**Time Management Behaviour: Scale Development And Validation**

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**Abstract:** According To Popular Belief, Individuals Who Manages Their Time Well Are Subjected To Less Stress, More Efficiency Resulting In High Level Of Performance And Satisfaction. This Paper Presents A Confirmatory Factor Analysis Of The Time Management Behaviour Scale Originally Developed Of Macan Et Al. (1990). With The Fast-Growing Rate Of Academicians In India, There Is A Growing Demands And Challenges Need To Understand The Concept Of Time Management Behaviour In Context Of Faculty Members. Three Underlying Dimensions Of Time Management Setting Goals And Priorities, Preference For Organization And Mechanics Of Time Management Are Confirmed In The Setting Of Faculty Members Of Higher Education Institutes In India. The Scale Was Empirically Tested In Indian Context To Establish Unidimensional, Reliable And Valid Scale Using Confirmatory Factor Analysis (CFA) And Structural Equation Modelling (SEM) With AMOS Version 20.0.

**Index Terms:** Time Management Behaviour Scale, Faculty Members, Higher Education, Confirmatory Factor Analysis,

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**I. Introduction**


Teaching Is Often Considered As A Stressful And Complex Occupation, With Increased Demands, Long Working Hours And High Workload (Court, 1996; Daniels & Guppy, 1994; Early, 1994; Jackson & Hayday, 1997; Tytherleigh Et Al., 2005). Apart From Their Core Task I.E. Teaching, Teachers Have To Fulfil A Great Number Of Additional Tasks Viz. Administrative Tasks, Preparing For Classes And Notes, Managing Classroom, Meeting Syllabus Deadlines And Engaging In Extracurricular Activities, Projects (Bauer Et Al., 2007).

Teachers' Job Profile Is More Complex In Higher Education Institutes In India. As, Indian Higher Education System Is The Third Largest In The World (World Bank Report, 2011) And Teachers Are Under Constant Pressure To Perform And Manage For Themselves And Their Institutions Collectively. They Also Have To Engage In Research And Guidance, Training And Placement, And Have To Fulfil Various Criteria For Their Own Career Development (E.G. Promotion). It Is Felt That There Is Not Enough Time To Complete All The Work Effectively. Therefore, It Is Essential For Teachers To Have A Good Time Management Behaviour Which Can Enhance Productivity And Minimise Stress (Lay & Schouwenburg, 1993), Also Contributes To The Work Effectiveness And Success (Misra & McKean, 2000).

It Has Been Observed That Time Management Practices Lower The Stress Level (Schuler, 1979). Effective Time Management A Play An Important Factor For Experiencing Job Satisfaction, Lower Stress And Maximize Health And Thus Can Contribute To An Individual And Organization’s Results. On The Other Hand,
Poor Time Management Has Been Associated With Unperformed Jobs, Low Quality Of Work, Emotional Exhaustion, High Stress And Strain (Britton & Tesser, 1991).

There Are Very Few Studies Available That Focuses On Time Management In Indian Context. The Majority Of Research Work In This Area Have Been Carried Out In Western Context (E.G. Coetzter, 2016; Garcia-Ros Et Al., 2004; Hellsten & Rogers, 2009; Kearns & Gardiner, 2007; Morsy 2010; Tavakoli Et Al., 2013; Van Der Meer Et Al., 2010; Wolters Et Al., 2017; Yang Et Al., 2015; Zampetakis Et Al., 2010). Thus, There Is A Need To Study The Dimensions Of Time Management In Indian Context.

