Construction & Validation of Main Psychological Needs Scale

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Abstract In the current study, we investigated Construction & the psychometric properties of main psychological needs scale in Azad University students of Ahwaz in Iran. A sample of 200 adolescents, both males (n=100) and females (n=100) was selected from different Sector of University of Ahwaz Azad, Iran. The age of the sample ranged from 24 to 29 years, with a mean age of 23.69 years (Sd=1.14) for the total sample. We estimated the internal consistency reliability of the main psychological needs using cronbach's alpha. Results (by factors analysis) indicated that main psychological needs inventory combinated three factors as autonomy, competence & relatedness. We obtained cronbach's alpha of total factors 0.78, for autonomy 0.73, for competence 0.70 & for relatedness 0.70. Using confirmatory factor analysis showed hierarchical models were relatively satisfactory, and the three factor model had the best fit to the data. The Persian version of the instrument appeared to be a good measure for main psychological needs in Iran students.

Keywords: main psychological needs scale, confirmatory factor analysis, autonomy, competence, relatedness

Cite This Article: Karim Sevari, "Construction & Validation of Main Psychological Needs Scale." *American Journal of Applied Psychology*, vol. 5, no. 1 (2017): 7-11. doi: 10.12691/ajap-5-1-2.

1. Introduction

Beginning with the pioneering work of Henry Murray [25], psychological need constructs have a long history within social and personality psychology. In the 1970s and 1980s, the needs approach lost popularity when research failed to confirm important predictions of the Maslovian need-hierarchy model [41]. The concept of need is one that is fundamental to behavioural science [17]. Indeed, as early as 1938, Murray had postulated the existence of several social needs, such as the need for relatedness and the need for power. Just a few years later, Maslow [23] proposed a list of innate needs, hierarchically organized in a pyramid, at the top of which stood the need for self-actualisation. Recently, Sheldon, Elliot, Kim, and Kasser [33] compared, in three studies, 10 psychological needs (including safety, self-esteem, and popularity) to find which are truly fundamental to human beings.

The results support self-determination theory (SDT; [29]) which postulates that the needs for autonomy (to feel free to choose and organise one's life), relatedness (to feel efficient in negotiating life's challenges), and competence (to have positive and beneficial interactions with others) are the most important for human beings. In fact, these needs emerged among the top four needs for both their salience and their association with emotional events in each of their studies. Moreover, Ryan and Brown [28] show why the need for self-esteem is not a fundamental need for human being and how SDT's needs seem to remain the truly fundamental ones. To date, autonomy, competence, and relatedness have all been shown to play

important roles in areas such as education [39], sports [13,28] and the workplace [1], and have also been linked to more individual aspects such as mental health [29]. Despite the fact that these basic needs have been related to many positive outcomes (e.g. [34]), including work performance (e.g. [22]) and well-being (e.g. [26]), only the generic Basic Psychological Needs Scale [6] and the more specialised Basic Psychological Needs in Exercise Scale [40] have to date been rigorously validated.

In this article, we try to answer this question (types of main psychological needs) through the use of Deci and Ryan's [6,7] self-determination theory. Self-determination theory is an organismic theory of optimal human motivation, extensively supported in the last three decades by studies in the fields of education, sport, work, well-being, and personal goals. what it is that people really need in order to thrive, contemporary self-determination theory makes strong assumptions about three proposed universal psychological needs: autonomy, competence, and relatedness [6]. A basic assumption of self-determination theory is that human beings are motivated by three inherent psychological needs; the needs for autonomy, competence and relatedness, respectively [6]. Several work-related factors could be important for fulfillment of these psychological needs. However, questions concerning potentially relevant work factors related to psychological need fulfillment are still unresolved.

In self-determination theory, Autonomy as defined by Deci and Ryan [7], occurs when people feel they are the cause of their behaviour, that is, when they feel a sense of whole-hearted volition in their choices. Autonomy is not independence or total freedom, but rather an internal acceptance of, and engagement with, one's motivated

behaviour. Supporting autonomy means taking the student's perspective, providing choice, and providing a meaningful rationale when choice is not possible. Competence occurs when one feels effective in one's behaviour. Competence is closely akin to self-efficacy, and of course, it is well known that many students lose or fail to develop self-efficacy within educational settings [10]. Supporting competence means conveying confidence in the student's ability to surmount challenges, and providing sensitive mentoring and feedback. Relatedness occurs when one feels connected to or understood by others. Relatedness is akin to the need for belongingness posited by Baumeister and Leary [2], but it is more general, including interpersonal as well as group connections. A basic assumption of self-determination theory is that human beings are motivated by three inherent psychological needs; the needs for autonomy, competence and relatedness, respectively [6]. According to SDT these three needs, when satisfied, promote psychological well-being [27] and enable optimal functioning and performance. In contrast, when an individual's environment or personality style does not afford these kinds of experiences, the person fails to thrive. Also, the needs are additive: an individual is best off when all three are present, and worst off with none present.

