A Comparative Analysis of the Validity
of CAD using the Factor Analysis

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요인분석을 이용한 CAD의 타당성에 관한 비교연구

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1. Introduction

One of the more engrossing concepts in the study of consumer behavior is that of personality. Purchasing behavior, media choice, innovation, segmentation, fear, social influence, product choice, opinion leadership, risk taking, attitude change, and almost anything else one can think of have been linked to personality.

Unfortunately, analysis do not agree on and general definition of the term "personality" except to somehow tie it to the concept of consistent responses to the world of stimuli surrounding the individual. Allport[1] defines personalty as "the dynamic organization within the individual of those psychophysical systems that determine his unique adjustments to his environment". This definition of personaliy emphasizes not only both psychological and physiological components but also the

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1) G.W. Allport, "Personality", New York : Henry Holt & Co., Inc, 1937, p. 18.

dynamic aspect of personality, that is, personality is not static and unchanging ; rather, it changes and develops over time.

Although Hersey and Blanchard[2] contend it is difficult to effect significant changes in personality after childhood, Maddi[3] indicated that radical changes in personality can and do occur beyond childhood. In fact, rather than limiting the period of significant personality formation to childhood, he suggests that psychological growth occurs throughout the human life span.

According to Luthans[4], "Man's behavior is more dependent on the psychological processes than on the biological…" or physiological processes. Therfore, it seems appropriate to develop a definition of personality that emphasizes psychological processes in its theoretical orientation or model of man. Maddi[5] defined personality in such a manner. He indicates that "Personality is a set of characteristics and tendencies that determine those commonalties and differences in the psychological behavior(thoughts, feelings, and actions) of people".

Considering these viewpoints, Personality, or better yet, the inferred hypothetical constructs relating to certain persistent qualities in human behavior, have fascinated both layman and scholars for many centuries. Kassarjian,[6] in his article reviews on the relationship between consumer behavior and personality, suggested that the relationship was so weak to be questionable or perhaps meaningless. Considering the cold reality that researchers in the area are not even sure of how to logically define personality as of yet, Kassarjian's suggesitons is understandable. However questionable the relationship between personality and consumer behavior is, personality has been found to relate to specific attributes of product choice.

Therefore the purpose of this artical is to review the personality measurement instruments and to assess the internal statistical structure of CAD(Compliant, Aggressive, Detached) instrument using the factoral composition of CAD comparatively.

2. Reviews on Personality Measurement Instruments in Marketing

In the field of marketing research, the most commonly used personality measurements are the California Psychological Inventory(CPI) or the Edwards Personal Preference Schedule(EPPS).

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2) P. Hersey and K.H. Blanchard, "Management of Organizational Behvior", New York : Harper and Row Publishers, Inc., 1966, p. 86.

3) S.R. Maddi, "Personality Theories : A Comparative Analysis", The Doresy Press, 1968, p. 226.

4) Fred Luthans, "Organizational Behavior", New York, McGraw-Hill Book Co., 1973, p. 320.

5) S.R. Maddi, op. cit., p. 10.

6) Harold H. Kassarjian, "Personality and Consumer Behavior : A Review", Journal of Marketing Research, Vol. 18 1971, pp. 409-18.

The CPI is composed of more than 480 true-false items which provide a profile of 18 scales, of which 3 are validity scales. The other 15 scales include scores on such dimensions as dominance, socialization, tolerance, achievement via conformance, achievement via independence, intellectual effciency, sense of well-being, self-control, and flexibility. In the EPPS consists of 210 pairs of items, in which the item response choices are equally attractive and similarly socially acceptable to the examinee[7].

These two tests are basically designed for clinical purposes and thus, the applicability to marketing research is questionable. Furthermore, the number of questions in CPI and EPPS are too many to efficiently adminsitered as a part of a lengthy quetionnaire, especially in a mail survey.

For the purpose of marketing research, Cohen[8] developed a personality measurement instrument, CAD, using the Horney paradigm to measure predominant interpersonal orientation. According to Horney[9], people can be placed into three groups, which reflect their predominant mode of response to others : (1) those who move people(compliant), (2) those who move against people(aggressive) and (3) those who move away from people(detached). Each mode of response involves a different strategic method of coping with other people. Consequently each mode of interpersonal orientation is defined as follows :

1) Compliant Orentation ; Compliant-oriented people want to be part of the activites of others. They wish to be loved, wanted, appreciated, and needed. They see in other people a solution for many problem of life and wish to be protected, helped, and guided. Because of the importance given to companionship and love of others, compliant people become oversensitive to other's needs, overgenerous, overgrateful, and overconsiderate. Such people tend to avoid conflict and subordinate themselves to the wishes of others. They are inhibited in criticism, and apologetic and willing to blame themselves rather than others if things go wrong. Among the most important attributes with a compliant tendency are : goodness, sympathy, love, unselfishness, and humility. The compliant person dislikes egotism, aggerssion, assertiveness, and power-seeking. The compliant type seeks to manipulate others by being weak and dependent and relying on others to help him achieve his goals. Since many of his goals are tied to finding an accepted place in society, he will go out of his way to conform to what he believes are accepted forms of behavior.

