

Validation of Metacognitions Questionnaire in Indian Context

Savita Gupta, Liyaqat Bashir

Abstract: *The present study was intended to test the appropriateness of the metacognitions questionnaire by Wells & Cartwright-Hatton (2004) in Indian context especially for university students. The CFA and Cronbach's Alpha was carried out in order to examine the validity and reliability of the questionnaire in Indian context. Based on a sample of 275 respondents empirical evidence determine an excellent fit of multidimensional structure of 22 items metacognitive beliefs questionnaire in the Indian context and the internal consistency indices, alpha coefficient ($\alpha = 0.761$) is adequate for the entire metacognitive beliefs questionnaire. Present scale provides direct evidence for the unique identification and psychometric properties of the metacognitions questionnaire in the Indian context. This study has proved the suitability of the metacognitions to measure metacognitive beliefs of university students.*

Index Terms: *Confirmatory Factor Analysis, Metacognitions, Scale Validation, University Students.*

I. INTRODUCTION

John Flavell (1976) introduced the term metacognition which states that consideration of cognitive strategies and processes and individuals own awareness. He determined that students obtain capability to retrieve and store that may be useful in future. Individual can possess any existing information allied problem-solving and retrieve it when will be needed. Actually the concept metacognition means thinking about thinking or cognition about cognition. According to John Flavell describes that metacognition refers to control of cognition and knowledge about cognition. The origin of metacognition comes from meta which means beyond. Metacognition has different forms which contains knowledge about how and when to use specific approaches for problem solving or for learning. It also denotes self-regulation, self-representation and self-monitoring process. Which are observed basic elements of human mind. It also includes ability to monitor learning, memory capabilities and study skills. Moreover, metacognition states the learners automatic awareness their ability and own knowledge to manipulates, control and understand their own cognitive processes.

Metacognition assists pupils to select the accurate intellectual instrument for the assignment which shows the serious character in fruitful knowledge. Scanlon (2012) described that it is a capability with the learner to usage past

Revised Manuscript Received on December 22, 2018

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information to deal a method for impending a activity which is related to education, modify one's approach as needed, reflect on and evaluate results, and take essential steps to solve a problem. So, therefore metacognition relates greater intellectual capability to comprehend personal understanding which assists the student to resolve difficulties, assess personal information, judge rationally which assists a students to attain a specific aim. Moreover, it also assists a student to confirm that the education aim is being grasped. It is a basically means cognition about cognition which denotes second order cognitions like as reflections about actions, knowledge about knowledge, and thoughts about thoughts. Therefore if cognition contains remembering, understanding, perceiving, and so forth then metacognition includes thoughtful relates to oneself remembering, comprehension, perceiving, and so on. These different mental action or process of acquiring knowledge categorized metamemory, metacomprehension and metaperception with metacognition remaining the superordinate term. Metacognition entails dualistic mechanisms: knowledge of cognitive process and classification of cognitive process.

I. Knowledge of cognitive process refers to our thinking processes like as study habits, attention, self-memory, self-intelligence, self-concept of knowledge and so on. Furthermore, Metacognitive knowledge is our own understanding or our cognitive processes of how to standardize those procedures to improve learning. Several kinds of metacognitive knowledge are declarative knowledge (personal knowledge) refers to comprehend own abilities like as learner assessing own knowledge of the subject in a class. Another metacognitive knowledge are Procedural knowledge (Task Knowledge) refers to how learner observes the adversity of the assignment which is measurement, kind of task, and content. Therefore the last one conditional knowledge (strategic Knowledge) which refers to one's personal capacity for using approaches to acquire knowledge. Various researchers backing the assertion that trained pupils have conditional, procedural and declarative knowledge about cognition which generally increases performance. Various theorists like Alexander, & Garner (1989) and Brown, (1987) described that metacognition information seems initially and endures to grow partially during teenage years. Baker (1989) describes that young children have less knowledge about their own cognition then adults.

Regulation of cognitive processes composes every mechanism through which we regulate our thinking process like as reflecting, evaluating, repairing, testing, monitoring, planning, orientation and so on. Understanding, while regulating and monitoring cognition shows a noteworthy



character in the refinement and enlargement of metacognitive knowledge. Cognitive knowledge appears facilitate the capability to regulate cognition. The two are empirically associated and may be combined in the form of metacognitive theories, which are informal or formal structures for organizing and representing beliefs about knowledge. Investigators concede that monitoring capability develops performance in various means, containing well usage of intellectual means like as greater awareness of comprehension breakdowns, better use of strategies and attention. Moreover, various studies describe significant enhancement in knowledge while monitoring abilities and a comprehend of in what way to usage of these abilities are encompassed as portion of classroom education.

