

Purifying a Television Viewing Measure for Use in Consumer Socialization Research: An Exploratory and Confirmatory Factor Analysis Approach

Eric V. Bindah*, PhD Scholar
University of Malaya
Department of Marketing
Faculty of Business & Accountancy Building
50603 Kuala Lumpur, Malaysia
**Corresponding Author: bindahe@yahoo.co.uk*
Phone: +6 012 679 5045

Prof.Dr.MdNor Othman
Professor and Head of Marketing Department
University of Malaya
Faculty of Business & Accountancy Building
50603 Kuala Lumpur, Malaysia

ABSTRACT

This paper advances an argument in favour of conducting and reporting confirmatory factor analyses (CFA) on existing and previously validated scale, and reporting the findings of those analyses in published research. Using a combination of exploratory and confirmatory factor analytic approaches, this research replicates a television viewing measure commonly used in consumer socialization research. Initially, an exploratory factor analysis (N=956.) evaluated two solutions, ranging from 1 to 2 factors. Next, a confirmatory factor analyses, using the sample (N=956), examined the two-factor model identified by the exploratory factor analysis. A number of indices were used to evaluate model fit, and these indices demonstrated that the model identified in the exploratory analysis had the most adequate fit. A confirmatory factor analysis of the factor structure of the adapted television viewing scale was conducted to assess whether the scale's purported 2 factors emerged. The findings of alternative model comparison converge with the results obtained from factor



analysis, which demonstrated that television viewing constructs performed better when modeled as a disaggregated two-factor structure. Overall, the required reliability and validity assessment demonstrated strong support for satisfactory convergent validity and discriminant validity, and proved to fit the data even better. These analyses serve as a valuable tool for both instructors and researchers to assess young adults' television viewing in consumer socialization research in an eastern cultural background.

Keywords: *television viewing, exploratory factor analysis, confirmatory factor analysis.*

INTRODUCTION

A very interesting research by Levine et al. (2006), argues that factor analysis is less frequently used on existing scales, with researchers only reporting scale reliability. This is due to the fact that in most cases, it is assumed that the particular instrument used has been validated elsewhere, and thus does not require the use of factor analysis. This is unfortunate, and the view that a once-validated scale can or should be treated as an always-valid scale is neither reasonable nor consistent with good scientific practice.

This article is in support of the work conducted by Levine et al. (2006) where the authors explained that in practice, many researchers believed that a particular instrument used for a study should not be factor analyzed "validated," "standardized," or "published" scales, arguing that if the scale is subjected to factor analysis and items are dropped, then findings are based on different measures, and cross-study comparisons are not possible. That is, some believe that the practice of assessing a measurement model inhibits valid cross-study conclusions (Levine et al., 2006). The researchers argue that this reasoning may be faulty, as factor analyzing existing scales and discarding problematic items is a desirable practice that should be both accepted and encouraged by editors or reviewers.

Levine et al. (2006) explained that the extent to which a scale remains valid across applications is an issue of measurement invariance (or lack thereof), which means that a measure retains its factor structure across different applications and samples.

The extent to which a scale has invariance across researchers, time, settings, and participants is best thought of as an empirical question (Levine et al., 2006). Recent investigations of measurement invariance show that previously validated measures often do not generalize across populations (e.g., Byrne and Watkins, 2003; Hui and Triandis, 1989; Lubke, et al., 2003; Wichert, Dolan, and Hessen, 2005).

Among the reasons that measures may not be invariant are that the meaning of the construct varies between different groups of respondents, methods of measurement and response may differ, and the meanings of the specific items used to measure the constructs may vary (Byrne and Watkins, 2003). One readily identifiable source of difference in communication research is attributable to subtle changes in item wording from study to study. Minor changes in item wording are made to fit the needs of a specific research project (Levine et al., 2006). The purpose of this study is to validate a television viewing scale commonly used in consumer socialization research.

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A REVIEW: RESEARCH ON TELEVISION VIEWING MEASURE IN CONSUMER SOCIALIZATION

No one questions that mass media influence our lives in postmodern society because mass media are ubiquitous. How mass media exert their political, social, psychological and behavioural effects on media audiences is the central concern of media effects scholarship. A tradition of mass communication research examines mass media's contribution to the audience's conceptions and perceptions of social reality that in turn guide people's behaviour. The tradition can also be considered as a social cognitive perspective of mass

82 communication. It is represented by the cultivation analysis of Gerbner et al. (2002) and
83 Bandura's (2002) social cognitive theory of mass communication.

