A Cross-Cultural Validation of Western Constructs of Spirituality, Personality Traits, and Cognitive Beliefs, and their Interrelations in a Malaysian Context

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Declaration

This project contains no materials which have been accepted for the award of any other degree or diploma in any university and, to the best of my knowledge and belief it contains no materials previously published or written by another person except where due reference is made in the text of the thesis.

Haslina Muhamad

July 2013

Ethics Approval

The research for this project received the approval of the Monash University Standing Committee for Ethical Research in Humans.

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In loving memory of:

My mother, *Allahyarhamah* Hajjah Hassiah@Asiah Hj Yaacob
and
My mother in-law, *Allahyarhamah* Hajjah Sofiah Muda

Who I lost during my struggle to complete this thesis.

May Allah rest their soul in peace.
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List of Abbreviations

Acronym	Description
CFA	Confirmatory factor analysis
CFI	Comparative fit index
COTS	Cognitive orientations towards spirituality
EPD	Experiential/Phenomenological dimension of spirituality
EWB	Existential well-being
FFM	Five-Factor Model
FFT	Five-Factor Theory
GFI	Goodness of fit index
MEV-BFI	Malay experimental version of the Big Five Inventory
MEV-CPSE	Malay experimental version of the Children Perceived Self-Efficacy
MEV-ESI	Malay experimental version of the Expressions of Spirituality
MEV-IBS	Malay experimental version of the Irrational Belief Scale
MEV-MHLC	Malay experimental version of the Multidimensional Health Locus of Control
MI	Modification indices
PAE	Perceived academic self-efficacy
PARA	Paranormal beliefs
PSE	Perceived self-efficacy
PSSE	Perceived social self-efficacy
REL	Religiousness
RMSEA	Root mean square error of approximation
SEM	Structural equation modelling
SMC	Squared multiple correlations
SRC	Standardized residual covariances
SRE	Perceived self-regulatory self-efficacy
SRMR	Standardized root mean square residual
TLI	Tucker Lewis index
LOC	Locus of control
Int_{HLOC}	Internal health locus of control
$Chance_{HLOC}$	Chance locus of control
PO_{HLOC}	Powerful Others Health Locus of Control

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Abstract

As a means of enhancing Well-Being the general purpose of this study was to research, develop, and test the cross-cultural applicability of an integrative model of Spirituality and how it relates cross-culturally to Personality traits and Western-type Cognitive Beliefs. In the process the study sought to:

(1) Seek out appropriate well-validated instruments that have operationalized the constructs within the domains of Spirituality, Personality traits, and Cognitive Beliefs in Western settings;

(2) Translate and validate these instruments into an Eastern language and culture, and;

(3) Elucidate and cross-culturally validate the nomological net concerning Spirituality, Personality traits, and Cognitive Beliefs by:

   a) exploring the relationship between Spirituality factors and the Personality traits of the Five-Factor Model of Personality ;

   b) investigating the relationship between Personality and Cognitive Beliefs factors on Spirituality; and

   c) examining the mediating effect of Cognitive Beliefs on the Personality-Spirituality relationship.

Well-being has emerged as one of the domains intensely studied not only in the field of positive psychology, but also personality, social, and organizational psychology. While numerous Western researchers have shown that the domains of Spirituality, Personality, and certain cognitive factors are significantly related to Well-Being, there is a serious question as to whether these are applicable cross-culturally in an Eastern culture.

The importance of Spirituality in human health and Well-being is well documented. Research over a number of years has identified Spirituality as necessary for an individual's overall Well-Being, which explains the upsurge of interest in the study of Spirituality. Since Spirituality constructs reflect many characteristics of traditional personality variables, some researchers rationalise that Spirituality can be understood within the broader models of Personality. Accordingly, many researchers have examined the relationship between Spirituality and Personality. Aside from Personality traits, a number of fundamental cognitions and beliefs have been shown to significantly impact Well-Being, Irrational Beliefs, Self-Efficacy, and Locus of Control have also been shown to correlate with Spirituality.

With a wealth of publications, primarily in the West, that scientifically examine and explore the Spirituality phenomena, there is now a need for empirical studies delineating the concept of Spirituality in an alternative cultural context, such as Malaysia, with very limited publication of any studies in Spirituality. No research could be found in Malaysia in regard to the relationship between Spirituality, Personality, and Cognitive Beliefs.

