AN EXAMINATION OF COLLEGE STUDENTS' STATE ANXIETY TO TRAIT ANXIETY, PROBLEM SOLVING STATUS AND SPIRITUALITY

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ABSTRACT

A total of 677 college students responded to the State-Trait Anxiety Inventory and Spirituality scale and Problem-Solving Inventory. This study investigates problem solving status, spirituality and levels of state anxiety among 677 college students. The findings of this quantitative study demonstrate that college students are rarely free of state anxiety. The results of the study showed that state anxiety is positive correlated with problems solving status, trait and spirituality. Moreover, by using multiple regression analyses, the predictor variables were able to account for 48% of the variance of State Anxiety. State anxiety could be predicted by four main predictors, "Trait anxiety", "Purpose and meaning in life", and "Problem Solving Confidence and Approach-Avoidance Style two subscales of the PSI". The study's limitations, implications for future research, and suggestions for diversifying career education are discussed.

Keywords: state anxiety, trait anxiety, problem solving, spirituality.

INTRODUCTION AND LITERATURE REVIEW

College students need to overcome different career related problems during their college/university years. To respond problems in any stage of life is a very complicated process, not only depending on personal factor but also environmental factors (Zeidner, 2007; Hamarta, 2009). A review of the career theory and career counseling literature Trevor-Roberts (2006) indicates that although contemporary approaches have been offered to respond to the changed nature of career, none of the approaches have identified uncertainty as a core part of individuals' experience of their career. For college students' academic career, Peng's study (2004) found that college career indecision situations varied by academic years and found that higher academic year students have different career education needs than lower academic year students. In addition, female college students more value career planning than male college students who value more on finding jobs. A survey from 1995 to 2004 with a sample of 31,731 first-year college students, the study results revealed that

male students emphasis more on making money, female students emphasis more on working with people and contributing to society. White college students placed a greater emphasis on having independence and intrinsic interest in the field while African Americans and Asian Americans espoused higher extrinsic work values (Duffy & Sedlacek, 2007). Therefore, to design higher education courses or program need to be aware of the age, gender and culture background factors.

To examine factors of career decision making has important implication for extending career interventions. College students experience different levels of state anxiety (Peng, 2004, 2005; Wu, 1991) and indecision (Larson & Heppner, 1985; Heppner & Hendricks, 1995a; Peng, 2001) during the time they are making a career decision related to their major or future career. Some students are undecided because the process of making a decision arouses strong state anxiety. Relevant studies have found that state anxiety is consistently related to high levels of career indecision (Cooper, Fuqua, & Hartman, 1984; Fuqua, Seaworth, & Newman, 1987; Heppner & Hendricks, 1995a; Peng, 2001, 2005). Even in the absence of clear evidence about the cause-and-effect relationship between state anxiety and career indecision, it has been found in earlier studies that anxiety management is an effective component of intervention strategies for treating career indecision (Peng, 2001, 2006). Peng's study (2005) was to evaluate the efficacy of using a combination of interventions to reduce state anxiety and found that offering a career education course to first-year college students experiencing career indecision will have a positive effect on state anxiety.

The state anxiety is the similar as the stress that has been conceptualized in terms of the imbalance between environmental demands and personal resources (Spangenberg & Orpen-Lyall, 2008; Schlossberg, 1981; Speilberger and Sydeman, 1994). Speilberger and Sydeman (1983) reported that state anxiety and trait anxiety are different. State anxiety in career decision making is considered to be a transitory and largely normal emotional state; trait anxiety is considered to be a stable characteristic reflecting individual differences in the tendency to experience perceptions that a range of situations can be threatening. The relationship of state and trait anxiety to career indecision is especially important. Relevant studies have found that state anxiety is consistently related to high levels of career indecision (Cooper, Fuqua, & Hartman, 1984; Fuqua, Seaworth, & Newman, 1987; Heppner & Hendricks, 1995a). In addition, based on career counseling theories, some studies confirmed that problem-solving appraisal is related to career indecision and career decision making (Chang, Sanna, Riley, Thornburg, Zumberg & Edwards, 2007, Heppner, McKinnon, Multon,& Gysbers, 2004; Larson and Heppner, 1985).

