

## THE URDU TRANSLATION AND VALIDATION OF FACT-COG VERSION 3 SCALE IN PAKISTANI BREAST CANCER SURVIVORS

SAMREEN KHURSHID<sup>1</sup>, SAIMA EHSAN<sup>2</sup>

<sup>1</sup>PhD Scholar, Department of Psychology, Foundation University Islamabad, Pakistan & Lecturer, Department of Applied Psychology, University of Sahiwal, Pakistan

<sup>2</sup> Professor, Department of Psychology, Foundation University Islamabad, Pakistan

Corresponding Author: Samreen Khurshid\*<sup>1</sup>

\*<sup>1</sup>PhD Scholar, Department of Psychology, Foundation University Islamabad, Pakistan & Lecturer, Department of Applied Psychology, University of Sahiwal, Pakistan

### Abstract

**Background:** *The Functional Assessment of Cancer Therapy-Cognitive Version3 (FACT-Cog V3) is a self-report instrument designed with a specific focus on quantifying the cognitive impairments experienced by individuals who have been diagnosed with cancer. The main aim of this study was to undertake the translation and adaptation of the original version 3 of FACT-Cog into the Urdu language, while also taking into account cross-cultural considerations.*

**Method:** *The research study employed a survey research design as its foundation. The researchers employed a purposive sampling technique to gather data from the medical records of female individuals who have survived breast cancer and fall within the age range of 21 to 50. These individuals received treatment at different hospitals located in Islamabad, Rawalpindi, and Lahore. The sample was collected on two occasions. Initially, a sample of 40 breast cancer survivors was collected for translation. Subsequently, a sample of 319 breast cancer survivors was collected to confirm and validate the factors of the translated version of the scale. All the required analyses were conducted using SPSS (Version 26) and AMOS (Version 23).*

**Main Findings:** *The study revealed noteworthy positive correlations (ranging from .82 to .90) between the FACT-Cog scores obtained in Urdu and those obtained in the English version. The scale demonstrated satisfactory alpha reliability, with a coefficient of 0.88. The final thirty-seven items of the Urdu version of the scale were validated through Confirmatory Factor Analysis.*

**Conclusion:** *The cross-cultural utility of the Pakistani adaptation of FACT-Cog (Version-3) has been substantiated through an examination of its psychometric properties in a sample of breast cancer survivors.*

### Introduction

Breast cancer survivors frequently report cognitive dysfunction (Von Ah et al., 2013). Cognitive dysfunction is a comprehensive concept that encompasses a range of deficiencies in cognitive abilities, such as memory, attention, perception, problem-solving, and language (Harvey, 2022). Cognitive impairments are frequently reported by individuals diagnosed with cancer, particularly following the administration of chemotherapy, a prevalent and consequential treatment modality (Kim et al., 2020; Janelins et al., 2011). Patients diagnosed with cancer often encounter challenges related to their cognitive functions, specifically attention, and memory, both before and after undergoing treatment (Ahles et al., 2012).

Numerous survivor women commonly encounter difficulties pertaining to concentration, memory (especially in relation to numerical information and proper nouns), verbal retrieval, and the ability to perform multiple tasks simultaneously (Myers, 2013). If any of these conditions are present, it is possible that both the individual's quality of life and productivity at work could be adversely impacted (Dwek et al., 2017). The primary domains impacted by cognitive decline include memory, executive functioning, attention, and processing speed, which are the focal areas of interest. Cerebral imaging techniques have been employed to identify and examine alterations in both the structure and function of the brain, particularly in the frontal regions that play a crucial role in executive function and memory processes (Lange & Joly, 2017; Joly et al., 2015).

The FACT-Cog (Functional Assessment of Cancer Therapy-Cognitive) is a component of the comprehensive FACT measurement system. The test was specifically designed to assess the cognitive impairments experienced by cancer patients. Additionally, it aims to assess the extent to which these disabilities are affecting their daily functioning. Several research studies have employed the Functional Assessment of Cancer Therapy-Cognitive Function (FACT-Cog) instrument to assess the presence of subjective cognitive impairments among individuals diagnosed with cancer (Von Ah & Tallman, 2015). The FACT-Cog version 3 has undergone successful translation into French and Chinese languages and has exhibited satisfactory outcomes in terms of linguistic validation among cancer patients in these specific linguistic contexts (Cheung et al., 2013; Joly et al., 2012). Despite the widespread utilization of the FACT-Cog in research, there exists a dearth of published studies substantiating the reliability and validity of the Urdu translation of this evaluative instrument. The primary objectives of this study were to elucidate the methodologies employed in the translation and adaptation of the initial iteration of FACT-Cog version 3 into the Urdu language, with a comprehensive approach. The objective of this study was to assess the suitability of the four fundamental psychometric properties, specifically factor structure, concurrent validity, convergent validity, and internal consistency, for clinical application among breast cancer patients in Pakistan. The primary objective of the researchers was to ascertain the appropriateness of these features for clinical application.

