Original Paper

Validating Instruments Applied In Studying the: Relationship between Religious Commitment, Peer Relations and Behaviour of Adolescents Implications for School Counselling

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Abstract

The main purpose of this study is to validate the three instruments applied in studying the relationship between Religious Commitment, Peer Relations and Behavior of secondary school adolescents (Mwita, 2010). The greatest challenge in understanding the behavior of people is the adequate measurement of abstract construct (Hinkin, 1989). Thus confirmatory factor analysis was conducted, and factors derived from all the three instruments were then explored by orthogonal rotations. Three factors were extracted from the behavior items, two from the peer relations items and two from the religious commitment items. Reliability scores between the constructs indicated statistically significant difference on the latent factors of all the three instruments. Constructs were further validated by determining Average Variance Extracted (AVE) where high scores of AVE (between 0.8 & 0.9) and high factor scores of ≥.4 (Hair et al., 2010) were obtained. Finally, constructs were validated by applying SEM which proved the validity of all the constructs by obtaining good fit indices.

Keywords

religious commitment, peer relations, behavior, factor analysis, construct validity

1. Introduction

Most adolescents move successfully through the lengthy path to adulthood, but many groups including Muslims, do not. This is because adolescence is a period when emotional highs and lows increase and thus imitate the behavior of adults in different degrees (Bandura, 1989). The transition from adolescence to adulthood is characterized by intensified contacts with peers and an entrance into new

social contexts. Bandura's Social interaction theory, explains that peer selection and peer influence effects are both important in the formation and continuation of normal peer relationships as well as deviant peer groups. Whereby, deviant peer involvement is known to be one of several factors that contribute to the development of antisocial behavior. But, Muslims believe that, no matter how deviant one has become, he/she can ask for pardon from the Almighty God, without repeating the same mistake and he/she (with God's Mercy) will get back to fitra a stage of purity. Muslims believe that to be religiously moral one has to control his desires and passion.

According to Bandura's social learning theory, girls and boys tend to imitate the behavior of more powerful people around them. They might be attracted by someone whom they admire, for example the powerful parent, or the third person, or the behavior itself (Ormrod, 1999). This explains the meaning of multiple behaviors of the students of International Islamic School (IIS) in Malaysia, who originated from more than 60 countries around the world and also belonged to the group of elites and/or professional parents. Thus they are exposed to multiple models within their home environments, school environments and their life styles. Some researchers declare a biological difference between male and female brain in the development of cognitive skills (Maubach & Morgan, 2001), however Rafik and Lualdi (1990) stated that evidence are scant and inconclusive. Some of the researchers even claim for an existence of gender differences in motivation and academic achievement.

A Study conducted by Finn, Pannozo, and Achilles (2003) indicated that students with antisocial behaviors were coming late to class, annoying peers or/and interfere with their work, verbally or physically abusive to teachers and frequently need to be reprimanded. Almost the same picture was observed at the IIS (Mwita et al., 2010).

In the Qur'an, there are various warnings pertaining to wrong doers, and various wonderful promises pertaining to the followers of the right path, i.e., those who do what God wants them to do and leave what God wants them to leave is clearly explained in many verses of the Qur'an. Astonishingly, some of the people choose to go astray especially adolescents who are learning by imitating others—peers, friends, parents and some famous people around them (Bandura, 1986). Despite of the elaborated consequences in the Qur'an, yet some of the Muslim adolescents tend to imitate and support each other on such forbidden behaviors. This indicates a high demand of spiritual counseling to Muslim youths.

Helping these adolescents in making appropriate decisions and in selecting the right peer groups, counselors can apply Bandura's Social Interaction Theory which explains that peer selection and peer influence effects are both important in the formation and continuation of normal peer relationships as well as deviant peer groups (Bandura, 1986). In guiding Muslim adolescents, counselors may also add some Islamic Approaches by applying Qur'an and practices of Prophet Mohammad, who is considered the best role model by all the Muslims. Deviant peer involvement is known to be one of the several factors contributing to antisocial relationships. The Qur'an says:

Evil (Sins and disobedience to Allah) has appeared on land and sea because of what the hands of men have earned (by oppression and evil deeds) that He (Allah) may make them taste a part of that which

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they have done, in order that they may return by repenting to Allah, and begging His pardon [Al-Rûm 30: 41], "and if not, (i.e., when he turns away) his effort in the land is to make mischief therein and to destroy crops and cattle, and Allah loves not mischief. And when it is said to him", fear Allah, he is led by arrogance to (more) crime. So enough for him is Hell, and worst indeed is that place to rest (Al-Baqarah 2, pp. 205-206).