When an individual lacks the capacity to meet objectively and subjectively appraised demands might cause people's state anxiety. Heppner, et al. (2004) reviewed the past 20 years coping literature has been the identification of coping resources that account for individual variability in response to stress. A critical resource for coping is one's problem-solving appraisal or general evaluation of oneself as a problem solver. Belzer, D'Zurillar, & Maydeu-Olivares (2002) mentioned that social problem solving and trait anxiety as predictors of worry in a college students' population. Some studies emphasis the association between problem-solving appraisal and psychological adjustment, career indecision is one of those (Larson & Heppner, 1985; Larson, Toulouse, Ngumba, Fitzpatrick & Heppner, 1994; Lazaus, 2000). The review study of research using the problem solving inventory which is developed and assessed in personal life how to deal with the personal difficulty or the problem at present, Heppner, et at., (2004) stated that a strong and consistent association between problem-solving appraisal and both career planning and decision making. The definition of problem solving can be defined as the best way to overcome people's obstacles, work through life transitions and difficult situations, not only to build on their strengths but also to enhance their life satisfaction and well-being. In addition, problem-solving appraisal can be conceptualized as a personal resource variable and a general set of beliefs or expectancies about one's problem-solving ability.

How people appraise their problem-solving capabilities and whether they tend to approach or avoid their problems needs to be aware of the person's factors. Heppner (2008) mentioned that all problems require effective problem-solving coping skills in order for individuals to maintain a life that they find satisfying. The findings of Dora (2003) and Hamarta, (2009) similarity about that positive problem orientation and rational problem solving and avoidance styles significantly predict life satisfaction. Successful problem solving takes time, effort and persistence, and committing oneself to solving problems with dispatch rather than avoiding them and effective problem solving can decrease psychological stress (Chang, D'Zurilla & Sanna, 2009; McCabe, Blankstein, Mills, 1999). They addressed the aim of problem solving is to change the problematic situation for the better or to reduce the emotional distress that it produces, or to do both these things. Proposing an integrative model of problem solving, Elliott, Godshall, Shrout, Witty (1990) suggested that two problem-solving components (Problem-Solving Confidence and Personal Control) best represent the initial problem- orientation phase of the social learning model, and Approach-Avoidance Style best represents the problem-solving skills component. To assess problem-solving attitudes and skills, Chang, D'Zurilla, and Sanna (2009) found that people with negative problem orientation, an avoidance style is the dysfunctional problem-

solving dimension characterized by procrastination, which is about addressing the solution and shifting responsibility for solving problems to others will maintain the problem situation and decrease life satisfaction.

To examine the hypothesis that ineffective problem solvers would have increased levels of anxiety, researchers (Davey, Hampton, Farrell, & Davidson, 1992; Sahin, Sahin & Heppner, 1993) have found a consistent association between problem-solving appraisal and anxiety. When relationships were examined among the PSI factors and anxiety, trait anxiety and trait anger were most strongly correlated with Problem-Solving Confidence and Personal Control (Carscaddon, Poston, & Sachs, 1988); Davey et al.' study (1992) suggest that trait anxiety is more related to two of the PSI factors (Problem Solving Confidence and Personal Control) and that problem solving appraisal is a more stable, dispositional construct rather than a state like construct. When relationships were examined with the PSI factors, three studies found that only the Problem-Solving Confidence and Personal Control factors were related to worry (Davey, 1994; Davey et al. 1992, Dugas, Letarte, Rheaume, Freeston, & Ladouceur, 1995). Thus, it may be informative to examine if problem-solving appraisal plays moderating, mediating, and/or reciprocal roles with anxiety. In addition, several researchers found that two components of problem-solving appraisal, Problem-Solving Confidence and Approach-Avoidance Style, may be the strongest contributors to problem-focused coping reports (Heppner, Cook, Wright, & Johnson, 1995b; MacNair & Elliott, 1992). Problem-Solving Confidence was found to have the strongest association with hopelessness and suicidal ideation (Dixon, Heppner, & Anderson, 1991, Dixon, Heppner, & Rudd, 1994, Priester & Clum, 1993).