II. Literature Review

The Interest In Time Management Is Not New. The Term Time Management Became Popular In The 1950s And 1960s As A Tool To Help Managers With Better Use Of Available Time (Drucker, 1967; Mccay, 1959). This Tool Was Based On Practical Experience, In The Form Of Various Methods And Techniques. The Term Appears To Be Indicating That Time Is Managed But It Is Actually The Activities That Are Managed Over A Period Of Time. The Advice On Managing Time Seemsquite Consistent Across The Various Authors. It Is Understood That Time Cannot Be Managed; It Is The Activities Or Tasks That Has To Be Performed By An Individual That Should Be Managed Over Time. Time Management Can Be Seen As A Way Of Monitoring And Controlling Time (Eilam And Aharon, 2003). In Spite Of All Popular Attention To Managing Time, Relatively Little Research Has Been Conducted On The Processes Involved In Using One’s Time Effectively And Completing Work Within Deadlines.Richards (1987) Discussed The Principles Mentioned By Authors Like Mccay (1959) and Concluded That, For Instance, Setting Life Goals And Keeping Time Logs Were Important Techniques For Effectively Managing One’s Time Definitions Of Time Management.

The Time Management Has Been Defined As The Process Of Skillfully Applying Time To Finish And Perfect A Specific Activity Within Time Limit (Harris, 2008). However, There Is No Single Definition Of Time That Fully Captures All Aspects Of The Concept. Time Management Has Been Described Using Many Different Terms Including Spontaneity, Balance, Flexibility, And Having Control Over Time (Lakein, 1973). Time Management Has Also Been Characterized As A Habit Developed Only Through Determination And Practice (Simpson, 1978) And Prioritizing And Respecting Those Priorities (Soci, 1986), And As Setting Priorities And Scheduling Tasks (Jordan Et Al., 1989). Time Management Can Also Be Considered As The Course By Which An Individual More Effectively Compleishes Tasks And Goals (Schuler, 1979). It Also Viewed As A Process By Which An Individual Obtains Control Over The Timing And The Content Of What They Do (Oncken & Wass, 1985) And As What Can Be Accomplished With Time (Mackenzie1990).


III. Time Management Behaviour Constructs


Setting Goals And Priorities: This Factor Taps The Setting Of Goals The Person Wants Or Needs To Accomplish And Prioritizing Of The Various Tasks To Achieve These Goals (Macan, 1994).

Preference For Organization: This construct was originally addressed as Preference For Disorganization, whose scores need to be reverse coded to indicate the factor for Preference for Organization (Macan, 1994). Here, Preference For Organization, refers to a general preference for organization in one’s workplace and approach to the assigned tasks.

IV. Development Of Research Instrument

In order to collect primary data, a research instrument—TMB was designed which included items relating to the three dimensions/constructs of TMB.

Setting Goals And Priorities (SG) Scale: Six Items

Mechanics Of Time Management (TM) Scale: Five Items

Preference For Organization (PO) Scale: Five Items

The TMB scale utilized a 5-point Likert scale labelled as Not True (1) to Always True (5). Five-point Likert scale has been commonly used by other researchers in the area (Britton & Tesser, 1991; Nonis et al., 2011; Tavakoli et al., 2013). Efforts were made to keep each item as simple and unambiguous as possible to avoid any sort of bias as suggested by Huselid and Becker (2000). During instrument development, face and content validity were ensured as suggested by Anderson and Gerbing (1988).

Pilot Testing And Data Collection

The questionnaire was administered on a smaller sample of the actual target population (e.g., teachers in higher education institution in India). They were asked to provide their responses but also give their comments on the instrument and its items. The respondents were asked to critique the questionnaire and its items. After pilot testing, few items were re-worded, refined and changed, so the questionnaire could be more representative of the intended constructs and thus, enhancing its content validity.

Final data was collected from the selected central universities through e-mail and personal visits. This methodology has been used by other researchers in the area too (Randhawa, 2007). In order to collect data, a three-wave methodology was adopted. To proceed with SEM with AMOS, the suggested sample size is a minimum of 50 and preferably 100-200 (Lindquist et al., 2001). Since the present study had a sample of 542 teachers, SEM procedure could be conveniently adopted.