84 Television viewing was operationally defined as young adult's frequency of viewing
85 specific program categories (Churchill and Moschis, 1979). In this study, young adults'
86 media use was measured with the "weekly" method practiced by mass communication
87 scholars (e.g., Perse and Dunn, 1998). This method focus moves respondents from the almost
88 impossible task of trying to estimate the complex effects of mass media on their lives to the
89 simpler task of merely reporting what they did throughout the week.

90 Moschis and Churchill (1978) offered a general conceptual framework of
91 socialization is outlined to serve as a blueprint for discussing variables and hypotheses in the
92 specific context of consumer socialization. In their study, the authors examined the
93 development of several consumption-related skills as a function of variables derived from
94 sociological and developmental theories of socialization. Seven items were used to measure
95 adolescent's frequency of viewing specific program categories on a 5-point Likert scale
96 ranging from (1) "Everyday" to (5) "Never." The programmes categories included items
97 such as "movies" and "cartoons." The reliability coefficient of the scale was .67.

98 Moschis and Moore (1982) study examined the short-term and long-term effects of
99 television advertising on the development of specific consumption-related orientations in four
100 areas: consumer role perceptions, normative consumer activities, materialistic values, and
101 sex-role perceptions. In their research, one question was used to tap both advertising viewing
102 frequency and motivations for viewing. Television advertising viewing was a direct measure
103 of the adolescent's frequency of viewing TV commercials for the motives of gathering
104 information for consumer decision making as well as information about life styles and
105 behaviours associated with consumer products. Respondents were asked to indicate not only
106 whether they watch television ads for various reasons (motivations) but also how often they

107 watched ads for such reasons (frequency). They were asked to indicate on a four-point scale
108 ranging from (1) "Very often" to (4) "Never", the extent to which they watched television ads
109 for seven reasons, such as "to find out how good a product is" and "to find out what things to
110 buy to impress others." The measure of frequency along with motivations for interaction
111 with the medium was suggested by previous socialization researchers (e.g., McLeod and
112 O'Keefe, 1972) as a better measure of television advertising than gross measures of "time
113 spent with" or "frequency of viewing" television. Responses were summed across the seven
114 items to form a 7-to-28 point index, which had a reliability coefficient of 0.83. External
115 validation of this measure was performed by correlating it with television viewing frequency
116 as measured in previous studies (e.g., Churchill and Moschis, 1979). The correlation was
117 0.23 ($p = < 0.001$).

118 Moschis, Prahasto and Mitchell (1986) presented the results of a study designed to
119 test the effects of television advertising and interpersonal communications on the teenager's
120 consumer behaviour. In the study, television advertising viewing was a direct measure of the
121 adolescent's frequency of viewing TV commercials for the purpose of gathering information
122 for consumer decision making as well as information about lifestyles and behaviours
123 associated with consumer products. Respondents were asked to indicate on a four-point scale
124 ranging from (1) "Very often" to (4) "Never" about the extent to which they watched
125 television advertisement for seven reasons such as "to find out about things to buy to impress
126 others" and "to find out how good a product is." Responses were summed across the seven
127 items to form a 7-to-28 point index, which had a reliability coefficient of .80.

128 O'Guinn and Shrum (1997) presented the results of a two-study inquiry into a
129 particular type of consumer socialization: the construction of consumer social reality via
130 exposure to television. In the study, television viewing was assessed by having respondents
131 to indicate the number of hours per week they view particular program categories and then



summing across categories. These categories were soap operas, news, sports, movies, comedy, action/adventure, and drama. In terms of television viewing, the sample results were lower than the national average ($X = 23$ hours vs. 28 hours; Nielsen 1993).

Shrum, Burroughs and Rindfleisch (2005) have conducted a survey and an experiment to examine whether cultivation effects generalized to consumer values such as materialism and (2) whether these values judgments were also processed in a heuristic manner. The amount of television viewing was measured using a six-item Likert scale. In the survey the level of television viewing was measured by three items, namely “I often watch television on weekends,” “I spend time watching television almost every day,” and “I hardly ever watch television.” The reliability coefficient of the scale was .80.