However, many Muslims still go against God's wishes, despite knowing that their actions would lead them to the eternal Hell-fire. Muslim counselors may apply Qur'an and the practices of Prophet Mohammad's practices in counseling and guiding these adolescents. However, all counselors can be encouraged to use Bandura's model of reciprocal causation shown in Figure 1 which explains that behavior, cognition and other personal factors, and environmental influences, all operate as interacting determinants that influence each other bidirectional. This theory can also be applied in preventing or rectifying psychological problems during adolescence that can be a precursor of later psychiatric disorders during young adult hood as also stated by Ferdinand, Stijnen, Verhulst, and Van Der Reijden (1999). Counselors can also apply Bandura's Social Learning Theory which emphasizes the importance of observing and modeling the behaviors, attitudes and emotional reactions of others. It explains that, one learns how new behaviors are performed, and uses this stored information as a reference or guide for action (Bandura, 1986).
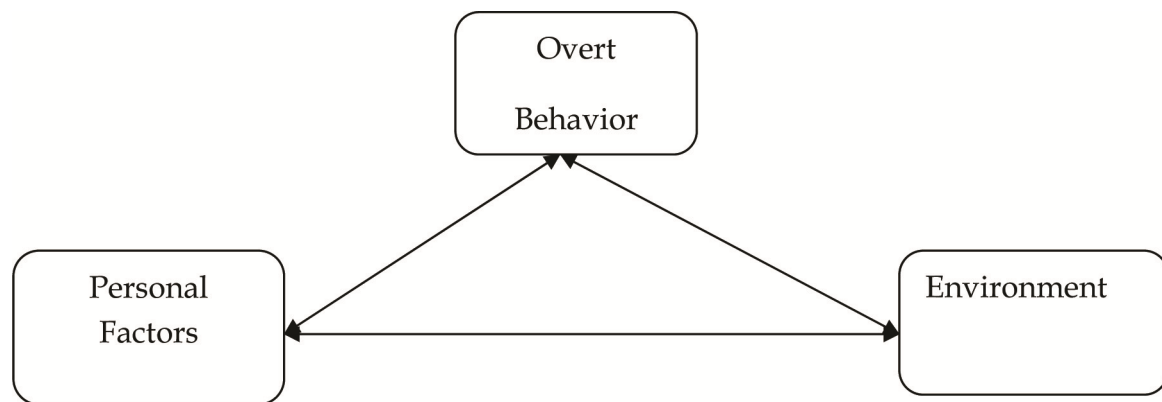
Figure 1. Triad Reciprocality Model (Bandura, 1986)

Mwita et al. (2010), conducted a survey to 103 students and their 7 teachers from 6 grades. The students age range was between 11 and 16 years, with an average age of 14 years old. Selection of the respondents was through a convenient sampling, which was done primarily on the basis of respondents availability and willingness to respond, as suggested by Shaughnessy, Zechmester, and Zechmester (2006). In their study (Mwita et al., 2010) used three types of questionnaires whereby all items were measured on a 1-5 point Likert scale, ranging from "strongly disagree to strongly agree".

- **The Modified Child Rating Questionnaire** (Mwita et al., 2010), was adapted from the *Child rating Questionnaire Strayer (1985),* which was especially developed for teachers to assess the students

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social behaviors. Strayers (1985) had 52 Items but in the modified version (2010), 5 items were not used and only 47 items were used. In designing his questionnaire, Strayer (1985) adapted the Prosocial Behavior Questionnaire of Weir, Stevenson, and Graham (1980) and also the Affect Expression Questionnaire of Buck (1977). Strayer (1985) reported that the 2 stated questionnaires had been previously used to measure the social and antisocial behavior. Therefore, after the removal of 5 items from *Child rating Questionnaire Strayer (1985)*, Mwita et al. (2010) used it in assessing the social and antisocial behavior of IIS students. The Cr. Alpha for Social Items was 0.86 and for anti-social items Cr. Alpha 0.06. Therefore anti-social items can be considered unreliable, thus became one of the reasons for validating the instruments applied in a study conducted by Mwita et al. (2010) as also suggested by Hikin (1998), who recommended factor analysis in refining a new scale.

- **Religious commitment Questionnaire** was designed with reference to th*e Religious Commitment Inventory-10* which was developed by Worthington, Wade and Hight, Ripley, McCullough, Berry, Schmit, Bursley, and OConnor (2003). They had adapted this tool from *Religious Commitment Inventory-17* (Hodge, 1972) who adapted it from King and Hunt (1979). This tool was developed for the purpose of development, refinement, and validation of a brief scale for research and counseling. Through Exploratory Factor Analysis, Worthington et al., extracted 7 items from *Religious Commitment Inventory-17 and came up with a Religious Commitment Inventory-10* which Mwita et al. (2010) adapted in designing their tool by modifying 9 out of 10 items so as to suit the Muslim Adolescents. In assessing its validity, Mwita et al. (2010) obtained Cr Alpha 0.7.

