

Concurrent Validity of Different Religiosity Scales Used in Researches of Marketing Ethics and A Proposal For A New Religiosity Scale

Pazarlama Etiği Araştırmalarında Kullanılan Farklı Dindarlık Ölçeklerinin Eş Zamanlı Geçerliliği ve Yeni Bir Dindarlık Ölçeği Önerisi

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Abstract

The aim of this study is to determine the concurrent validity of four religiosity scales that are frequently used in researches related to ethics and to propose a new religiosity scale based on these four scales. A face-to-face survey has been conducted through convenience sampling at vocational schools and small businesses in Edremit Gulf of Balıkesir. This study is based on the findings of three different sampling applied between September and November 2010; the first sample was collected from 400 students, the second from 250 students and the third from 300 sales personnel of small businesses. AMOS 18 and SPSS 16 softwares are used on data analysis. Correlations analysis is applied to determine the concurrent validity of the scales. Exploratory and confirmatory factor analysis is manipulated to develop a scale.

Upon evaluating the findings of this study, four different religiosity scales are observed to be highly correlated. Consequently, these scales can be claimed to have a high concurrent validity. Having been carried out on three separate samples for three dimensional religiosity scale, the results of confirmatory factor analysis support the validity of this new scale.

Keywords: Ethics, Marketing, Religiosity, Scale Development, Validity.

Öz

Bu araştırmanın amacı, etiğe yönelik araştırmalarda sıklıkla kullanılan dört dindarlık ölçeğinin eş zamanlı geçerliklerini tespit etmek ve bu ölçeklerden yola çıkarak yeni bir dindarlık ölçeği önerisinde bulunmaktadır. Araştırma Balıkesir ili Edremit Körfezine bağlı yüksekokullarda ve yine Edremit Körfezinde bulunan küçük işletmelerde kolayda örnekleme yöntemi ile belirlenmiş cevaplayıcılar üzerinde yüz yüze anket uygulanarak gerçekleştirilmiştir. Araştırma Eylül- Kasım 2010'da toplanan üç ayrı örneklemin verilerine dayanmaktadır; ilki 400, ikincisi 250 üniversite öğrencisinden üçüncüsü ise, küçük işletmelerde satış elemanı olarak çalışan 300 kişi üzerinde uygulanan bir anketten elde edilmiştir. Verilerin analizinde AMOS 18 ve SPSS 16 paket programlarından yararlanılmıştır. Ölçeklerin eş zamanlı geçerliklerini belirlemede korelasyon analizi, ölçek geliştirmede ise kişisel ve doğrusal faktör analizi kullanılmıştır.

Araştırma sonuçları incelendiğinde dört farklı dindarlık ölçeği arasında yüksek korelasyon değerlerinin ortaya çıktığı görülmüştür. Bu sonuçla, ölçeklerin eş zamanlı geçerliklerinin yüksek olduğu söylenebilir. Bu ölçeklerden yararlanarak ortaya atılan üç boyutlu dindarlık ölçeği için üç farklı örnekleme üzerinde yapılan doğrulayıcı faktör analizi sonuçları da yeni ölçeğin geçerliğini göstermektedir.

Anahtar Kelimeler: Etik, Pazarlama, Dindarlık, Ölçek Geliştirme, Geçerlik.

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Introduction

There have been many researches on marketing ethics done by marketers and scholars for a long time. It will contribute to the development of marketing theory and marketers to unveil variables that may be referential for the ethical decision making of an individual and to determine their impact degrees. There are several personal factors that affect ethical decision making process of an individual. In Hunt-Vitell model which has been the most cited among ethical decision making models for years (Hunt and Vitell, 1986), these personal factors are listed as ethical sensitivity, cognitive moral development, strength of moral character, value system, belief system and religion. According to this model these variables affect individual level of ethical problem perception whereas the perception level influences respectively ethical judgments, intentions and behaviors. There have been some researches depending on this model (Singhapakdi et al., 2000; Oumlil and Balloun, 2009). All the variables in the model have been analyzed many times and it has been attempted to find new relationships. Religiosity is one of the most popular variable probably because of its measurement difficulty or its continuous place on the agenda (Parameshwaran and Srivastava, 2010, p.46). Various scales have been found out when marketing researches that measure religiosity variable are considered. Indeed, Hill and Hood published a book of 126 religiosity scales in literature in 1999 (Vitell, 2009, p.157). It creates difficulty to adapt these scales to people from different cultures and religions. As all these situations may cause results that can harm measurement sensitivity, it will be useful to develop an extensive measurement instrument that can be applied to any culture and religion.

In order to find out whether the religiosity scales used in marketing ethics literature measure the same thing, the concurrent validity of four different scales have been tested in this study. Moreover, a new religiosity scale has been proposed to solve the generalization problem of current religiosity scales by using the items composing these scales.

