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Construction and Standardization of Self-confidence Scale in Malayalam

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Abstract

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Researchers are interested in the measurement of human behavior. They have devised many methods to assess human behavior using the principles of psychometrics. The measurement of self and its various dimensions were thoroughly investigated, assessment instruments are also available. While searching an instrument to measure self-confidence of an individual who speaks Malayalam is not available. To address this, 13 item Self-Confidence Scale was developed. The data collected using this scale was analyzed using Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA). The Confirmatory Factor Analysis (CFA) fit statistics indicated high fit with normed chi-square value of (CMIN/DF) 1.742; CFI value of 0.952; GFI value of 0.951; RMR value of 0.046; IFI value of 0.953 and RMSEA value of 0.048.

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Self-confidence is the belief in one's ability to succeed. Generally human beings are born with innate capacity to perform any activities successfully. In olden days people are confident and approach the things/process without any hesitation. Due to many environmental as well as socio-technological developments and change brought many limitations and necessitated the understanding of psychological belief about one's own ability. Self-confident people know they have certain skills and qualities, but they don't boast on it. Usually people who brag are trying to hide their poor self-confidence. Self-confident people are very happy to give credit to others if the groups they belong accomplish something.

What constitutes the "self" was a hot subject among philosophers and great teachers, religious leaders etc., for many years. The self of a person is the sum total of his thoughts, feeling and emotions, concerns, imagination, hopes etc. Behavioral scientists approached this as a construct and identified a number of self constructs like self-esteem, self-efficacy, Self-confidence, and self-concept. According to Neill (2015) Self-Esteem refers to general feelings of self worth or self value, Self-efficacy is the belief in one's capacity to succeed at tasks, Self-confidence refers to belief in one's personal worth and likelihood of succeeding, Self-concept is the nature and organization of beliefs about one's self. According to Basavanna (1975), self-confidence refers to an individual's perceived ability to act effectively in a situation to overcome obstacles and to get things go all right.

A self-confident person perceives him/herself to be successful, intellectually superior, emotionally stable, self reliant, socially competent and relaxed. This is a quality essential for effective human being. Research studies revealed that self-confidence is related to many psychological variables. Goel and Agarwal (2012) pointed out that children with siblings were more self-confident than children with no siblings and also reported that sense of alienation is negatively correlated with poor self-confidence.

Development and Planning of the Scale

While searching an instrument to measure self-confidence in Malayalam absolutely no standardized psychological instrument is available for Malayalam speaking people. Those available measuring instruments were developed in western context and are not suitable to Indian context. Those scales available are in English and very old and lengthy (eg Basavanna, 1975). And also the recent trend in psychological testing supports the concept of brevity of

instruments. Nowadays individuals are hesitant to respond research instruments with many numbers of items. Central tendency or social desirability error can be observed while scoring a scale with many items. Keeping these in mind the investigator decided to develop a scale with minimum number of items.

Preparation of Items

After going through the existing literature on self-confidence, the investigator thought of constructing a scale to measure an individuals' self-confidence with minimum number of statements. And the decision was to construct a uni-dimensional scale consists of minimum of 10-15 items with 5 point Likert type (Strongly agree to Strongly Disagree) anchors. Initially 26 items were prepared in regional language (Malayalam) and it was distributed among experts in the field of psychology (Professors, Associate Professors and senior researchers who are well versed in psychometrics) and also among psychologists who are working as counselors, trainers etc., to verify the construct. After obtaining the comments/ suggestions some items were dropped, added and even rewritten. This resulted in deletion of 6 items and the draft scale consists of 20 items. Since it is in regional language (Malayalam) the draft scale was given to two language experts for verifying the structure, appropriateness and quality of each item.

Method

Participants

Participants of this study consists of 325 college going students. Among them 121 (37.20%) were males and 204 (62.80%) were females. Among the total sample 30 (9.2%) were single child, 133 (40.9%) with one sibling, 117 (36.0%) with two sibling, 37 (11.38%) with 3 sibling and the remaining were having four and more siblings. All participants belongs Kerala and speaks Malayalam language.

Instruments

1. Self-Confidence Scale: Self-Confidence Scale consists of 20 items in Malayalam language with 5 point Likert type response category was used to measure/collect responses from the subjects. The scale was designed in such a way that it can be answered any person who can read and write Malayalam language. The responses were marked in the right side of each statement. Instructions were clearly printed in the top of the scale and subjects will take below 10 minutes to respond the statements.
2. Personal Data Sheet: Personal Data sheet was used to collect information like sex, age, educational qualification, parents' occupation, parents' qualification etc.