### **Method**

#### ***Sample***

A purposive sampling method was used to collect data from the medical files of 319 female breast cancer survivors. These survivors were between the ages of 21 and 50 and were treated at various hospitals in Islamabad, Rawalpindi, and Lahore. The current study only included female breast cancer survivors who have undergone chemotherapy within the past 2 to 12 months. The present study focused on female breast cancer survivors who had stopped post-treatment for a period ranging from three months to two years. Female breast cancer survivors who have undergone chemotherapy more than a year ago and are currently in the early or final stages of chemotherapy were excluded if they had co-morbidities such as cardiac disease, diabetes, HIV/AIDS, or other medical conditions.

#### ***Instrument***

The FACT-Cog scale is a self-report questionnaire (Wagner et al., 1994). It consists of 37 items. The scale utilizes a Likert-type response format, ranging from 0 (indicating never) to 4 (indicating several times a day). The scale consists of four subscales: perceived cognitive impairments (20 items), perceived cognitive abilities (9 items), comments from others (4 items), and impact on quality of life (4 items). Participants are asked to evaluate how often they have experienced certain events or situations in the past week. The FACT-Cog total score is derived by summing the subscale scores, which range from 0 to 132. A higher score on this scale indicates better cognitive functioning (Park et al., 2015). Prior research has provided evidence supporting the reliability of the scale, as indicated by Cronbach's alpha coefficients surpassing the threshold of 0.80. This finding provides additional evidence for the reliability of the scale as a valid instrument for measurement (Hajj et al., 2020).

#### ***Translation Procedure***

To uphold the scientific rigor and maintain equivalence in translations within the FACIT Measurement System, a standardized translation process was implemented in this study for the translation of FACT-Cog version 3. The translation process involved the participation of a group of five bilingual experts who were not acquainted with one another or the scale. The scale was subjected to forward translation from English to Urdu by two language experts, who provided their recommendations. These recommendations were then combined to produce a reconciled version of the scale. The reconciled translation was subjected to additional scrutiny by another expert in the field of Urdu language, who offered further insights to enhance its quality. In order to ensure precision, a back translation was carried out by an expert in the English language, who compared the translated Urdu rendition with the original English version. Following a thorough review and

meticulous proofreading process, a definitive iteration of the scale was meticulously prepared for the purpose of conducting a pilot study aimed at evaluating the content and semantic comparability. The evaluation of the translation was conducted by unbiased reviewers, and their feedback was integrated to complete the final version of the translation. The compatibility between the reconciled version and the back-translated English versions was assessed by the research program coordinator of the FACIT Measurement System. The requisite updates were implemented to ensure optimal translation accuracy. Subsequently, the translated scale was prepared for subsequent examination to ascertain its reliability and validity. To maintain the precision, conceptual consistency and cultural appropriateness of the Urdu translation of FACT-Cog version 3, strict adherence to the FACIT translation process was observed.