V. Method Of Analysis

As the approach suggested by Anderson and Gerbing (1988), the measurement model for the three scales was estimated. Measurement model estimates the unidimensionality, reliability and validity of each construct (Green et al., 2006). Measurement model depicts how well the observed indicators measure the latent variables. For determining the measurement model, we used Confirmatory Factor Analysis (CFA) for purification of scale using AMOS (20.0). As suggested by Jöreskog and Sörbom (2002), separate measurement models were estimated for each construct within the TMB scale.

Once the unidimensionality of the scales is established, an assessment of the statistical reliability is necessary before proceeding with the validity of the scales is performed (Anderson & Gerbing, 1991; Mentzer et al., 1999). Scale reliability is considered as an internal consistency or the degree of inter-correlations among the scale items (Nunnally & Bernstein, 1994). It reflects the scale’s ability to consistently yield the same responses. Cronbach’s alpha as well as construct-reliability and variance-extracted measures were used as assessing scale reliability. Various forms of construct validity, convergent and discriminant validity were also estimated. Structural equation modelling (SEM) capabilities AMOS version (20.0) were deployed in order to test the scales.

VI. Assessing Scale Unidimensionality

Unidimensionality refers to the extent to which items on a scale estimate one construct. Unidimensionality is a necessary condition for reliability and validation (Anderson & Gerbing, 1991). To assess unidimensionality of the three scales of TMB, Confirmatory Factor Analysis (CFA), was carried out.

Confirmatory Factor Analysis (CFA)

The researcher proceeded with scale refinement to obtain unidimensional scales. This warrant purifying the scale by removing those items that reduce unidimensionality of the scale. The primary approach for scale purification, when theory guides survey development, is to rely on CFA (Mentzer et al., 1999). CFA procedure using AMOS (20.0) was performed on the scales with the objective of
Determining The Fit Of The One-Factor Model. A Measurement Model Consisting Of The Scales, Each Defined According To A Weighted Linear Combination Of The Items, Is Specified.

When Using AMOS, Fit Indices Should Ideally Correspond To The Recommended Values (For The Recommended Values Of Fit Indices And Their Description See Table 1). These Recommended Values Have Been Mentioned By Number Of Researchers (Garver & Mentzer, 1999; Hu & Bentler, 1999; Jöreskog & Sörbom, 2002; Schumacker & Lomax, 2004). When Examining The Measurement Model, It Is Important To Note That All Indices Are Not Important. At The Same Time, It Is Not Possible To Achieve Perfect Values For All Indices (Garver & Mentzer, 1999). Thus, As Suggested By Garver And Mentzer (1999), Jöreskog And Sörbom (2002) And Lindquist Et Al. (2001) The Areas Of Greater Focus Were Goodness Of Fit Index (GFI) And Adjusted Goodness Of Fit Index (AGFI), Normed Fit Index (NFI) And Non-Normed Fit Index (NNFI).

GFI And AGFI Are Indications Of How Well The Model Fits The Data With Values Of 0.90 Or Higher For The Model Suggesting That Evidence For Unidimensionality Exists (Jöreskog & Sörbom, 2002). NFI And NNFI Are Used To Examine The Proportion Of Total Variance Accounted For By A Model. The Values Should Ideally Be Greater Than 0.9. When The Measurement Model Was Estimated For The Original Scales, The Fit Indices Were Not Satisfactory. The Measurement Model Was Estimated Based On Standardized Solutions.