Religiosity Concept and Researches on Measurement of Religiosity Level

Although social scientists have tried to define religiosity, there is still a need of a common definition. Having quite extensive researches in this topic, Allport defines religiosity as inner experience of religion (Allport and Ross, 1967). According to Cornwall et

al. (1986), religiosity is a concept that covers an individual's behaviors and the strength of their religious beliefs. McDaniel and Burnett (1990) define religiosity as a commitment to follow principles believed to be set forth by God. According to De George (1986), religion is a motive to be moral and a reference source for the moral behavior. On the other hand, Magill (1992) approached religiosity in terms of moral, and evaluated as an interpretation for ethical behavior. Considering these definitions, the concept of religiosity can be suggested to have three dimensions such as cognitive level (religious knowledge, beliefs), affect (religious feelings), and behavior (towards church, attendance at prayers, etc.) (Barnett et al., 1996). These dimensions are frequently used in measuring individuals' level of religiosity. Likewise, the concept of religiosity defined as "being depend on the teachings of religion of a person, and reflecting these teachings to his/her behaviors" (Johnson et al., 2001). Based on these definitions, Barnett's approach has been taken into account, and it has been thought that sum of religious belief (affect), worship (behavior) and effect of religion on daily life (effect) of an individual constitutes religiosity level of the individual. Some studies on this topic, also, support this approach (Stark and Glock, 1978; Ok, 2011).

Johnstone (1975) summarizes different approaches of religion measurement under three approaches. The first approach is organizational approach in which major religions are stressed and it is questioned whether to be a member of a religious organization. The second approach is individual approach where such issues are considered as individual ritual practice, praying and the importance of religion for individual. The last one is multidimensional approach to religiosity which includes criticism of measuring religion in a single dimension (Khraim, 2010, p. 167-168).

In the earliest studies that attempted to measure religiosity level of an individual, single-question scales that generally included the frequency of ritual attendance were used. The most common question in these scales was "How often do you attend Sunday worship service at church?" (Hall et al., 2008, p.140). It is possible to replace church with synagogue or mosque. However, recent studies have showed that a single-question measurement isn't a valid method to measure religiosity level of an individual.

Although the first seminal scientific works on measurement of religiosity variable were published by James (1902) and Weber (1922), the first important measurement instrument was developed by Allport and Ross through their study following the Second World War (Hall et al., 2008, p.136). This study identifies two dimensions of religiosity as intrinsic and extrinsic dimensions. Intrinsic orientation describes individuals who live their life as they believe and see religion as an end, not a means whereas in extrinsic orientation, religion isn't the fundamental determiner of individual's behaviors. According to this approach, individuals have their own desires and religion shouldn't forbid but help fulfill them (Allport and Ross, 1967). This study includes 9 items for intrinsic religiosity and 11 items for extrinsic religiosity. The scale has been revised by some researches on it (Hoge, 1972; Gorsuch and McPherson, 1989; Kirkpatrick and Hood, 1990). Moreover, in a distinguishing research on this scale, intrinsic religiosity is mentioned to be helpful as a scale to measure individual religiosity alone (Donahue, 1985).

In the same period with Allport and Ross, an important study was performed by King and Hunt that contributed to measurement of religiosity. In 1967 King and Hunt started their study to develop a measurement of religiosity together with a scale of 130 items. At the end of five studies carried out until 1990 the item number was reduced to 98 under 9 dimensions (King and Hunt, 1990). However, this work is problematic in scientific measurement and its application to different cultures due to its huge number of questions and its items (only covers Christianity) that don't

apply to every religion. While this work has been used in religious studies, it is not common to use it as a variable of religiosity level in different disciplines.

After the number of studies investigating measurement of religiosity concept decreased in the 1970's, there has been a serious increase since the 1980's. The most outstanding study in this period is that of Gorsuch and McPherson (1989).

It is difficult to use scales that are proposed by religiosity studies in the field of psychology and religion because they include questions of a specific religion or church and they sometimes use a single question or sometimes too many questions to perform measurement. Although these scales are used in the works on the philosophical relationship between religiosity and ethics, it needs to investigate religiosity more deeply in order to reach a sufficient measurement that can be applied in works of marketing ethics.

Some of the Religiosity Scales Used in Researches of Marketing Ethics

Revised Intrinsic/Extrinsic Religiosity Scale (I/E Revised Scale)

One of the religiosity scales commonly used in marketing ethics is Religious Orientation Scale-ROS developed by Allport and Ross (1967) and its revised version of Intrinsic/Extrinsic Religiosity Scale (I/E Revised Scale) by Gorsuch and McPherson (1989). There are 8 items for intrinsic religiosity and 6 items for extrinsic religiosity in this scale.

