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# Reliability and Exploratory Factor Analysis of Psychological Well-being in a Persian Sample

# Reliability and Exploratory Factor Analysis of Psychological Well-being in a Persian Sample

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**Abstract.**

This study examined the factor structure of Psychological Well-being Questionnaire (PWBQ) in a Persian sample. A Persian translated version of this well-being measure (six dimensions with 14 items for each) was investigated in a sample of university students. Eight hundred sixty nine participants (434 males and 435 females) ranging in age from 18 to 33 years were administered PWBQ. It used exploratory factor analysis with warimax rotation, paying attention to gender differences in the all steps of the assessment. Findings showed that, disregarding gender differences, psychological well-being questionnaire loaded with six factors was consistent with previous research. Furthermore, it was indicated that items loaded with factors vary from the parent factors. In terms of reliability, the findings, in line with previous studies, demonstrated a good reliability for all and for each gender. Replicating this study in a more stratified population or even in a longitudinal study will result in extensive generalization. Using confirmatory factor analysis to examine the acceptability of the present findings and comparing the results with the original model is another suggestion for future research.

**Keywords:** Psychological Well-being, Exploratory Factor Analysis, Reliability, Gender

## 1. Introduction

Nowadays, the interest in positive psychology and psychological functioning such as psychological well-being is growing all over the world. Thus the improvement of a model besides the operationalization of the theoretical framework is a paramount concern among many scholars (Abbott et al., 2010; Sanjuán, 2010). Ryff and her coworkers (Ryff & Keyes, 1995; Ryff & Singer, 2008; Ryff & Singer, 2006) developed a successful model of psychological well-being questionnaire (PWBQ) which is regarded as the measurement of positive mental health. The model integrated six functioning factors including positive relations with others, environmental mastery, autonomy, personal growth, purpose in life, and self-acceptance.

She has developed several versions of PWBQ to appraise the factors, including versions with three items, nine items, 14 items and 20 items per factor (Ryff et al., 1995; Ryff, 1989a). Interestingly, the number of factors in all of these studies is six, revealing that the point of interest in each study is the number of items rather than number of subscales. Although some studies (Springer, Hauser & Freese, 2006) doubted the validity of PWBQ, the different versions of PWBQ with intuitive appeal and widespread interest have been commonly used all over the world and displayed variations in reliability and validity (e.g., Abbott et al., 2010; Chow, 2007; Huppert et al., 2009; Ryff et al., 1995).

Further, in a research Clarke and his colleagues (2001) indicated a high correlation among four subscales of PWBQ: Environmental Mastery, Personal Growth, Purpose In Life, and Self- Acceptance. Surprisingly, most research surrounding assessing factor analyses of PWBQ scales have used confirmatory factor analysis except for a few studies (Burns & Machin, 2009; Kafka & Kozma, 2002; Linley et al., 2009) which have used exploratory factor analysis. High correlations among factors beside cross-loading of some items on more than one factor –which have impact on model fit - are reported (Kafka et al., 2002).

The evaluation in these several researches is focused on construct validity without attention to gender differences, which have possibility to change the results of the construct validity. A few studies have been conducted showing that there are statistically significant different outcomes of some subscales of SPWB based on gender (Cheng & Chan, 2005; Lindfors, Berntsson & Lundberg, 2006; Maier & Lachman, 2000). Maier and Lachman (2000), for instance, in a research evaluated the effect of parental death and divorce on well-being of those under 17 years of age. The findings showed that parental divorce was related to less self-acceptance, less positive relations with others, lower environmental mastery, and more autonomy for men compared to women. These findings increase the probability of different PWBQ structures based on gender.