Try out

To know how will be the individuals receive, perceive, interpret and respond each item or any difficulty in responding to the items in the scale, it was administered among 34 PG Psychology students from Department of Psychology, University of Calicut. All most all respondents reported that they have no difficulty in understanding the meaning of the statements, marking the responses etc.

Procedure

The investigator directly met the Principal and class mentors in the Institution discussed the purpose, objectives and importance of the study. After receiving the permission the Class mentor introduced the investigator to the subjects and explained the purpose, objectives and relevance of the study and solicited their whole hearted cooperation for the study. After getting written consent from each participant the self-confidence scale and Personal Data Sheet were handed over to them and requested to complete as per the direction printed on the instruments itself. Even then the investigator gave oral instructions to the participants so that the responses would be better. After completion of both instruments, it was collected back and checked for

omission. Then both instruments were scored/coded as per the previously prepared scoring key and entered into a spread sheet for further statistical analysis.

Results and Discussion

The objective of the study was to construct and standardize a valid measure for self-confidence. Researchers are having different opinion in selecting a valid item from a pool of items. Here the investigator used traditional as well as new methods for selecting an item, establishing its psychometric properties etc.

Item Analysis

The responses of all subjects in each item were entered into a spread sheet and loaded into statistical software. There are many methods available for items selection. Here the investigator decided to calculate the corrected item-total correlation (Point Biserial Correlation), discriminating power and factor loading of each items in the scale. The criterion for including an item in the scale was as follows. If an item achieve corrected item-total correlation of .25 or above (Seema, n.d), discriminating power greater than 2.58 (t value) as proposed by Edwards (1957) and item loading .45 or above will be include in the final scale. The details of the computations are given in the following tables.

Table 1

Item statistics (Item total Correlation and Discriminating Index)

| Items | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Discriminating Power (t-value) |
|--------|----------------------------|--------------------------------|----------------------------------|--------------------------------|
| item1 | 68.54 | 98.453 | .209* | 3.89 |
| item2 | 67.92 | 101.287 | .235* | 3.41 |
| item3 | 69.10 | 101.206 | .131* | 2.57 |
| item4 | 68.23 | 96.032 | .419 | 6.91 |
| item5 | 69.75 | 100.720 | .165* | 4.06 |
| item6 | 69.38 | 97.737 | .234* | 5.58 |
| item7 | 68.85 | 99.375 | .184* | 4.14 |
| item8 | 69.26 | 95.032 | .387 | 9.21 |
| item9 | 69.11 | 98.263 | .230* | 4.69 |
| item10 | 68.37 | 95.173 | .492 | 10.33 |
| item11 | 68.18 | 95.386 | .499 | 8.73 |
| item12 | 68.31 | 94.078 | .580 | 10.89 |
| item13 | 68.17 | 96.491 | .524 | 8.56 |
| item14 | 68.32 | 96.464 | .458 | 8.91 |
| item15 | 68.36 | 96.120 | .447 | 8.38 |
| item16 | 68.43 | 96.110 | .452 | 10.83 |
| item17 | 68.57 | 96.826 | .397 | 9.02 |
| item18 | 68.64 | 94.842 | .500 | 8.94 |
| item19 | 68.96 | 94.656 | .466 | 10.52 |
| item20 | 68.54 | 91.891 | .546 | 11.19 |

**Items which are removed from the scale*

From table 1, it can be seen that all the 20 items in the self-confidence scale significantly discriminate the low and high scorers in the self-confidence scale. All the calculated 't' values were above 2.58 ($p < .01$). When the item-total correlations were scrutinized, items 1, 2, 3, 5, 6, 7, and 9 were found to have correlation below .25. As mentioned earlier those items which are not satisfied the condition, ie items 1, 2, 3, 5, 6, 7, and 9 were deleted from the draft scale. The remaining 13 items were analysed for factor structure by principal component method and varimax rotation with Kaiser Normalization. The details of the factor analysis are presented in table 2.