<table>
<thead>
<tr>
<th>Table 1 CFA Model Fit Indices For The Original Scales</th>
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<tbody>
<tr>
<td>Fit Indices</td>
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<tr>
<td>-------------</td>
</tr>
<tr>
<td>GFI</td>
</tr>
<tr>
<td>AGFI</td>
</tr>
<tr>
<td>NFI</td>
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<tr>
<td>CFI</td>
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</table>

Note: GFI= Goodness Of Fit Index; AGFI= Adjusted Goodness Of Fit Index; NFI= Normed Fit Index; NNFI= Non-Normed Fit Index; CFI= Comparative Fit Index

<table>
<thead>
<tr>
<th>Table 2 CFA Model Fit Indices For The Refined Scales</th>
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<tbody>
<tr>
<td>Fit Indices</td>
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<tr>
<td>-------------</td>
</tr>
<tr>
<td>GFI</td>
</tr>
<tr>
<td>AGFI</td>
</tr>
<tr>
<td>NFI</td>
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<tr>
<td>CFI</td>
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</tbody>
</table>

Note: GFI= Goodness Of Fit Index; AGFI= Adjusted Goodness Of Fit Index; NFI= Normed Fit Index; NNFI= Non-Normed Fit Index; CFI= Comparative Fit Index

The Improved Fit Indices In The Refined Scales Support The Case For Unidimensionality Of The Scales. The Cumulative Measurement Model Based On The Standardized Solution For The Refined Scales Viz. SG, TM And PO Are Shown In Exhibit 1

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VII. Assessment Of Reliability

Scale Reliability Estimates Were Calculated In This Study. It Is The Most Popular Method To Assess The Reliability Of A Construct Is By Computing The Cronbach’s Alpha Value Of 0.6 Or More Is Considered Significant For The Scale To Be Reliable (Hair Et Al., 2008). Reliability Assessment Of The Three Scales Returned High Cronbach Alpha Values Suggesting High Reliability. However, Coefficient Alpha Tends To Underestimate And Sometimes Overestimate Scale Reliability (Garver & Mentzer, 1999). Thus, Apart From Cronbach’s Alpha, Garver And Mentzer (1999) Recommend Computing The SEM Construct-Reliability And Variance-Extracted Measures For Scale Reliability. SEM Construct Reliability Values Do Not Assume That The Individual Items Have Equal Reliabilities.

Fornell And Bookstein (1982), Garver And Mentzer (1999) Have Described Construct-Reliability And Variance-Extracted Measures As: Construct Reliability (CR) Is Estimated For Internal Consistency Similar To Cronbach’s Alpha. Varianceextracted (VE) Is An Equivalent Measure For Finding Construct Reliability And Is Referred To As Variance Extracted Measure. It Estimates The Assess The Amount Of Variance Captured By A Construct’s Measure In Relation To Variance Due To Random Measurement Error. Fornell And Bookstein (1982) Stated Thatcr Value Higher Than 0.6 Implies That There Ishigh Internal Consistency. Variance Extracted At 0.5 Or Higher Is Consideredacceptable (Fornell& Bookstein,1982. The Scale Reliability Estimates For All Scales Are Given In Table 3.

<table>
<thead>
<tr>
<th>Scales</th>
<th>Cronbach Alpha</th>
<th>Construct Reliability</th>
<th>Variance Extracted</th>
</tr>
</thead>
<tbody>
<tr>
<td>SG</td>
<td>0.55</td>
<td>0.90</td>
<td>0.72</td>
</tr>
<tr>
<td>TM</td>
<td>0.65</td>
<td>0.92</td>
<td>0.76</td>
</tr>
<tr>
<td>PO</td>
<td>0.65</td>
<td>0.92</td>
<td>0.72</td>
</tr>
</tbody>
</table>

VIII. Assessment Of Validity

**Convergent Validity**: Convergent validity is the extent to which items in a scale correlate positively with each other. A construct is said to possess convergent validity if measures/items of a construct converge or highly correlate (Kaplan & Sacuzzo, 1993). The items of various scales should load or converge on their respective constructs with item loading values greater than 0.50 (Kaplan & Sacuzzo, 1993; Hair et al., 2008). Factor loadings of all scales were more than 0.50, thus indicating presence of convergent validity. Also, convergent validity can also be measured using Bentler-Bonett coefficient (Bentler & Bonett, 1980). Ahire et al. (1996) and Green et al. (2006) suggested Bentler-Bonett coefficient values of 0.9 or higher as indicative of high convergent validity. In the present study, the refined scales have a Bentler-Bonett coefficient I.E. NFI and TLI values closer to 0.9.