2) Aggressive Orientation : Aggressive oriented people want to excel, to achieve success,

7) Wan soo, Lee, "An Investigation of the Validity of CAD by the Use of Factor Analysis", New Business Review, Vol. 17, No. 1, 1983.
8) Joel B, Cohen, "An Interpersonal Orientation to the Study of Consumer Behavior", Journal of Marketing Research, Vol. 4, 1967, pp. 270-7.
9) Karen Horney, "Our Inner Conflicts", New York, W.W. Norton & Co., Inc., 1945.

prestige, and admiration. Other people are seen as competitor. Aggressive people to be superior strategists, to control their emotions, and to bring their fears under control. Strength, power, and unemotional realism are seen as necessary qualities. People are valued if useful to one's goals. Everyone is thought to be motivated by self-interest, with feelings simply a cover for hidden objectives. The aggressive person seek to manipulate others by achieving power over them. Yet, he needs people to confirm his self-image, to bolster what may well be uncertain confidence in his competitive talents. He will go out of his way to be noticed if such notice brings admiration.

3) Detched Orientation : Detached oriented people want to put emotional "distance" between themselves and others. Freedom from obligations, independence, and self-sufficiency are highly valued. Such people do not want to be influenced or to share experiences. Conformity is repellent, intelligence and reasoning are valued instead of feelings. Detached people consider themselves more or less unique, possessing certain gifts and abilities that should be recognized without having and need to go out of their way to show them to others. The detached type is distrustful of others, but does not wish to "stay and fight." Horney suggested that people frustrated in their compliant or aggressive tendencies, or both, may well adopt this response trait. If one is uncertain as to how to deal effectively with people, and receives negative reinforcement from early social interaction, this latter mode may be a solution. Goals and values that support this individualistic orientation will acquire positive reinforement character.

The measurements of the predominant interpersonal orientations can provide us an insight into a person's perception of his social environment and his behavioral tendencies toward the objects in his life space since much of human action is interpersonal. The CAD scale(refer to Appendix A and B) was designed to measure compliant, aggressive, and detached interpersonal orientations. The scale consists of 35 incomplete statements followed at equal intervals by six blank lines, the first and last of which are labeled extremely undesirable and extremely desirable, respectively. The instrument was shown to have adequate test-retest and interconsitent reliability and instrument validity[10].

As compared to other personality measurement instruments, the CAD instrument is simple in administering and collecting data. Furthermore, the instrument is supposed to reveal three different interpersonal orientation classification ; a person is not likely to have high scores on more than one personality dimension with respect to the sample median.

In spite of these potential benefits, literature review indicates that very few marketing researchers utilized the CAD instrument in their marketing relating to personality studies. This fact appears to suggest that researchers in the area somewhat doubtful of the validity and reliabiliy of the CAD instrument.

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10) Joel B. Cohen, op. cit., pp. 270-7.

3. Methodology

1) Factor Analysis

Factor analysis attempts to simplify complex and diverse relationships that exist among a set of observed variables by uncovering common dimensions or factors that link together the seemingly unrelated variables, and consequently provides insight into the underlying structure of the data[11]. That is, factor analysis refers to a variety of statistcal techniques whose common objective is to represent a set of variables in terms of a smaller number of hypothetical variables[12].

Therefore, factor analysis is freuqently employed in all kinds of research for the purpose of exploring the unknown domain by reducing complex interrelationship to a resulting simple linear expression and is useful in assessing the internal statistcal structure of this type of instrument[13]. Consequently four function factor analysis can perform are specified as follows[14]; 1) Identify a set of dimensions that are latent(not easily observed) in a large set of variables. 2) Devise a method of combining or condensing larg numbers of peple into distinctly different groups within a large population. 3) Identify appropriate variables for subsequent regression, correlation or discriminant analysis from a much larger set of variables. 4) Create an entirely new set of a smaller number of variables to partially or completely replace the orginal set of variables for inclusion in subsequent regression, correlation or discrimination analysis.

In implementing factor analysis, the following statistical approaches were used to generate unbiased, conservative results. Firstly, Bartlett's test of significance of correlational matrix was employed to determine at the outset whether there exists any relationship among variables.

$$Ho \; ; R=1, \quad H_1 \; ; R \neq 1, \quad \chi^2 = (n-1-\frac{2V+5}{6}\ln \mid R \mid),$$

$$\text{Degeree of freedom} = \frac{V(V-1)}{2}$$

where, n=number of observations, v=number of variables used, and R=determinants of the

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11) William R. Dillion and Matthew Goldstein, "Multivariate Analysis, Methods and Applications", John Wiley and Sons, 1984, pp.53-54.

12) Je-on, Kim and Charles W.Muller, "Introduction to Factor Analysis", a SAGE University Paper, 1978. p. 9.

13) Kerlinger, Fred N, "Foundations of Behavior Research", Holt, Rinehart and Winston, 1973.

14) Joseph F. Hair, Jr, "Multivariate Data Analysis", Petroleum Publishing Company, 1979, p. 218.

correlational matrix

Secondly, screetest and Harris procedure were employed to extract the exact number of factors. In screetest, all the characteristic roots are plotted with value of the root along the ordinate and the root's factors number as the abscissa. The point where the factors curve above the straight line formed by the smaller roots gives the number of factors. The basic idea is that when the roots drops dramatically in size, an additional factor would and relatively little to the information already extracted.