II. LITERATURE REVIEW

Metacognition can be described as "stable beliefs or knowledge about one's own cognitive system, and knowledge about factors that impact the functioning of the system; the regulation and awareness of the current state of cognition, and appraisal of the significance of thought and memories" (Wells, 1995). Research and theory in metacognition has progressed in the ranges of progressive and mental processes like perception, memory, learning, thinking (Narens, and Nelson 1990; Flavell, 1979), and has newly been familiarized as a center for treating and understanding cessation of purposeful functioning of cognition, emotions or behavior (Wells and Matthews, 1994, 1996). In the words of Peirce (2003) that metacognition as an appreciation of what skills and knowledge and it needs combined with the capability to create accurate conclusions about when and how to use different strategic knowledge to a specific condition and what one previously knows composed with accurate apprehension of the learning task and to do so reliably and efficiently. Students who are capable to recognize proper learning approaches in the suitable condition are using metacognition.

Metacognitive theory generally stipulates two subdivisions of metacognitive beliefs which are essential to the preservation of cessation of purposeful functioning of cognition, emotions or behavior; negative and positive metacognitive beliefs. Metacognitive beliefs in a positive way describe that knowledge of persons which clench around endure strategies that effect on internal states and cognition. These may contain beliefs like as "rumination will help me solve the problem" (Wells and Papageorgiou, 2001) or "worrying will help me get things sorted out in my mind" (Wells, and Cartwright-Hatton 1997). Such beliefs are conceptualized as central to its strategic selection and precursor to the origination of participating in negative behaviors such as harming yourself. Metacognitive beliefs in a negative way relates to the consequences and meaning of appealing in a known method of grapple and associated invasive feelings and thoughts. These may contain beliefs like as "Ruminating will damage my mind" (Wells and Papageorgiou, 2001) or "My worry is uncontrollable" (Wells, and Cartwright-Hatton 1997). Such beliefs are

related with an increase of negative oral activity that pays to fitting kindness on intimidation. So that persons have complication in swapping to ordinary threat-free status (Wells, 2000). Thus combination of metacognitive beliefs in negative and positive way enhances to the continuing of failure to operate or work well for the reason that the individual includes specific efforts both psychological and behavioral that makes information regarding a overall incapability to regulate emotions and thoughts in a preferred way (Wells, 2000).

III. METACOGNITIONS QUESTIONNAIRE

The questionnaire on metacognitions assesses the variances of a person in a selection of monitoring tendencies, decisions and metacognitive beliefs. It is a 30 item questionnaire. Exploratory and confirmatory factor analysis was used to measure construct validity. Generally, the fit indices recommended an adequate fit to a 5 construct model. EFA sustained a five-factor structure; the five factors are cognitive confidence, need to control thoughts, cognitive self-consciousness, negative beliefs and positive beliefs. It revealed good test-retest reliability, convergent validity and worthy internal consistency. The psychometric properties of metacognitions questionnaire recommend that the tool is a valued to the determination of monitoring tendencies, judgments and beliefs.

The questionnaire on metacognitions by Wells & Cartwright-Hatton (2004) has been constructed and validated in the western cultural context. Review of related literature shows that there is growing need of research to been conducted in India pertaining to measuring metacognitive beliefs among university students in Indian context. There is need for the questionnaire to be validated which measures metacognitive beliefs among university students of Jammu and Kashmir, India. This inspires and motivates the investigator to test the appropriateness of the questionnaire in the Indian context especially among university students.

IV. OBJECTIVES OF THE STUDY

- A.To test the construct validity of the metacognitions questionnaire using confirmatory factor analysis.
- B.To test the reliability of metacognitions questionnaire by using internal consistency method.

V. METHOD

A. Respondents

The sample constitutes of the students of 5 different universities in J & K, India. The sample of the research was 275 university students (i.e N= 275), 130 females and 145 male, who were chosen via convenience sampling approach. Primarily, two divisions Kashmir and Jammu were selected. Then universities in the divisions were selected on the basis of streams. From these universities numerous students were selected up conveniently as respondents. The students are in the age range of 21-25 pursuing



master's degree from various universities of Jammu and Kashmir. There was an equal distribution of students from various streams like as management & commerce, sciences & engineering, and arts & humanities, by using convenience sampling approach. The higher

authorities were contacted and the purpose of study was conferred. Respondents were inspired to with humble request to fill the questionnaire. In the primary study 405 questionnaires were distributed and only 330 respondent's responses were returned. The reverted questionnaires were sensibly examined for inappropriate values and outliers, respondent fairness, completeness (Black, et al. 2010). Fifty five questionnaires were excluded due to unfilled and misplaced data. The scoured and final dataset confined of 275 responses out of 275 students, 145 male and 130 females.