While most research concerning the structure of the model has focused on the English version of the measure (Abbott et al., 2010; Burns et al., 2009; Kafka et al., 2002; Springer et al., 2006) there is no research to measure the Persian version of the PWBQ's structural scales. Nevertheless, there are some research has indicated that different cultures lead to different results of PWBQ (Cheng et al., 2005; Dierendonck, 2004; Ryff, Keyes & Hughes, 2004). Therefore, this study aimed to assess the reliability and construct validity of the PWBQ's Persian version concerning gender differences in the assessment. In light of this research, besides evaluation based on gender, this study investigated whether the structural factor and reliability of PWBQ in a Persian population would mirror results from other cultures such as American, Chinese and British.

## 2. Methods
### 2.1. Participants and Procedure
#### 2.1.1. Sample
The PWBQ was administered to 869 university students (435 females and 434 males; Table 1) in the Islamic Azad University, Karaj, Iran. The students were from different faculties including Engineering, Science, Agriculture, Veterinary Studies, Foreign Language, Management, Low, Theology, Nursing, Physical Education, and Psychology (Table 1). The research was presented as a study on health related to psychology. Participating individuals voluntarily and unknown were requested to fill up the test.

### 2.2. Measures
#### 2.2.1. PWBQ Subscales
Psychological Questionnaire was developed by Ryff (1989a). In the present research, six subscales of PWBQ - autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance- with 14 items for each subscale were used. The autonomy dimension assesses self-determining and independence, and the ability to resist social pressure. The environmental mastery dimension measures the ability to control and manage environmental complexes. The personal growth dimension measures self growing and self expanding. The positive relations with others dimension assesses the capacity to have warm satisfying and trusting interrelationships. The purpose in life dimension is to measure one's sense of having meaning and purpose in life. Finally, the self-acceptance dimension assesses one's sense of attitude toward the self; acknowledges and accepts multiple aspects of self including good and bad qualities. Participating individuals responded using a six-point form questionnaire from strongly disagree (1) to strongly agree (6).

In a study by Ryff (1989b), a sample of 321 participants revealed that reliabilities for autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance were all instituted in the course of the revelation of high inner stability by Cronbach's alpha values, i.e. .86, .90, .87, .91, .90, and .93. Furthermore, test-retest reliability was assessed by a sample of 117 participants, during six weeks; coefficients ranged from .81 to .85.

#### 2.2.2. Question translation
In the present study, the PWBQ was translated into Persian by two academicians in the English language department. The content of the translated version among university students was discussed to ensure that the version is clear and understandable. After that, one academician in the English language department back-translated it into English and examined the consistency between the Persian and English versions of the questionnaire.

### 3.  Results

*3.1. Separation by Gender*

In this part of the present study, data analysis was performed  for all and for each gender separately to find any difference based on gender since having different psychosocial variables depending on gender had been evidenced in some psychological researches (Cheng et al., 2005; Lindfors et al., 2006; Maier et al., 2000). Besides , the separate Exploratory factor analysis for each gender was emphasized statistically  (Ho, 2006).

*3.2. Classical Statistical Assumptions*

All variables for the 869 participating individuals (434 males and 435 females) were evaluated through a variety of SPSS programs for precision of data entry and fit between their distributions and some assumptions of Exploratory factor analysis (Ho, 2006) . In this study, all analytical statistics were done with data for all and also separated by gender. Date was checked for assumptions such as homoscedasticity, multivariate outliers, normality, and linearity. For females, 33 items and for males 43 items of 84 items were found to require transformation. After transformation, the normal distribution, skewness (between -1 .15 to  0.843 for men,  between      -1.30 and  0.847 for women) and kurtosis (between – 2.002 and -0.634 for men, between -1.60 and 0.709 for women) of each of the items of the scale fell within the acceptable range of normality ±3 and ±10 respectively (Kline, 2010).

*3.3. Internal Consistency Reliability*

Cronbach's α was performed to examine the internal consistency of PWBQ and its subscales. Results point out that the PWBQ has good internal consistency reliability for all and by gender (Cronbach's α=0.924; 0.923 for males and 0.925 for females; Table 2). On the whole, all subscales had high reliability, although one subscale (i.e., autonomy) showed low reliability. Further, one subscale (i.e., personal growth) had low reliability for females only.