- **Peer relations questionnaire (2010)** originated from the Index of Peer Relations which was validated by Klen, Beltran, and Sowers-Hoag (1990), from the School of Social Work, Florida State University, USA. The Index of Peer Relations (IPR) is a short, easily administered, and simply scored instrument which was designed to assess the severity or magnitude of an individual's problem in experiencing peer relationships. Hudson (1993) described The IPR as a short-form, 25-item self-report questionnaire that is administered to individual adults and young adults over the age of 12 years, which is also the age range of IIS students (12 and 18 years old). In their study Mwita et al. (2010) minimized it to 20 items and the Cr Alpha 0.86 was obtained for social peer relations items, on the contrary only 0.06 Cr Alpha was obtained for anti social items. This indicated either invalid items or due to its negative nature. This result is one of the reasons which prompted Mwita et al. (2010) to validate the three instruments. Hikin (1998), recommend factor analysis in refining a new scale, thus authors of this study decided to conduct an Exploratory factor analysis so as to validate the constructs and confirm them with SEM which is one of the best statistical tool in validating instruments.

Based on literature reviews including theories, field observations, focus group discussions and statistical results, Mwita et al. (2010) assumed that religious commitment influences behavior on the other hand behavior determines peer relationships, where positive behavior influences social peer relationship and negative behavior influences antisocial peer relationships.

In our current study, we designed a theoretical model (Figure 4), based on the assumptions made by

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Mwita et al. (2010). Exploratory Factor Analysis was carried-out so as to validate the instruments used in studying the relationship between religious commitment, peer relations and behavior of adolescents. This is based on the suggestion made by Antonakis and Dietz (2010) who demonstrated that a theoretical approach and the use of poor procedures can result in biased validity estimates. And also according to Hikin (1998), who recommend factor analysis in refining a new scale. This is the missing gape in the study of (Mwita et al., 2010). Therefore the main purpose of the present study was strictly confirmatory of the assumption made after completion of the first study through exploration of the latent factors in the Religious Commitments, Peer Relations and Positive Behavior Instruments as well as the Structure equation modeling.
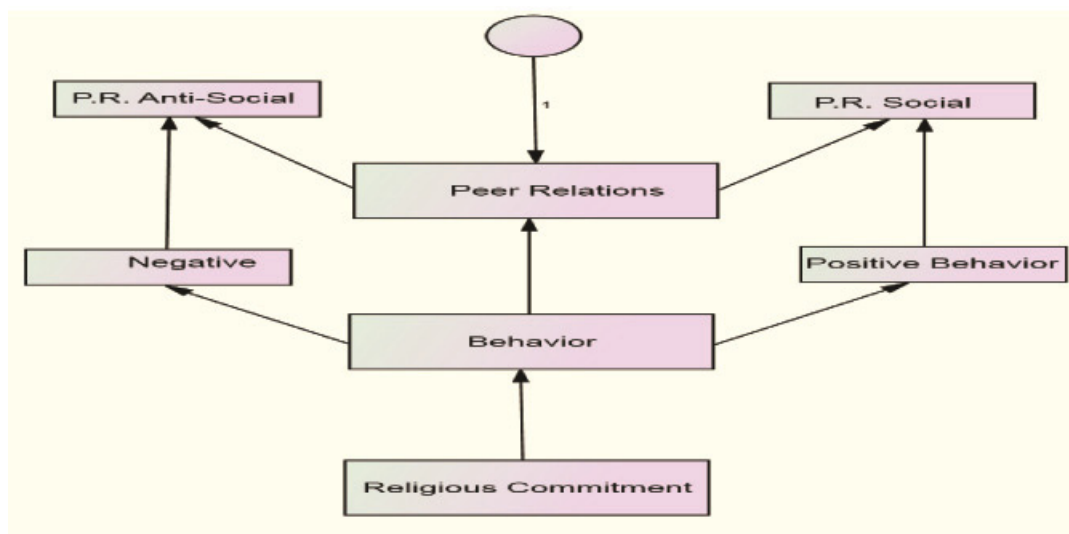

Figure 2. Theoretical Model

2. Instrument Validation

Researchers applied the Principal Component Analysis (PCA) to explore the underlying constructs among Positive Behavior, Religious Commitment and Peer Relations items. Kaiser-Mayer-Olkin (KMO) and Bartletts test of Sphericity were measured and good results were obtained as indicated in Table 1. Bartletts test of sphericity was significant for all the constructs, which indicated that the correlation matrix was not an identity matrix.

