

COMPILING OF COLLEGE STUDENTS OF FREE WILL AND RESEARCH RELIABILITY AND VALIDITY

Peipei Wang, Xinyue Hu

Zhuhai Campus of Jinan University, Zhuhai, 519070, P.R.China

ABSTRACT: *Objective: To develop a free will questionnaire for college students and verify its reliability. Based on Chinese cultural background and relevant overseas research literatures and questionnaires, choose 300 students to complete the first round initial survey, then modify the questionnaire. Next, finalize the questionnaire based on a second round survey with another 390 students. Finally, choose 880 random sample students from 10 universities within Wuhan to do the finalized questionnaire. There are totally 5 factors in the questionnaire: fatalism, self-control, the behavioral and independent choice, choice of the limitations, the personal impact history. A number of factors of 0, 760, of the study of the sample card to less than 5, RMSEA value that is less than 0, 08, the value of CFI and LTLI is greater than 0.95, and RMSEA value that is less than 0.08. Free Will concepts of structural model fit is very good. The survey measured the credibility 0.518. This free will questionnaire has a good reliability and can be used in related research and practice.*

KEYWORDS: Free will; University students; Questionnaires; Reliability; Efficiency.

INTRODUCTION

Free will is an old topic in philosophy. The concept of free will is not only the cornerstone of Kant's practical rational system, but also the idea of freedom in bourgeoisie. Free will refers to the ability to choose between different possible courses of action or the ability to take action in certain circumstances, which is unimpeded by nature, society and God.(Kant,1998). Arguments in theology, law and ethics are reasoned from conclusions to premises. Therefore, psychology undoubtedly could provide free will with the most direct argument. A few psychologists and philosophers are dedicated in proving human being's free will in psychological aspect, such as James, an American psychologist and philosopher, who applied the Theory of Evolution, Psychodynamic Theory and the concept of creation to interpret free will.

Theoretical Underpinning

Christopher J. Ferguson believes that free will is a kind of unconscious reaction(Yang,S.G,1981). An essential feature that can distinguish human beings with the physical world and animals is that human beings have free will and the right to make free choices. It is the awareness and subjectivity of human being's existence that make them have the freedom to choose. As Soren Aabye Kierkegaard said, "Self is freedom". Everybody's existence is the result of free choice(Liu,X.P,2001). Rollo May pointed out that if one has no

freedom, the only things that can affect him are the principles of determinism put forward by Sigmund Freud and Charles Robert Darwin respectively. The purpose of psychotherapy is to help people regain freedom. According to Viktor Emil Frankl, free will is a kind of direct experience, which means one's spirit is free even his or her body is imprisoned. Free will opens up new experience for human being's life(Zavalloni, R,1962). Moreover, this kind of free choice is the premise of psychotherapy. Rollo May also observed that people realize the meaning of those past decisive events from what happens at present and will happen in the future. People are able to evaluate their own experience through the past and the future, decide what they should do now by predicting what may happen, view the history as a mirror and a guide and create their unique future. Zavalloni (1962) and some other scholars thought that to some extent, people are free while animals are not, for people have self-consciousness. (Rogers, C. R.A,1959).

So far, main approaches that are interfered to explore free will are as follows. (1) Two-view method by Carl Rogers (Rotter,J.B,1954); (2) Target Response Theory by Joseph Rychlak(C.W,1982); (3) Three dimensional developmental model by Tageson; (4) R.W.Sperry (Sperry,R.W,1983) and B. F. Skinner (Rychlak,J.E,1981);(5) Albert Bandura and his colleagues. As what Rychlak (1981) and Bandura (1989) supposed, people are able to set up a goal that can influence their future.

From previous relative researches, free will has been attached close relationship to psychology, and the emergence of such concepts of free choice and future directing narrows the gap between freedom and creativity. The aims of the compilation of free will questionnaire for college students are to discuss the relationship between free will and creativity, and to provide more methods for the research of creativity.