In the same study, an experiment was conducted and undergraduate students ($n = 101$) participated for course credit in an experiment ostensibly about the relation between television program content and the ads in the programs (Shrum, Burroughs and Rindfleisch, 2005). Participants were told that the program was a movie edited for television and were randomly assigned to view either a segment of *Wall Street* (high materialism) or *Gorillas in the Mist* (low materialism). Pretests indicated that *Wall Street* was rated as more materialistic than *Gorillas in the Mist* ($M = 5.11$ vs. 1.62 , $f(61) = 12.45$, $p < .001$), but the programs did not significantly differ on interest, excitement, intelligence, or persuasiveness. Each program was 19 min. long, followed by 2 min. of ads. Immediately after viewing, participants listed the thoughts they had during viewing. They then completed scales that measured how much television they generally watch. They also completed a scale measuring the extent to which they were absorbed in the program. Participants were then debriefed.

Flouri (2000) has proposed an integrated model of consumer materialism. In the study, teenagers had to complete a questionnaire and were asked to answer a few questions that measured the amount of TV viewing. Two items on TV viewing included, “During an

average week, on how many days on average do you personally watch television?” and “On a day when you personally watch television for about how many hours do you view on average?” These were combined to provide a weekly viewing figure for each respondent.

METHODOLOGY

Sample and Procedures

A survey was conducted in the Klang Valley in Malaysia between January to March 2011. The target population were college students in public and private institution of higher learning. College students were chosen because generally they represent the future of a country as with a good education, they will become middle-class professionals at least. The questionnaire was given to 1,200 randomly selected university and college students. Of which, 956 completed questionnaires were usable for the data analysis.

Measurement of Constructs

In this section, the measurement of television viewing construct for the study is presented. This study adapted and modified the original scale from Churchill and Moschis (1979) which measured mass media use, particularly television viewing. The original scale consisted of various program categories, where respondents indicated on a 5-point Likert scale ranging from (1) ‘Never’ to (5) ‘Everyday’ how frequently they watched specific program categories. In the original study, these program categories were classified as national and local news, sports events, movies, variety shows, cartoons, police shows, and adventure shows. The reason for adapting the scale is because the scale has proved to be reliable in many studies of consumer socialization and mass media.

For the purpose of this study, the measurement scale from Churchill and Moschis (1979) was modified and adapted, by asking respondents “how many hours per week do they watched specific program categories. These program categories were classified as news,

sports events, movies, soap dramas/dramas shows, documentaries, comedy shows, action and adventure shows. For each programme category, we provided some of the most popular programmes aired by the national television stations, as a guide for respondents. Table 1 provides both original items and the items which were adapted for measuring the television viewing dimension.

Table 1: Items Adapted for Measuring Television Viewing Dimension

No.	<u>Original Items</u> <i>Churchill and Moschis (1979)</i> 5 point Likert scale ranging from 1 'Never' to 5 'Everyday'	No.	<u>Adapted Items</u> <i>Churchill and Moschis (1979)</i>
1.	Asking respondents <u>how frequently</u> they watched specific program categories These program categories were; • National and local news • Sports events. • Movies, • Variety shows. • Cartoons. • Police shows, and adventure shows.	1.	Asking respondents <u>how many hours per week</u> they watched specific program categories These program categories are; • News • Sports events • Movies • Soap dramas/dramas shows • Documentaries • Comedy shows • Action and adventure shows.

RESULTS

Respondent Characteristics

In this section, a general profile of the respondents is discussed. Table 2 presents the demographic characteristics of the respondents. Basically, of the 956 respondents who completed the questionnaire, 39.9% were males and 60.1% were females. In terms of age distribution, 63.6% of the samples were between the aged of 20-29 years old, followed by aged range of 19 years old and below (25.4%) and the remaining of the respondents 11% were aged 30 years old and above. The high percentage (63.6%) of respondents in the aged ranged of 20 to 29 years old, was explained by the fact that the subjects for this study were young adult consumers, and were therefore the main target for response.

In terms of ethnic group, the majority of the sample consisted of Malay respondents (52.2%), followed by Chinese respondents (28.2%) and Indians (10.7%) and other ethnic groups formed (9.0%) of the sample. The respondent characteristics in terms of ethnicity was generally consistent with the Malaysian Population Census (Department of Statistics and Economic Planning Unit, 2008). Consistent with the race composition of Malaysia, in terms of religious faith, the majority of the respondents endorsed Islam (58.2%), followed by Buddhism, (20.4%), Christianity (10.2%), Hinduism (9.4%) and others (2.0%).