Table 1. Revised Intrinsic/Extrinsic Religiosity Scale by Gorsuch and McPherson

No	Items
1	I enjoy reading about my religion. (I)
2	My whole approach to life is based on my religion. (I)
3	I have often had a strong sense of God's presence. (I)
4	It is important to me to spend time in private thought and prayer. (I)
5	I try hard to live all my life according to my religious beliefs. (I)
6	Although I am religious, I don't let it affect my daily life. (IR)
7	Although I believe in my religion, many other things are more important in life. (IR)
8	It doesn't much matter what I believe so long as I am good. (IR)
9	Prayer is for peace and happiness. (E)
10	I pray mainly to gain relief and protection. (E)
11	I go to church mostly to spend time with my friends. (E)
12	I go to church because helps me to make friends. (E)
13	I go to church mainly because I enjoy seeing people I know there. (E)
14	What religion offers me most in comfort in times of trouble and sorrow. (E)

The items in Table 1. compose the revised version of Allport and Ross' (1967) Religious Orientation Scale by Gorsuch and McPherson (1989). This scale is used to measure religiosity variable in researches of marketing ethics (Knotts et al., 2000; De Noble et al., 2007). The first 8 items (I and IR) are aimed to measure intrinsic religiosity (Intrinsic), among which 6th, 7th and 8th items are reversed. And the items between 9 and 14 are used to measure extrinsic religiosity (Extrinsic).

Religious Commitment Scale (Cognitive Commitment Component of Religiosity)

Another scale used in researches of marketing ethics (Barnett et al., 1996) is cognitive commitment component of religiosity that was developed by McDaniel and Burnett in 1990. This component includes three items and measures religious commitment out of religiosity components. Religious commitment can be either intrinsic or extrinsic. In intrinsic religiosity individuals live their religious beliefs whereas they use religion in extrinsic motivation. Table 2. shows items of this scale.

Table 2. Religious Commitment Scale developed by McDaniel and Burnett

No	Items
1	I am very religious.
2	My religious is very important to me.
3	I believe in God.

Santa Clara Strength of Religious Faith Questionnaire- Brief Version

Another scale which aims to replace single-question measurement and narrow scope is Santa Clara Strength of Religious Faith Questionnaire- SC Sof developed by Plante and Baoccaccini (1997). It includes 10 items that can be directed to a believer of any religion. In this work, the factor analysis on these items resulted in a single dimension. Moreover, Plante et al. (2002) proposed a short version of this 10-item scale and a high correlation of ,95 was found between the original and the short versions. Therefore, the authors recommended the short version (Plante et al., 2002). The items in Table 3. are the revised version of Plante and Boccaccini's (1997) religiosity scale by Plante et al. (2002).

Table 3. SC Sof Questionnaire- Brief Version developed by Plante et al. (2002)

No	Items
1	I pray daily.
2	I look to my faith as providing meaning and purpose in my life.
3	I consider my self active in my faith or church.
4	I enjoy being around others who share my faith.
5	My faith impacts many of my decisions.

Religiosity Scale developed by Marta

Religiosity scale developed by Marta (1999) to measure the religiosity level of respondents is composed of 8 items. These items are universal enough to cover various religions. Furthermore, it has a quite high Cronbach's alpha coefficient (0,95) in comparison to single-item measurements (Marta, 1999). Table 4. shows the items of religiosity scale developed by Marta (1999).

Table 4. Religiosity Scale developed by Marta (1999)

No	Items
1	Spirituality is a key to living a happy life.
2	I feel responsible, because of religious values, to help people who are less fortunate than I am.
3	I feel it is important to worship regularly.
4	Religious faith makes life an exciting and challenging journey.
5	My religious beliefs help me to accept other people as they are.
6	My religious faith convinces me that it is better to focus on others than on myself.
7	My religion gives focus and direction to my life.
8	It is vital to support religious organizations financially.

Method and Application

Data Collection and Sampling

This study involves students from three vocational schools and sales personnel from small businesses in Edremit Gulf of Balikesir. And it is composed of three stages. Three different implementations have been performed in the study because determining distinctive items used to measure a sensitive subject such as religiosity is not easy. Therefore, it has been thought that performing more than one pre-study could provide more realistic results. Additionally, data of two of three pre-studies gathered from same and of the other pre-study gathered from different populations. Thus, it could be seen that whether results differentiate both between studies of same population and between different populations. Then, if the scale gives same results in different populations, this would be a proof of validity of the scale. Hence, participants of first two studies are university students, and participants of the other study are sales persons of SME's.

Samples of all three studies are determined with convenience sampling method. Because it has been thought that the scale can be applied to all populations, religions of participants are not queried.

The first application aimed to determine the concurrent validity of four scales that have been mentioned in detail in literature and to pre-test new religiosity scale. In this study only eight of intrinsic religiosity items of the scale developed by Gorsuch and McPherson (1989) were used because the extrinsic religiosity of the scale had inverse correlation to other scales as

it was expected. Therefore, a total of 24 items were used from the four scales. In addition to them, four general items of religiosity scale developed by Coştu (2009) were used (as they seemed consistent with other scales) (Table 5.). This application was carried out in the form of a questionnaire delivered to 400 students who were determined through convenience sampling method from three vocational schools located in Edremit Gulf of Balıkesir (Burhaniye UBYO, Burhaniye MYO and Havran MYO). Out of 400 questionnaire, nine were eliminated from the research due to incomplete or wrong data.

Table 5. The items of Religious Orientation Scale developed by Coştu (2009) used in this research

No	Items
1	I find it right for a person to face some difficulties for the sake of their religion.
2	I feel restless when I don't act on my religious beliefs.
3	I feel a necessity to obey religious rules.
4	I try to correct my wrong religious attitudes and behaviors.