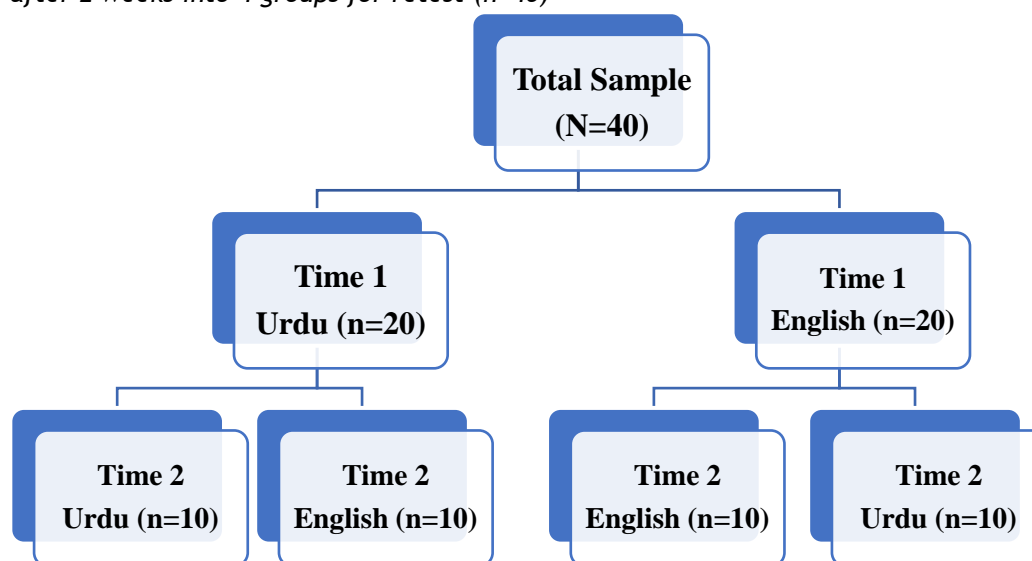
## Results

### Pilot Study

A sample of (n=40) participants was used to assess the cross-language validation and test-retest reliability of the FACT-COG scale. . The participants were selected from the hospitals located in Islamabad and Rawalpindi by examining the patient's files with the consent of the hospital administration. In addition, those breast cancer survivors were selected who had the ability to read and understand Urdu language. In first administration, both scales were randomly administered to the equal number of adolescents (n=20). In second administration with 14 days gap, both scales were again administered to groups (n=20). In this administration each of the group of the first administration was randomly divided into two sub groups. Therefore random assignment of the sample to one of the four conditions emerged; English test and retest; Urdu test and Urdu retest; English test and Urdu retest; and Urdu test and English retest. Grouping and random assignment assisted to manage the influence of learning or previous experiences as participants had the knowledge of both versions Urdu and English forms within 14 days period. The purpose of this entire procedure was to identify any equivalence or discrepancy issues between the Urdu and English versions of FACT-Cog (Version-3). The reliabilities of the FACT-Cog (Version-3) (Urdu) were assessed through test-retest reliability analysis, using the total scores obtained from both the initial test and the retest. Reliability coefficients, specifically Cronbach's alpha, were also calculated for this scale. The obtained results are presented as follows:

**Figure 1**

*Diagrammatic representation for the distribution of total sample into two groups for test and after 2 weeks into 4 groups for retest (n=40)*



**Results.** Correlation coefficient was calculated between scores on the Urdu and English versions at time 1 and time 2 with a gap of 15 days in order to determine the test retest reliability and cross language validity of the scale.

**Table 1**  
*Alpha Reliability Estimates for Urdu and English versions of FACT-COG at Time 1 and Time 2 (N = 40)*

| Scale    | Time 1       |                 | Time 2       |                 |
|----------|--------------|-----------------|--------------|-----------------|
|          | Urdu<br>n=10 | English<br>n=10 | Urdu<br>n=10 | English<br>n=10 |
| FACT-Cog | .79          | .80             | .78          | .81             |

Table 1 demonstrates, a good level of alpha reliability i.e., .79 to .81 in two specific groups: the Urdu test group and the English test group.

**Table 2**  
*Retest Reliability of the Urdu and English Version of FACT-COG Scale (N = 40)*

| Scale    | Time 1     |            | Time 2     |            |
|----------|------------|------------|------------|------------|
|          | UU<br>n=10 | UE<br>n=10 | EE<br>n=10 | EU<br>n=10 |
| FACT-Cog | .85***     | .90***     | .88***     | .82***     |

*Note.* UU = Urdu Urdu, UE = Urdu English, EE = English English, EU = English Urdu.

\*\*\* $p < .001$

The correlation coefficient is shown in the table above, indicating that the scale has a high degree of stability over time. There was a significant connection between the four groups (Urdu-Urdu, Urdu-English, English-English, and English-Urdu) that ranged from .82 to .90. This demonstrates the scale's consistency over time and the translational validity of both the Urdu and English versions. The findings demonstrated the remarkable similarity between the Urdu and English versions of the FACT-Cog.

### **Main Study**


After conducting the pilot study, a purposeful sampling technique was employed to select a sample of 319 breast cancer survivors with an age range between 21 years to 50 years ( $M=2.02$ ,  $SD=.80$ ) was collected by using purposive sampling from different hospitals located in Islamabad and Rawalpindi for the treatment of cancer patients, through their medical files to conduct Confirmatory Factor Analysis (CFA). The objective of this analysis was to ascertain the validity of the ultimate translated iteration of the scale. The adequacy and representativeness of the sample size were determined following Kline's (2017) data collection procedure. The participants for the study were chosen based on predetermined inclusion criteria. The data collection process employed purposive sampling to ensure the inclusion of only eligible participants. The evaluation of the ultimate scale was conducted by examining model fit indicators and employing confirmatory factor analysis (CFA) techniques which was carried out utilizing a statistical software package, namely AMOS (Version-23).

### **Socio-Demographic Information**

Socio-demographic information of the participants is given in the below table.