Researchers have used a number of strategies to assess applied problem solving. Providing cognitive process is one of the strategies to build person's problem solving ability (Heppner, Witty & Dixon, 2004). Career choices and development are complex, ever changing, and driven by a multitude of forces, both internal and external. Spirituality is one of the internal factors for career behavior. Spirituality is related to the cognitive process factor of the problem solving. Career counseling for indecision is usually cognitive based (Osipow, 1999; Peng, 2005; Sampson, Shy, Hartley, Reardon & Peterson, 2009). Spirituality will influence one individual's belief as it recognizes the valuable goal to be a developing and becoming self, unity with others, expressing self and serving others, while those goals will affect one's career behavior (Bloch, 2005; Dik & Duffy, 2009; Duffy & Blustein, 2005; Wiersma, 2002). By giving work a deeply spiritual meaning to underscore the importance of assisting a client to identify life themes, values and unfinished business as a way to make career

choices (Constantine, Miville, Warren, Gainor, & Lewis-Coles, 2006; Savickas, 1993, Savickas, Nota, Rossier, Dauwalder, Duarte, Guichard, et al, 2009).

Haciwara & Sakurai (2008) indicated that the absence of self-determined motivation to "search for something to commit to" could lead to career indecision. It was suggested that a sense of self-determination in "searching for something to commit to" could be linked to adaptation for career choices. Just as the discovery by Dudeck (2004), many would search one "call" or spiritual symbol in his/her job, and the internalized value system will always help the individual explore his/her spiritual goal. In other words, the issues about spiritual goal and vocation will appear in the process of vocational development (Bygrave & Macmillan, 2008; Dudeck, 2004; Fisher, Francis, & Johnson, 2000). In a broad sense, spirituality has no absolute relationship with religion (Gockel, 2004;Powell, Shahabi, & Thoresen, 2003; Shakun, 2003), even though opinions from many scholars have indicated that religious belief is related to life meaning, as it shows significant difference in life meaning for students with different religious beliefs (Constantine, Miville, Warren, Gainor, & Lewis-Coles, 2006; Duffy & Blustein, 2005; Gockel, 2004).

In sum, although considerable research has been conducted regarding the relationship between state anxiety and career decision-making or between problem-solving appraisal and psychological adjustment (in which state anxiety is of those), little of this research has focused on the relations of state anxiety with problem solving status and spirituality at the same time. The basic hypothesis of this study was ineffective problem solving would likely result in increase level of state anxiety. In this study, the hypothesis of this study is that if a person lack of problem-solving confidence and a tendency to avoid problems may be related to state anxiety. Although the focus of previous research has used the PSI to predict indices of human adjustment, but none of the previous study by using state anxiety and spirituality variables together. The objectives include: (1) to investigate the relations of problem solving status, spirituality and levels of state anxiety among the college students; (2) to examine the differences on the state anxiety score by using a two-way ANOVA (gender and academic year level); (3) to determine whether or not subscales of the PSI, trait anxiety, and subscales of Spirituality scale by college students predicts their state anxiety. Determining the prediction levels of state anxiety by trait anxiety, problem solving status and spirituality can provide future direction for career education programs and career counseling services.

METHODOLOGY
Participants

Six hundred and seventy-seven Taiwanese college students from 5 career planning related courses voluntarily participated in this study. Whereas all participants came from the same college, they majored in various fields ranging from Finance to Computer Science. Among the 677 subjects, 121 were male. In addition, 246 of them were freshmen or sophomore, and 431were junior or senior. The mean age of the participants was 22.6 years with a standard deviation of 5.8.

Procedure

The 677 participants responded to the three instruments. The processes of the procedure included: (1) To do the literature review related to positive psychology and spirituality to confirm that studies theme content and progress; (2) Setting the time schedule to grind and plan to the study in details; (3) The Pearson correction coefficient technique was used to determine the relationship among the subscales of Spirituality Assessment Scale (SAS), The state-Trait Anxiety Inventory (the Chinese version of the STAI) and the Problem-Solving Inventory (PSI); (4) To run statistics t and to get feedback of the questionnaire with the research; (5) Multiple regression analysis was used to determine whether or not problem solving status, trait anxiety and spirituality predicts state anxiety.