B. Instrument

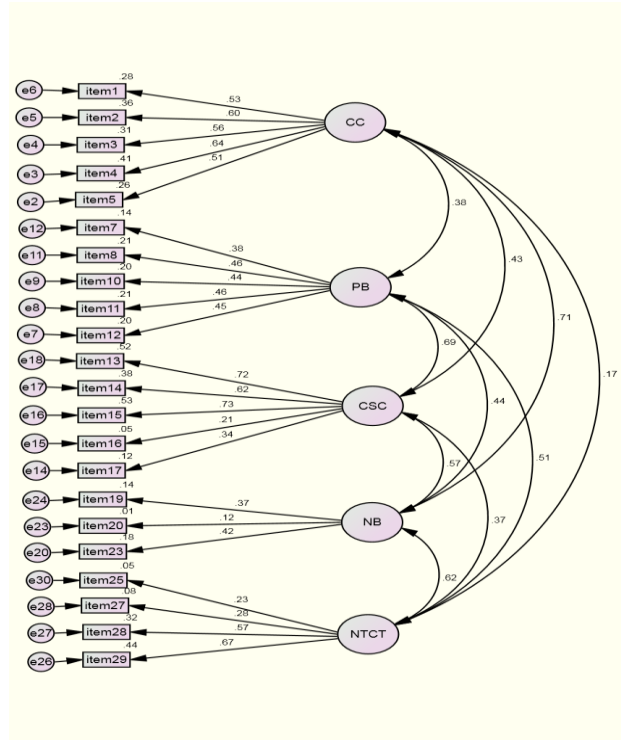
The metacognitions questionnaire developed by Wells & Cartwright-Hatton (2004) has been used to collect data from 275 respondents. The metacognitions questionnaire consists of a total of 30 items with six dimensions such as positive beliefs, cognitive confidence, cognitive self-consciousness, need to control thoughts, negative beliefs.

VI. RESULTS

A. Confirmatory Factor Analysis

Sorbom & Joreskog (2004) describes that CFA is different case of SEM which is identified as linear structural association model. The CFA was tested using SPSS Amos 19 version to the 05 factors. The examination of the outcomes concedes that certain values are lower the ranges of values. After the inspection of the SMC, variances and modification indices eight statements were deleted. The final indices of the model were Chi-square=274.197 ($p>0.01$), AGFI=.90, GFI=.918, CFI=.902, RMSEA=.037 and CMIN/DF=1.378). Figure 1 affords a comprehensive view of the CFA model.

Figure 1. Confirmatory Factor Analysis



B. Reliability Statistics

Reliability states to the quality of being trustworthy or of performing consistently well. The notion of reliability proposes both consistency and stability of measurement. Internal Consistency Reliability was used to assess the consistency of results across the items within the test. The Cronbach's alpha for the final set of items was found out to be ($\alpha = 0.761$) which is given in table 1. Moreover the thumb rule stated by George & Mallery (2003) for the interpretation of Alpha is 0.7 to 0.8 has acceptable internal consistency. So the estimation of reliability of the Metacognitions scale has acceptable internal consistency.

Table 1: Reliability Statistics

Cronbach's Alpha	Number of items
.761	22

VII. DISCUSSIONS

The purpose of present investigation was to validate an instrument of metacognitions questionnaire constructed by Wells & Cartwright-Hatton (2004). The aim of this study was to explore psychometric properties of metacognitions questionnaire. CFA was accomplished to authorize the factor structure of metacognitions questionnaire. The examination of the outcomes concedes that certain values are lower the ranges of values. After the inspection of the SMC, variances and modification indices eight statements were deleted. Empirical evidence demonstrates an excellent fit having final set of 22 items. The result of confirmatory factor analysis of the metacognitions questionnaire has given admirable results and affords support to the metacognitions questionnaire by Wells & Cartwright-Hatton (2004). Consequently, psychometric properties of the metacognitions questionnaire are highly reliable and valid to assess metacognitive beliefs of university students in Indian context. So, according to George & Mallery (2003) there exists good degree of

Published By:

Blue Eyes Intelligence Engineering & Sciences Publication



internal consistency. This study has proved the suitability of the metacognitions to measure metacognitive beliefs of university students.

So, finally scale passed all criteria like reliability, validity. This research shall offer academician's ample necessary mechanism for the experimental examination on the concept of metacognitions which will ultimately help in bringing a fresh empirical perspective to the notion of metacognitive beliefs.

VII. LIMITATIONS AND FUTURE RESEARCH

The confirmatory factor analysis was carried out on quite sample size specific. So to get well outcomes a larger sample size is desirable for confirmatory factor analysis. The questionnaire is used to measure the metacognitive beliefs among university students only. The questionnaire does not measure the metacognitive beliefs among adolescence. This gap need to be covered too because the concept belief in cognition is not age specific or limited by age. Future study necessity pursues to regulate this scales suitability for practice with other sample sizes. Moreover, qualitative research can be piloted established on this scale

to expose the causes in the background on positive and negative beliefs. In addition future study can be piloted to conclude the association of metacognitive beliefs with academic performance of students.

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