**Table 21**  
*Socio-Demographic Characteristics of sample (N=319)*

| Demographic Characteristics | <i>f</i> | <i>%</i> |
|-----------------------------|----------|----------|
| Age in years                |          |          |



|   |     |       |
|---|-----|-------|
| 21years - 30 years                                | 100 | 31.35 |
| 31years - 40 years                                | 113 | 35.42 |
| 41years- 50 years                                 | 106 | 33.23 |
| Marital Status                                    |     |       |
| Married   | 118 | 37    |
| Un-married  | 98  | 31    |
| Divorced/ Widow                                   | 103 | 32    |
| Family System                                     |     |       |
| Nuclear Family System                             | 156 | 49    |
| Joint Family System                               | 163 | 51    |
| Years of Education                                |     |       |
| No education/ Illiterate                          | 70  | 22    |
| Less than 14 years                                | 110 | 34    |
| 14 years  | 55  | 17    |
| 16 years  | 60  | 19    |
| 18 years & above                                  | 24  | 08    |
| Occupation  |     |       |
| Employed  | 154 | 48    |
| Un-employed                                       | 165 | 52    |
| Monthly income                                    |     |       |
| Less than 50k                                     | 112 | 35    |
| 51k- 100k   | 108 | 34    |
| 101k-150k   | 51  | 16    |
| 151k & above                                      | 48  | 15    |
| Physical Activity/Exercise                        |     |       |
| None  | 56  | 17    |
| Once a week                                       | 88  | 28    |
| Twice a week                                      | 79  | 25    |
| Thrice a week & above                             | 96  | 30    |
| History of Psychological or Neurological Disorder |     |       |
| Yes   | 81  | 25    |
| No  | 238 | 75    |

The above table mentions the socio-demographic characteristics of the participants. 31% of the participants women were between the age of 21 years to 30 years, 36% were between the ages of 31 years to 40 years, 33% were between 41 years to 50 years. 37% of the women breast cancer patients were married, 31 % were unmarried and 32% were either divorced, or widowed. Regarding the family system, 49% reported living in the nuclear family system while the remaining 51% were living in the joint family system. In this study 22% of the participant women were illiterate, 35% had less than 14 years of education, 17% had 14 years of education, 19% had 16 years of education and the remaining 8% had 18 years of education and above. 48% of the participants were employed while the remaining 52% were unemployed. Regarding monthly income, 35% of the participants reported less than 50k monthly income, 34% reported 51k to 100k, 16% reported 101k-150k, and the rest 15% reported 151k and above. Participants were also asked about their exercise and physical activity. 17% of the participants reported that they were doing no exercise at all, 28% reported once a week, 25 percent reported twice a week and only 30 percent reported thrice a week and above. 25 percent of the women participants had a history of psychological disorder while the remaining 75 percent never had any history of psychological or neurological illness.

**Table 2** Item Total Correlation of (FACT-Cog-V3) Urdu Version (n= 40)

| Item no.                                 | r    | Item no. | r    |
|--|------|----------|------|
| Perceived Cognitive Impairments (CogPCI) |      |          |      |
| CogA1                                    | .35* | CogV17b  | .40* |
| CogA3                                    | .50* | CogF19   | .54* |
| CogC7                                    | .55* | CogF23   | .32* |
| CogM9                                    | .35* | CogF24   | .35* |
| CogM10                                   | .30* | CogF25   | .36* |
| CogM12                                   | .54* | CogC31   | .39* |
| CogV13                                   | .46* | CogC32   | .40* |
| CogV15                                   | .35* | CogC33a  | .38* |
| CogV16                                   | .34* | CogC33c  | .36* |
| CogQ35                                   | .30* | CogQ38   | .30* |
| CogQ37                                   | .55* | CogQ41   | .46* |
| Cog MT1                                  | .39* | Cog MT2  | .37* |
| Comments From Others (CogOth)            |      |          |      |
| CogO1                                    | .41* | CogO3    | .32* |
| CogO2                                    | .46* | CogO4    | .55* |
| Perceived Cognitive Abilities (CogPCA)   |      |          |      |
| CogPC1                                   | .36* | CogPCh1  | .39* |
| CogPV1                                   | .39* | CogPCh2  | .40* |
| CogPM1                                   | .36* | Cog PMT1 | .36* |
| CogPM2                                   | .39* | Cog PMT2 | .34* |
| CogPF1                                   | .36* |          |      |

\* $p < .05$ 

There are significant positive connections between items and the overall score of the FACT-Cog, as seen in Table 2. According to the estimated correlation coefficients, all of the scale's items are highly correlated with one another and assess the same underlying construct.

**Table 3** Reliability on Scale and all Subscales of Translated Version of (FACT-Cog-V3) (N = 319)

| Scale/ Subscales | $\alpha$ |
|------------------|----------|
| FACT-Cog         | .88      |
| CogPCI           | .83      |
| CogQol           | .70      |
| CogOth           | .72      |
| CogPCA           | .70      |

The reliability of all subscales of the translated version of the FACT-Cog-V3 scale was assessed in a sample of 40 participants. The reliability analysis involved calculating Cronbach's alpha coefficient for the main scale as well as each subscale. The alpha reliability of the main scale was .88 which shows good internal reliability whereas the results of the subscales indicated varying levels of reliability across the subscales. The CogQol subscale, consisting of 4 items, demonstrated a reliability coefficient of .70, suggesting that it had acceptable internal consistency. The CogPCA subscale, with 7 (9) items, showed a higher reliability coefficient of .70, indicating acceptable internal consistency. The CogPCI subscale, consisting of 18(20) items, exhibited a high level of reliability with a Cronbach's alpha coefficient of .83, suggesting strong internal consistency. Lastly, the CogOth subscale, comprising 4 items, yielded a reliability coefficient of .72, indicating

acceptable internal consistency. These findings provide insights into the reliability of each subscale within the translated version of the FACT-Cog-V3 scale in this particular sample of participants.