The participants in the career planning related course met once a week for 18 weeks. Each class meeting lasted 2 hours, resulting in a total of 36 hours of direct training in career education. At the end of the semester course, students completed the Chinese version of the State-Trait Anxiety Inventory (STAI) (Wu, 1991), the Problem-solving Inventory, spirituality Assessment Scale and a demographic questionnaire.

Instruments

To achieve the research goal, three instruments were adopted by this research include a demographic questionnaire was prepared by the researcher, Spirituality Assessment Scale (SAS), Anxiety scale-The State-Trait Anxiety Inventory (The Chinese version of the STAI) and the Problem-Solving Inventory (PSI). Spirituality Assessment Scale(SAS): This scale was created by Delaney (2005) based on the definitions by Banks (1980) and Banks et al (1984), with the spiritual health covering four key dimensions: (1) Purpose and Meaning in Life; (2) Innerness or Inner Resources; (3)

Unifying Interconnectedness and (4) Transcendence. The subscales include "Spirituality" (X_1), "Purpose and Meaning in life" (X_2), "Innerness or Inner Resources" (X_3), "Unifying Interconnectedness" (X_4), "Transcendence" (X_5), "Work Value" (X_6), "Self Growth" (X_7), "Self Realization" (X_8) and "Dignity" (X_9).

The State-Trait Anxiety Inventory (STAI, Spielberger & Reheiser, 2009) was designed to evaluate both state and trait anxiety. Spielerger (1972) defined state anxiety as a temporary emotional state, and trait anxiety as an aspect of personality emphasizing a personal tendency to worry. The 20 items State Anxiety subscale (A-State) and the 20 items Trait Anxiety subscale (A-Trait) were used to represent two different models of anxiety. Both the A-State and A-Trait scales are made up of twenty 4-point scale items. Scores were computed by summing ratings across items, with higher scores representing higher anxiety on both subscales. Test-retest reliabilities for the A-State scale are low (.16 to .54) as would be expected for a transitory emotional state while they are higher (.73 to .86) for the A-Trait scale. Dreger and Katkin's review (1978) of the State-Trait Anxiety Inventory concluded it was both reliable and valid. Internal consistency reliabilities for the sample used in Dreger and Katkin's study were .62 and .84 for the State- and Trait-Anxiety subscales, respectively. The Chinese version of the State-Trait Inventory, which is translated and modified from the English version, yielded internal consistency reliability (Cronbach alpha) of .85 for all items (Saunders, Peterson, Sampson & Reardon, 2000). Internal consistency reliability for the present sample was .88 and .89 for A-State and A-Trait, respectively.

The Problem-Solving Inventory (PSI; Heppner & Peterson, 1982) is an instrument that assesses individuals' perceptions of their problem-solving behavior. It consists of 32 six-point Likert scale items, where low scores indicate behaviors and attitudes typically associated with "effective" problem solving. Since the PSI is a self-rating questionnaire, scores should not be considered synonymous with subjects' actual level of problem-solving skills (Heppner, 1988). Factor analysis has revealed three distinct constructs: problem-solving confidence (11 items), approach-avoidance style (16 items), and personal control (5r items). Reliability estimates revealed the construct were internally consistent (.72-.90); N=150) and stable over a 2-week period (.83-.89; N=31). In addition to the three factor scores, a total PSI score is used as a single, general index of problem-solving appraisal. The instrument is developed and assessed in personal life how to deal with the personal difficulty or the problem at present by Heppner and Cooper. Regard this quantity form as the form assessment (formative evaluation). Demand to join answer this of students of class' group of the career and

assess forms at the end of class' group in one term. Later followed the trail of the interview group's effect did for self-criticism and improved group's scheme quality and dependence reference tool in future.

RESULTS

Means, standard deviations, and intercorrelations (See Table 1)

Means, standard deviations, and bivariate correlations of all variables are provided in Table 1. Students' state anxiety was positively associated with their trait anxiety, problem-solving confidence, approach-avoidance style, personal control, and overall PSI ($r = .17 \sim .67$, $p < .01$). In contrast, state anxiety was negatively related to respondents' spirituality ($r = -.44$, $p < .01$).