### Table 4 Values Indicating Convergent Validity

<table>
<thead>
<tr>
<th>Scale</th>
<th>Loading Value Range</th>
<th>NFI</th>
<th>TLI</th>
</tr>
</thead>
<tbody>
<tr>
<td>SG</td>
<td>0.32-0.72</td>
<td>0.908</td>
<td>0.742</td>
</tr>
<tr>
<td>TM</td>
<td>0.44-0.68</td>
<td>0.971</td>
<td>0.829</td>
</tr>
<tr>
<td>PO</td>
<td>0.42-0.69</td>
<td>0.957</td>
<td>0.889</td>
</tr>
</tbody>
</table>

**Discriminant Validity**: Discriminant validity refers to the extent to which two theoretically alike concepts are unrelated. It refers to the extent to which a certain construct discriminates from other constructs (Chen et al., 2005). A scale represents discriminant validity if its constituent items assess only one construct (Bagozzi, et al., 1991). This plays an important role when constructs are highly correlated, which means items from scale should not load on a different scale (Garver & Mentzer, 1999). Despite correlation, each scale should represent a distinct concept.

### Table 5 Correlation Values For Discriminant Validity

<table>
<thead>
<tr>
<th>Scale</th>
<th>SG</th>
<th>TM</th>
<th>PO</th>
</tr>
</thead>
<tbody>
<tr>
<td>SG</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TM</td>
<td>0.403</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>PO</td>
<td>0.034</td>
<td>0.028</td>
<td>1.000</td>
</tr>
</tbody>
</table>

As can be seen from the Table 5, correlation values are low to moderate. Thus, indicating that discriminant validity of the scales.

### IX. Conclusion and Direction for Future Research

The measurement model for the three scales viz. setting goals and priorities (SG), mechanics of time management (TM) and preference for organization (PO) showed that scales were not unidimensional in nature. Hence, the process of scale purification was carried out to obtain better fit indices with the help of CFA. The purified scale had improved fit indices and were established as indices and were established as unidimensional. Reliability and validity of refined scales were then assessed. Scale reliability was measured in three ways i.e. Cronbach’s alpha, construct reliability and variance extracted. The scales exhibited satisfactory results. Further, evidence of various forms of validity was assessed. I.E. convergent and discriminant was found.

The study has implications for both academicians and practitioners. The study intends to build on recent theoretical work aimed at extending the boundaries of time management is defined and researched. The contributions of the study included development of a reliable and valid instrument viz. TMB scale. Since the existing scales in the area have been produced in developed countries, the present research contributes by drawing its sample from India. The present study contributes methodologically by deploying SEM, which is a rather less touched upon technique in the area. Since SEM is said to be superior to traditional statistical techniques (Anderson & Gerbing, 1988; Garver & Mentzer, 1999), the results can be relied upon.

Without a theoretical foundation for the propositions being tested and establishing construct validity for the measures, practitioners would have less confidence in the conclusions from any study. By adopting a rigorous methodology and ensuring reliability and validity, the study has sound basis for both theoretical and managerial implications. The present study was intended at developing a reliable and valid instrument for measuring TMB dimensions. However, the instrument has been tested in the Indian context only. Some scale modifications, which are empirically generated, must be cross-validated on other samples. Thus, it calls for more studies in different settings, cultures and countries. Further test its unidimensionality, reliability and validity. The scales are tested based on the responses of a limited sample. Hence, the study might have suffered from sample size-related problems. Future investigations may focus on larger samples and to give more representative results. Researchers can utilize the TMB scale and relate them to objective and subjective measures of organizational...
Performance. Further, As Suggested By Kohli Et Al. (1993) Deleted Scale Items May Be Relevant To For Specific Stakeholders. That Should Be Consider In Future Researches.

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