To measure religiosity, totally 28 items were gathered from four scales and four items from Coştu's scale (2009). Table 6. includes explanatory information on these scales.

Table 6. The Scale Distribution of Items Used in the First Application

Researcher (Developed the Scale)	Number of Items
Gorsuch and McPherson	8
McDaniel and Burnett	3
Plante and Boccaccini	5
Marta	8
Coştu	4
Total	28

The second application was performed over 250 students from the same vocational schools. This application didn't have any questions that were omitted from the scope of the research according to the results of the first application. In order to enhance the validity of factor structure resulted from this application, another application was conducted over a different group of respondents. Third application involved sales personnel from small business entrepreneurs in Edremit Gulf of Balıkesir. A-face-to-face survey was applied to 300 sales personnel who were determined through convenience sampling method. Twelve questions were eliminated from the research due to incomplete or wrong data.

Scales Used in this Study

Four different generally accepted scales were used to measure religiosity variable in the first application of

this study. The first scale is 8-item intrinsic dimension of Intrinsic/Extrinsic Religiosity Scale (I/E Revised Scale) of Gorsuch and McPherson (1989) that is the revised version of Allport and Ross' (1967) Religious Orientation Scale. The second scale is three-item scale developed by McDaniel and Burnett (1990). The third scale is Plante et al.'s (2002) brief version (5-item) of 10-item religiosity scale originally developed by Plante and Boccaccini (1997). The fourth scale is the 8-item scale developed by Marta (1999). Also, four items of the religiosity scale developed by Coştu (2009) were used in the research because these items are generalizable like other four scales.

In the second and third applications all the items were used apart from those that were eliminated according to the results of the first application and no more items were added.

All the religiosity questions were asked respondents on the basis of a five-point Likert scale. The items were designed as 1-strongly disagree, 2-disagree, 3-no idea, 4-agree, 5-strongly agree.

Analysis of Research Results

SPSS 16.0 and AMOS 18.0 softwares were used in the analysis of data resulted from three applications. First of all, exploratory factor analysis was carried out on four different scales in order to determine their con-

current validity. Then, correlations between composite variables were analyzed and concurrent validity of the scales was proved. Finally, the structure of new religiosity scale that was proposed with the help of exploratory and confirmatory factor analysis was assessed. The construct that was resulted from the first application was tested through confirmatory factor analysis in the second application. In the final application this construct was re-tested over a different group of respondents.

Results of the First Application

Initially, exploratory factor analysis was performed on the data collected in the first application and their Cronbach's alpha coefficients were measured to find out the internal consistency of the scale. Thereby, concurrent

validity of four different scales was evaluated with regard to the fundamental purpose of this research.

Table 7. shows that research results are suitable for exploratory factor analysis ((KMO>.60). When the internal consistency of the scales were evaluated, Cronbach's alpha coefficients of only McDaniel and Burnett's scale was monitored to be below .70 (.56). This result is supposed to emerge from the structural difference between scale questions. For instance, almost all the respondents gave the highest score to the question of "I believe in God" while the questions of "My religion is very important to me" and "I am very religious" got the lower scores. Depending on this consequence, this scale was eliminated from concurrent validity analysis.

Table 7. Results of Exploratory Factor and Reliability Analysis

Researcher	KMO	Variance Extracted	Factor Loading	Cronbach's α
Marta	.83	.62	.73- .85	.84
Plante ve Boccaccini	.61	.64	.70- .88	.71
McDaniel ve Burnett	.61	.56	.61- .84	.59
Gorsuch ve McPherson	.74	.60	.79- .86	.78

Upon the results of the factor analysis of the scales, a composite variable for each scale was constructed from averages of items composing each scale. Therefore, it was possible to assess the correlation between the scales. Table 8. presents the correlations between composite variables constructed for each scale. That the corre-

lations are statistically meaningful can be interpreted as existence of concurrent validity between the scales. As shown in the table, meaningful correlations at the level of .01 were observed. Depending on these results, the scales can be claimed to measure the same thing. Thus, the scales can be concluded to have concurrent validity.

Table 8. Correlations Among the Scales in Terms of The First Application Results

		Marta	P&B	G&M
Marta	Pearson Correlation	1	.70	.68
	p		.01	.01
	N	391	391	391
P&B	Pearson Correlation	.70	1	.78
	p	.01		.01
	N	391	391	391
G&M	Pearson Correlation	.68	.78	1
	p	.01	.01	
	N	391	391	391

Marta: Marta (1999); P&B: Plante and Boccaccioni (2002); G&M: Gorsuch and McPherson (1989).