*3.4. Exploratory Factor Analysis for All*

Exploratory Factor analyses using principal components analysis with varimax rotations were conducted. The results show that 42 of 84 items were low in communalities (<0.4) or low factor loadings (<0.4). After deleting the low items, data were then analyzed for the second time and six factors were found to be the most suitable. Table 3 shows items loaded with factors    that are ordered and grouped by size of loading. The factors that emerge are self-acceptance (1); purpose in life, personal growth, positive relations with others (1), self-acceptance (2) and positive relations with others (2).The six factors explain 45.233% of total variance (Table 4).

*3.5. Exploratory Factor Analysis for Females*

Exploratory Factor analyses using principal components analysis with varimax rotations were conducted. The results show that 58 of 84 items, were low in communalities (<0.4) or low factor loadings (<0.4). After deleting the low items, data were then analyzed for the second time and four factors were found to be the most suitable. Table 5 shows items loaded with factors    that are ordered and grouped by size of loading. The factors that emerged are self-acceptance, personal growth, purpose in life and positive relations with others. The four factors explained 52.447% of total variance (Table 6).

*3.6. Exploratory Factor Analysis for Males*

Exploratory Factor analyses using principal components analysis with varimax rotations were conducted. The results show that 56 of 84 items, were low in communalities (<0.4) or low factor loadings (<0.4). After deleting the low items, data were then analyzed for the second time and five factors were found to be the most suitable. Table 7 shows items loaded with factors    that are ordered and grouped by size of loading. The factors that emerged are environmental mastery, personal growth, positive relations with others, self acceptance, and purpose in life. The four factors explained 51.487% of total variance (Table 8).

For the present research, Exploratory factor analyses were done for all and for each gender separately since there is research indicating that males and females are separate populations in terms of some subscales of PWBQ (Maier et al., 2000; Marks & Lambert, 1998).Furthermore, in the present study, although there are similar factors between the genders, there are also single factors and single construct combinations for each gender.

### 4.  Discussion

The findings of the present research point out critical conclusions concerning the items of PWBQ, its subscales, and factor structures of PWBQ and give direction for future revisions of PWBQ.

### 4.1. Reliability

The findings of the present study specify that the PWBQ has high internal consistency reliability (Cronbach's α=0.924 for all; 0.923 for males and 0.925 for females; Table 2). Five of the six subscales had reliability of more than 0.70 for both males and females, including positive relations with others, environmental mastery, personal growth, purpose in life, and self acceptance.

### 4.2. Factor Analysis

4.2.1. Factor Structure for All

Six factors emerged for all (Table 3). Factor one is a combination of items that assess personal growth, environmental mastery, purpose in life, and self-acceptance. Although purpose in life subscale's items were initially generated to assess goal and purpose in life, the items, in the Persian version, are load with three factors including first, second and fifth factors.  In this regard, environmental mastery subscale's items have similarity with the purpose in life subscale's items, since the items of the environmental mastery subscale are loaded with all factors except factor four and six. Interestingly, the items loaded in the first factor, in the Persian version of SPWB, seem to assess self-acceptance subscale since the subscale assesses a positive attitude toward the self and the Persian version of the items is all directly related to accepting multiple aspects of self. Therefore, this factor can best be described as self-acceptance (1).

Factor two for all, is a combination of items measures environmental mastery, purpose in life, and personal growth. The Persian version of these items can be covered by the purpose in life subscale since the subscale aims to assess a feeling that there is a meaning to present and past life.

Factor three for all items measures a combination of items designed to measure personal growth, positive relations with others, autonomy,  and self acceptance. Interestingly, it combines different items from six dimensions of PWBQ.  This presents the possibility that some of the items of the six dimensions are intertwined. This factor may be regarded as a measure of personal growth.