Results of the ANOVA (See Table 2)

We performed a two-way analysis of variance (ANOVA) to examine whether students' state anxiety is a function of their gender and academic year (cf. Table 2). Results of ANOVA showed that neither gender, nor academic year or their interaction term, had a significant effect on state anxiety ($F = .00 \sim 3.50$, $p > .05$). To further investigate the causes of state anxiety, we performed a multiple regression analysis in which all facets of problem-solving status and spirituality, as well as trait anxiety, were included to predict state anxiety. Results indicated that, taken all together, students' state anxiety can be predicted by their scores on purpose and meaning in life ($\beta = -.15$, $p < .01$), problem-solving confidence ($\beta = .13$, $p < .01$), approach-avoidance style ($\beta = -.12$, $p < .01$), and trait anxiety ($\beta = .56$, $p < .01$). That is, students who perceived their life as being more meaningful and purposeful also tended to experience low levels of state anxiety. Similarly, those who inclined to approach various problem solving activities were less prone to experience state anxiety. Results pertaining to the relationship between trait and state anxiety were consistent with our expectation that one's trait anxiety is a general tendency to experience anxious states and thus trait and state anxiety should be positively associated with one other. In contrast, the positive relationship between problem-solving confidence and state anxiety was unexpected. Our results indicated that students had more confidence in problem solving activities also had proneness to perceive transitory feelings of tension and apprehension (i.e., state anxiety).

Prediction of state anxiety from problem-solving status, spirituality, and trait anxiety (See Table 3)

DISCUSSION

Data analysis based on Pearson Product-moment Procedure, it presents positive correlations among state anxiety, the total score of the PSI and trait anxiety. Hence, the lower of the individuals' total score of Problem Solving Inventory (The lower scores on Problem-Solving Inventory will be more satisfy abilities), the lower of the individuals' total score of state anxiety, the higher of the individuals' total score of Spirituality; the higher of the individuals' total score of Problem Solving Inventory (The higher scores on Problem-Solving Inventory will be less satisfy abilities), the higher of the individuals' score of state anxiety, the lower of the individuals' score of Spirituality. In addition, it has presented negative correlation with spirituality but positive correlations among the total score of PSI and state anxiety, the subscales scores of the problem solving confidence, approach-avoidance style and control. In addition, this study also suggests that problem-solving appraisal is not only related to spirituality but also state anxiety.

According to the results of this research, the t-test for the problem solving confidence score (PSC) of PSI was significantly different between female subjects and male subjects, indicating female subjects having higher score of the problem solving confidence than male subjects', which means that male subjects' basic belief and trust in their problem solving ability to more effectively cope with problems than female subjects'. For the scores of PSI, the lower scores for the subscales of the PSI represents more satisfy abilities. Based on the results of the t-test for the trait anxiety score of SATI was significantly different between lower year level subjects and higher year level subjects, indicating subjects of freshman and sophomore having higher trait anxiety than subjects of junior and senior. The lower scores on STAI will be less trait or state anxiety. Based on the results of the t-test for the personal Control Score (PC) of PSI was significantly different between lower year level subjects and higher year level subjects, indicating subjects of junior and senior having higher control of their emotions while problem solving than subjects of freshmen and sophomore. In addition because there is an interaction effect between gender and academic year level indicating that differences in the state anxiety score really need to be described separately for gender and academic year level. These findings are

consistent with findings of several other researchers (Duffy & William, 2007; Peng, 2004; 2005).

In order to predict the status of the dependent variable of state anxiety by given the independent variables, personal profile with factors (gender, age, etc.), trait anxiety, spirituality, and problem solving status, the results indicating that by using multiple regression analyses, the predictor variables were able to account for 48% of the variance of State Anxiety. "Trait anxiety", "purpose and meaning in life", "Problem Solving Confidence and Approach-Avoidance Style two subscales of the PSI", which were the four main predictors of State Anxiety. The finding is also supported by the findings of (Dora, 2003; Hamarta, 2009), positive problem orientation and rational problem solving and avoidance styles significantly predict life satisfaction. These findings are consistent with findings of several other researchers (Heppner, Cook, et al., 1995b; MacNair & Elliott, 1992) who found that two components of problem-solving appraisal, Problem-Solving Confidence and Approach-Avoidance Style, may be the strongest contributors to problem-focused coping reports and suggested that a number of career counseling interventions might profitably focus on the various components of problem solving appraisal..