Table 1. Kaiser-Meyer-Olkin Measures of Sampling Adequacy & Bartlett's Tests of Sphericity

	KMO	x^2	Df	P
Religious Commitment	0.704	171.274	36	.000
Peer Relations	0.862	838.717	171	.000
Positive Behavior	0.946	2528.874	300	.000

Normal Kaiser-Meyer-Olkin Measures of Sampling Adequacy is ≥0.6 and Bartlett's Tests of Sphericity is ≤0.05 Pallant (2005). As indicated in Table 4, KMO for religious commitment items was 0.704; for Peer Relations items was KMO 0.862 and for behavior items it was KMO 0.946 and all the three instruments had a significance of 0.00, this suggested that factor analysis was appropriate and the sample size was adequate for meaningful factorability (Pett, Lackey, & Sulivan, 2003). Thus, the choices of PCA and Varimax rotation were made based on the exploratory nature of this study and the low correlation among the latent factors (Pett et al., 2003; Green, Neil, & Salkind, 2005). Furthermore, the solution of oblique rotation was identical to that of orthogonal rotation.

The number of factors was based on the analysis of Kaiser Normalization criteria (Pett et al., 2003), screed plots and theoretical frame works in the related study on religious commitment, peer relations & behavior. Researchers chose the three factor orthogonal solution for behavior factors; two factor orthogonal solutions for religious commitment factors; and two factors for peer relations factors. Interpretation was based on simple structure convergence, item loadings and conceptual clarity. From 7 constructs, behavior Items were reduced to 3 factors, i.e., morality, confidence and human relations. All three factors had Eigen values of more than one. The first one had Eigen value 16.1, explained by 64% variance; the second one had Eigen value 1.1, explained by 4.5% variance and the third one was 1.0 explained by 4.2% variance, making a total of 73% of Variance explained.

To begin with peer relations had four constructs but having only one construct that had factors which were ≥.4 the other three had very weak factors, so it was decided to set the rotation for two components. Therefore three items were having more than 1 Eigen value, but only two constructs were extracted-Social and Anti-Social Peer Relations. Two components were extracted from religious commitment questionnaire, i.e., religious values and religious practice. It began with three components, while the third component had a single item, therefore it was r peduce to two components. Each component had an Eigen value of one. The first component was explained by 31.9% variance and the second was explained by 15.3% variance. This made a total of 47.2% of variance explained.

3. Parameter Estimates for the CFA Measurement Models of Latent Factors

Table 2. Three Latent Factors Related to Positive Behavior items

FACTOR 1: Morality	Indicators	Factor Loading	Mean	Composite Reliability	AVE
1. Responds in a positive way if someone else does something well.	PB18	.782	3.60	77.053	0.992
2. Is aware and considerate of the feelings of others.	PB15	.738	3.52		
3. Tries to be fair in games or activities	PB7	.717	3.81		

4. Shows imagination or creativity in work or play.	PB30	.708	3.54		
5. Settles into work or other activities quickly.	PB11	.707	3.66		
6. Shows high levels of responsibility.	PB14	.696	3.61		
7. Volunteers to help clean up a mess someone else has made.	PB21	.689	3.26		
8. Shows a strong competitive spirit.	PB26	.665	3.62		
9. Offers to help people who are feeling sick or in trouble.	PB16	.639	3.60		
10. Is generally cooperative.	PB25	.638	3.58		
11. Can work easily in a small group.	PB13	.619	3.71		
12. Shares play (games) food or other materials with others.	PB10	.591	3.59		
13. Offers to help other people who are having difficulty with a task or activity.	PB24	.581	3.44		
FACTOR 2: Confidence		**Factor Loading**	**17.8660**	**Composite Reliability**	**AVE**
1. Is highly verbal.	PB20	.796	3.29	**77.053**	**0.983**
2. Demonstrates good intellectual problem-solving skills.	PB28	.785	3.45		
3. Is vocal about asserting rights and opinions.	PB27	.732	3.64		
4. Shows maturity for his or her age in actions and judgments.	PB31	.656	3.38		
5. Is independent and not overly influenced by group activities.	PB33	.621	3.55		
6. Has good interpersonal social skills; relates easily to others.	PB19	.576	3.42		
FACTOR 3: Human Relations		**Factor Loading**	**Mean**	**Composite Reliability**	**AVE**
1. If there is a fight or quarrel, tries to stop it.	PB1	.781	3.52	**77.053**	**0.979**
2. Likes to socialize with others rather than be alone.	PB4	.742	3.70		
3. Goes to the help of someone who has	PB5	.700	3.90		

been hurt.