Factor four for all items measures only items that assess positive relations with others. These items assess warm, satisfying, trusting relationships with others and the welfare of others. Interestingly, the factor is limited to positive relations with others.

Factor five for all items measures a combination of items designed to indicate self acceptance, purpose in life, and environmental mastery. It seems that the present factor is like factor one that can be regarded as a construct that assesses self acceptance.

Factor six for all items measures only items that assess positive relations with others. This factor is similar to factor four, since the items in factor six assess warm satisfying, trusting relationships with others and the welfare of others as well.

Interestingly, items that measure self acceptance are common in all three factors and the items of the two factors have possibility to measure the self acceptance dimension. Items assess positive relations with others unlike other items not loaded with several factors. They are only in two factors without any combination with items from other dimensions.

### 4.2.1.    Factor Structure for Females

Four factors emerged for females (Table 5). Factor one is a combination of items that assess environmental mastery, purpose in life, and self-acceptance. This kind of combination has similarity with factor one for all, which included items that assess self acceptance and purpose in life.  Although purpose in life subscale's items were initially generated to assess goal and purpose in life, the items in the Persian version, did not load only with the first factor. Some of the items were loaded in the first and some of them loaded with factors two and three. In this regard, environmental mastery subscale's items, for females and for all, have similarity with the purpose in life subscale's items, which are loaded with more than one factor. Environmental mastery subscale in the factor is stricter for females loaded with the first and second factors. Interestingly, the items loaded in the first factor, in the Persian version of SPWB, seem to assess self-acceptance subscale since the subscale assesses a positive attitude toward the self and the Persian version of the items are all directly related to accepting multiple aspects of self . Therefore, this factor can best be described as self-acceptance. Therefore, factor one in both factor analyses namely for females and for all can be described as self acceptance dimension.

Factor two for females is items that measure environmental mastery, purpose in life, self acceptance and personal growth. The Persian version of these items, unlike the second factor for all, can cover the personal growth subscale since the subscale aims to assess a feeling of continued development. Noteworthy is the similarity between the

present factor and the third factor for all since both of them have the possibility to be called personal growth dimension.

Factor three for females is a combination of items designed to measure personal growth) and purpose in life. Surprisingly, it is a combination of items designed to measure personal growth and purpose in life. This presents the opportunity for these two constructs to be intertwined for females and can be considered as one construct. Factor three, like the second factor for all, may be an accurate measure of purpose in life dimension.

Factor four for females measures only items that assess positive relations with others. These items assess warm satisfying, trusting relationships with others and the welfare of others. Interestingly, the factor is limited to positive relations with others. In this regard, the last factor for females is similar to the fourth and sixth factors for all, since all of the factors assess positive relations with others dimension.

Significantly, items measuring purpose in life are common in all factors for females except factor four. Additionally, items assessing environmental mastery and self-acceptance are common in factors one and two. Similarly, items measuring personal growth are common in two factors, namely second and third factors. However, items assessing positive relationships with others are only in factor one. Further, similarities between factors for females and factors for all are evident. Nevertheless, the number of items loaded with factors as well as the number of factors is more for all in comparison with items for females.

### 4.2.2.    Factor Structure for Males

There are five factors, in contrast to females, that emerge for males. Factor one for males combines environmental mastery, purpose in life and self acceptance.   The factor one for males is similar to factor one for all and factor one for females since the factor is a combination of items assessing environmental mastery, purpose in life and self-acceptance. However, factor one for all, males and females, is different in the number and content of items' subscales.    Overall, this factor, which is the Persian version may measure environmental mastery for males and raises the possibility that, in the present version of PWBQ, the construct of environmental mastery can be regarded for males rather than for females.

Factor two for males is a combination of items that assess environmental mastery, personal growth, and purpose in life. Generally, this factor may measure personal growth, since these translated items are involved in assessing growing and expanding of self. In this regard, the construct of personal growth for males is different from factor two for females.