In this study, scree test is used as a preliminary step to subsequently execute the Harris procedure since it tends to generate less conservative results than the Harris procedure. In the Harris procedure, a number of different factor solutions are employed to examine the pattern of factor loadings across the different factor solutions employed.

The number of factors is determined when the patterns of factor loadings are most consistent across different factor solutions employed. In this study, Minres factor analysis, Truncated factor analysis(Backdoor Image), Image factor anaylsis, and Alpha factor anlaysis were employed for the Harris procedure. Among the different four factor solutions, the Minres factor analysis is chosen as the most representative solution due to the consistency of the factor loadings of raw data.

2) Sources of Data

The survey was made possible with the data provided by Korea Maritime University students consisting of the Freshmen, Sophomore, and the Senior group. Using the simple random sampling procedure, 450KMU students belonging to Nautical Science dept. and Marine Engineering dept. were randomly selected from the predefined population. Survey questionnaire were distributed to randomly selected 450KMU students. Of the 450KMU questionnaire distributed, all of them were returned. Of the 450 questionnaire distributed, 15 reponses were deleted for the reasons specified in table 1. This generated a net total of 435 usable responses. Of these 435 responses, 21 responses were not pertinent to the interest of the study.

Finally, 414 responses were selected to be used in this study. Accordingly these 414 responses consisted of 142 responses from Freshmen group, 136 responses from Sophomore group, and 136 responses from Senior group.

Table 1. Summary Responses of the Distributed Questionnaire Survey

1. Total Distributed		450
2. Total Number of the Questionnaire Returned		450
* Unusable Responses	−15	
3. Total Responses Deleted	−15	
4. Net total of Usable Responses		435
* Responses not pertinent to the interest of the study	−21	
5. Net Total of the Responses used in this study		414

3) Sample Size

The factors presented in table 2 were considered in estimating the sample size and total number of qusetionnaire to be distributed. Of the four factors in table 2, factor 1, and factor 2 are more relevant to estimating the sample size whereas factor 3 and 4 are to estimating the total number of questionnire to be distributed. Factor analysis dictates that sample size should be at least five times number of predictor variables in the analysis[15].

Table 2. Factor considered for the Sample Size and Total Number of Questionnaires to be Distributed

1. Factor analysis   N=5P, where, P=Number of predictor variables, N=Sample size 2. Split sample test 3. Estimated number of responses to be screened out 4. Expected survey responses ratio

* Total number of responses (n=414) was not large enough to execute this procedure.

4. Results

The 414 responses to the items shown in table 3 were factor analyzed. Before factor analyzing the data, Bartlett's test of the significance of the correlation matrix was carried out to determine whether there exists any relationship among the items. If no relationship exists, factor analysis is not warranted. The test indicates, as shown below, that the items are interrelated.

$$H_0 : R=I, \quad H_1 : R \neq I$$

$$\chi^2 = -(n-1-\frac{2V+5}{6})1nR=2659.43$$

$$d.f = V(V-1)/2$$

$R=$determinant of correlation matrix (*see Table* 4) $\chi^2=2659.43, \ 0.05, \ 595$

The scree test presented in Figure 1 indicates that three or four factors are the logical number of factors to be extracted for the anlysis: the plots of the eigenvalues provided by Minres and Backdoor Image suggest three factors, whereas Image and Alpha suggest four factors. Based on these findings, Harris procedure (Table 5) was carried out across the four different factor solutions(Alpha, BI, Image, and Minres) using two factors(3 ± 1) as the minmum trial number of factors and five factors(4 ± 1) as the maximum with 0.3 as the criterion loading point. of the four alternative number of factors, two factors, three factors, four factors or five factors, three factors yields the most consistent factor loadings across the four different factor solutions, as shown in table 5.

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15) Joseph, F. Hair. op. cit, p. 219.

Table 3. List of the Variables Entered Factor Analysis

Variables	Lables
B1	Freedom from Emotional Ties with Others (Detached)
B2	Comforting Those in Need of Friends (Compliant)
B3	Knowing Most People Fond of Me All Time (Compliant)
B4	Refusing to Give in an Argument (Aggressive)
B5	Refusing to Give in to Others (Aggressive)
B6	Little Attention to Others' Thoughts of Me (Detached)
B7	Owning an Item before Friends (Aggressive)
B8	Knowing Others Envious of Me (Aggressive)
B9	Feeling That I Like Everyone I Know (Compliant)
B10	Working Hard While Others Have Fun (Detached)
B11	Using Pull to Get Ahead (Aggressive)
B12	Impressing Self-Styled Big-Shots (Aggressive)
B13	Basing Life on Duty to Others (Compliant)
B14	Working under Tension(Aggressive)
B15	Living All Alone in Cabin in Woods or Mts.(Detached)
B16	Punishing Those who insult my Honor(Aggressive)
B17	Giving Aid to Poor and Underprivileged(Compliant)
B18	Standing in way of Too-Sure persons(Aggressive)
B19	Being Free of social obligations(Detached)
B20	Saying Something Good About Everybody(Compliant)
B21	Telling a waiter about Inferior Food(Aggressive)
B22	Planning to Get Ahead without Others
B23	Spoting and Exploiting Others Weakness(Aggressive)
B24	Strong Desire to Surpass Others(Aggressive)
B25	Sharing Personal Feeling with Others (Compliant)
B26	Ability to Blame others for their Mistakes(Aggressive)
B27	Avoiding Influences from Others(Compliant)
B28	Repaying thoughtless with Friendship(Compliant)
B29	Competing for Rewards(Aggressive)
B30	Know others care little about My Affairs(Detached)
B31	Defending my rights by Fore(Aggressive)
B32	Putting self out to be Considerate(Compliant)
B33	Correct those Expressing Ignorant Belief(Aggressive)
B34	To work alone(Detached)
B35	To be Fair to wrong-doers(Compliant)