Self-determination theory posits the existence of three universal, innate, and nonhierarchical psychological needs, the fulfillment of which leads to optimal behavior and psychological well-being. According to Ryan and Deci [30], the need for *autonomy* reflects feeling a sense of volition and self-endorsement in one's behavior. The need for *competence* refers to the need to interact effectively with one's environment and to experience opportunities for expressing or developing one's capacities. The need for relatedness refers to situations where individuals feel that they are authentically associated with significant others and experience a sense of belonging.

In line with the SDT, the satisfaction of these needs results in higher levels of behavioral self-determination; that is, behavior emanating from the individuals' true self. Further, psychological needs operate as mediators of the effects of socio-contextual factors (e.g., fitness instructors' autonomy-supportive behaviors) on levels of behavioral self-determination [36]. Greater self-determination is reflected by high levels of intrinsic motivation (e.g., finding exercise enjoyable), identified regulation (e.g., considering exercise outcomes to be personally important), and lower levels of amotivation (e.g., absence of motivation to exercise/continue exercising), external regulation (e.g., exercising owing to external pressures or to obtain rewards), and introjected regulation (e.g., exercising to avoid internal pressure and negative feelings and to support conditional self-worth). Greater self-determination in turn leads to more positive cognitive (e.g., concentration), affective (e.g., exercise enjoyment), and behavioral (e.g., frequent exercise participation) motivational outcomes [36].

All human behavior, according to Choice Theory, is driven by people attempting to satisfy basic needs [14,15,16]. Knowledge of which needs are not being met in individuals' lives is important to understanding their behavior and determining interventions to create a needs-satisfying environment. Glasser [14,15,16] described five

basic needs that must be met for physiological and psychological health. The physiological need of Survival represents the biological desires for food, water, shelter and reproduction, as well as safety and security. Humans also attempt to satisfy the four psychological needs of Power, Belonging, Freedom, and Fun. The Power need relates to desire for status, dominance, respect, and achievement and it is the need that is the most difficult to satisfy. Belonging refers to the need to be with others, to feel cared for, and to be in cooperative relationships. Freedom, a need which often conflicts with Power and to some extent belonging, is the desire to do what one wants to do and to be able to make choices. Finally, the need for Fun is the desire to play, to laugh, and to seek enjoyment and is hypothesized to be linked to the ability to learn [16]. In this study investigated follow objectives: Construction of Main psychological needs Scale for Iranian students, Reliability of Main psychological needs scale &validity of Main psychological needs scale.

2. Methodology

Two hundred students(100 boys & 100 girls), who are studying in Azad University of Ahwaz, Iran, were asked to participated in the study and fill in the questionnaire and give it back to the researcher. Students sample were randomly selected. The following students are selected between the four (40 person), five(40 person), six(40 person), seven(40 person) & eight term of psychology (40 person) & their age average are 23.69(Sd=1.14). Main psychological needs Scale was developed by Sevari, Ardeshiri, & Hashemipure [31] to measure main psychological needs of college students that is within the context of their learning in higher education. Each item is responded by a five-point Lickert scale (strongly agree = 5, agree = 4, without viewpoint = 3, disagree=2, and strongly disagree=1). The scale is composed of three factors: autonomy (6 items), competence (5 items), & relatedness (8 items). The three factors were uncovered using an initial principal components analysis with varimax rotation. The Cronbach's alpha coefficient estimate for the instrument total and subscales was acceptable and calculated for questionnaire total 0.78, for autonomy 0.73, for competence 0.70 & for relatedness needs 0.70. questionnaire validity assigned by confirmatory factor structure.