It was observed that more than two third of the responding sample were single (87.8%), while (11.3 %) were married. It was noted that there were 7 divorcees involved in the sample group. In terms of education, the majority of the respondent in the sample group possessed a professional qualification (56.9%), and (32.2%) possessed a college diploma while 10.6% have obtained their SPM certificate.

In addition to that, it was also observed from the sample that 65.8% of respondents were earning an income ranged of less then RM 1,000 which formed the largest category, followed by those earning between RM 2,000 to RM 3,999 formed 14.1% of the respondents. 13.5% of the sample group were earning an income in the ranged of between RM 1, 000 to RM 1, 999. One possible reason for such findings was due to the predominantly younger aged respondents who were still in the early stage of their career path.

Exploratory Factor Analysis

In order to determine the underlying dimensions of the multi-item measurement scale, exploratory factor analysis was performed separately on the statements. The purpose for performing factor analysis was to determine whether the data could be condensed or summarised into smaller set of factors (Malhotra, 2004). The dimensions of the scales were examined by factor analysing the items using the principal components analysis with Varimax rotation. Minimum eigenvalues of 1.0 helped determined the number of factors or

224 dimensions for each scale (Hair et al. 2006). Although factor loadings of 0.30 to 0.40 was
 225 considered acceptable, however, factor loadings greater than 0.50 was generally necessary for
 226 practical significance (Hair et al. 2006). Hence, the items for a factor were retained only
 227 when the absolute size of their factor loading was above 0.50.

228 **Table2: Respondent Characteristics**



Items		Frequency	Percentage (%)
Gender	• Male	381	39.9
	• Female	575	60.1
Age	• below 19	243	25.4
	• 20-29	608	63.6
	• above 30	105	11.0
Ethnicity	• Malay	495	51.8
	• Chinese	270	28.2
	• Indians	102	10.7
	• Others	89	9.3
Religion	• Islam	556	58.2
	• Buddhism	195	20.4
	• Hinduism	90	9.4
	• Christianity	96	10.0
	• Others	19	2.0
Marital Status	• Single	839	87.8
	• Married	108	11.3
	• Widow/Widower/Divorcee	7	0.7
Education^a	• Primary School or Less	1	0.1
	• PMR/SRP/LCE	3	0.3
	• SPM/SPVM/MCE	101	10.6
	• College Diploma	307	32.2
	• Professional qualification/University degree.	544	56.9
Monthly Gross Personal Income	• Less than RM1,000	629	65.8
	• RM1,000 to RM1,999	129	13.5
	• RM2,000 to RM3,999	135	14.1
	• RM4,000 to RM5,999	50	5.2
	• RM6,000 to RM7,999	10	1.0
	• RM8,000 to RM9,999	3	0.3

229 Note: ^aPMR/SRP/LCE is equivalent to nine years of formal elementary and middle school education.

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Factor Analysis of Television Viewing Construct

The 7-item television viewing scale was factor analysed to identify the dimensionality. Similarly, principal component analysis with Varimax rotation method was used to assess the factor loadings of each item on different television viewing factors.

Table 3:Kaiser-Meyer-Olkin (KMO), Bartlett's Test and Total Variance Explained for Television Viewing Construct

Bartlett's Test of Sphericity Approx. Chi-Square= 1.6653, d.f=21, p=0.000 Kaiser-Meyer-Olkin Measure of Sampling Adequacy=0.826			
EXTRACTION SUMS OF SQUARED LOADINGS			
Factor	Eigenvalue	Percentage of Variance	Cumulative Percentage of Variance
1	3.090	44.141	44.141
2	1.031	14.731	58.872

Table 3 above presents the results of Kaiser-Meyer-Olkin (KMO), Bartlett's test of sphericity and total variance explained.

The Bartlett's test of sphericity was significant ($\chi^2= 1.6653$, $p = 0.000$) and the KMO value of 0.826 indicated that factor analysis was appropriate to be used for analysing the television viewing factor (Hair et al. 2006). The rotated factor matrix in Table 4, showed that two factors were identified to explain the underlying characteristics of television viewing factor. Together, the two factors accounted to more than 50% of the variance in responses. Factor 1 included four items related to television viewing with the factor loadings ranging from 0.693 to 0.772, accounting for 44.141% of the total variance. Only factor loading 0.5 and above were taken into consideration. Factor 2 consisted of three items ranging from 0.586 to 0.845, explaining 14.731% of the total variance.