This study used a survey research method. A packet of questionnaires consisting of instruments measuring the constructs of interests was prepared to allow for the investigation of the relationship between Spirituality, Personality and Cognitive Beliefs. First, I systematically translated the English instruments into Malay. Then I conducted the pilot test with twenty participants to check for the clarity of language used. The final paper and pencil and online version of the survey were administered to the participants in order to validate the instruments and to examine the relationships between the above-mentioned variables.

The participants were students at a Malaysian public university recruited via flyers explaining the study's general purpose and inviting their participation by paper and pencil

or online using SurveyMonkey. The 437 respondents were randomly allocated to a *Calibration sample* of 236 (*Mean age* = 21.2, SD = 1.69) and a *Validation sample* of 201 (*Mean age* = 21.1, SD = 1.83). Data were analyzed using SPSS and AMOS to examine the psychometric properties of the instruments and to test for the direct and mediation effects.

This dissertation reports that the systematic translation process demonstrated that modifications and revisions need to be made to the English instruments measuring Spirituality, Personality Traits, and Cognitive Belief factors for them to become valid and reliable measures in the Malaysian context. The validation of these Malay-translated instruments required the use of sophisticated modelling techniques encompassing the classical test theory, a popular statistical framework for addressing test measurement problems.

The findings regarding the interrelationships between the variables indicated that:

- Irrational Beliefs partially mediated the relationship between Neuroticism and two dimensions of Spirituality, namely, Existential Well-Being and Paranormal Beliefs;
- Self-Efficacy Beliefs fully mediated the relationship between Conscientiousness and Religiousness, and partially mediated the Extraversion-Cognitive Orientation towards Spirituality relationship; and
- Chance Health Locus of Control partially mediated the Neuroticism-Existential Well-Being relationship.

In summary, the results confirmed the cross-cultural applicability of the (a) Neuroticism-Irrational Beliefs-Existential Well-Being/Paranormal Beliefs model; (b) Conscientiousness-Self-Efficacy-Religiousness, and Extraversion-Self-Efficacy-Cognitive Orientation towards Spirituality model; and finally (c) Neuroticism-Chance

Health Locus of Control-Existential Well-Being model. Validation results of the Malay-translated instruments confirmed the appropriateness of these instruments for investigating the interrelationships between these variables as well.

The findings of this study will assist academic researchers in further delineating Spirituality phenomena and universality in terms of cross cultural applicability. For health practitioners, an understanding of the mediational role of modifiable Cognitive Beliefs factors points towards its usefulness in therapeutic interventions aimed to promote Spirituality and subsequently, overall Well-Being. Using techniques similar to those utilized in this study, it would be possible to expand understanding of the impact of Spirituality, Personality traits and Cognitive Beliefs on the dimensions of Well-Being, which in this study was not considered.

CHAPTER 1: Introduction and Overview

Science is not only compatible with spirituality; it is a profound source of spirituality (Sagan, 1996, p. 45)

The aim of this study is to determine the cross-cultural relevance of an integrative model of Spirituality, Personality traits and Cognitive Beliefs to which end I translate, validate, and then investigate the interrelationships and compare it with Western literature. In this dissertation, the following issues are investigated in two parts (1) the establishment of the measurement models and (2) the evaluation of structural models:

- Cross-cultural applicability of three well validated Western domains, those of Spirituality, Personality traits, and Cognitive Belief scales all considered important for well- being, by the adaptation, translation and validation of the study instruments for the Malaysian context;
- The interplay between Spirituality, Personality predispositions, and Cognitive Beliefs.

This study seeks to systematically translate the English instruments into the Malay language. After a rigorous translation process, I test the translations of various models using the classical test theory approach and incorporating Jöreskog's (1993) two-step model generating process. This involves a systematic investigation of the measurement properties of the study variables within each domain as a prelude to testing the structural relationships among them.

Chapter 1 offers a brief discussion of Spirituality and the factors associated with Spirituality as a background to this study. Additionally, I provide the general contributions of the study to practice and research and also the overview of the

methodology. Next, I present the general research questions for both Part 1 and 2 of this study and I establish the proposed conceptual framework. This chapter concludes with the details of the organization of the thesis.

