wso), physical (Phy), and intellectual and spiritual (Spi) as dependent variables (Y variables). Canonical correlation analysis was performed to investigate the degree of canonical correlation between these two sets of variables, and to find most favorable linier combinations between variable sets. The analysis can generate functions of pairs of canonical variates whether they reach significant level or not.

III. RESULTS

The surveys were distributed during the spring semester in 2012. Total of 1,696 surveys were sent, and 1,477 surveys were returned. After the removal of the incomplete surveys, 1,408 valid responses remained for an 83.02% valid response rate for statistical analysis.

From the surveys, the descriptive statistics (frequencies and percentages) of participants' demographic information are shown in Table I. As indicated by Table I, students in the subgroups residence location: others, levels of monthly spending on leisure: NT\$ 1000 and less, and average academic grade: 80-89, were the majority in each subgroup.

TABLE I
PARTICIPANTS' DEMOGRAPHIC INFORMATION

Demographics	Subgroups	<i>f</i>	<i>P</i>
Year of school attendance	First	299	21.3%
	Second	286	20.3%
	Third	277	19.0%
	Fourth	283	20.1%
	fifth	261	19.3%
Residence location	At home	601	42.7%
	Others	805	57.3%
	NT\$ 1000 and less	749	53.3%
Levels of monthly spending on leisure	NT\$ 1001-2000	303	21.6%
	NT\$ 2001-3000	108	7.7%
	NT\$ 3001-4000	129	9.2%
	NT\$ 4001-5000	75	5.2%
	NT\$ 5001 and more	42	3.0%
Average academic grade	60-69	117	8.3%
	70-79	607	43.2%
	80-89	659	46.9%
	90-100	23	1.6%

Note. *N* = 1406.

In addition, the mean scores of each dimension of leisure participation are as follows: outdoor is 3.83, mechanical is 2.93, cultural and artistic is 3.36, service is 3.14, fitness is 3.06, and social is 3.77; the mean score of total leisure participation is 3.32. The mean scores of each dimension of perceived wellness are as follows: psychological is 3.48, emotional is 3.63, social is 3.50, physical is 3.61, and intellectual and spiritual is 3.6; the mean score of total perceived wellness is 3.56.

The coefficients of the outdoor, mechanical, cultural and artistic, service, fitness, social, and overall survey of the Leisure Interest Scale were 0.795, 0.667, 0.774, 0.813, 0.755, 0.693 and 0.880 respectively. The coefficients of the psychological, emotional, social, physical, intellectual and spiritual, and overall survey of the Perceived Wellness Scale were 0.680, 0.663, 0.727, 0.731, 0.85 and 0.907 respectively. The coefficients of dimensions in the survey instruments were all higher than 0.600, and the coefficients of the survey instruments were all higher than 0.700. Therefore, the above results showed that these scales are well suited for this research.

Canonical correlation analysis was used to analyze the data by using leisure participation dimensions as independent variables and perceived wellness dimensions as dependent variables. As shown in Table II, five pairs of canonical variates were generated in the canonical correlation analysis, and these five canonical correlation coefficients were shown to reach significant level ($p < 0.01$). The first pair of canonical correlation coefficient was found to be 0.660 ($F=62.816$, $p=0.000$); the second pair of canonical correlation coefficient was found to be 0.448 ($F=34.588$, $p=0.000$); the third pair of canonical correlation coefficient was found to be 0.329 ($F=21.852$, $p=0.000$); the fourth pair of canonical correlation coefficient was found to be 0.142 ($F=8.529$, $p=0.000$), and the fifth pair of canonical correlation coefficient was found to be 0.091 ($F=7.392$, $p=0.001$). Therefore, these five pairs of canonical variates were reserved for further inspection.

As shown in Table III, in the first pair of canonical variates, leisure participation set extracted 60.879% of variance from its variables and perceived wellness set extracted 39.164% of variance from its variables. The redundancy index showed that the perceived wellness set extracted 17.061% of variance from the variables of the leisure participation set, and the leisure participation set extracted 26.521% of variance from the variables of the perceived wellness set. In the second pair of canonical variates, leisure participation set extracted 11.893% of variance from its variables and perceived wellness set extracted 15.409% of variance from its variables. The redundancy index showed that the perceived wellness set extracted 3.094% of variance from the variables of the leisure participation set, and the leisure participation set extracted 2.388% of variance from the variables of the perceived wellness set. In the third pair of canonical variates, leisure participation set extracted 8.182% of variance from its variables and perceived wellness set extracted 11.425% of variance from its variables. The redundancy index showed that the perceived wellness set extracted 1.239% of variance from the variables of the leisure participation set, and the leisure participation set extracted 0.887% of variance from the variables of the perceived wellness set. In the fourth pair of canonical variates, leisure participation set extracted 10.050% of variance from its variables and perceived wellness set extracted 16.101% of variance from its variables. The redundancy index showed that the perceived wellness set extracted 0.323% of variance from the variables of the leisure participation set, and the leisure participation set extracted 0.202% of variance from the variables of the perceived wellness set. In the fifth pair of canonical variates, leisure participation set extracted 8.994% of variance from its variables and perceived wellness set extracted 7.892% of

variance from its variables. The redundancy index showed that the perceived wellness set extracted 0.065% of variance from the variables of the leisure participation set, and the leisure participation set extracted 0.074% of variance from the variables of the perceived wellness set.