251 **Table 4: Rotated Factor Analysis for Television Viewing Construct**

Items	Component	
	1	2
NEWS: About how many hours per week do you watch news on television?	0.274	0.612
SPORTS: About how many hours per week do you watch sports on television?	-0.043	0.845
MOVIES: About how many hours per week do you watch movies on television?	0.693	0.214
DRAMA: About how many hours per week do you watch drama series on television?	0.772	-0.097
DOC: About how many hours per week do you watch documentaries on television?	0.457	0.586
COMEDY: About how many hours per week do you watch comedy shows on television?	0.698	0.366
ACTION: About how many hours per week do you watch action movies on television?	0.732	0.339
Eigenvalues	3.090	1.031
Total Variance Explained (%)	44.141	14.731
Cumulative Variance Explained (%)	44.141	58.872

252 **Item Analysis and Scale Reliabilities**



253 The internal consistency reliabilities of the scale were next assessed after the factor
 254 analyses. Cronbach's alpha coefficient which was the most popular indicator of internal
 255 consistency was employed in the present study to assess the reliabilities of measurement
 256 scales adopted (Malhotra, 2004). By convention, an acceptable level of coefficient alpha to
 257 retain an item in a scale is at least 0.50 (Churchill, 1979). The present study was based on
 258 Churchill (1979) recommendation when assessing the reliability of each scale. The reliability
 259 analysis and descriptive statistics for individual items of the television viewing measure, are
 260 presented in Table 5.

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264 **Table 5: Descriptive Statistics and Reliability Analysis of Television Viewing Measure**

Scale Items	Mean	St. Dev.	Cronbach's Alpha
Television Viewing			0.779
NEWS: About how many hours per week do you watch news on television?	3.84	3.75	
SPORTS: About how many hours per week do you watch sports on television?	2.52	3.33	
MOVIES: About how many hours per week do you watch movies on television?	4.44	4.72	
DRAMA: About how many hours per week do you watch drama series on television?	3.96	4.58	
DOC: About how many hours per week do you watch documentaries on television?	2.65	3.15	
COMEDY: About how many hours per week do you watch comedy shows on television?	3.07	3.93	
ACTION: About how many hours per week do you watch action movies on television?	3.41	4.78	

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266 The mean scores for television viewing items varied from 2.52 to 4.44. Overall, the
 267 subjects in the present study were somewhat agreed with television viewing measures.
 268 Internal consistency for this 7-item scale was the highest ($\alpha = 0.779$).

269 In conclusion, the present study have demonstrated a high internal consistency
 270 reliability. Television viewing($\alpha = 0.779$) scored a high Cronbach's alpha value. The
 271 measure of alpha coefficients for the scale used was above 0.50. This indicated satisfactory
 272 reliability for the measure used. Subsequently, summated mean scores of multiple indicators
 273 were created for the research construct and used in further analyses. Nevertheless, there were
 274 several limitations associated with the use of Cronbach's alpha, including the fact that the
 275 alpha value was inflated as the larger number of items included in a scale (Sekaran, 2000).
 276 Additionally, satisfactory Cronbach's alpha value did not indicate unidimensionality of a
 277 particular scale (Gerbing and Anderson, 1987). Hence, confirmatory factor analysis was
 278 employed for the assessment of unidimensionality of scale adopted.

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A Summary Statistics of the Television Viewing Construct

The proportional mean scores for the television viewing construct was computed by summing the items and dividing by its respective number of items. The mean scale scores and distributional statistics are presented in Table 6.

The summary statistics for television viewing construct consisted of seven from the exploratory measurement assessment using factor analysis.

Table 6: Summary Descriptive and Distributional Statistics of the Television Viewing Construct

Constructs	Mean	Std.Dev.	Kurtosis	Skewness
Television Viewing *	21.35 (3.56)	1.74281	10.122	2.604

Notes: Figures in parenthesis are proportional means; for television viewing construct; * open scale ranges from 0 to 48.