Table 4 presents the Varimax rotated factor matrix based on Minres factor solution using three factors. As in the previous Harris procedure 0.3 is used as the criterion loading. Factor 1 is significantly correlated with the vriables B2, B10, B, B13, B17, B20, B21, B22, B23, B24, B25, B26, B27, and B33 to explain 10.8% of variation of the total variables. Factor 2 is significantly correlated with the variables B3, B4, B7, B8, B12, B16, B24, and B31 and explain 5.3% of variation of the total variables. Factor 3 is significally correlated with B1, B6, B9, B30, and B34 and explains 3.5% of variation of the total variables. The total proportion of variation of the total variables that can be explained by the three factors amount to 19.6%, As shown Table 4, factor 1 explains 55.1% of that total proportion, factor 2 27.0%, and factor 3 17.9%. Thus factor 1 can explain the
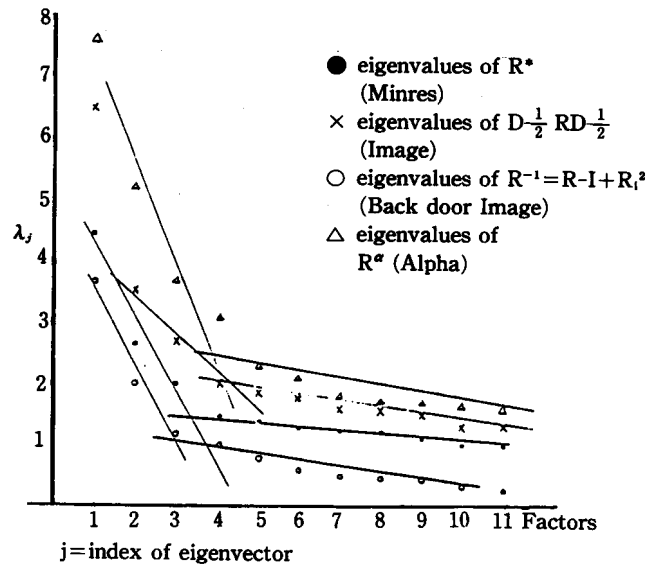
Fig 1. Scree Test-Personality

largest percentage of the variation that can be explained by the three factors.

Evaluating communality for each variable, these three factors can best explain the variance of the variable B26(Ability to Blame Others for their Mistakes-aggerssive orientation); 35.9% of variation of this variable can be explained by the three factors. Looking at the cluster and nature of those variables that are significantly correlated with each factor, factor 1 appears to represent aggerssive orientation, factor 2 compliant orientation, and factor 3 detached orientation(Table 6). Factor 1 has salient loadings by variables B2, B10, B11, B13, B17, B20, B21, B22, B23, B24, B25, B26, B27 and B33. All these 13 variables are related to the measures of aggressive orientation. In this context, they may be synthesized to represent "aggressive orientation". Factor 2 has salient loadings by variables B3, B4, B7, B8, B12, B16, B24 and B31. All these variables are related to the measures of compliant orientation. Accordingly, they may be synthesied to represent "compliant orientation." Factor 3 has salient loadings by variables B1, B6, B9, B30 and B34, All these variables are related to the measures of detached orientation.

Therefore, they may be synthesized to represent "detached orientation." These findings suggest that(1) the CAD test items(variables) appear to measure three independent dimensions considering that test items(variables) measuring the different CAD dimensions do not load significantly on the same factor(Table 6), that (2) more than the majority of test items have factor loadings of less than ±0.5, which is often used in the literautre as an arbitrary minmum (Table 4), that (3) the total proportion of variation of the total test items explained by the three factors are not in any way