**Table 5** Factor Loadings in the Confirmatory Factor Analysis of FACT-COG-V3 Questionnaire (N=319)

| Items   | Factor 1<br>(CogPCI) | Factor 2<br>(CogQOL) | Factor 3<br>(CogOth) | Factor 4<br>(CogPCA) |
|---------|----------------------|----------------------|----------------------|----------------------|
| CogA1   | .33                  |                      |                      |                      |
| CogA3   | .42                  |                      |                      |                      |
| CogC7   | .34                  |                      |                      |                      |
| CogM9   | .41                  |                      |                      |                      |
| CogM10  | .45                  |                      |                      |                      |
| CogM12  | .32                  |                      |                      |                      |
| CogV13  | .38                  |                      |                      |                      |
| CogV15  | .47                  |                      |                      |                      |
| CogV16  | .45                  |                      |                      |                      |
| CogV17b | .35                  |                      |                      |                      |
| CogF19  | .54                  |                      |                      |                      |
| CogF23  | .40                  |                      |                      |                      |
| CogF24  | .42                  |                      |                      |                      |
| CogF25  | .39                  |                      |                      |                      |
| CogC31  | .37                  |                      |                      |                      |
| CogC32  | .51                  |                      |                      |                      |
| CogC33a | .48                  |                      |                      |                      |
| CogC33c | .46                  |                      |                      |                      |
| CogMT1  | .44                  |                      |                      |                      |
| CogMT2  | .43                  |                      |                      |                      |
| CogQ35  |                      | .41                  |                      |                      |
| CogQ37  |                      | .31                  |                      |                      |
| CogQ38  |                      | .34                  |                      |                      |
| CogQ41  |                      | .32                  |                      |                      |
| CogO1   |                      |                      | .31                  |                      |
| CogO2   |                      |                      | .32                  |                      |
| CogO3   |                      |                      | .49                  |                      |
| CogO4   |                      |                      | .46                  |                      |
| CogPC1  |                      |                      |                      | .44                  |
| CogPV1  |                      |                      |                      | .38                  |
| CogPM1  |                      |                      |                      | .39                  |
| CogPM2  |                      |                      |                      | .41                  |
| CogPF1  |                      |                      |                      | .45                  |
| CogPCh1 |                      |                      |                      | .50                  |
| CogPCh2 |                      |                      |                      | .52                  |
| CogPMT1 |                      |                      |                      | .45                  |
| CogPMT2 |                      |                      |                      | .33                  |

The CFA of the *FACT-COG-V3* has 37 items that indicate satisfactory regression weights in all items of the scale ranging between .31 to .54.

**Table 4** Confirmatory Factor Analysis of FACT-Cog-V3 Scale (N=319)

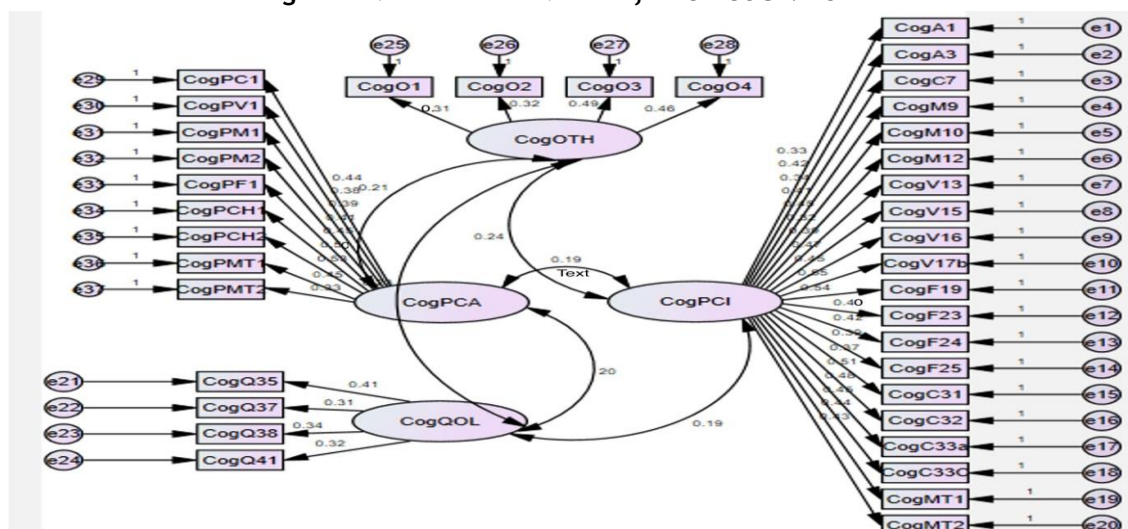
| Models | $\chi^2$ | df | $\chi^2 / df$ | CFI  | NFI  | TLI  | RMSEA |
|--------|----------|----|---------------|------|------|------|-------|
| Model  | 8.18     | 7  | 1.168         | .958 | .959 | .951 | .02   |