1.1. Background and Rationale to the Study

Emerging adulthood (as seen in individuals between 18 and 25) has always been associated with significant developmental challenges to long-term wellbeing. Research has established the importance of Religion and Spirituality in enhancing the state of well-being (Yonker, Schnabelrauch, & DeHaan, 2012). However, some researchers have argued that Spirituality, being numinous and immaterial, is an improper and inappropriate subject to be studied scientifically (Miller & Thoresen, 2003).

In response, researchers began to investigate Spirituality within the broader context of Personality. This is due to the nature of Spirituality constructs that, according to Piedmont (2005), have much in common in terms of nature and content, with traditional personality variables such as “being intrinsic to the person, motivational in nature, providing stability in functioning over time, and providing consistency in behaviour across situations” (p. 253). This led Piedmont (2005) to suggest that “such overlap in form and function makes it only logical for one to view spiritual and religious constructs within the interpretive umbrella of broader models of personality” (p. 254). Consequently, the interpretive value of Spirituality, and a determination as to what it is, can be enhanced more specifically by linking it with the now well-established and accepted personality trait model of personality, the Five-Factor Model (FFM) (McCrae & John, 1992).

In utilizing such a personological approach to understanding and evaluating Spirituality the robust FFM “provide[s] measurement models for developing

religious and spiritual scales. Such quantification allows for a psychometric understanding of what the scale represents as well as an opportunity to integrate findings within a cohesive conceptual model" (Piedmont, 2005, p. 254).

In understanding Spirituality within the broader context of Personality, questions arise as to whether Spirituality constructs are simply some aspects of Personality, adequately or fully captured within existing trait dimensions. Some researchers emphasize that Spirituality is aligned with social attitudes and ideologies (Saucier, 2000) and values that people use as guiding principles in their life (Saroglou & Muñoz-García, 2008). In counterargument, Piedmont (1999) claims that existing spirituality variables are independent of existing personality traits based on the independence of Spirituality in factorial analyses from the existing Big Five personality factors. As a personality type construct, he proposed Spirituality as a sixth factor of Personality. Nevertheless, Saroglou (2010) argued that the independence of Spirituality from the traditional five domains of Personality alone was insufficient in claiming Spirituality as another predisposition aspect of Personality. Perhaps Saroglou is correct when he argues that "not everything that is beyond the big five is necessarily a basic, fundamental, and universal personality dimension" (p. 118), but an exploration of this issue is beyond the scope of this study.

In order to untangle the questions of the content and nature of Spirituality constructs, this research follows on from researchers who specifically advocate investigating the associations between Spirituality and Personality in terms of Five-Factor Theory (FFT; McCrae & Costa, 2008b, will be discussed in detail in Section 4.2.1.). Within the framework of FFT, Spirituality is considered as *characteristic adaptations* that are acquired from the interaction of the individual's *basic tendencies* (i.e. personality traits) and external influences. In other words, Spirituality is a

concrete and acquired construct that develops as a function of social interactions (McCrae & Costa, 2003), while personality traits are considered as endogenous basic traits, largely based on genetic and biological influences (Saroglou, 2010). As an example, a woman or man who is by nature agreeable and conscientious (*basic tendencies*), tend to be, remain, or become spiritual (*characteristic adaptations*) if he or she grows up in a spiritualistic family environment (*external influences*). Consistent with this perspective, I would expect that Personality traits predict Spirituality, rather than vice versa.

The measures used to assess the model of Spirituality and Personality were predominantly developed and validated in Western settings. It can be argued that these measures may not be culturally relevant to be applied to other cultures beyond the borders of the United States and other European-based cultures (Behling & Law, 2000). Furthermore, the use of instruments in cross-cultural research requires translating the instruments into the target language. In the case of this dissertation, the instruments measuring Spirituality and Personality traits need to be properly and accurately translated into the Malay language. The translation needs to take into account the linguistic and cultural factors that allow the instruments to be tested for cross-cultural applicability. Hence, another purpose of this study is (a) to report in detail the approach used to translate the original version of the instruments into Malay and (b) to determine the cross-cultural applicability of these instruments.