4. Is content and happy most of the	PB9	.680	3.83
time.	PB2	.536	3.50
5. Expresses feelings openly and is			
easy to "read" emotionally.	PB6	.509	3.66
6. Cares about other people.			

Table 3. Two Latent Factors Related to Adolescence Religious Commitment (Modified)

FACTOR 1: Religious Practice	Indicators	Factor Loading	Mean	Composite Reliability	AVE
1. I often read Qur-an, Hadith and books/articles on Islam	RC6	.721	3.38	9.647	0.928
2. Islamic Religion is especially important to me because it answers all my questions	RC5	.669	4.21		
3. I enjoy working in the activities of Islamic organization	RC7	.638 .	3.42		
4. I enjoy spending time with other Muslims	RC8 RC9	580 .507	4.13 4.21		
5. I keep well Informed about local Islamic activities within my area and take part in some of them					

FACTOR 2: Religious Values	Indicators	Factor Loading	Mean	Composite Reliability	AVE
1. It is important to me to spend periods of time in private Islamic thoughts and reflection	RC3	.807	3.8	9.647	0.880
2. I spend time trying to grow in understanding Islam	RC2	.720	3.64		
3. Islamic beliefs influence all my dealings in life	RC4	.613	3.50		
4. I spend time trying to grow in understanding of Islam	RC1	.613	3.57		

Table 4. Two Latent Factors Related to Adolescence Peer Relations (Modified Variables)

FACTOR 1: Social	Indicators	Factor Loading	Mean	Composite Reliability	AVE
1. My peers think I'm important to them	PS7	-.808	2.60	53.519	0.987
2. My peers understand me	PS3	.805	3.47		
3. My peers really seem to respect me	PS2	.701	3.57		

4. I feel like I'm an important member of my peer group	PS8	-.694	3.44		
5. My peers regard my opinions and ideas very highly	PA10	-..687	2.72		
6. My peers are a real source of pleasure to me	PA9	-.633	2.63		
7. My peers seem to like me very much	PS4	.628	3.35		
8. My peers seem to like having me around	PS5	.616	3.40		
9. My peers are proud	PA4	-.588	2.83		
10. I really like my present peer group	PS6	.569	3.53		
11. I get along very well with my peers	PS1	.562	3.77		
FACTOR 2: Anti Social	**Indicators**	**Factor Loading**	**Mean**	**Composite Reliability**	**AVE**
1. My peers don't seem to even notice me	PA8	.767	3.80	53.519	0.988
2. My peers treat me badly	PA2	.755	4.08		
3. I don't feel like I'm part of the group	PA3	.741	3.73		
4. My peers act like they don't care about me	PA1	.733	3.89		
5. I really feel "left out" of my peer group	PA5	.677	3.86		
6. I wish I had a different peer group	PA7	-.616	2.49		
7. I hate my present peer group	PA6	.599	3.53		
8. I hate my present peer group	PA11	.579	3.70		

Therefore, while the mean and Cronbach Alpha identified the seven constructs of behavior to be internally consistent for behavior items, three constructs as consistent for religious items and four constructs consistent for peer relations items, but the exploratory factor analysis found out that the factors were not clearly separable. Thus, more rigorous structural based approach of Confirmatory Factor Analysis (CFA) subsequently provided stronger evidence in supporting the constructs as uni-dimensional in representing single concepts (Anderson & Gerbing, 1988) of the CFA model. The factors (for all the 3 tools) and their factor loadings are detailed in Tables 2-4.

4. Model Building

After validating the instruments, basic models were proposed and examined with SEM techniques. The analysis adopted a one way approach for analyzing models, where confirmatory measurement models were specified prior to simultaneous estimation of the measurement and the structural model. In a process of exploring the most appropriate models, a theory-driven approach of model comparison strategy was applied, and competing models were generated on the basis of alternative formulations of

the underlying theory (Hair et al., 2010). In evaluating the alternative models, consideration was given to the overall fit measures based on a number of fit indices namely Normed chi-square index (cmindf), Comparative Fit Index (CFI) and Root Mean Square Error of Approximation (RMSEA). The component fit measures came from parameters estimates (Bollen, 1989), which included the squared multiple correlation (R^2) for each pair of relationship.

Overall fit indices of individual model and component fit measures were examined to check whether any of the three models would be rejected or not. As indicated within the models, all models were fit and accepted, which also answers our three research questions (pp. 8-9). The acceptable models in terms of overall fit and component fit were then compared and evaluated in terms of parsimony indices, and all indicators were found to have significant loadings. The measurement of Normed chi-square was recommended by Bentler and Bonnet (1980) to be greater than 0.9 in a good fitting model. This means that, according to chi-square obtained from our study, all three models are considered to be good fitting models. As for Religious Commitment the chi-square was 1.459, for Peer Relations 1.629 and for behavior model 1.864.