*Note.* Comparative Fit Index, Normative Fit Index, Tucker-Lewis Index, RMSEA = Root Mean Square of Approximation,  $\chi^2$  = Chi-Square, df = Degree of Freedom



Table 17 shows the Confirmatory Factor Analysis of the FACT-Cog-V3 scale. Results revealed that model fit indices of CFI = .958 ( $> .95$ ), NFI = .959 ( $> .95$ ), and TLI = .951 ( $> .95$ ) were satisfactory. The RMSEA value was also satisfactory ( $< .05$ ) with a non significant *pclose value* ( $p=1.22$ ) which indicates the model is well-fitted. Therefore it can be concluded that the current CFA model was a well-fitted model  $X^2 = 8.18$ ,  $p > .05$ .

Figure 2 Measurement Model of FACT-COG-V3 Scale



In the above model, all items explained satisfactory estimates of effect sizes which confirms the item-wise scale validation of the translated version of the scale.

### Discussion

Cognitive impairment is a term used to describe the decline or deterioration of cognitive processes in individuals. These processes include perception, attention, language, thinking, learning and memory, action planning, comprehension, reasoning, and problem-solving (Országhová et al., 2021; Lange et al., 2019; Horowitz et al., 2018; Schmidt et al., 2016; Janelins et al., 2011). Patients undergoing chemotherapy for breast cancer have reported experiencing difficulties with memory, cognitive function, and concentration (Chovanec et al., 2018). Therefore, it is crucial to assess cognitive impairment, implement preventive nursing interventions, and assess their efficacy. It is important to utilize a suitable assessment tool to effectively measure the needs and interventions. The purpose of this study was to evaluate cognitive functioning and the psychometric properties of the Urdu version of the FACT-Cog scale in a sample of Pakistani women with breast cancer survivors. The FACT-Cog is commonly used to evaluate cognitive deficits in cancer patients (Dyk et al., 2019; Joly et al., 2012), and it is frequently utilized in observational and treatment studies (Park et al., 2015).

This study is the first to report on the validity and reliability of the Urdu version of the FACT-Cog among breast cancer survivors. Our findings indicate that the Urdu version of the FACT-Cog instrument is both reliable and valid, making it suitable for assessing cognitive functioning in Urdu-speaking adults. These findings provide further support for previous research that has identified the English, French, and Chinese versions as valuable instruments for evaluating cognitive impairments. Following the translation process, which involves the process of re-translation of a previously translated text into the source language by a translator who has not had access to the original text. The objective of this study is to conduct a comparison between the back-translated text and the source text. This task aims to detect any discrepancies and evaluate the precision of the translation. If discrepancies arise between the back-translation and the original text, such





inconsistencies are regarded as indicative of translation errors within the version of the target language (Tyupa, 2011).

In 2005, Wild et al. provided a comprehensive summary of guidelines for translating questionnaires. According to Wild et al. (2005), the process of back-translation should be carried out independently by two translators who are not familiar with the source text. In addition to the translation itself, it is crucial to have an expert review of the translated text. This expert will compare the back translations to the original text, identify any differences, and engage in discussions with the translator responsible for the reconciliation process. These discussions will determine whether any changes are necessary. In addition, this review examines the back translations of various language versions to identify a consistent approach for addressing translation issues (Wild et al., 2005). The forward and backward translation method was utilized by the FACIT translation team, following these rules and their ideas. This approach ensured that the meanings and cultural nuances remained consistent.

The analysis of the results of cross-language validation and test-retest reliability of the FACT-COG revealed robust correlations between the initial and subsequent administrations across all groups. These findings underscore the remarkable test-retest reliability of the FACT-COG scale, indicative of its consistent performance regardless of language, whether Urdu or English. Consequently, these results bolster the scale's validity across different linguistic contexts, thereby facilitating its effective application and comparison across various language versions. The derived test scores, often termed "sum scores," serve as valuable metrics for evaluating respondents' cognitive proficiency, emotional disposition, and overall achievement. Importantly, when administered multiple times under identical conditions, each participant's test score is expected to demonstrate high-test score stability (Hoekstra et al., 2019).

Cronbach's alpha is the most popular statistic for evaluating the dependability of measuring devices (Hoekstra et al., 2019). According to the study's reliability analysis, the FACT-Cog Urdu Version is trustworthy. All objects have larger impact sizes (i.e.,  $> 0.30$ ), indicating they can load correctly. All subscales (CogPCI, CogOth, CogQOL and CogPCA) have acceptable reliability (0.70). These findings corroborate those of previous research (Park et al., 2015; Joly et al., 2012).