Overall, the respondents had high score on television viewing ($M = 21.35$, $SD = 1.74$). Exploratory factor analyses was initially employed to purify the multi-item scale (As discussed earlier). Only indicators exhibiting satisfactory loadings on the intended factor and indicators with no cross-loadings were retained. Based on the theoretical and empirical justifications, the constructs of television viewing was subjected to confirmatory factor analyses using AMOS 16.0 version.

Confirmatory Factor Analysis

Gerbing and Anderson (1987) highlighted the importance of unidimensionality in the scale development process. Gerbing and Anderson further argued that the traditional exploratory analyses (e.g., factor analysis) were not theory based analysis and hence they failed to assess unidimensionality directly. To overcome this limitation, confirmatory factor analysis (CFA) was employed for the assessment of measurement model fit and unidimensionality. This section covered important discussion relating to CFA which included

identification issues, model specification and the testing of single versus multi-component measures employed for the study.

(a) Identification Issues

In SEM, identification was about whether there were enough pieces of information to identify a solution for a set of structural equations (Hair et al. 2006). It was important to determine the identification status of a hypothesised model by checking the number of degrees of freedom associated with the model (Byrne, 2001).

As the sample size of the present study was sufficiently large ($n=956$), it was believed that the hypothesised model would converge and produce reliable results (Hair et al. 2006).

(b) Model Specification

For specification of the latent constructs, the loading for one of the indicator of each construct was fixed to 1.0 in the model to create a scale for the latent construct. This process was done automatically with the features in AMOS 16.0 software.

(c) Comparing the Disaggregated Multi-component Structure to a Traditional Unidimensional Measure

There were no debates regarding the conceptualization of television viewing on whether each of these predictors should be modeled as a single concept or a disaggregated multi-components structure. To date there were no recent studies that supported the disaggregated multi-components of television viewing structure. In order to determine whether television viewing was best represented as single concept or multi-component constructs, both exploratory factor analysis and confirmatory factor analysis were conducted.

The exploratory factor analysis results indicated that television viewing comprised of two distinct components. Subsequently, CFAs were employed to test and confirmed these findings as reported in the exploratory factor analyses. It was acknowledged that the hypothesized alternative models could not be compared using chi-square difference test if

these models were not nested (Kelloway, 1995). However, comparison could still be made by looking at the normed χ^2/df value and other fit indices.

Following the exploratory factor analysis results, a disaggregated two-factor television viewing measure was tested against a single television viewing concept to reflect the global television viewing construct (see Figure 1). Consequently, if these tests indicated a significantly better χ^2 and model fit indices when modelled as two disaggregated concepts would suggest discriminant validity.

Based on empirical findings obtained from factor analysis, television viewing structure was best represented through disaggregated multi-component concepts.