3. Analysis Results

Psychometrics is the process of assigning a score to the attributes of a person [24]. The statistical analyses were conducted with SPSS 19.00 and Amos 16.0. After analyzing items & constructing of questionnaire, the first step is usually a test of internal consistency of the instrument using cronbach's coefficient alpha reliability estimate which has a general accepted target value of 0.70 [12,18]. Confirmatory factor analyses (CFAs) were conducted using Amos 16.0. Furthermore, in line with the work of Batinic, Wolff and Haupt [3], the goodness of fit statistics was obtained emphasizing the Root mean square error of approximation (RMSEA), the comparative fix

index (CFI), Nonnormed fit index (NFI) and incremental fit index (IFI). The X^2 test was also used to test the fitness of the model. RMSEA values less than 0.05 indicate good fit and values as high as 0.08 represent acceptable errors of approximation [21]. The CFI/NFI and IFI differ along a 0 to 1 continuum in which values greater than 0.90 and 0.95 are considered to show an acceptable and outstanding fit of the data [4]. However, an index of 0.90 and above is considered as acceptable fit [20]. Uisng another sample, the three factor structure was confirmed using confirmatory factor analysis (CFA) and adequate fit was achieved ($\chi2$=308.278, Df=166, RMSEA=0.69, GFI=0.90, and NFI=0.90). There is evidence of convergent validity where all three factors were highly inter-correlated.

4. Confirmatory Factor Analysis

Confirmatory factor analysis (CFA) is a theory-testing model as opposed to a theory-generating method like exploratory factor analysis. In CFA, the researchers begin with a hypothesis prior to the analysis. This model, or hypothesis, specifies which variables will be correlated with which factors and which factors are correlated. The hypothesis is based on a strong theoretical and/or empirical foundation [35]. In current study, CFA was conducted to analyze using the estimation procedure of maximum likelihood (ML). However, maximum likelihood method assumes multivariate normality when statistical tests are performed.

Table 1 provides the means, & standard deviations, for main psychological needs subscales used in this study. In general, the participants reported high levels of relatedness ($M = 32.64$, S.d =4.75), autonomy ($M = 21.82$, S.d =3.65) & subscale of competence ($M = 20.28$, S.d =2.92).

Table 1. Means, and Standard deviations of main psychological needs subscales

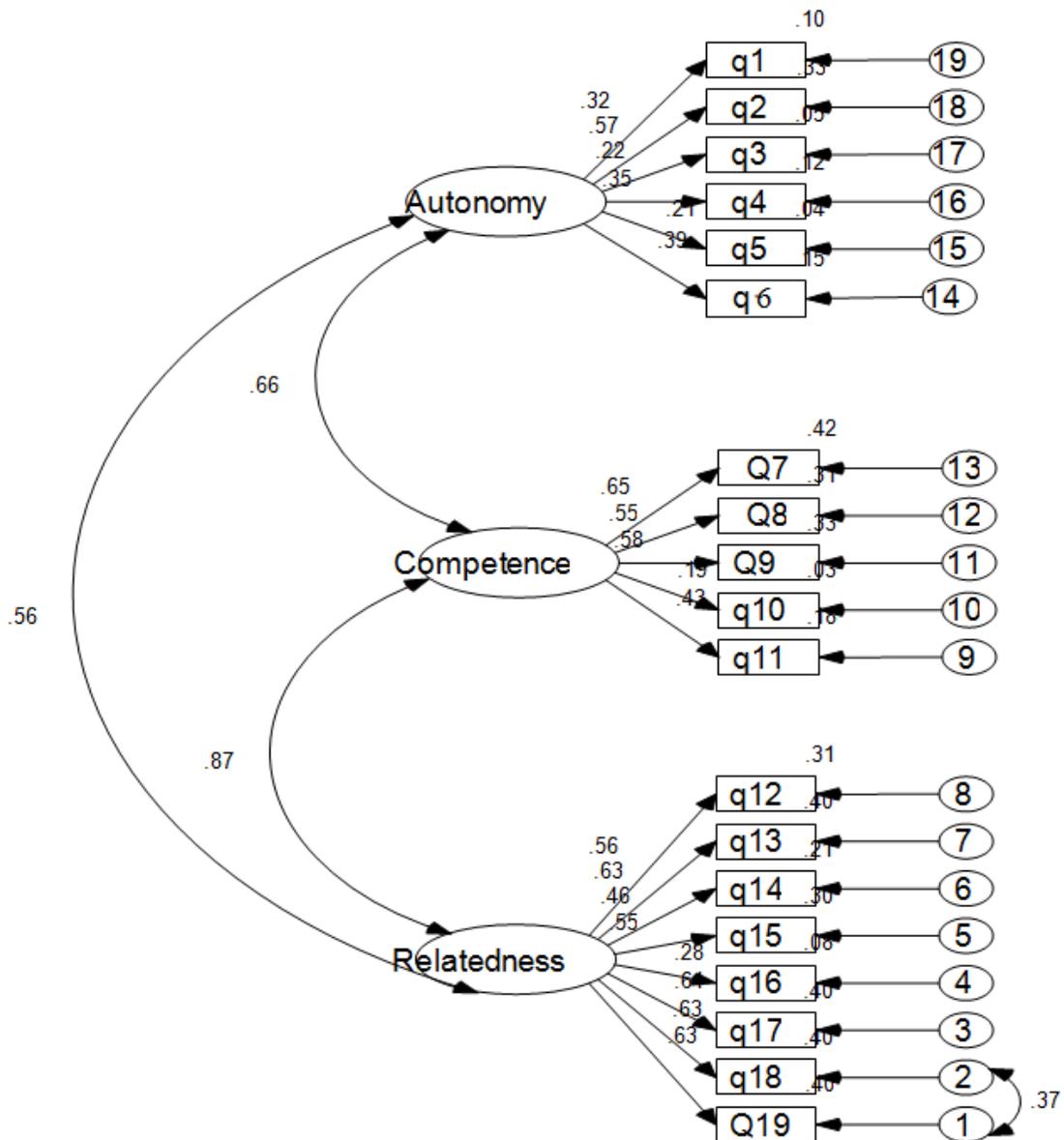| Subscale	M	S.d
Autonomy	21.82	3.65
Competence	20.28	2.92
Relatedness	32.64	4.75