The Comparative Fit Index (CFI) which was originated by Bentler (1980), takes into account the sample size (Byrne, 1998), it performs well even when the sample size was small (Tabachnick & Fidell, 2007) and Fan et al. (1999). Thus we included it as part of the fit index in this study due to the fact that we had a small sample size (<200). Normal values for this measurement are between 0.0 and 1.0, with values closer to one indicating good fittings (Hooper et al., 2008). All three models fall within this range. Religious commitment had CFI 0.916, Peer Relations had CFI 0.884 and Behavior model had CFI 0.912. Thus according to CFI results all models are considered to be good fitting models.

RMSEA was one of the selected measurement because, it indicates how well the model, with unknown chosen parameter estimates would fit the population covariance matrix (Byrne, 1998). Due to its sensitivity to the number of estimated parameters in the model, it is regarded as the most informative fit indices (Diamantopoulos & Siguaw, 2000). Thus we also used it to assess our three instruments. It has been suggested that RMSEA with the value of <0.05 constitute good fitting values; those that are ≥ 0.05 to 0.08 are considered as acceptable fittings; values that are ≥0.08 to 0.01 are marginal fit; and values that are ≥0.01 are poor fit (Browne & Cudeck, 1992). Therefore two of our models had RMSEA within the acceptable range, i.e., Religious Commitment model had RMSEA 0.067 and Peer Relations model had RMSEA 0.079. Behavior model fell under the marginal fit by having an RMSEA of 0.092. However, both Chi-square and CFI indices for the behavior model proved it to be a good fitting model, thus all three models are considered to be good fitting models.
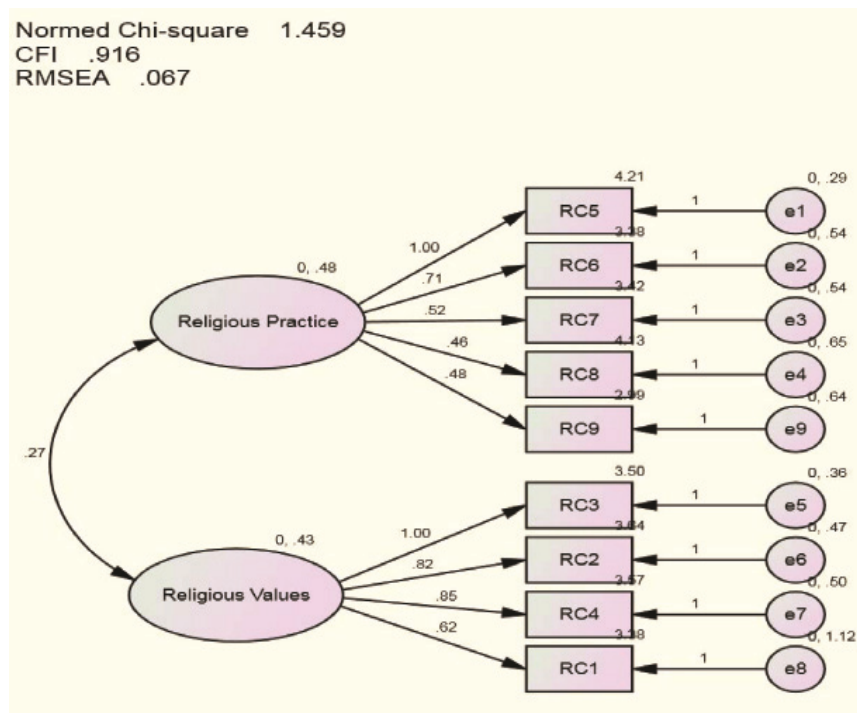
5. The Basic Models
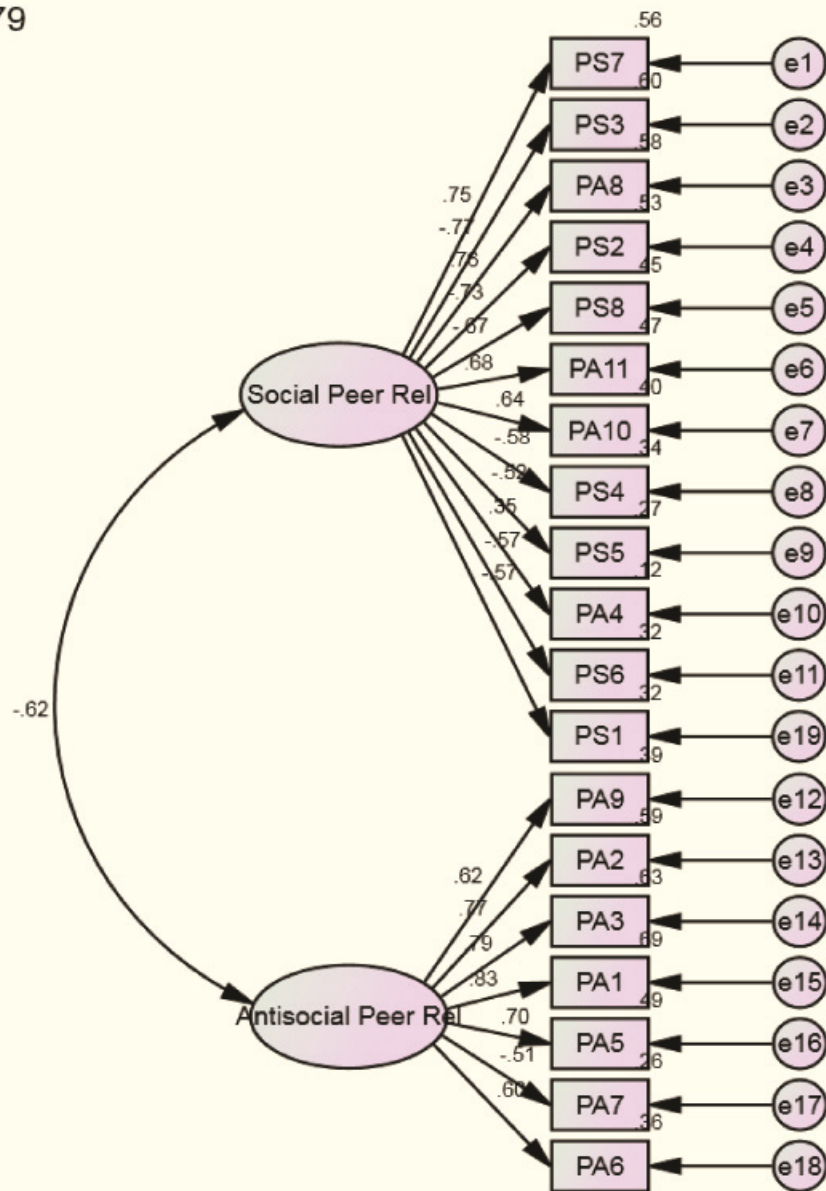