Using confirmatory factor analysis (CFA), the validity of the interpreted version of the scale was examined and validated. The CFA is a multivariate statistic that is used to estimate the structure of an instrument, confirm that the measured variables accurately represent the number of constructs, and investigate construct validity (Boelen et al., 2008). It provides better results when evaluating the validity and reliability of an instrument and adds a degree of statistical precision along with the verification of the plausibility of an instrument's construction (Sürücü & Maslakci, 2020).

To accomplish this objective, a CFA was conducted, and the results indicated that all components adequately explained estimates of effect sizes. The effect sizes with a minimum estimate of .31 and a maximum estimate of .54 support the item-wise scale validation of the translated version of the scale. However, these results contradict the other scale translations. Historical Turkish, Japanese, and Korean translations all have relatively high factor loadings. Previous translations were conducted on breast cancer patients, whereas the current study was conducted on breast cancer survivors, which may account for the disparity in sample sizes. Consequently, there must be a distinction between the cognitions of a patient and a survivor. Cancer-related cognitive impairment is a common side effect experienced by an increasing number of cancer survivors, and it has a significant negative impact on their quality of life (Országhová et al., 2021). Cancer patients may experience cognitive abnormalities as a result of cancer treatment or the disease itself.

Following the pilot test, our findings align with the Korean version (Park et al., 2015) that Cog12 needs to be revised because people today use the newest technologies, such as smartphones, Google Docs, and other tools to encode and store memories, making it simple to recall any memory when using these tools. Consequently, the original author must revise this piece to reflect the most recent standards and maintain the scope.


Furthermore, to thoroughly investigate the development of cognitive performance and improve the accuracy of the scale's measurement in the Pakistani context, it is essential to determine whether the scale is applicable in clinical oncology settings for male breast cancer patients and other cancer patients because currently, the scale has only been tested among Urdu-speaking women with breast cancer survivors.

### Conclusion

The current research demonstrates the validity and reliability of the FACT-Cog scale in Urdu as a self-report measure for measuring reported cognitive impairment among breast cancer survivors in Pakistan. These results have therapeutic relevance for healthcare practitioners, since the scale may be used to assess cognitive performance in breast cancer patients and survivors receiving different therapies, such as chemotherapy and radiation. However, further study is needed to determine the scale's generalizability across various forms of cancer and clinical settings in the Pakistani community. Longitudinal research is also required to investigate changes in cognitive performance across time. Furthermore, future research should look at the link between perceived cognitive impairment and objective neuropsychological testing to establish the therapeutic use of the FACT-Cog in Urdu

### REFERENCES

- [1] Ahles, T. A., Saykin, A. J., McDonald, B. C., Furstenberg, C. T., Cole, B. F., Hanscom, B. S., ... & Kaufman, P. A. (2012). Cognitive function in breast cancer patients before adjuvant treatment. *Breast cancer research and treatment*, 135(1), 135-147.
- [2] Boelen, P. A., van den Hout, M. A., & van den Bout, J. (2008). The factor structure of posttraumatic stress disorder symptoms among bereaved individuals: A confirmatory factor analysis study. *Journal of Anxiety Disorders*, 22(8), 1377-1383.
- [3] Cheung YT, Lim SR, Shwe M, et al (2013) Psychometric properties and measurement equivalence of the English and Chinese versions of the functional assessment of cancer therapy-cognitive in Asian patients with breast cancer. *Value Health* 16:1001-1013. doi: [10.1016/j.jval.2013.06.017](https://doi.org/10.1016/j.jval.2013.06.017)
- [4] Chovanec M., Vasilkova L., Setteyova L., Obertova J., Palacka P., Rejlekova K., et al. (2018). Long-Term Cognitive Functioning in Testicular Germ-Cell Tumor Survivors. *Oncol.* 23 (5), 617-623. [10.1634/theoncologist.2017-0457](https://doi.org/10.1634/theoncologist.2017-0457)
- [5] Dwek MR, Rixon L, Hurt C, et al: Is there a relationship between objectively measured cognitive changes in patients with solid tumors undergoing chemotherapy treatment and their health-related quality of life outcomes? A systematic review. *Psychooncology* 26:1422-1432, 2017
- [6] Dyk, K. V., Crespi, C. M., Petersen, L., & Ganz, P. A. (2019). Identifying Cancer-Related Cognitive Impairment Using the FACT-Cog Perceived Cognitive Impairment. *JNCIcancerspectrum*, 4(1),pkz099. <https://doi.org/10.1093/jncics/pkz099>
- [7] Harvey, P. D. (2022). Domains of cognition and their assessment. *Dialogues in clinical neuroscience*.
- [8] Hajj, A., Salameh, P., Khoury, R., Hachem, R., Sacre, H., Chahine, G., ... & Khabbaz, L. (2020). Psychometric Properties of the 37-item Functional Assessment of Cancer Therapy-Cognitive Function (FACT-Cog) scale in Cancer Patients.
- [9] Hoekstra, R., Vugteveen, J., Warrens, M. J., & Kruijnen, P. M. (2019). An empirical analysis of alleged misunderstandings of coefficient alpha. *International Journal of Social Research Methodology*, 22(4), 351-364.
- [10] Horowitz T. S., Suls J., Treviño M. (2018). A Call for a Neuroscience Approach to Cancer-Related Cognitive Impairment. *Trends Neurosciences* 41 (8), 493-496.
- [11] [10.1016/j.tins.2018.05.001](https://doi.org/10.1016/j.tins.2018.05.001).