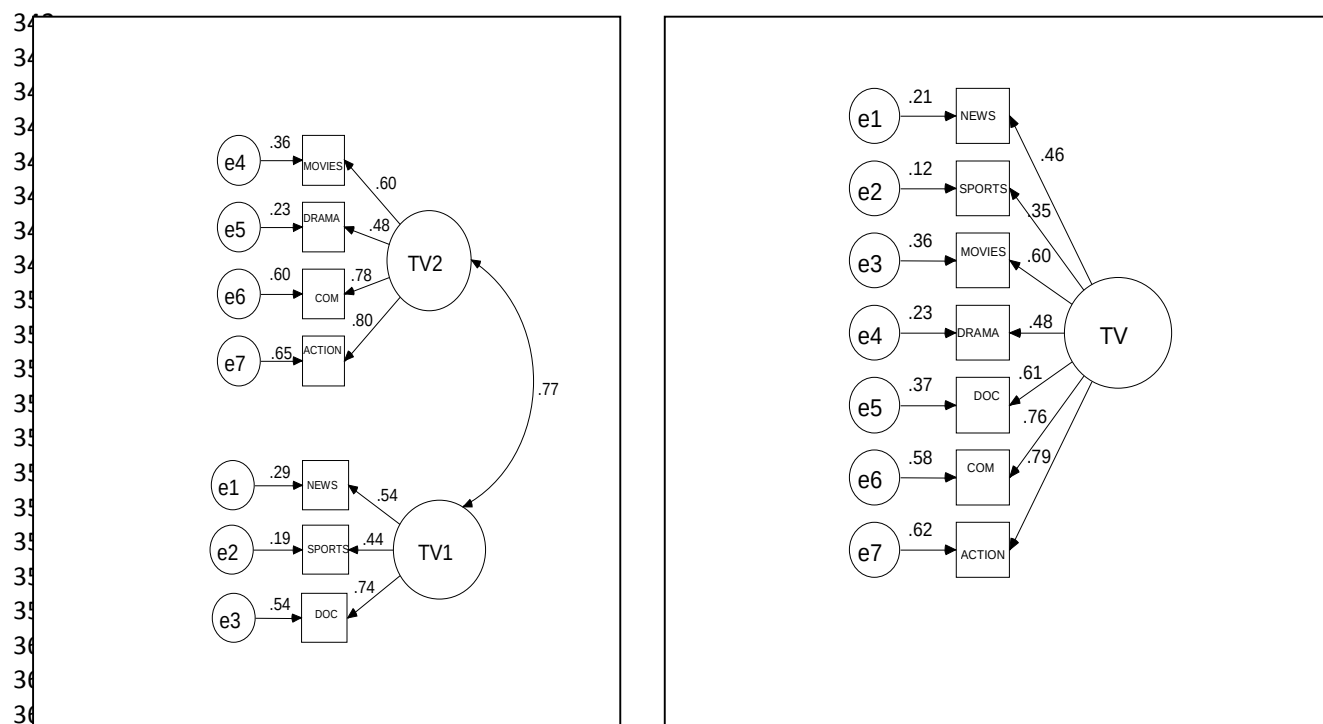


Figure 1:Disaggregated Multi-components versus Single Television Viewing Concept

Table 7:Alternative Model Testing Results

Alternative Model	χ^2	df	P	Ratio	GFI	TLI	CFI	RMSEA
Television Viewing								
Single Concept	128.162	14	.000	.667	.962	.896	.931	.092
Two concept	61.959	13	.000	.619	.983	.952	.970	.063

Based on Table 7, the χ^2 GOF for single television viewing model was compared to χ^2 GOF for the disaggregated multi-components television viewing model. The results showed that the hypothesised disaggregated multi-components television viewing model ($\chi^2 = 61.959$) performed better than the single television viewing model ($\chi^2 = 128.162$). The incremental fit measures also indicated great improvement to the hypothesised model (i.e., disaggregated multi-components television viewing structure).

Construct Validity

There exists many ways to test construct validity in the literature. This study adopted Staub's (1988) measurement validation procedures to test construct validity in terms of convergent validity and discriminant validity. Prior to structural model testing, the construct validity and reliability were tested by checking the convergent validity, discriminant validity, and composite reliability of the data. The whole process of scale validation is delineated in the following sub-sections.

(a) Convergent Validity

The measurement model specified how the observed indicators were related to unobserved constructs (Kline, 2005). Having fulfilled the goodness-of-fit indices assessment, the next step was to test convergent validity of the data. The convergent validity was assessed by checking the loading of each observed indicators on their underlying latent construct (Anderson and Gerbing, 1988). Table 8 presents the CFA results, which included the unstandardised and standardised factor loadings as well as the item reliability for each indicator.

Firstly, the factor loadings (i.e., the path estimate linking construct to indicator) were examined to identify potential problem with the CFA model. The standardised factor loading should be significantly linked to the latent construct and have at least loading estimate of 0.5

and ideally exceed 0.7 (Hair et al. 2006). Hence, insignificant loading with low loading estimate indicated potential measurement problem.

The CFA results (see Table 8) indicated that each factor loadings of the reflective indicators were statistically significant at 0.001 level. The factor loadings ranged from 0.446 (SPORTS) to 0.803 (ACTION). Following this, the squared multiple correlations (also called item reliability) in the CFA model was examined.

Item reliability refers to the value that represented the extent to which an observed indicator's variance was explained by the underlying construct (Hair et al. 2006). The majority of the squared multiple correlations of indicators in the measurement model were lower than the acceptable level of 0.50 (Bollen, 1990).