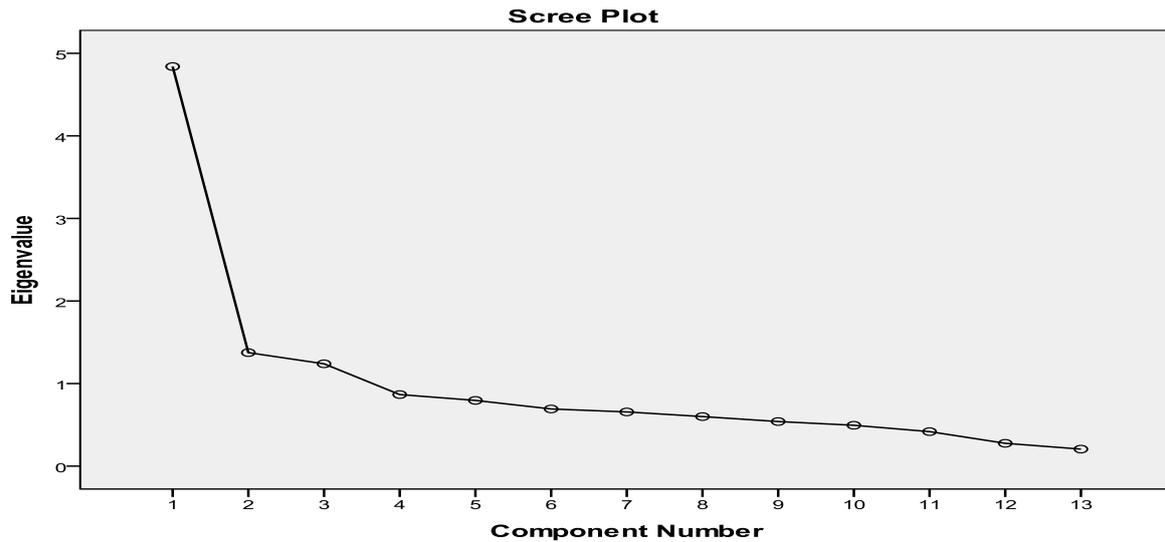**Figure 1.** Final three-factor model in confirmatory factor analyses