METHODOLOGY

Objects

This research consists of two preparatory surveys and one final survey. During the first preparatory survey, we chose 300 participants from four universities in Wuhan in a stratified manner by giving out questionnaires to individuals and classes, in which case we took back all questionnaires once they finished. Eventually, 264 valid questionnaires were collected.

During the second preparatory survey, 390 participants from four universities in Wuhan were selected in a stratified manner. The questionnaires were distributed and recycled through the teachers of each department and the students guided by the researchers. Finally, 363 questionnaires were collected. According to the principle of information integrity (the number of questions which were forgotten to answer or were chose more than required in three questionnaires was cumulatively no more than three), 352 valid questionnaires were obtained. The recovery rate was 93.1% and the effective rate was 90.3%.

The final survey has selected 10 colleges and universities in Wuhan, including science, engineering, arts, medicine and management. A total of 880 questionnaires were distributed and 840 were collected. 815 valid questionnaires were divided into two parts according to the representativeness of the sample. About half of the valid questionnaires which contained 406 data were used for exploratory factor analysis to construct a theoretical model of free will initially. Then, another 409 data were used to carry out verification factor analysis, verify and amend the theoretical model of the questionnaire, and then establish the structure of the final questionnaire.

After that, 60 college students from a university in Guangdong Province were selected to test-retest the questionnaires one month before and after.

Research Procedure

Compilation of Questionnaire

The Free Will Questionnaire was mainly translated from foreign questionnaires, which has adjusted the meaning and simplicity of the items from the original, and finally set up 35 questions.

The Free Will Questionnaire consists a total of 35 questions, from which 6 common factors were extracted: factor 1 (self-control and decision); factor 2 (possibility of free choice); factor 3 (determinism); factor 4 (impact of free will concept on the future); factor 5 (limitations of free choice); Factor 6 (self-determination of behavior and decision making).

Implementation

After the first preparatory survey, five graduate students majoring in psychology were interviewed. Then both questionnaires were added to new items based on the first deletion, and a second preparatory questionnaire was formed, totaling 34 questions.

The following dimensions were determined after the first preparatory survey: dimension 1: self-control; dimension 2: self-determination of fate; dimension 3: autonomy of action and choice; dimension 4: history influenced by person; dimension 5: fatalism; dimension 6: biological determinism.

The scores of the rest of the factors in the two preparatory surveys were too low to be combined with the above dimensions, so they are temporarily deleted. In each dimension, new items are added through interviews and literature analysis, and dimensions and reliability and validity are re-examined.

Statistical Methods

Descriptive analysis, t-test, Pearson-related analysis, exploratory factor analysis, and test-retest reliability were performed by using SPSS 16.0. Confirmatory factor analysis was performed by using AMOS.

RESULTS

Project Analysis

The data in the second preparatory survey were used for project analysis, and items whose correlation coefficient was less than 0.3 with the total score of the scale were deleted. Then five dimensions in the final questionnaire were formed: the first dimension, fatalism; the second dimension, self-control; The third dimension, the autonomy of behavior and choice; the fourth dimension, the limitations of autonomous choice; the fifth dimension, history influenced by person. Finally, 22 questions were retained. According to the results of factor analysis and interviews with experts and students, five new items were added on the basis of the original ones, and a formal questionnaire consisting of 27 questions was formed.

Validity Analysis

Exploratory Factor Analysis: Two exploratory factor analyses were performed respectively by using the second and third sampling data. The first KMO value was 0.829 and the Bartlett spherical test reached a significant level.