Figure 3. Religious Commitment Model

Figure 4. Peer Relations Model

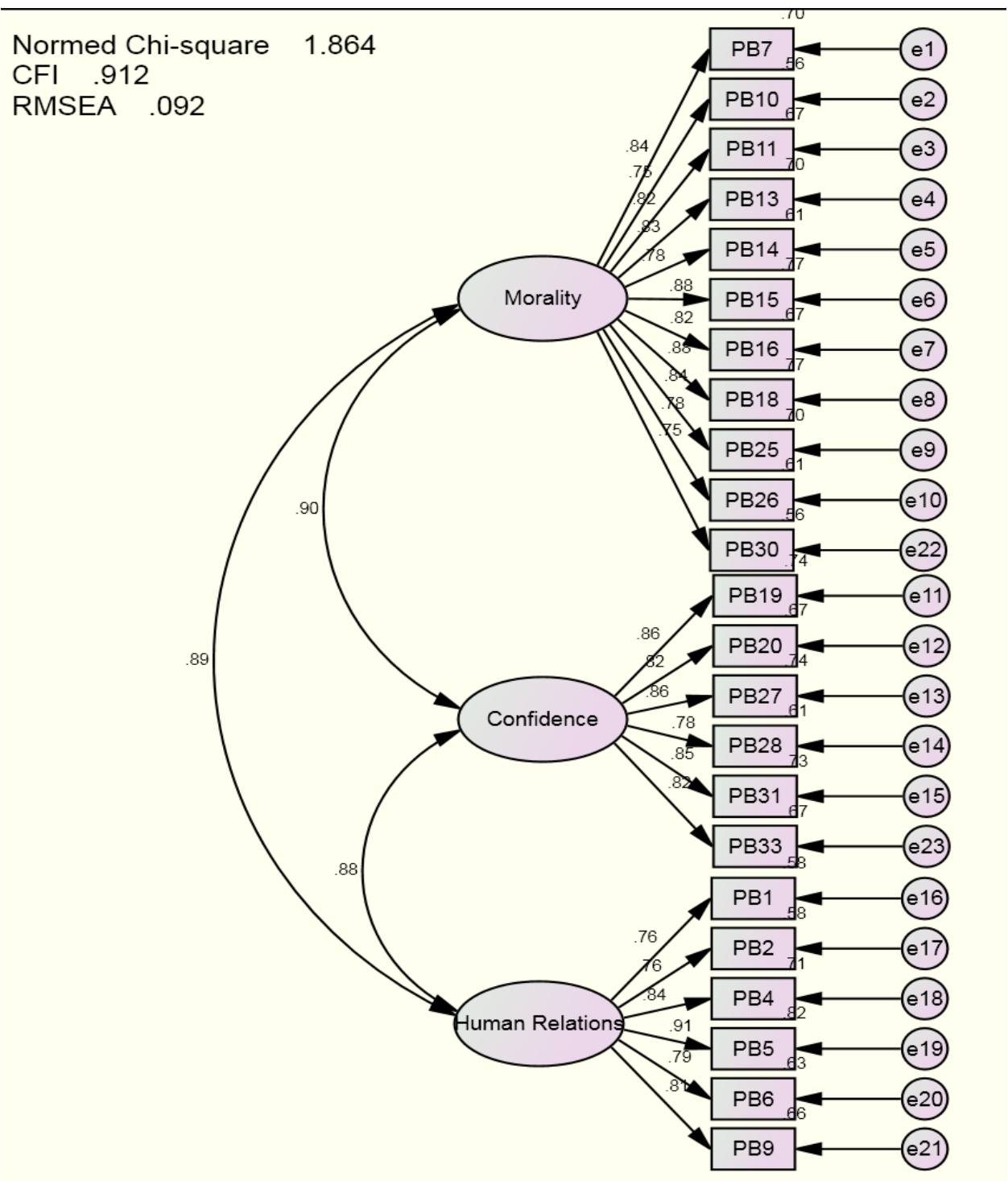**Figure 5. Positive Behavior Model**

Table 8. Summary of the Fit Indices for the Three Models

VARIABLES	MEASURE	RESULT
Religious Commitment	Chi-square	1.459
	CFI	0.916
	RMSEA	0.067
Positive Behavior	Chi-square	1.864
	CFI	0.912
	RMSEA	0.092
Peer Relations	Chi-square	1.629
	CFI	0.884
	RMSEA	0.079

6. Discussion

Exploratory as well as confirmatory factor analysis was selected in running the present study because, they allow the reduction of a set of observed variables of the original set of observations, thus providing evidence of construct validity (Guadagnoli & Velicer, 1988; Bahaman Abu Samah, n.d.). Several reductions of components were carried out and in the final reduction, latent factors for each instrument were extracted through an exploratory factor analysis with orthogonal rotations.

Two factors were extracted from the religious commitment variables, two from the peer relations variables and three from the positive behavior variables. Comparison of scores by levels of behavior, peer relations and religious commitment of Secondary School Adolescents indicated statistically significant difference in scores on the latent factors of the three Instruments. The scores were then validated by measuring the factor loadings. Convergent validity (a set of variables that presume to measure variables), was tested by using Average Variance Extracted (AVE) where high scores of AVE were obtained (between 0.8 & 0.9). And also high factor loadings of ≥.4 were obtained. Hair et al. (2010) considered high factor loading to be ≥.4.

Since SEM is mostly used as a confirmatory technique rather than an exploratory technique, it was used to confirm the construct validity of the three instruments which were used to assess the relationship between religious commitment, peer relations and adolescent behavior (Mwita, Ssekamanya, & Md. Noor, 2010). Constructs were validated by using Structure Equation Modeling, because SEM provides overall tests of model fit and individual parameter estimate tests simultaneously and also it improves statistical estimation by incorporating measurement errors (Bahaman Abu Samah, n.d.). Composite reliability and Variance-Extracted (AVE) for each construct provided further support of convergent validity (Hair, Black, Babins, & Anderson, 2010).

7. Conclusion

The strength of this study was the ability to examine the hypothesized factor models and to validate the results through structure equation modeling for the three instruments that were measuring the religious commitment, peer relations and behavior of the adolescents (Mwita et al., 2010). All adequate fit, for the factor models were indicated across all the three tools. All items were reliable with standardized loadings greater than 0.5. Therefore, all the three tools are considered valid and can be used by School counselors in studying the students behavior.

Thus The results of this study will not only contribute to the literature and researches done on behaviors, but might also allow the introduction of valid instruments that can be used by School Counselors and counseling students of Malaysia in identifying and rectifying issues on adolescent behaviors, peer relationships as well as religious commitment, especially Islamic religion. Counselors may be urged to apply Bandura's reciprocality Model while counseling these Muslim youths.

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