Table 2

Exploratory Factor Analysis of Self-confidence Scale

| Component | Initial Eigen values | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings | | |
|-----------|----------------------|---------------|--------------|-------------------------------------|---------------|--------------|-----------------------------------|---------------|--------------|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 4.586 | 35.277 | 35.277 | 4.586 | 35.277 | 35.277 | 3.123 | 24.021 | 24.021 |
| 2 | 1.169 | 8.991 | 44.268 | 1.169 | 8.991 | 44.268 | 2.632 | 20.247 | 44.268 |
| 3 | .924 | 7.107 | 51.376 | | | | | | |
| 4 | .873 | 6.717 | 58.093 | | | | | | |
| 5 | .843 | 6.488 | 64.580 | | | | | | |
| 6 | .783 | 6.025 | 70.605 | | | | | | |
| 7 | .726 | 5.588 | 76.193 | | | | | | |
| 8 | .649 | 4.995 | 81.189 | | | | | | |
| 9 | .563 | 4.327 | 85.516 | | | | | | |
| 10 | .507 | 3.896 | 89.412 | | | | | | |
| 11 | .483 | 3.716 | 93.128 | | | | | | |
| 12 | .460 | 3.537 | 96.665 | | | | | | |
| 13 | .434 | 3.335 | 100.000 | | | | | | |

From table 2, it can be seen that there are two factors with eigen value above one. These two factors constitute a total variance of 44.268 (Factor1=24.021 and Factor2=20.247). The result of varimax rotation presented in table 3 reveals that items are clustered in components (factors) either in one or in two. The preset criteria for selecting an item was those items which have a factor loading .45 or above. Item no 16, 15, 20, 19, 18, 17 and 14 have a factor loading above .45 and items 8, 11, 10, 12, 13 and 4 under component 2 were factor loading above .5. All the items in the scale satisfied the criteria of factor loading and hence decided to keep all the 13 items in the scale (Field, 2005).

Table 3
Rotated component matrix of Self-Confidence Scale

| Items | Component | |
|--------|-------------|-------------|
| | 1 | 2 |
| item16 | .737 | .075 |
| item15 | .649 | .173 |
| item20 | .642 | .265 |
| item19 | .625 | .220 |
| item18 | .596 | .256 |
| item17 | .572 | .150 |
| item14 | .493 | .258 |
| item8 | -.037 | .669 |
| item11 | .232 | .662 |
| item10 | .268 | .656 |
| item12 | .327 | .652 |
| item13 | .367 | .550 |
| item4 | .247 | .528 |

The scrutiny of the meaning and nature of the items loaded under component one and two clearly revealed that these items are measuring two dimensions of self-confidence and are named as Personal and Social. Here the investigator considered components one and two are the first order factors and self-confidence as the second order factor. The factor Personal is considered as the belief of an individual's ability to perform activities and succeed by virtue of his/her personal strength. Social factor of self-confidence means the belief of an individual's ability to succeed a task as others in the group. Self-confidence of a person is the integration of these two factors.

To test the two factor model of self confidence- Personal and Social as the first order factor and Self-confidence as second order factor, Confirmatory Factor Analysis (CFA) was carried out and the results are presented in Figure 1 and table 4.