After having evaluated the concurrent validity results of the scales, it has started to develop a new religiosity scale as the second purpose of this research. A four-dimensional construct was found at the end of exp-

loratory factor analysis over totally 28 questions aimed to assess religiosity level. In this construct, seven items where factor loading never reaches .35 at any factor, and which are loaded to more than one factor

with a difference less than .10 were omitted from the analysis. This new construct with 21 items had KMO value of .93 and variance of .59 at four factors (eigenvalue= 12,313). When this construct was evaluated carefully, three reverse-coded items in intrinsic scale of Gorsuch and McPherson constituted a separate factor. As a result of this situation which doesn't serve the theory, these three items were eliminated from the analysis and exploratory factor analysis was re-conducted. A new construct of three items emerged from this analysis as it was expected. KMO value of

this new construct was .93 and its variance was .59 at three factors (eigenvalue= 10,693). The questions that are loaded on different factors above .35 were eliminated and factor analysis was run again. And a new construct with 13 items (KMO=0,91) was found that explained .68 of total variance (eigenvalue = 8,815). Finally, upon a detailed evaluation of this construct, it was decided that there was no need for another amendment. Table 9. presents the names given to the construct and its dimensions emerged from the first application.

Table 9. Scale Distribution of Factor Structures Resulted from the First Application

No	Items	Researcher (Developed the Scale)	Dimension
1	My religious is very important to me.	M&B	Affect
2	I feel it is important to worship regularly.	Marta	
3	It is vital to support religious organizations financially.	Marta	
4	I have often had a strong sense of God's presence.	G&M	
5	Religious faith makes life an exciting and challenging journey.	Marta	Behavior
6	I pray daily.	P&B	
7	I enjoy reading about my religion.	G&M	
8	It is important to me to spend time in private thought and prayer.	G&M	
9	I try hard to live all my life according to my religious beliefs.	G&M	Effect
10	My religion gives focus and direction to my life.	Marta	
11	I look to my faith as providing meaning and purpose in my life	P&B	
12	I enjoy being around others who share my faith.	P&B	
13	I find it right for a person to face some difficulties for the sake of their religion.	Costu	

Marta: Marta (1999); P&B: Plante and Boccaccini (2002); G&M: Gorsuch and McPherson (1989); M&B: McDaniel and Burnett (1990); Costu: Coştu (2009).

The construct in Table 9. emerged as a result of exploratory factor analysis. The factor loadings of items on affect dimension ranged from .58 to .88. These values were between .51- .85 for behavior dimension while they ranged from .57 to .89 for the four items of effect dimension. Having been measured for internal consistency of the scale, Cronbach's alpha coefficients were respectively .84, .82 and .85. The consequent dimensions were consistent with cognitive, behavioral and affective dimensions in religiosity literature (Barnett et al.: 1996).

Once data reduction was completed, the second application was carried out to test this construct.

Findings of the Second Application

In the second application a sample of 250 students different from the first application determined through convenience sampling method was asked 13 questions that composed a meaningful construct in the first analysis. When exploratory factor analysis was

applied to this data, KMO value of .94 and variance of 69 percent at three factors (eigenvalue=9,694) was recorded. Analysis of factor dimensions showed that the questions loaded on three factors were the same as those in the first application. This finding is important in terms of construct validity. Table 10. represents the results of exploratory factor analysis in the second application.

Table 10. The Results of Exploratory Factor and Reliability Analysis in the Second Application

Scale Dimensions	KMO	Variance Extracted	Factor Loading	Cronbach's α
Total	.94	.69	.58- .87	.93
Affect	.84	.64	.71- .87	.85
Behavior	.82	.70	.80- .89	.85
Effect	.80	.71	.82- .90	.86

Table 10. shows that items of scale dimensions are possible to be summarized within a composite variable for each one because of high variance extracted values. At the end of confirmatory factor analysis that aimed to test the construct emerged from exploratory

factor analysis, results reached an acceptable level of conformity (Bayram, 2010, p.78) by eliminating two items at affect dimension (CMIN/df: 2,55; SRMR: 0,04; RMSEA: 0,07; GFI: 0,92; NFI: 0,94; CFI: 0,96). Indeed, these two factors were observed to be much loaded on other factors in the exploratory factor analysis carried out both in the first and the second applications. Therefore, it was decided to eliminate these two factors from the analysis.

After these results, another test was run in order to increase the construct validity of scale.

Findings of the Third Application

In the final application the construct obtained at the first application was tested on a different sample. It was applied to 288 sales personnel at small business entrepreneurs. Firstly, exploratory factor analysis was performed on research data and it was detected that items loaded on scale dimensions as expected. Moreover, separate Cronbach's alpha coefficients were calculated for the whole scale and for each dimension. These findings are presented in Table 11.

Table 11. The Results of Exploratory Factor and Reliability Analysis in the Third Application

Scale Dimensions	KMO	Variance Extracted	Factor Loading	Cronbach's α
Total	.92	.73	.49- .92	.92
Affect	.69	.74	.84- .90	.82
Behavior	.81	.71	.81- .89	.86
Effect	.80	.70	.81- .88	.85

At the end of confirmatory factor analysis that aimed to test the construct resulted from exploratory factor analysis, as in the second application a more acceptable and statistical findings were reached by eliminating two items at affect dimension (CMIN/df: 2,93; SRMR: 0,04; RMSEA: 0,08; GFI: 0,93; NFI: 0,94; CFI:

0,96). Therefore, it was confirmed to be an appropriate decision to eliminate these two factors from the analysis of the second application.