Although the items did not meet the 0.50 cut-off, these items were retained considering that they were important indicators and the content validity associated with these items was high (Hair et al. 2006). This was also because other estimate such as factor loading, variance extracted and composite reliability remained satisfactory. Further, deleting these items would leave fewer items than three on some constructs that might led to subsequent identification problem (Byrne, 2001).

i. Construct Reliability and Variance Extracted Measures

Other than fulfilling the factor loadings and item reliability criteria, the convergent validity assessment also included the measure of construct reliability and variance extracted. According to Fornell and Larcker (1981), variance extracted refers "to the amount of variance that is captured by the construct in relation to the amount of variance due to measurement error". Further, Fornell and Larcker (1981) suggested that variance extracted to be a more conservative measure than construct reliability.

Additionally, two other criterias were assessed to ensure convergent validity: (1) construct reliability should be greater than 0.7 (Nunnally, 1978), and (2) variance extracted

(VE) for a construct should be larger than 0.5 to suggest adequate convergent validity (Fornell and Larcker, 1981). Table 9 summarises the results of construct reliability and variance extracted for each construct.

In this study, the variance extracted values for the main construct exceeded the cut-off of 0.50 recommended by Fornell and Larcker (1981). The measurement model was further assessed to determine the constructs reliability. The results displayed adequate reliability in that the reliability of each construct exceeded the 0.7 threshold (Nunnally, 1978). Generally, the present findings indicated that the television viewing has achieved a range of fairly good reliabilities among indicators to measure the latent constructs.

Table 8: Indicator Loadings and Item Reliability (Revised Measurement Model)

Latent Construct	Items	Unstandardised factor loading	Standardised factor loading	Standard Error ^a	Critical Ratio ^b	Item Reliability
Television Viewing	MOVIE	.736	.598	.043	17.292	.358
	DRAMA	.579	.485	.042	13.909	.235
	COMEDY	.795	.775	.036	21.821	.601
	ACTION	1.000	.803	-	-	.644
	NEWS	.857	.532	.066	12.916	.283
	SPORTS	.638	.446	.057	11.175	.199
	DOC	1.000	.738	-	-	.544

Fit indices: $\chi^2 = 907.624$, $\chi^2/df = 2.125$, GFI = 0.943, TLI = 0.926, CFI = 0.936, RMSEA = 0.034. Note: ^a S.E. is an estimate of the standard error of the covariance; ^b C.R. is the critical ratio obtained by dividing the estimate of the covariance by its standard error. A value exceeding 1.96 represented significance level of 0.05; c some critical ratios were not calculated because loading was set to 1 to fix construct variance; All item loadings in CFA model were significant at 0.001 level.

Table 9: Confirmatory Factor Analysis for Convergent Validity

Construct	No. of Items	Factor Loading	Construct Reliability	Variance Extracted
Television viewing	7	0.446-0.738	0.779	0.588

(b) Discriminant validity

This section presents a common method of assessing discriminant validity. It is to be noted that, a more conservative approach for establishing discriminant validity was employed (Hair et al. 2006). As suggested by Fornell and Larcker (1981), discriminant validity was determined by the variance extracted value, namely whether or not it exceeded the squared

inter-construct correlations associated with that construct. It was found that the variance extracted of each construct was all above its squared correlation with other constructs. Following Fornell and Larcker's (1981) guidelines, it was evident that these results lent adequate evidence for discriminant validity of the present measurement model. Overall, the required reliability and validity assessment demonstrated strong support for satisfactory convergent validity and discriminant validity.

CONCLUSION

The purpose of this study was to validate a television viewing instrument commonly used in consumer socialization research. Using a combination of exploratory and confirmatory factor analytic approaches, this research replicated a television viewing measure. Initially, an exploratory factor analysis (N=956.) evaluated two solutions, ranging from 1 to 2 factors. Next, a confirmatory factor analyses, using the sample (N=956), examined the two-factor model identified by the exploratory factor analysis.

The findings of alternative model comparison converge with the results obtained from factor analysis, which demonstrated that television viewing constructs performed better when modeled as a disaggregated two-factor structure. The two-factor model of television viewing structure was developed as a result of an extensive review of literature, with a sample of young adults in order to test the factorial structure of the scale, and a CFA to confirm the two-factor model and to provide further reliability evidence. Overall, the required reliability and validity assessment demonstrated strong support for satisfactory convergent validity and discriminant validity.

In addition, the results of the CFA also indicated that the two-factor model showed a good fit with high fit indices. The latent structure of television viewing measure seems better represented by two factors with 7 items. These factors and items are essential to being

successful in consumer socialization research and commonly suggested in the previous questionnaires.

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