TABLE II
SUMMARY OF CANONICAL SOLUTIONS

Root No.	1	2	3	4	5
Eigenvalue	.772	.251	.122	.020	.008
Percentage	65.776	21.411	10.363	1.744	.707
Canon cor.	.660	.448	.329	.142	.091
Sq. cor	.436	.201	.108	.020	.008
Wilk's L	.391	.693	.867	.972	.992
F	62.816	34.588	21.852	8.529	7.392
	***	***	***	***	**
p	.000	.000	.000	.000	.001

Note. $N=1408$.

*** $p < .001$. ** $p < .01$.

Canon cor. = Canonical correlation coefficient, Sq. cor = Square of canonical correlation coefficient.

TABLE III
STRUCTURAL COEFFICIENTS, PERCENT VARIANCE AND REDUNDANCY

structural coefficients					
X variables	χ_1	χ_2	χ_3	χ_4	χ_5
outdoor	.842	-.085	.394	.021	.305
mechanical	.401	.429	-.148	.683	-.275
cultural and artistic	.525	-.050	.048	.527	-.190
service	.383	.292	-.565	.385	.486
fitness	.613	.737	-.081	-.235	-.137
social	.826	-.319	-.424	-.133	-.118
Percent variance	60.879	11.893	8.182	10.050	8.994
redundancies	26.521	2.388	.887	.202	.074
structural coefficients					
Y variables	η_1	η_2	η_3	η_4	η_5
psychological	.805	-.047	.100	.197	-.548
emotional	.883	-.313	-.322	-.133	-.034
social	.729	-.400	.528	-.173	.022
physical	.818	.526	.075	-.047	.217
intellectual and spiritual	.646	-.241	.105	.643	.317
Percent variance	39.164	15.409	11.425	16.101	7.892
redundancies	17.061	3.094	1.239	.323	.065

Note. $N=1408$.

However, the redundancy indices extracted 3.094%, 1.239%, 0.323% and 0.065% of variance from the variables of the leisure participation set in the other pair of canonical variates in order; and extracted 2.388%, 0.877%, 0.202% and 0.074% of variance from the variables of the perceived wellness set in order. The redundancies were all less than 5%, which showed that the accountability from the other pair of canonical variates is insufficient and need not be considered.

IV. DISCUSSION

Because redundancy measures the degree of variance a variate on one side extracting from the variables that constitute the variate on the other side of the equation, as the above results show, the amount of variability and redundancies that variables of the two sets in the first pair of canonical variates have statistically significant canonical correlation, and the first pair of canonical variates deserves further discussion. X variables influence Y variables mainly through variate χ_1 and variate η_1 .

Path diagram for the first pair of canonical variates is appeared as Fig. 1.

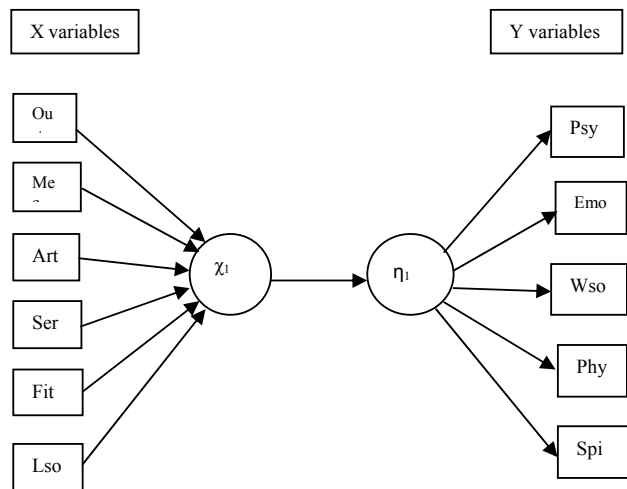


Fig. 1 Path diagram for the first pair of canonical variates

In the first pair of canonical variates, variate χ_1 accounted for 43.6% of the variability in variate η_1 (See Table II). Structural coefficients for the canonical variables of leisure participation set and perceived wellness set are shown in Table III. Whether the variables are regarded as a part of particular variables depends on the structural coefficients whose load should be greater than or equal to 0.3 [14]. All variables load structural coefficients were higher than 0.3 either in leisure participation set and in perceived wellness set for first pair of canonical variates. All dimensions of leisure participation are positively correlated with the canonical variate χ_1 , and all domains of perceived wellness are positively correlated with the canonical variate η_1 . In addition, outdoor, mechanical, cultural and artistic, service, fitness, and social dimensions of leisure participation were shown to be significantly and positively related to psychological, emotional, social, physical, intellectual and spiritual dimensions of perceived wellness. That is, if participants greatly engage in leisure activities which are their leisure preferences, they could greatly feel the positive feelings. These come from 1) personal experience of situation and location, 2) possession of a secure self-identity and a positive sense of self-regard of self-esteem, 3) the support from friends and family in the time of need, and the valuable support the individual give to other, 4) the positive consciousness and expectation of bodily health which is related to health and high level of physical activity, and 5) optimal stimulating activity that provides inner liveliness as well as the merging of beliefs and psycho-physical forces that provides positive meaning and direction to life.

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