Factor three for males is similar to factor four for females. It assesses items related to only positive relations with others. It is also noteworthy that the number of items loaded to factors for males is more than the number of items loaded for females. Additionally, factor three for males is similar to factor four and six for all but with greater number of items in terms of structural factors for all.

Factor four for males measures a mixture of purpose in life, and self-acceptance. The items are intended to measure the self-acceptance subscale. This factor for males is similar to the first factor for females since both the factors are a combination of items, in the original version, related to purpose in life and self-acceptance. However, the two factors are different in the number of items loaded.

Factor five for men measures only purpose in life  and therefore it is similar to factor three which assesses items related to only one subscale of the original version. Therefore, the construct of purpose in life for males is totally different from the construct for all and for females. Nevertheless, similarity between factor five for males and factor two for all cannot be ignored since both of them are in the purpose in life dimension.

### 5.   Conclusion

The purpose of this study was to examine psychometric properties of PWBQ's Persian version, paying attention to gender differences. The results confirm that the Persian and English forms of the PWBQ might be containing some communality. Nevertheless, the differences between the original version and the Persian version are more than the commonalities. The results of exploratory factor analysis demonstrated that 42 for all, 26 for females and 27 for males of 84 items were loaded on factors and that the factor structure was somehow harmonized with the factor structure of the original scale. Findings indicated that the number of factors were six for all as reported in the original version.   Additionally, there were four factors for females and five factors for males, indicating gender differences in psychological well-being.  Some factors have similarity for both genders, some are unique to one gender, and some are a mixture of constructs. Noteworthy is that the majority of items are not loaded with the factor designed for the items in the parent version – confirming the findings indicated by Kafka and Kozma (2002).

The number of items left after structural factor analysis is more for all in comparison with the gender differences conditions. This kind of result has more possibility for increasing the reliability of a scale - showing that regardless of gender differences, in factor analysis can be preferred for SPWB.

The concept of the well-being questionnaire is a theory-based scale covering a variety of human being's realms and the structural factor analysis for all confirmed that the number of subscales of SPWB is six. Using Exploratory factor analysis with different research plan, namely factorial analysis for each subscale of the original version independently, can be recommended. Additionally, comparing the present findings with the original version of SPWB in a statistical research aiming at confirmatory factor analysis to find a much better fit model for Persian version is another recommendation of the present study. In confirmatory factor analysis, considering gender differences and comparing the original models conducted by developer of the questionnaire is another suggestion of the present study.

Finally, limitations in the present research, such as university student sample limitations in other demographic factors like age of the participating individuals, are acknowledged as an important reason for replicating the present research in another sample population.

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**Table 1 individual's demographics (N=869)**

| | | | Gender | | |
|---|---|---|---|---|---|
| | Male ( n= 434) | | | Female (n=435) | |
| Ages | Faculty | Percentage | Ages | Faculty | Percentage |
| | Agriculture | 3.2 | | Agriculture | 0 |
| | Engineering | 32.0 | | Engineering | 8.3 |
| | Foreign Language | 3.9 | | Foreign Language | 19.8 |
| | Management | 6.0 | | Management | 3.2 |
| | Low | 8.8 | | Low | 3.0 |
| 18-33 | | | 18-31 | | |
| M= 21.50, | Nursing | 3.9 | M=22.06, | Nursing | 6.7 |
| SD=2.69 | | | SD=2.89 | | |
| | Physical Education | 5.3 | | Physical Education | 6.7 |
| | Psychology | 7.1 | | Psychology | 33.1 |
| | Science | 10.4 | | Science | 14.9 |
| | Theology | 9.4 | | Theology | 0 |
| | Veterinary Studies | 9.9 | | Veterinary Studies | 4.4 |