Table 4. Factor Loadings of the Variables

	VARIMAX ROTATED FACTOR MATRIX/MINRES FACTOR SOLUTION			
	FACTOR 1	FACTOR 2	FACTOR 3	COMMUNALITY
B1	−0.19479	0.08283	0.41030	0.21315
B2	0.37002	0.18320	−0.26617	0.24133
B3	0.15691	0.40901	−0.37037	0.32916
B4	−0.05741	0.29701	0.06339	0.09553
B5	0.05414	0.12951	0.20920	0.06305
B6	−0.02228	0.00863	0.52135	0.27238
B7	0.01286	0.52090	0.02090	0.27194
B8	0.14159	0.51593	−0.08169	0.29290
B9	0.30448	0.22309	−0.30228	0.23385
B10	0.35219	0.17335	−0.25972	0.22154
B11	−0.40769	0.34021	0.17114	0.31124
B12	−0.04805	0.38845	−0.03611	0.15450
B13	0.50841	0.11458	−0.26094	0.33946
B14	−0.06908	0.09219	−0.04203	0.01504
B15	−0.12890	0.05650	0.27766	0.09691
B16	0.18833	0.29645	0.08971	0.13140
B17	0.53554	0.05002	−0.07000	0.29420
B18	0.07049	0.12465	0.03490	0.02172
B19	−0.25467	0.23821	0.22307	0.17137
B20	0.52458	0.09696	−0.23099	0.33794
B21	0.33112	0.04968	0.00227	0.11211
B22	0.45106	0.07818	0.07990	0.21595
B23	−0.53999	0.21332	0.08966	0.34513
B24	0.34633	0.30643	0.06725	0.21837
B25	0.47785	0.02531	−0.11951	0.24326
B26	−0.58860	0.10992	−0.02392	0.35911
B27	−0.32731	0.22690	0.05502	0.16164
B28	0.21781	0.08153	−0.16075	0.07993
B29	0.08603	0.29079	0.17428	0.12234
B30	−0.07271	0.04145	0.49051	0.24761
B31	−0.06210	0.32961	0.26579	0.18315
B32	0.05847	0.02371	−0.19103	0.04047
B33	0.45264	0.03223	−0.08549	0.21323
B34	0.07295	0.12328	0.32193	0.12420
B35	−0.23150	−0.03627	−0.17965	0.08725
EIGENVALUE	3.78339	1.85169	1.22737	
· % of Common Variance	55.1%	27.0%	17.9%	
· % of Total Variance	10.8%	5.3%	3.5%	

· % of the Total Variance of
  All the Variables explained by 3 Factors : 19.6%
· Determinant of Correlation Matrix=0.0025871(0.25871156E-02)

significant amounting only 19.6%(Table 4), and that test items comprising each dimension do not load heavily on the same factor.

Summarizing these findings, many of the test items do not appear to measure adequately and sufficiently the three interpersonal orientaion dimensions. Furthermore, the distribution of the

Table 5. Determination of the Number of Factors by Harris Procedure

VARIABLES	VARIMAX ROTATED FACTOR MATRIX			
	ALPHA	BI	IMAGE	MINRES
	FACTOR 1	FACTOR 1	FACTOR 1	FACTOR1
B1	−0.18158	−0.19370	−0.22489	−0.19479
B2	0.34761	0.36349	0.37409	0.37002
B3	0.17209	0.15440	0.18028	0.15691
B4	−0.08757	−0.05851	−0.05800	−0.05741
B5	0.04362	0.15729	0.01817	0.05414
B6	−0.05994	−0.02431	−0.06043	−0.02228
B7	−0.03693	0.00924	0.02699	0.01286
B8	0.11293	0.13857	0.11614	0.14159
B9	0.28853	0.30431	0.31479	0.30448
B10	0.34132	0.35897	0.37234	0.35239
B11	−0.50368	−0.41057	−0.34542	−0.40769
B12	−0.08090	−0.05243	−0.02284	−0.04805
B13	0.49352	0.50701	0.48243	0.59841
B14	−0.05369	−0.07445	−0.04344	−0.06908
B15	−0.13448	−0.12772	−0.13358	−0.12890
B16	0.18900	0.19163	0.10485	0.19833
B17	0.52733	0.53691	0.49470	0.53554
B18	0.06778	0.07232	0.02774	0.07049
B19	−0.26145	−0.25671	−0.25408	−0.25467
B20	0.50397	0.52405	0.51094	0.52458
B21	0.32036	0.33772	0.27842	0.33112
B22	0.50993	0.45903	0.35271	0.45105
B23	−0.58938	−0.53370	−0.46124	−0.53999
B24	0.32666	0.35411	0.28186	0.34633
B25	0.43775	0.48683	0.47774	0.47785
B26	−0.66410	−0.57842	−0.49735	−0.58860
B27	−0.36305	−0.32742	−0.28203	−0.32731
B28	0.16853	0.21795	0.25205	0.21781
B29	0.08426	0.08749	0.03928	0.08603
B30	−0.07891	−0.07109	−0.11821	−0.07271
B31	−0.06574	−0.06182	−0.10381	−0.06210
B32	0.05607	0.05842	0.07954	0.05847
B33	0.42999	0.45905	0.42416	0.45264
B34	0.04661	0.07959	0.00755	0.07295
B35	−0.22241	−0.23916	−0.13283	−0.23150

	VARIMAX ROTATED FACTOR MATRIX			
	ALPHA	BI	IMAGE	MINRES
	FACTOR 2	FACTOR 2	FACTOR 2	FACTOR 2
B1	0.02111	0.08318	0.09219	0.08283
B2	0.22201	0.18168	0.11729	0.18320
B3	0.48759	0.40667	0.24547	0.40901
B4	0.26835	0.30573	0.16883	0.29701
B5	0.12967	0.13329	0.07047	0.12951
B6	−0.01906	0.00930	0.00757	0.00863
B7	0.49586	0.53093	0.46134	0.52090
B8	0.52899	0.52285	0.42416	0.51593
B9	0.26558	0.22987	0.09160	0.22509