To decrease state anxiety of college students can be increased by developing their problem solving skills by increasing problem solving confidence, personal control and increasing the content of spirituality (means-end thinking related to search meaning in career). For career counseling/education intervention, we also need to pay more attentions on decreasing state anxiety of female college students by increasing their problem solving confidence. Moreover, for freshman and sophomore college students we need to pay more attention on increasing their personal control of their emotions while problem solving. This study provides strong support for earlier research (Belzer, D'Zurillar, & Maydeu-Olivares, 2002; Heppner,Witty, & Dixon, 2004; Lazaus, 2000), which emphasized the association between problem-solving appraisal and psychological adjustment. The results of this study suggest that although a person's tendency to avoid problems was directly related to state anxiety, that tendency was associated with less problem-solving confidence.

Generalizations based upon the results of this study are limited because of the sample size and the cultural characteristics of Taiwanese college students. Changes in state anxiety may be related to factors of problems solving status and spirituality or only for certain subtypes of undecided college students. By using pre-test of a large sample of college students or other populations, future research might also study other psychological factors (ex. self-efficacy, or career maturity) that may mediate, and thus further explain, the relationships of state anxiety, problem solving status and spirituality. Another limitation is the post-test nature of the study, because treatment time was fairly long as a semester, the content of the career education related courses and possible threats to internal validity, such as history and maturation, may exist to impact the relations result.

Finally, the relationship of state anxiety, problem solving status and spirituality in the current study can be taken into consideration when helping professions developing career education courses or career counseling programs. Moreover, future studies of college students' state anxiety need to be designed to examine the problem solving process with more explicit attention to the role of spirituality. Further longitudinal research identifying the most effective interventions in decreasing state anxiety for various subtypes of college students should be examined. This study supported the hypothesis of this study which was that if a person lack of problem-solving confidence and a tendency to avoid problems would be related to state anxiety. The current study is an indication of possible directions for future research.

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Table 1 Means, standard deviations, and intercorrelations

	M	SD	1	2	3	4	5	6	7
1. Overall PSI	97.29	14.79	(.89)						
2. PSC	30.69	6.16	.84	(.83)					
3. AAS	46.81	8.08	.89	.58	(.81)				
4. PC	19.79	3.81	.64	.39	.40	(.71)			
5. Trait-Anxiety	46.49	10.09	.43	.46	.24	.44	(.89)		
6. State-Anxiety	46.03	9.69	.35	.41	.17	.34	.67	(.88)	
7. Spirituality	123.81	14.70	-.55	-.59	-.43	-.24	-.51	-.44	(.92)

Note: PSI= Total PSI score; PSC = Problem Solving Confidence; AAS = Approach-Avoidance Style; PC= Personal Control. $N = 677$. Coefficient alphas are depicted on the diagonal. Coefficients of intercorrelations reported under the diagonal were all significant at the $p < .01$ level (2-tailed).

Table 2 ***Results of the ANOVA[a]***

	S.S.	d.f.	M.S.	F	η^2
Gender (A)	327.92	1	327.92	3.50	.005
Academic year level (B)	83.63	1	83.63	.89	.001
A × B	.34	1	0.34	.00	.000
Error	63097.45	673	93.76		
Total	63530.47	676			

[*] $p < .05$ [**] $p < .01$

[a] dependent variable: **state anxiety**

Table 3 Prediction of state anxiety from problem-solving status, spirituality, and trait anxiety
[a]

	B	SE(B)	Beta
Spirituality: Purpose and Meaning in Life	-.47	.14	-.15[**]
Spirituality: Innerness or Inner Resources	-.12	.09	-.07
Spirituality: Unifying Interconnectedness	.11	.07	.05
Spirituality: Transcendence	.08	.12	.03
Problem-solving: Problem-solving confidence	.20	.06	.13[**]
Problem-solving: Approach-avoidance style	-.14	.04	-.12[**]
Problem-solving: Personal control	.13	.09	.05
Trait anxiety	.54	.03	.56[**]

[a] Dependent variable: state anxiety

 * $p < .05$

** $p < .01$