- 
- [12] Janelins, M. C., Kohli, S., Mohile, S. G., Usuki, K., Ahles, T. A., & Morrow, G. R. (2011, June). An update on cancer-and chemotherapy-related cognitive dysfunction: current status. In *Seminars in oncology* (Vol. 38, No. 3, pp. 431-438). WB Saunders.
- [13] Joly F, Lange M, Rigal O, et al (2012) French version of the functional assessment of cancer therapy-cognitive function (FACT-Cog) version 3. *Support Care Cancer* 20:3297-3305. doi:10.1007/s00520-012-1439-2
- [14] Kline, T. J. (2017). Sample issues, methodological implications, and best practices. *Canadian Journal of Behavioural Science/Revue canadienne des sciences du comportement*, 49(2), 71.
- [15] Lange, M., & Joly, F. (2017). How to identify and manage cognitive dysfunction after breast cancer treatment. *Journal of Oncology Practice*, 13(12), 784-790.
- [16] Kim H., Jung S., Kim H., Abraham I. Systematic review of longitudinal studies on chemotherapy-associated subjective cognitive impairment in cancer patients. *Psycho-Oncology*. 2020;29:617-631. doi: 10.1002/pon.5339.
- [17] Myers, J. S. (2013, November). Cancer-and chemotherapy-related cognitive changes: the patient experience. In *Seminars in oncology nursing* (Vol. 29, No. 4, pp. 300-307).
- [18] WB Saunders. Országhová, Z., Mego, M., & Chovanec, M. (2021). Long-term cognitive dysfunction in cancer survivors. *Frontiers in molecular biosciences*, 8, 770413.
- [19] Park, J. H., Bae, S. H., Jung, Y. S., & Jung, Y. M. (2015). The psychometric properties of the Korean version of the functional assessment of cancer therapy-cognitive (FACT-Cog) in Korean patients with breast cancer. *Supportive Care in Cancer*, 23, 2695-2703.
- [20] Schmidt, John E.; Beckjord, Ellen; Bovbjerg, Dana H.; Low, Carissa A.; Posluszny, Donna M.; Lowery, Amy E.; Dew, Mary Amanda; Nutt, Stephanie; Arvey, Sarah R.; Rechis, Ruth (2016). *Prevalence of perceived cognitive dysfunction in survivors of a wide range of cancers: results from the 2010 LIVESTRONG survey*. *Journal of Cancer Survivorship*, 10(2), 302-311. doi:10.1007/s11764-015-0476-5
- [21] Sürücü, L., & Maslakci, A. (2020). Validity and reliability in quantitative research. *Business & Management Studies: An International Journal*, 8(3), 2694-2726. Tyupa, S. (2011).
- [22] A theoretical framework for back-translation as a quality assessment tool. *New Voices in Translation Studies*, 7(1), 35-46.
- [23] Von Ah D., Habermann B., Carpenter J.S., Schneider B.L. Impact of perceived cognitive impairment in breast cancer survivors. *Eur. J. Oncol. Nurs.* 2013;17:236-241. doi: 10.1016/j.ejon.2012.06.002
- [24] Von Ah D., Tallman E.F. Perceived Cognitive Function in Breast Cancer Survivors: Evaluating Relationships With Objective Cognitive Performance and Other Symptoms Using the Functional Assessment of Cancer Therapy–Cognitive Function Instrument. *J.PainSympt.Manag.* 2015;49:697-706 doi: 10.1016/j.jpainsymman.2014.08.012
- [25] Wagner L, Sweet J, Butt Z et al (2009) Measuring patient self-reported cognitive function: development of the functional assessment of cancer therapy–cognitive function instrument. *J Support Oncol* 7:W32-W39.
- [26] Wild, D., Grove, A., Martin, M., Eremenco, S., McElroy, S., Verjee-Lorenz, A., & Erikson, P. (2005). Principles of good practice for the translation and cultural adaptation process for patient-reported outcomes (PRO) measures: report of the ISPOR task force for translation and cultural adaptation. *Value in health*, 8(2), 94-104.