B10	0.22356	0.18093	0.13261	0.17335
B11	0.32877	0.34203	0.33267	0.34021
B12	0.43474	0.39564	0.35150	0.38845
B13	0.15264	0.11495	0.05217	0.11458
B14	0.05096	0.09977	0.04392	0.09219
B15	0.08343	0.06082	0.01381	0.05650
B16	0.31802	0.30116	0.18337	0.29645
B17	0.07366	0.04954	0.00687	0.05002
B18	0.12540	0.12653	0.06438	0.12465
B19	0.24068	0.24250	0.13778	0.23821
B20	0.12053	0.09744	0.10265	0.09696
B21	0.08089	0.04878	0.02882	0.04968
B22	0.12829	0.07760	−0.04602	0.07818
B23	0.19769	0.20743	0.14339	0.21332
B24	0.30412	0.31326	0.28738	0.30643
B25	0.05580	0.02432	0.03492	0.02531
B26	0.07215	0.10493	0.06977	0.10992
B27	0.22313	0.22597	0.15232	0.22690
B28	0.09943	0.08402	0.05865	0.08153
B29	0.29666	0.29222	0.17597	0.29079
B30	0.05258	0.04142	0.00553	0.04145
B31	0.33571	0.32531	0.24353	0.32961
B32	0.06833	0.02487	−0.01611	0.02371
B33	0.06453	0.03179	0.03212	0.03228
B34	0.13533	0.12551	−0.02074	0.12328
B35	−0.06055	−0.03653	−0.04442	−0.03627

VARIMAX ROTATED FACTOR MATRIX			
ALPHA	BI	IMAGE	MINRES
FACTOR 3	FACTOR 3	FACTOR 3	FACTOR 3

	ALPHA FACTOR 3	BI FACTOR 3	IMAGE FACTOR 3	MINRES FACTOR 3
B1	0.41954	0.41454	0.27128	0.41030
B2	−0.28140	−0.26693	−0.15051	−0.26617
B3	−0.38774	−0.36888	−0.15031	−0.37041
B4	0.02611	0.06639	0.11012	0.06339
B5	0.23915	0.21550	0.15754	0.20820
B6	0.061257	0.50726	0.42399	0.52135
B7	0.04148	0.01753	0.06362	0.02090
B8	−0.04769	−0.08530	−0.05952	−0.03169
B9	−0.28974	−0.31195	−0.10446	−0.30228
B10	−0.22461	−0.27292	−0.11713	−0.25972
B11	0.16691	0.17029	0.14593	0.17114
B12	−0.03276	−0.04049	−0.01514	−0.03611
B13	−0.23195	−0.26272	−0.16410	−0.26049
B14	−0.03439	−0.04709	0.00205	−0.0423
B15	0.17707	0.29706	0.35294	0.27766
B16	0.09884	0.09430	−0.01910	0.08971
B17	−0.09725	−0.07186	−0.00811	−0.07000
B18	0.03375	0.03747	0.01206	0.03490
B19	0.22214	0.22804	0.25102	0.22307
B20	−0.22860	−0.23602	−0.16138	−0.23093
B21	−0.02282	0.00592	−0.05880	0.00227
B22	0.10593	0.08572	0.02644	0.07990
B23	0.06762	0.09277	0.09058	0.08366

B24	0.05749	0.07325	−0.03455	0.06725
B25	−0.20962	−0.12038	−0.00037	−0.11951
B26	−0.03614	−0.01518	0.01370	−0.02392
B27	0.06770	0.05636	0.09246	0.05502
B28	−0.17642	−0.16795	−0.06538	−0.16075
B29	0.20334	0.17654	0.08720	0.17428
B30	0.50315	0.49100	0.36853	0.49051
B31	0.27901	0.26348	0.13491	0.26579
B32	−0.21395	−0.19686	−0.05761	−0.19103
B33	−0.14408	−0.08554	−0.03665	−0.0849
B34	0.32779	0.33629	0.26646	0.32199
B35	−0.17312	−0.18980	−0.05384	−0.17965

Table 6. Salient Loadings on Extracted Factors

Variables	Factor		
	1	2	3
B2	.37		
B10	.35		
B11	.41		
B13	.51		
B17	.54		
B20	.52		
B21	.33		
B22	.45		
B23	−.54		
B24	.35		
B25	.48		
B26	−.59		
B27	−.33		
B33	.45		
B3		.41	
B4		.30	
B7		.52	
B8		.52	
B12		.39	
B16		.30	
B24		.30	
B31		.33	
B1			.41
B6			.52
B9			−.30
B30			.49
B34			.32

loadings of test items comprising each dimension appears to indicate that these items may be measuring the different construct.

The purpose of this comparative study is not only to investigate the validity and internal structure of the CAD instrument but also to enhance the usefulness of the CAD instrument as a practical research tool relating to personality research in marketing. The CAD instrument

(questionnaire in Korean language) was distributed to the students of Korea Maritime University randomly and factor analyzed.