Table 1. Factor Load Matrix of Free Will Questionnaire

Items	Fatalism	Self-control	Autonomy of Action And Choice	The Limitations of Autonomous Choice	The History Influenced by Person
b21	.841				
b13	.773				
b22	.753				
b25	.523				
b18	.508				
b12		.731			
b9		.704			
b8		.625			
b11		.550			
b1		.535			
b31		.501			
b4		.438			
b28			.756		
b3			.751		
b5			.707		
b33				.701	
b30				.644	
b26				.626	
b27				.625	
b29					.730

b6					.707
b15					.662

The second exploratory factor analysis: The KMO value was 0.859, and the Bartlett spherical test has reached a significant level, indicating that the scale is suitable for factor analysis. It can be seen from Table 2 that the homogeneity reliability coefficients of the five factors are between .574 and .810, and the homogeneity reliability coefficient of the total scale is .760. The homogeneity coefficient of this scale is 0.760, which has reached the level that is required for the compilation of the scale. It indicates that the factors of the scale and the total scale have good homogeneity reliability.

The correlation between the factors is between -0.065 and 0.573, and the correlation is significant, which is a low-to-medium correlation. The correlation between each factor and the total score is between 0.282 and 0.817, which is significant and moderately correlated, indicating that the dimensions are quite consistent with the overall concept.

Table 2. Reliability And Validity Test of Free Will Concept Questionnaire

Factor s	F1	F2	F3	F4	F5	Scores
F1	1.000(0.810)					
F2	.278**	1.000(0.775)				
F3	0.057	0.573**	1.000(0.637)			
F4	0.052**	0.388**	0.324**	1.000(0.643)		
F5	0.299**	-0.065	-0.020	-0.157**	1.000(0.574)	
Scores	0.584**	0.817**	0.625**	0.314**	.282**	1.000

Confirmatory Factor Analysis: The third data was used for confirmatory factor analysis. A confirmatory factor analysis of the Free Will Concept Questionnaire was conducted by using Amos 4.0. The final results are shown in Table 3.

Table 3. Fitting indicators of the Free Will Concept Questionnaire

Model	X ²	df	X ² /df	RMSEA	CFI	IFI	NFI	RFI	TLI
Free Will Concept	832.536	289	2.881	0.068	0.982	0.982	0.972	0.966	0.978

Reliability Analysis of The Scale

Cronbac' α Coefficient: The Cronbach α coefficient of this scale is between .574 and .810, and the homogeneity reliability coefficient of the total scale is .760.

Test-retest Reliability: After the formal questionnaire was formed, 60 subjects were randomly selected for retesting at intervals of one month before and after, and the test-retest reliability was 0.518** ($P < 0.01$).

DISCUSSION

The main purpose of this study is to compile the Free Will Questionnaire. The questionnaire has been conducted for three times and analyzed for four times, which thus contributes to the establishment of structure of the Free Will Concept Questionnaire. The questionnaire has five factors: fatalism, self-control of the fate, the autonomy of action, the history influenced by person, and the limitations of autonomous choice. The reliability and validity of the five factors were tested. The homogeneity reliability coefficients of the five factors were between .574 and .810, and the homogeneity reliability coefficient of the total scale was .760. The homogeneity coefficient of this scale is .760, which has reached the level that is required to compile the scale. The correlation between the factors is basically between -0.065 and 0.573, and the correlation is significant, which is a low-to-medium correlation. The correlation between each factor and the total score is between 0.282 and 0.817, which is significant and moderately correlated, indicating that the dimensions are quite consistent with the overall concept.

There is a negative correlation between fatalism and self-control of fate and self-control of action. There is a negative correlation between the limitations of autonomous choice and the history influenced by person and the autonomy of action. This is because they are opposite dimensions. The limitations of fatalism and autonomous choice restrict the ability of individuals to exercise independently. However, Self-control, the autonomy of action, and the history influenced by person all reflect individual's control to fate and action.

Finally, a confirmatory factor analysis was carried out. The values of CFI, IFI, NFI, RFI and TLI were all higher than 0.900, and the value of RMSEA was less than 0.08. The structural model of the free will concept was well fitted.

CONCLUSION

The analysis of the reliability and validity of the Free Will Questionnaire shows that the internal consistency reliability and structural validity are good. Moreover, the results of the validation factor analysis show that the factor model fit of the questionnaire is also quite good. However, many of the theoretical foundations of the concept of free will at home and

abroad are derived from philosophy. The study of the concept of free will in psychology and the relationship between free will and creativity are in the exploratory stage.