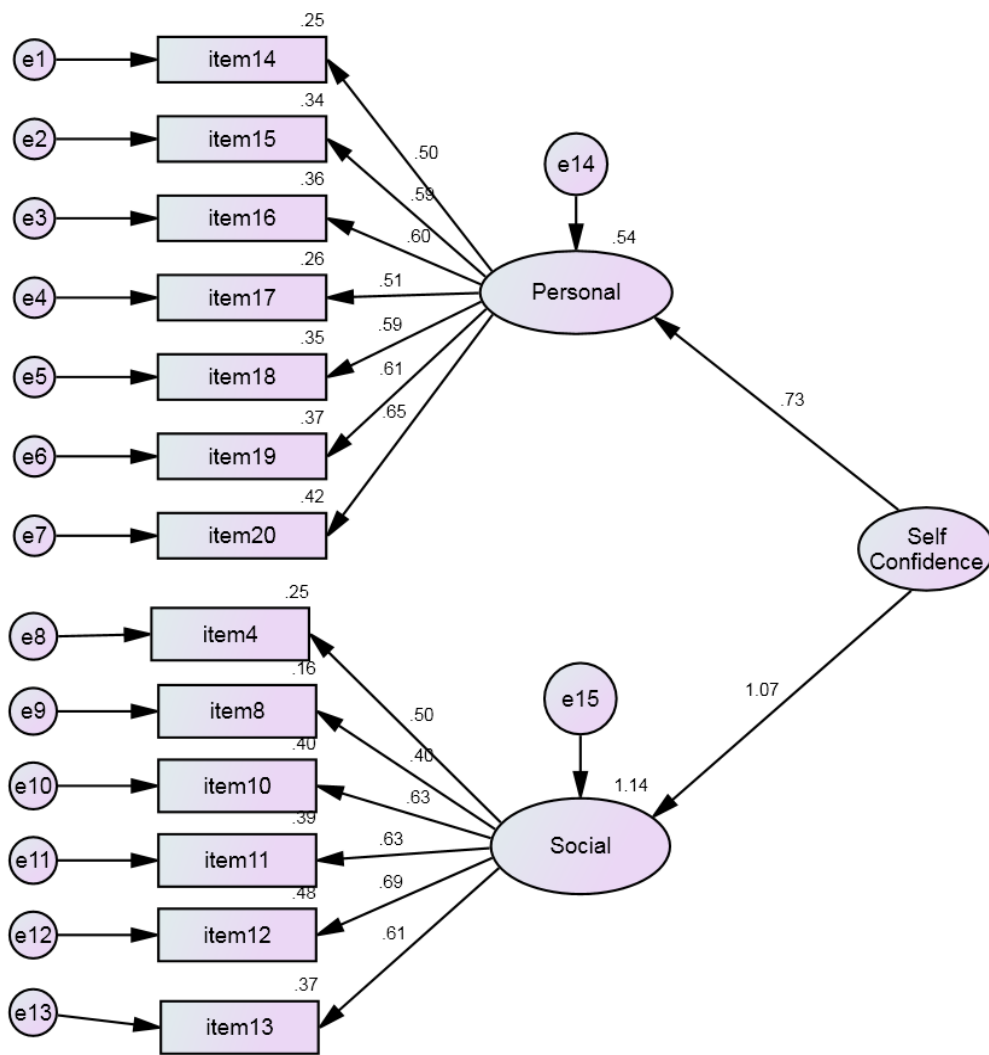


Figure 1: Confirmatory Factor analysis of Self-Confidence Scale (Two-factor Model)

Table 4

Goodness of fit indices for two factor structural equation model (SEM) of Self-Confidence Scale

| Model | CMIN/DF | CFI | RMSEA | GFI | RMR | IFI |
|------------|---------|------|-------|------|------|------|
| Two Factor | 1.742 | .952 | .048 | .951 | .046 | .953 |

Note: CMIN=Relative chi-square, CFI= Comparative Fit Index, RMSEA=Root Mean Square Error Approximation, GFI= Goodness of Fit Index, RMR= Root Mean Square Residual, IFI= Incremental Fit Index

From table 4, it can be seen that the overall model fit appears quite good. The relative chi-square also known as normed chi-square value is 1.742 (CMIN=111.463, df=84). The criterion for acceptance varies across researchers. Schumaker and Lomax (2004) prescribe an acceptable chi-square value below 5 but Ullman (2001) suggests that a value less than 2 is acceptable. While referring both arguments the chi-square value is acceptable. The other common index considered by researchers is Comparative Fit Index (CFI) which represents the

extent to which the model on interest is better than the independence model. Byrne (1994) suggests that if the estimated CFI exceeds .93 then the model fit to the data. Here the CFI is .952 which exceeds the cut-off value. RMSEA is .048 below the .05 cut-off. The Goodness Fit Index (GFI) exceeds .90 (Byrne, 1994), RMR below .08 (Brown & Cudeck, 1993) and the Incremental Fit Index exceeds .90. All these fit indices indicate that the model is a good fit to the data.

Reordering of the items

In the draft scale there were 20 items, and these item numbers were used throughout in the analysis process like, item analysis, factor analysis and confirmatory factor analysis. Exploratory Factor analysis (EFA) and Confirmatory Factor Analysis (CFA) brought a two first order factors and one second order factor. The serial number of the items in the just identified model was not continuous; hence the items were re-numbered and arranged from item one (1) to thirteen (13). The initial item number and newly assigned serial number (final item number) Mean, Sd, and variance of each item are presented in table 5.