The results of the study suggest that the CAD instrument should be reappraised, and refined in order to be used in marketing research as a valid personality measuring instrument. Marketing researchers "must develop their own definitions and design their own instruments to measure personality variables."[16]

References

1) Au, Taik Sup, "Quantitative Analysis of Social Science Data", Nanam Publishing Co., 1984.
2) Cohen, Joel B., "An interpersonal Orientation to the Study of Consumer Behavior", JMR, Vol. 4, 1967.
3) Dillion William R., and Goldstein Matthew, "Multivariate Analysis", John Wiley and Sons, 1984.
4) Heeler, Roger M. and Ray, Michael L., "Measure Validation in Marketing", JMR, Vol. 9, 1972.
5) Horney, Kaaren B. *Our Inner Conficts*. New York : W. W. Norton and Co., Inc., 1945.
6) Kassarjian, Harold H., "Personality and Consumer Behavior : A Review", JMR, Vol. 18, 1971.
7) Kerlinger, Fred N. *Foundations of Behavioral Research*. 2nd ed. New York : Holt, Rinehart, and Winston, Inc., 1973.
8) Kernan, Jerone B. "The CAD Instrument in Behavioral Diagnosis", Proceedings, Second Annual Conference, Association for Consumer Research, 1972.
9) Kim, Jae-on, Muller, Charles W., "Introduction to Factor Analysis", a SAGE Univ. paper, 1978.
10) Kim, Kwang-Woong, "Research Methods in Social Science", Park-Yong-Sa, 1981.
11) Nunnally, Jum C. *Psychometric Theory*. New York : McGraw-Hill Book Company, Inc., 1967.
12) Swanda, John, "Organizational Behavior ; Systems and Application", Alfred Publishing Co., inc., 1979.

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16) Harold H. Kassarjian, "Personality and Consumer Behavior : A Review", JMR, Vol. 8, 1971, pp 409-18.

APPENDIX A
The CAD Instrument

In this section you will find a number of incomplete statements followed by six numbers. These statemets describe a variety of situtions. There are no seem to be quite different. The purpose of this survey will be best served if you accurately report your feeling toward each statement. You may notice that many items are similar. Actually no two items are exactly alike.

Example :

Asking a friend to loan you money is 1,2,3,4,5,6. For example, number 3 has been circled. This means that the situation described is slightly undesirable to indvidual concerned. These same six numbers will be provided for each statement. Please circle the number which best express how desirable or undesirable the situation seems to you.

      *1 : extremely undesirable, 6 : extremely desirable

1. Being free of emotional ties with others is:	1 2 3 4 5 6
2. Giving comfort to those in need of friends is:	1 2 3 4 5 6
3. The knowledge that most people would be fond of me at all times would be:	1 2 3 4 5 6
4. To refuse to give in to others in argument seems:	1 2 3 4 5 6
5. To refuse to give in to others is:	1 2 3 4 5 6
6. For me to pay little attention to what others think of me seems:	1 2 3 4 5 6
7. For me to be able to own an item before most of my friends are able to buy it would be:	1 2 3 4 5 6
8. Knowing that others are somewhat envious of me is:	1 2 3 4 5 6
9. To feel that I like everyone I know would be:	1 2 3 4 5 6
10. To be able to work hard while others are elsewhere having fun is:	1 2 3 4 5 6
11. Using "pull" to get ahead would be:	1 2 3 4 5 6
12. For me to have enough money or power to impress self-styled "big shot" would be:	1 2 3 4 5 6
13. Basing my life on duty to others is:	1 2 3 4 5 6
14. To work under tension would be:	1 2 3 4 5 6
15. If I could live alone in a cabin in the woods or mountains, it would be:	1 2 3 4 5 6
16. Punishing those who insult my honor is:	1 2 3 4 5 6
17. To give aid to the poor and underprevileged is:	1 2 3 4 5 6
18. Standing in the way of people who are too sure of themselves is:	1 2 3 4 5 6
19. Being free of social obligation is:	1 2 3 4 5 6
20. To have something good to say about everybody seems:	1 2 3 4 5 6
21. Telling a waiter when you have received inferior food is:	1 2 3 4 5 6
22. Planning to get ahead without others is:	1 2 3 4 5 6
23. To be able to spot and exploit weakness in others would be:	1 2 3 4 5 6
24. A strong desire to surpass other's achievements is:	1 2 3 4 5 6

25. Sharing my personal feelings with others would be :   1 2 3 4 5 6
26. To have the ability to blame others for their mistakes is :   1 2 3 4 5 6
27. For me to avoid situations where others can influence me
   would be :   1 2 3 4 5 6
28. Wanting to repay others' thoughtless actions with friendship is :   1 2 3 4 5 6
29. Having to compete with others for various reward is :   1 2 3 4 5 6
30. I knew that others paid very little attention to my affairs,
   it would be :   1 2 3 4 5 6
31. To defend my rights by force would be :   1 2 3 4 5 6
32. Putting myself out to be considerate of others feeling is :   1 2 3 4 5 6
33. Correcting people who express an ignorant belief is :   1 2 3 4 5 6
34. For me to walk alone would be :   1 2 3 4 5 6
35. To be fair to people who do things which I consider wrong seems :   1 2 3 4 5 6

APPENDIX B
(본 연구에 사용된 설문지)

이 부분에서는 여러 상황하에서 귀하는 어떻게 느끼시는 가를 질문하고자 합니다.