Figure 2. Scree plot

5. Explatory & Confirmatory Factor Analysis

We use explatory factor analysis for analyzing data. Results of index tests with enough sampling KMO=0.799 & measurement Bartlett test of sphericity X^2=433.455 (P< 0.001) show that data are appropriate for factorial analysis. In first used method of main compilations analysis, for scale factorial analysis of Main psychological needs Scale, then, for recognizing basic factors used method of varimax rotation. Exploratory Factorial analysis show that eigenvalues of first till third factors is higher from number 1 that they generally reveal 58/87 variance of scale materials. In factorial loads just over 0.45. Data analysis after 3 experimental iterations show that main psychological needs scale is composed of three factors as: autonomy (6 items), competence (5 items), & relatedness (8 items). Analysis of the data (by factor analysis) showed that all three factors remained. The first factor is the need for a reform and it can be removed item 6 under title «I freely choose to do due to the low load factor. Also requires that item 18 to item 19 may be connected. Analysis also showed the autonomy subscale correlated with the competence subscale 0.66, autonomy subscale with subscale of relatedness 0.56 and competence subscale was with subscales relatedness 0.87. Furthermore, the minimum correlation for the subscales of autonomy from 0.21 to 0.57, For competence subscale of 0.18 to 0.65 and dependency subscale was 0.27 to 0.63. Detail information presented in Figure 1 & Figure 2.

Table 2 provides Goodness – of - Fit statistics for main psychological needs subscales used in this study. Table 2 shows that IFI = 0.89, CFI = 0.88, GFI = 0.83, X^2= 378.454, D.f =167, $X^2/d.f$ = 2.266 & RMSEA=0.08.

Table 2. Goodness – of - Fit statistics

RMSEA	IFI	CFI	GFI	$X^2/d.f$	DF	X^2
0.08	0.89	0.88	0.83	2.266	167	378.454

Note: X^2 = Chi-square, d.f.=degrees of freedom, $X^2/d.f$= Chi-square degrees of freedom, CFI=Comparative Fit Index, RMSEA=Root Mean Square Error, IFI= Incremental Fit Index, GFI= Goodness of Fit Index.

6. Discussion

As previously noted, in this study construction & the psychometric properties of the questionnaire main psychological needs examined. In order to examine the construction & factor structure confirmatory factor analysis of questionnaire Amos 16 software was used. The results (by factors analysis) showed that scale is composed of three factors (autonomy:6 items, competence: 5 items and relatedness:8 items). And the reliability and validity is highly desirable. Results indicated that cronbach's alpha for the total scale 0.78, for autonomy subscale 0.73, for competence subscale 0.70 and for relatedness subscale 0.70. Data also showed that all factor three remain in force but 6 question of autonomy subscale removed (I freely choose to do due to the low load factor). For scale validity use structure confirmatory factor. Results show that IFI = 0.89, CFI = 0.88, GFI = 0.83, X^2= 378.454, D.f =167, $X^2/d.f$ = 2.266 & RMSEA=0.08.

As mentioned the need for autonomy reflects the need for individuals to feel volitional and responsible for their own behavior [9]. The need for competence is defined as the extent to which individuals interact effectively with their environment [42]. Finally, the need for relatedness concerns the degree to which individuals feel connected and accepted by others [2]. As previously noted, SDT [7,8] proposed that there are basic psychological needs that need to be fulfilled in order for individuals to attain optimal psychological functioning and motivation in life contexts. Basic psychological needs are proposed to exist at the global level and are trait like, generalized, and universal [29,38]. Basic psychological needs include the needs for autonomy, competence, and relatedness, and are defined as the need to perceive oneself as the origin of one's behavior, to feel effective and capable, and to feel connected to others, respectively. Within SDT, a basic psychological need is described as a universal and innate nutrient for optimal functioning, personal growth and integration, well-being and social development [5]. Need satisfaction is also required for intrinsic motivation and internalisation [11]. In SDT, sufficiently validated measures of basic psychological need satisfaction are commonly used (e.g. [40]).

Briefly, this research showed that the psychological needs of autonomy, competence, and relatedness to have significant main effects on intentions and behaviors. This meant that there would be both direct and indirect effects of basic psychological need satisfaction on intentions and behaviors, as shown previously [19]. However, this questionnaire can use about of the psychological needs.

7. Limitations

This questionnaire was done on the sample of psychology students of Azad University of Ahwaz, Iran, so, to generalize of the results & the overal use of this questionnaire, I suggest to do this questionnaire on sample of the larger groups & different fields of study. Finally, another potential limitation of the present study is the reliance on self-report measures.

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