The new religiosity scale proposed as a result of three applications is presented in Table 12.

Table 12. Descriptive Information on new Scale Proposed as a Result of Three Applications

No	Items	Researcher (Developed the Scale)	Dimension
1	My religious is very important to me.	M&B	Affect
2	I feel it is important to worship regularly.	Marta	
3	Religious faith makes life an exciting and challenging journey.	Marta	
4	I pray daily.	P&B	Behavior
5	I enjoy reading about my religion.	G&M	
6	It is important to me to spend time in private thought and prayer.	G&M	
7	I try hard to live all my life according to my religious beliefs.	G&M	Effect
8	My religion gives focus and direction to my life.	Marta	
9	I look to my faith as providing meaning and purpose in my life	P&B	
10	I enjoy being around others who share my faith.	P&B	
11	I find it right for a person to face some difficulties for the sake of their religion.	Costu	

Marta: Marta (1999); P&B: Plante and Boccaccini (2002); G&M: Gorsuch and McPherson (1989); M&B: McDaniel and Burnett (1990); Costu: Coştu (2009).

Reliability and Validity Analysis

To assess the reliability of research findings, Cronbach's alpha coefficient was calculated. Item analyses based on item-to-total correlations, item-to-remainder correlations and the high-low groups averages were conducted to statistically confirm construct validity of scale. Item analyses provide clues

about construct validity of scale because this analysis aims to construct a consistent scale by determining whether it measures one of traits to be calculated without mixing it with other traits (Tavşancıl, 2002, p.151). Table 13. presents separate Cronbach's alpha coefficients of three different applications and scale dimensions and item-to-total and item-to-remainder

correlations calculated for each item. Given these measurements, internal consistency of items that compose scale dimensions at each application can be said to be at a sufficient level ($\alpha > .70$). That item-to-total and item-to-remainder correlations are at a high level and statistically meaningful shows items' reliability and calculating the same behavior. Given that items with an item-to-total correlation higher than .30 discriminate individuals to a great extent, item discrimination can be thought to be high (Büyükoztürk, 2007).

After factor totals of ratings by respondents had been calculated for each item of scale to assess item-to-

total correlations, Pearson's correlation coefficients were computed between each item and total points of the factor it belonged to. Item-to-remainder correlation means Pearson's correlation coefficients between an item and the values of item-to-total scores minus that item (Bindak, 2005, p.20). Therefore, the correlation coefficients between the item and the total variable including that item refers to item-to-total correlation whereas the correlation coefficients between the item and the total variable excluding that item-to-remainder correlation.

Table 13. Item-to-total Correlations, Item-to-remainder Correlations and Cronbach's alpha Coefficients

ITEMS AND DIMENSIONS	A1 ITC	A1 IRC	A2 ITC	A2 IRC	A3 ITC	A3 IRC
AFFECT α	.78		.83		.82	
My religious is very important to me.	.81	.63	.84	.69	.81	.64
I feel it is important to worship regularly.	.86	.66	.90	.76	.89	.74
Religious faith makes life an exciting and challenging journey.	.84	.57	.87	.67	.87	.65
BEHAVIOR α	.82		.85		.86	
I pray daily.	.79	.59	.82	.64	.83	.66
I enjoy reading about my religion.	.78	.62	.83	.69	.82	.68
It is important to me to spend time in private thought and prayer.	.86	.73	.87	.77	.88	.79
I try hard to live all my life according to my religious beliefs.	.81	.65	.83	.69	.82	.68
EFFECT α	.85		.86		.85	
My religion gives focus and direction to my life.	.86	.72	.83	.67	.83	.67
I look to my faith as providing meaning and purpose in my life	.89	.80	.89	.80	.88	.77
I enjoy being around others who share my faith.	.80	.64	.83	.70	.82	.68
I find it right for a person to face some difficulties for the sake of their religion.	.78	.62	.82	.67	.81	.66
A1: Application 1; A2: Application 2; A3: Application 3; ITC: Item-to-Total Correlation; IRC: Item-to-Remainder Correlation; α : Cronbach's α Coefficient						

To collect more evidence about item discrimination, item analyses were carried out through high-low groups averages. Initially, the scores given to respondents for each item were ranged from the highest to the lowest. The average points obtained from the responses of participants who were in the high and low groups of 27% were compared through independent samples

T-test and results are presented in Table 14. According to the test results, the differences between the high group of 27% and the low group of 27% were found to be statistically meaningful in all the comparisons. Thereby, the high item discrimination of these items was proven once again.