REFERENCE

- C.W.(1982). *Humanistic psychology: A synthesis*. Homewood,IL: Dorsey Press.
- Kant.(1998). *Critique of practical reason*. Beijing: commercial press.
- Liu X.P. (1962). *Search for meaning in life*. Taipei: Taiwan owl publishing co.,20014
- Zavalloni, R(1962). *Self-determination: The psychology of personal freedom*. Chicago: Forum Books.
- Rogers, C. R.(1959). *A theory of therapy, personality, and interpersonal relationships, as developed in the client-centered framework*. In S.Koch (Ed.), *Psychology: The study of a science* (Vol. 3). New York:McGraw-Hill.
- Rotter, J. B.(1954). *Social learning and clinical psychology*. Englewood Cliffs, NJ: Prentice-Hall.
- Rychlak, J. E.(1981) *Introduction to personality and psychotherapy*. Boston: Houghton Mifflin.
- Sperry,R.W.(1983).*Psychology's mentalist paradigm and the religion/science tension*. *American Psychologist*, 43,607-613
- Yang S.G.(1981). *Existential psychology*. Nanjing: Nanjing normal university press.

APPENDIX**ATTACHMENT ONE****THE FREE WILL QUESTIONNAIRE FOR COLLEGE STUDENTS**

E.G.	I believe that as long as I work hard, I can achieve my life goals.	1	2	3	4	5	6	7
1	I believe that fate is in everyone's own hands.	1	2	3	4	5	6	7
2	I made the choice based on my own wishes in most cases.	1	2	3	4	5	6	7
3	Even if it is impulsive, the parties should be responsible for it.	1	2	3	4	5	6	7
4	I strongly feel that my decisions and actions are determined by me.	1	2	3	4	5	6	7
5	I believe that a hero can influence the direction of history.	1	2	3	4	5	6	7
6	I think that the path of a person's life is the result of his or her own choice.	1	2	3	4	5	6	7
7	At the critical juncture of life, an individual's free will plays a key role.	1	2	3	4	5	6	7
8	People's choices are often influenced and restricted by external factors.	1	2	3	4	5	6	7
9	I believe that one's future life is up to his or her own.	1	2	3	4	5	6	7
10	An important decision made by the king often affects the rise and fall of a dynasty.	1	2	3	4	5	6	7
11	I believe that one will possess the life that is chosen by he or she.	1	2	3	4	5	6	7
12	The fate of a person is like an electron running along a fixed trajectory, which is difficult to change.	1	2	3	4	5	6	7
13	I can choose my own work according to my own wishes.	1	2	3	4	5	6	7
14	I believe that history is largely determined by the free will of the highest decision maker.	1	2	3	4	5	6	7
15	I believe that some kind of power is dominating my life.	1	2	3	4	5	6	7
16	I often think that the fate of a person has already been arranged and cannot be changed.	1	2	3	4	5	6	7
17	Personal efforts are hard to change their destiny.	1	2	3	4	5	6	7

18	The times produce their heroes, and heroes make history.	1	2	3	4	5	6	7
19	I think that the innate genetic factors determine the fate of a person.	1	2	3	4	5	6	7
20	Many things that I did were not intended, but were forced by the environment.	1	2	3	4	5	6	7
21	If I find that I can't change my destiny, I will follow suit.	1	2	3	4	5	6	7
22	I often act according to my free will.	1	2	3	4	5	6	7
23	History sometimes changes its direction because of someone's thoughts.	1	2	3	4	5	6	7
24	I sometimes feel helpless about my own life.	1	2	3	4	5	6	7
25	Everyone's future is in his or her own hands.	1	2	3	4	5	6	7
26	When faced with the choice in life, I always feel that I do not have many free choices.	1	2	3	4	5	6	7
27	I always believe that my current life status is the result of my own choice.	1	2	3	4	5	6	7