Table 5

Initial item number, Final item number and descriptive statistics of each item in the Self-Confidence Scale

| Initial Item Number | Final Item Number | N | Mean | S.D | Variance |
|---------------------|-------------------|-----|------|-------|----------|
| item4 | 1 | 325 | 4.03 | 1.087 | 1.181 |
| item8 | 2 | 325 | 3.00 | 1.261 | 1.589 |
| item10 | 3 | 325 | 3.89 | 1.030 | 1.062 |
| item11 | 4 | 325 | 4.09 | 0.999 | 0.999 |
| item12 | 5 | 325 | 3.95 | 0.985 | 0.970 |
| item13 | 6 | 325 | 4.10 | 0.864 | 0.747 |
| item14 | 7 | 325 | 3.94 | 0.970 | 0.941 |
| item15 | 8 | 325 | 3.90 | 1.023 | 1.046 |
| item16 | 9 | 325 | 3.83 | 1.014 | 1.028 |
| item17 | 10 | 325 | 3.69 | 1.050 | 1.103 |
| item18 | 11 | 325 | 3.62 | 1.046 | 1.094 |
| item19 | 12 | 325 | 3.30 | 1.126 | 1.267 |
| item20 | 13 | 325 | 3.73 | 1.218 | 1.483 |

Reliability & Validity

Reliability of the two dimensions as well as the total scale was estimated by the method of Cronbach Alpha and found to be .74 for the social dimension and .78 for the Personal and .84 for the whole scale. External validity of the scale was estimated by correlating scores in Self-Esteem Inventory (Thomas & Samsanand Raj, 1985) and it was found to be .77.

Scoring

Self-Confidence is a two dimensional scale which gives an estimate of an individuals' Self-Confidence. It is a five point Liker scale with response category as Strongly Agree (5), Agree (4), Undecided (3), Disagree (2) and Strongly disagree (1). All the items in the scale are worded positively and scored 5 to 1. The sum total of items from one to six constitutes the

Social dimension score and sum of the items from seven to 13 constitute the Personal dimension score. Sum of the scores of all items is an index of the individuals' Self-Confidence.

Norms

Norms are considered as the reference point in interpreting the test score of a particular variable measured using a psychological scale. It is essential feature of a standardized psychological instrument. Norms for the Self-confidence Scale for total sample, Males and Females separately (table 6) were developed. From the table it can be seen that Males and Females are having more or less equal Self-Confidence.

Table 6

Percentile norms for Male, Female, and Total Sample

| Statistics | Male | Female | Total |
|--------------------|-------|--------|-------|
| N | 121 | 204 | 325 |
| Mean | 49.24 | 48.96 | 49.06 |
| Median | 50.00 | 49.00 | 50.00 |
| Mode | 50 | 48 | 50 |
| Std. Deviation | 7.94 | 8.156 | 8.07 |
| Minimum | 13 | 13 | 13 |
| Maximum | 65 | 64 | 65 |
| Percentiles | | | |
| 5 | 35.20 | 35.00 | 35.00 |
| 10 | 40.00 | 39.00 | 39.00 |
| 15 | 41.30 | 40.00 | 40.00 |
| 20 | 43.40 | 41.00 | 42.00 |
| 25 | 45.00 | 44.00 | 45.00 |
| 30 | 46.00 | 46.00 | 46.00 |
| 35 | 47.00 | 46.75 | 47.00 |
| 40 | 49.00 | 48.00 | 48.00 |
| 45 | 49.00 | 48.00 | 49.00 |
| 50 | 50.00 | 49.00 | 50.00 |
| 55 | 50.10 | 50.00 | 50.00 |
| 60 | 51.00 | 52.00 | 51.00 |
| 65 | 52.00 | 53.00 | 52.00 |
| 70 | 53.00 | 54.00 | 53.20 |
| 75 | 54.00 | 55.00 | 55.00 |
| 80 | 55.60 | 57.00 | 56.00 |
| 85 | 57.00 | 58.00 | 58.00 |
| 90 | 59.80 | 59.00 | 59.00 |
| 95 | 61.90 | 61.00 | 61.00 |

Conclusion

Psychologists always try to measure human behavior and quantify it. They are very specific and creative in interpreting/predicting human behavior. Self-confidence is the belief in one's ability to succeed in day today activities. The objective of this study was to construct and

standardize a scale to measure self-confidence of people who speaks Malayalam language. Initial search for such scale revealed that no published work is available. The investigator planned to develop a scale based on theoretical basis. Following the principle of scale construction yielded a two factor (component) 13 item scale which can measure self-confidence of an individual. Confirmatory Factor Analysis (CFA) revealed that the two factor model is a good fit to the data.

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