Table 14. Item Analysis Results based on High-Low Groups Averages

Item No	Application 1			
	Highest 27% (Mean)	Lowest 27% (Mean)	t	p
1	5,00	3,58	12,779	.001
2	5,00	2,85	20,202	.001
3	5,00	2,08	31,924	.001
4	4,15	0,84	54,697	.001
5	5,00	2,23	30,711	.001
6	4,84	1,84	40,022	.001
7	4,87	1,85	36,716	.001
8	4,91	1,45	45,294	.001
9	5,00	2,13	28,331	.001
10	5,00	2,10	29,278	.001
11	5,00	2,36	25,486	.001
Item No	Application 2			
	Highest 27% (Mean)	Lowest 27% (Mean)	t	p
1	5,00	3,46	14,201	.001
2	5,00	3,06	16,554	.001
3	5,00	2,51	23,484	.001
4	4,51	1,44	35,354	.001
5	5,00	2,33	29,557	.001
6	4,92	2,29	28,721	.001
7	5,00	2,31	31,174	.001
8	4,97	2,13	29,842	.001
9	5,00	2,56	21,202	.001
10	5,00	2,66	20,926	.001
11	5,00	2,47	23,247	.001
Item No	Application 3			
	Highest 27% (Mean)	Lowest 27% (Mean)	t	p
1	5,00	3,53	15,222	.001
2	5,00	3,11	17,027	.001
3	5,00	2,53	24,991	.001
4	4,49	1,37	38,540	.001
5	5,00	2,27	31,830	.001
6	4,91	2,22	30,618	.001
7	4,96	2,24	32,547	.001
8	4,94	2,02	30,839	.001
9	5,00	2,48	22,614	.001
10	5,00	2,53	24,252	.001
11	5,00	2,44	25,303	.001

Upon statistical evaluation of construct validity of scale was completed, unidimensionality, convergent and discriminant validity was also investigated. Table 15. presents the standard factor loadings of three-dimensional construct resulted from confirmatory factor analysis for each application. The table shows that the observed variables (research questions) of each dimension load on latent variables (dimensions). When all the dimensions are considered, the total T values calculated for the paths between dimension and items composing that dimension was significant at the level of .001. These results proved the convergent validity of scale items.

Means, standard deviations (SD) and variance extracted for each scale dimension were calculated and presented together with correlation values between dimensions in Table 16. As known, in order for factor constructs to have discriminant validity, squared correlation coefficients of scale variables with other variables should be lower than the variance extracted by that variable. For example, variance extracted at a factor of affect dimension in the third application was .74 and correlation coefficient between affect and behavior dimensions was .70. As squared correlation coefficient (.49) was lower than variance extracted (.74), discriminant validity could be mentioned between these variables. When the same measurement was applied to other variables, discriminant validity was observed among all the variables.

Table 15. Standard Factor Loadings of the Structure resulted from DFA

ITEMS AND DIMENSIONS	Application 1 Standardized Factor Loading	Application 2 Standardized Factor Loading	Application 3 Standardized Factor Loading
AFFECT			
My religious is very important to me.	.73	.77	.71
I feel it is important to worship regularly.	.79	.87	.88
Religious faith makes life an exciting and challenging journey.	.71	.77	.76
BEHAVIOR			
I pray daily.	.64	.67	.70
I enjoy reading about my religion.	.68	.75	.74
It is important to me to spend time in private thought and prayer.	.77	.82	.84
I try hard to live all my life according to my religious beliefs.	.82	.83	.82
EFFECT			
My religion gives focus and direction to my life.	.86	.80	.79
I look to my faith as providing meaning and purpose in my life	.91	.87	.86
I enjoy being around others who share my faith.	.66	.75	.74
I find it right for a person to face some difficulties for the sake of their religion.	.64	.71	.70

Table 16. Means, Standard Deviation, Variance Extracted and Correlation Coefficients of Scale Dimensions

DIMENSIONS	Application 1					
	Mean	σ	V.E.	Correlations		
				1	2	3
Affect	4,22	.89	.70	1	.53	.61
Behavior	3,32	1,01	.66	.53	1	.69
Effect	3,76	1,08	.70	.61	.69	1
	Application 2					
	Mean	σ	V.E.	Correlations		
				1	2	3
Affect	4,22	.83	.76	1	.61	.72
Behavior	3,58	.95	.70	.61	1	.74
Effect	3,91	.93	.71	.72	.74	1
	Application 3					
	Mean	σ	V.E.	Correlations		
				1	2	3
Affect	4,22	.80	.74	1	.59	.70
Behavior	3,53	.97	.71	.59	1	.73
Effect	3,87	.94	.70	.70	.73	1

V.E. : Variance Extracted

On the other hand, principal components analysis was separately applied to items of each scale and these items (without any eliminated item) loaded on one factor as a group. This result provided evidence for unidimensionality validity of scale (Table 17.).

Results and Further Research Implications

There are several scales developed to measure religiosity variable as an important variable in many discip-

lines of the social sciences. However, some of them are not accepted to be reliable and valid as they are single-item scales while some are composed of too many items to cause measurement difficulties. Furthermore, some of the scales in literature creates generalization obstacle as they include items referring to specific religions. Therefore, there is a need for reliable and valid scales that can be generalized and easily measured at any community.