**Table 2 Cronbach's α internal consistency reliability**

| | Alpha | | |
|---|---|---|---|
| | Full | Female | Male |
| **All items** | 0.924 | .925 | .923 |
| **Subscales** | | | |
| Positive relations with others | .799 | .785 | .813 |
| Autonomy | .665 | .671 | .656 |
| Environmental Mastery | .739 | .743 | .736 |
| Personal Growth | .721 | .698 | .742 |
| Purpose in Life | .770 | .754 | .786 |
| Self Acceptance | .777 | .799 | .746 |

**Table 3 PWBQ Exploratory Factor Analysis For All**

| Principal Components Analysis, with Varimax Rotations | Factor Loadings | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| **Subscales & Items** | | | | |
| **Personal Growth** | | | | |
| Item1 | .624 | | | |
| **Environmental Mastery** | | | | |
| Item 2 | .604 | | | |
| Item 11 | .581 | | | |
| Item 13 | .575 | | | |
| **Purpose In Life** | | | | |
| Item 6 | .566 | | | |
| Item 14 | .562 | | | |
| **Self-Acceptance** | | | | |
| Item 3 | .552 | | | |
| Item 7 | .550 | | | |
| Item 12 | .504 | | | |
| Item 14 | .456 | | | |
| **Environmental Mastery** | | | | |
| Item 12 | | .637 | | |

Continued

Continued

**Table 3 PWBQ Exploratory Factor Analysis For All**

| Principal Components Analysis, with Varimax Rotations | Factor Loadings | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| **Purpose In Life** | | | | |
| Item 8 | | .579 | | |
| Item 9 | | .571 | | |
| Item 10 | | .563 | | |
| Item 12 | | .525 | | |
| Item 13 | | .517 | | |
| **Personal Growth** | | | | |
| Item 11 | | .517 | | |
| Item 12 | | .494 | | |
| **Personal Growth** | | | | |
| Item 2 | | | .622 | |
| Item 7 | | | .554 | |
| Item 8 | | | .549 | |
| **Positive Relations With Others** | | | | |
| Item 4 | | | .536 | |
| Item 5 | | | .481 | |
| **Autonomy** | | | | |
| Item 9 | | | .476 | |
| **Self Acceptance** | | | | |
| Item 5 | | | .464 | |

Continued

## Table 3 PWBQ Exploratory Factor Analysis For All

| Principal Components Analysis, with Varimax Rotations | | | Factor Loadings | | |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 |
| **Positive Relations With Others** | | | | | |
| Item 2 | | | | .682 | |
| Item 3 | | | | .645 | |
| Item 6 | | | | .635 | |
| Item 8 | | | | .632 | |
| Item 10 | | | | .509 | |
| Item 11 | | | | .501 | |
| **Self Acceptance** | | | | | |
| Item 1 | | | | | .707 |
| Item 6 | | | | | .597 |
| Item 8 | | | | | .569 |
| Item 13 | | | | | .493 |
| **Purpose in Life** | | | | | |
| Item 6 | | | | | .433 |
| **Environmental Mastery** | | | | | |
| Item 14 | | | | | .432 |

Continued

Continued

### Table 3 PWBQ Exploratory Factor Analysis For All

| Principal Components Analysis, with Varimax Rotations | Factor Loadings |
| --- | --- |
| | 6 |

**Subscales &Items**

**Positive Relations With Others**

| | |
| --- | --- |
| Item 7 | .635 |
| Item 9 | .542 |
| Item 12 | .509 |
| Item 14 | .438 |

**Extraction Method: Principal Component Analysis.**

**Rotation Method: Varimax with Kaiser Normalization.**

### Table 4 Percentage of Variance Explained for All

| Factor | Percentage of Variance | Cumulative percentage |
| --- | --- | --- |
| 1 | 10.060 | 10.060 |
| 2 | 9.529 | 19.589 |
| 3 | 7.372 | 26.961 |
| 4 | 7.211 | 34.172 |
| 5 | 6.594 | 40.766 |
| 6 | 4.467 | 45.233 |