각 질문마다에는 선택이 가능한 6개의 답안이 나열되어 있습니다만 개인마다 느끼는 바가 다르기 때문에 "옳고" "그른" 답이 있지 않습니다. 따라서 귀하께서는 느끼는 대로 번호를 선택하여 ○표 하여 주십시요.

1) 타인에게 신경을 쓰지 않는다는 것은?

    1. 매우 바람직하지 못하다.
    2. 바람직하지 못하다.
    3. 약간 바람직하지 못하다.
    4. 약간 바람직하다.
    5. 바람직하다.
    6. 매우 바람직하다.

2) 친구가 필요한 사람에게 위안을 준다는 것은?   1. 2. 3. 4. 5. 6.
3) 대부분의 사람들이 언제나 나를 좋아
   한다는 것은?   1. 2. 3. 4. 5. 6.
4) 어떤 논쟁에 있어 있어 다른사람의 주장에
   굴복하지 않는다는 것은?   1. 2. 3. 4. 5. 6.
5) 혼자 좋은 영화를 감상한다는 것은?   1. 2. 3. 4. 5. 6.
6) 다른 사람이 나를 어떻게 생각하는 가에 대해
   별로 신경을 쓰지 않는다는 것은?   1. 2. 3. 4. 5. 6.
7) 대부분 나의 친구들에 앞서 내가 먼저 어떤
   무엇을 가질 수 있다는 것은?   1. 2. 3. 4. 5. 6.

12) 많은 돈과 권력으로 자칭 거물급이라 하는 자 둥에게
　　나를 상당한 사람으로 생각나게 한다는 것은?　　　　　1.　2.　3.　4.　5.　6.

13) 다른 사람에 대해 나의 의무를 다하면서
　　살아간다는 것은?　　　　　　　　　　　　　　　　　　1.　2.　3.　4.　5.　6.

14) 긴장 속에서 일을 한다는 것은?　　　　　　　　　　　　1.　2.　3.　4.　5.　6.

15) 산속 오두막집에서 홀로 살수 있다는 것은?　　　　　　1.　2.　3.　4.　5.　6.

16) 나의 명예를 훼손 시킨 사람에게 벌을
　　준다는 것은?　　　　　　　　　　　　　　　　　　　　1.　2.　3.　4.　5.　6.

17) 가난하고 힘없는 자에게 도움을 준다는 것은?　　　　　1.　2.　3.　4.　5.　6.

18) 지나치게 자신감을 가진 사람을 제재
　　한다는 것은?　　　　　　　　　　　　　　　　　　　　1.　2.　3.　4.　5.　6.

19) 모든 사회적 의무로 부터 해방된다는 것은?　　　　　　1.　2.　3.　4.　5.　6.

20) 모든 사람에 관해 어떤 좋은 면을 이야기 할 수
　　있다는 것은?　　　　　　　　　　　　　　　　　　　　1.　2.　3.　4.　5.　6.

21) 식당에서 별로 좋지 못한 음식을 받았을 때
　　종업원에게 이에 관해 이야기한다는 것은?　　　　　　　1.　2.　3.　4.　5.　6.

22) 남의 도움없이 출세하려는 것은?　　　　　　　　　　　1.　2.　3.　4.　5.　6.

23) 다른 사람의 약점을 알아내어 이를 이용할 수
　　있다는 것은?　　　　　　　　　　　　　　　　　　　　1.　2.　3.　4.　5.　6.

24) 타인의 업적을 능가하려는 강한 욕망을
　　가지는 것은?　　　　　　　　　　　　　　　　　　　　1.　2.　3.　4.　5.　6.

25) 나의 개인적 느낌을 남과 함께 나눈다는 것은?　　　　　1.　2.　3.　4.　5.　6.

26) 나의 잘못을 남의 탓으로 돌릴 수 있다는 것은?　　　　1.　2.　3.　4.　5.　6.

27) 나의 마음가짐을 돌리게 할 수 있는 자리를
　　피한다는 것은?　　　　　　　　　　　　　　　　　　　1.　2.　3.　4.　5.　6.

28) 남의 경솔한 행동에 친구의 우정으로써
　　대한다는 것은?　　　　　　　　　　　　　　　　　　　1.　2.　3.　4.　5.　6.

29) 어떤 댓가를 위해 다른 사람과 경쟁을 해야
　　한다는 것은?　　　　　　　　　　　　　　　　　　　　1.　2.　3.　4.　5.　6.

30) 다른 사람들이 나의 일에 관해 별로 신경을
　　쓰지 않는다는 것은?　　　　　　　　　　　　1.　2.　3.　4.　5.　6.

31) 힘으로써 내권리를 지킨다는 것은?　　　　　　1.　2.　3.　4.　5.　6.

32) 남의 감정에 대해 많은 신경을 쏟는다는 것은?　1.　2.　3.　4.　5.　6.

33) 무식한 견해를 가진 사람을 바로 잡아주는 것은?　1.　2.　3.　4.　5.　6.

34) 홀로 일을 한다는 것은?　　　　　　　　　　　1.　2.　3.　4.　5.　6.

35) 내가 볼때 그릇된 일을 하고 있는 사람에게
　　공평하게 대한다는 것은?　　　　　　　　　　1.　2.　3.　4.　5.　6.