Table 17. Principal Components Analysis Results That Show Dimensional Factor Loadings

Research Items	Application 1	Application 2	Application 3
AFFECT			
My religious is very important to me.	.85	.87	.84
I feel it is important to worship regularly.	.87	.90	.90
Religious faith makes life an exciting and challenging journey.	.79	.85	.84
BEHAVIOR			
I pray daily.	.76	.80	.81
I enjoy reading about my religion.	.79	.83	.83
It is important to me to spend time in private thought and prayer.	.87	.89	.89
I try hard to live all my life according to my religious beliefs.	.81	.84	.83
EFFECT			
My religion gives focus and direction to my life.	.86	.82	.82
I look to my faith as providing meaning and purpose in my life	.90	.90	.88
I enjoy being around others who share my faith.	.80	.83	.83
I find it right for a person to face some difficulties for the sake of their religion.	.78	.82	.81

This study of three different applications has mainly two objectives. First one is to determine concurrent validity of four different religiosity scales that are frequently used in literature and tested for validity. In the end, one of the scales was eliminated as it didn't provide an integrally reliable Cronbach's alpha value. And concurrent validity analysis was carried out on other three scales. A composite variable composed of scale items' averages was constructed for each scale, and correlations between these variables were calculated. High correlation values such as .68, .70 and .78 were observed between three scales. All the correlations were significant at the level of .001. Therefore, scales were concluded to measure the same thing, in other words, to have concurrent validity. All three scales were sufficient enough to replace each other. After they were clearly proved to measure religiosity, it was started to develop a more extensive religiosity scale given these scale items.

The second objective of this study is to develop a new religiosity scale given items of the scales that were proved to be valid in literature. A three-dimensional construct was obtained at the end of exploratory factor analysis that was performed on 28 items of the first application. Once item elimination was completed, 13 items were concluded that described three-dimensional construct the best. A second application was done in order to see results of this construct over a different group of people. In this application, respondents were asked 13 items resulted from the first application and other items were eliminated from the scope of the study.

The exploratory factor analysis conducted on findings of the second application confirmed three-dimensional construct. But statistically more significant and acceptable results were obtained provided that the construct was modified according to confirmatory factor analysis and accordingly two items were eliminated from the structure. An application over a different group of people was carried out to enhance scale validity. The respondents were again asked 13 items resulted from the first application.

At the end of confirmatory factor analysis conducted in the third application, more meaningful results were obtained by eliminating two items as they were previously proposed. Thus, the scale of 11 items in three dimensions of affect, behavior and effect were successful at every test. The affect dimension of religiosity represents religious faith and importance given to religion. The behavior dimension refers to the importance given to religious practice. And the effect dimension involves to what extent religion affects life of individual.

Cronbach's alpha coefficient was computed to test scale validity. Nine Cronbach's alpha values for all the applications and dimensions ranged from .78 to .86. Therefore, scale reliability existed for all the dimensions at all applications. To assess structural validity of scale, item analyses were carried out. As a consequence of these item analyses, item-to-total and item-to-remainder correlations had meaningful values. This result showed that scale items were reliable and aimed to measure the same behavior. Another analysis

applied to items was item analysis based on high-low groups averages. According to this, the average points obtained from a respondent group of 27% who rated each item the highest and a group of 27% who rated each item the lowest were analyzed through independent samples T-test. All the items were observed to have meaningful T values at the end of the analysis which meant that items had sufficient discrimination and measurement strength.

Upon statistical evaluation of structural validity of scale was completed, unidimensionality, convergent and discriminant validity was also investigated. At the end of T tests that aimed to investigate whether factor loadings obtained from confirmatory factor analyses were meaningful or not, factor loadings were proved to be meaningful for all the items in all applications. This result suggested the convergent validity of scale items. To investigate discriminant validity that relied on discrimination of scale dimensions from each other, interdimensional correlation coefficients were evaluated for each application. The squared correlation coefficients between scale variables and other variables were found to be lower than variance extracted for the related variable in each application. This result can be accepted as an important evidence for discriminant validity of scale. On the other hand, when primary components analysis was separately applied to items composing each scale dimension, these items (without excluding any item) loaded on a single factor as a group. This result supported unidimensionality validity of scale. But high covariance values between scale dimensions suggested that scale dimensions couldn't be used as a scale on their own. Therefore, scale should be taken as a whole and scale dimensions shouldn't be used as a separate scale.

Given all these results, the three-dimensional scale of 11 items can be concluded to be a reliable and valid scale. However, no scale is claimed to be absolutely reliable or valid. Scale validity can be enhanced with the same results achieved in different cultures and sectors.

This research has been implemented in order to determine if some religiosity scales used in marketing ethics researches have concurrent validity, and suggest a scale, starting from these scales, that is neither extremely comprehensive nor narrow-scoped, could be applied in marketing ethics researches and has statistical validity. However, scales used in this study are not only used in marketing ethics researches but also in sub-branches of business ethics and different fields of social sciences researches. Therefore, it would be

wrong to state that this new scale emerged as a result of this research could be only used in marketing ethics researches. The scale might be used in other social research fields if it is convenient with aims of researches.

It is a deficiency that whether there is social desirability bias in responses. As a matter of fact, an individual may want to show him/herself different from actual in issues such as religion and ethics. On the other hand, being based on results of three different pre-studies somewhat reduces these concerns.

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