**Table 5 PWBQ Exploratory Factor Analysis For Females**

| Principal Components Analysis, with Varimax Rotations | Factor Loadings | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| **Subscales & Items** | | | | |
| **Environmental Mastery** | | | | |
| Item 12 | .491 | | | |
| Item 14 | .658 | | | |
| **Purpose in Life** | | | | |
| Item 12 | .603 | | | |
| Item 13 | .493 | | | |
| **Self-Acceptance** | | | | |
| Item 1 | .655 | | | |
| Item 2 | .564 | | | |
| Item 7 | .401 | | | |
| Item 8 | .613 | | | |
| Item 11 | .459 | | | |
| Item 13 | .638 | | | |

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Continued

Continued

### Table 5 PWBQ Exploratory Factor Analysis For Females

| Principal Components Analysis, with Varimax Rotations | Factor Loadings | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| Subscales & Items | | | | |
| **Environmental Mastery** | | | | |
| Item 11 | | .710 | | |
| Item 13 | | .420 | | |
| **Purpose in Life** | | | | |
| Item 6 | | .690 | | |
| Item 7 | | .533 | | |
| Item 14 | | .673 | | |
| **Self –Acceptance** | | | | |
| Item 14 | | .486 | | |
| **Personal Growth** | | | | |
| Item 6 | | .515 | | |
| Item 9 | | .478 | | |
| **Personal Growth** | | | | |
| Item 8 | | | .728 | |
| Item 12 | | | .671 | |
| **Purpose in Life** | | | | |
| Item 8 | | | .769 | |
| Item 10 | | | .592 | |

**Extraction Method: Principal Component Analysis.**

**Rotation Method: Varimax with Kaiser Normalization.**

Continued

Continued

### Table 5 PWBQ Exploratory Factor Analysis For Females

| Principal Components Analysis, with Varimax Rotations | Factor Loadings | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| **Subscales & Items** | | | | |
| **Positive Relations With Others** | | | | |
| Item 3 | | | | .686 |
| Item 6 | | | | .733 |
| Item 8 | | | | .753 |
| Item 10 | | | | .688 |

**Extraction Method: Principal Component Analysis.**

**Rotation Method: Varimax with Kaiser Normalization.**

### Table 6 Percentage of Variance Explained for Females

| Factor | Percentage of Variance | Cumulative Percentage |
|---|---|---|
| 1 | 15.560 | 15.560 |
| 2 | 13.492 | 29.052 |
| 3 | 12.371 | 41.422 |
| 4 | 11.025 | 52.447 |

**Table 7 PWBQ Exploratory Factor Analysis for Males**

| Principal Components Analysis, with | Factor Loadings | | | | |
|---|---|---|---|---|---|
| Varimax Rotations | 1 | 2 | 3 | 4 | 5 |
| **Subscales & Items** | | | | | |
| **Environmental Mastery** | | | | | |
| Item 11 | .602 | | | | |
| Item 13 | .673 | | | | |
| **Purpose In Life** | | | | | |
| Item 6 | .569 | | | | |
| Item 14 | .607 | | | | |
| **Self –Acceptance** | | | | | |
| Item 8 | .641 | | | | |
| **Environmental Mastery** | | | | | |
| Item 6 | | .699 | | | |
| **Personal Growth** | | | | | |
| Item 8 | | .683 | | | |
| Item 12 | | .638 | | | |
| Item 13 | | .518 | | | |
| **Purpose in Life** | | | | | |
| Item 4 | | .423 | | | |
| Item 8 | | .567 | | | |
| Item 10 | | .595 | | | |

**Table 8 Percentage of Variance Explained for Males**

| Factor | Percentage of Variance | Cumulative Percentage |
|--------|------------------------|-----------------------|
| 1 | 12.407 | 12.407 |
| 2 | 12.174 | 24.581 |
| 3 | 11.272 | 35.853 |
| 4 | 9.052 | 44.904 |
| 5 | 6.583 | 51.487 |