As previously mentioned, a considerable body of research has supported the importance of Spirituality in improving human functioning (Miller & Thoresen, 2003). Based on the FFT, Spirituality and Personality traits in this research are related to each other and are both shown to be important correlates of positive

psychological constructs, such as happiness and life satisfaction, that indicate Well-Being (Löckenhoff, Ironson, O'Cleirigh, & Costa, 2009).

While offering us insights into spiritual phenomena, the pattern of relationships between Spirituality and Personality cannot provide us the point of intervention to change our spiritual thinking and behaviours. This is because Personality traits, as postulated by the FFT, are largely biologically based, thus resistant to much change. This offers a significant rationale for why I need to investigate modifiable factors assumed to mediate the relationship between Personality and Spirituality. An important set of such factors is the Cognitive Beliefs (cognitive thought and beliefs) one associates with Spirituality. To this end, I decided to examine the mediational role of Irrational Beliefs, Self-Efficacy, and Health Locus of Control Beliefs in the Personality-Spirituality relationship.

1.1.1. Situating the problem.

The scientific study of any psychological domain is strengthened by quantitative analysis and validation, a process that requires operationalization in order to use well-established psychometric theory (Unterrainer, Ladenhauf, Moazedi, Wallner-Liebmann, & Fink, 2010).

Ideally, operationalization of the study constructs should be developed from the perspective of the culture under investigation. However, due to the impracticality of developing new instruments, most researchers prefer to translate previously developed and validated instruments (DeVellis, 2003). It seems to be more reasonable and practical to examine the cross-cultural invariance of the translated instruments, rather than reinvent new scales which require sophisticated and complicated procedures.

With most empirical research on Spirituality and Personality traits having been undertaken within the context of a Western, Judeo-Christian tradition (Amer & Hood, 2008), a cross-cultural and cross-contextual validation of the translated instrument is desirable to ascertain its cross-cultural universality and relevance. Some researchers argue that because of the significant linguistic, cultural, and religious differences between the East and the West (Amer & Hood, 2008), there is a need to understand Spirituality and Personality in the Malaysian culture, with a predominantly Muslim population. Hence, in this study, I "borrow" the instruments and models from the West and see if the models hold cross-culturally. This is an important consideration for cross-cultural psychologists to ultimately maximize and understand Spirituality, Personality, and well-being in other than a Western Christian context.

Malaysia is a developing country in South-East Asia that offers an appropriate context for examining cross-cultural validity. Malay or *Bahasa Melayu* is the principal and official national language (Goddard, 2000). The Malaysian population is very multicultural: 67.4% are *Bumiputeras* (Indigenous), 24.6% are Chinese, 7.3% are Indians and 0.7% other. Multiculturalism in Malaysian culture offers an ideal context for determining the universality of the domain structures and universal generalizability of the interrelationships of this study's constructs.

In the Malaysian context, the operationalization of the study constructs requires a complex translation process into Malay, one that takes into account linguistic and/or cultural appropriateness (Nintachan & Moon, 2007). Careful attention needs to be given to problems that may lead to errors that can compromise the validity of the study's results (Peña, 2007; Yu, 2004). An instrument that is not properly translated can seriously threaten the validity of any research conclusion. So far, however, there has been little or no discussion about the translation processes of

instruments measuring this study's constructs of interest. In addressing this gap, this dissertation includes a report of applying well-established and psychometrically sound principles of test translation and validation (Brislin, 1970, 1980) to the translation process of this study's instruments for the Malaysian linguistic and cultural context.

The choice of instruments to be translated for the Malaysian sample is made based on the sufficiency and the hegemony of the original version's reliability and validity, reported in extant literatures. Nevertheless, according to Behling and Law (2000), the satisfactory levels of the psychometric properties of these original instruments do not necessarily extend to the target language version. Hence, "the researcher must determine and report the basic properties of the target language measure" (Behling & Law, 2000, p. 9). However, most of the Malaysian research to date has overlooked the importance of reporting the translation and validation process of the translated version of the study's instruments. Thus, the validation of the Malay-translated version of the instruments is one of the foci of this study.

It was surprising to find from a review of the research literature so far that there appears to have been few if any attempts to delineate Spirituality constructs in a multicultural Malaysian context. Malaysian studies on Spirituality have also overlooked the relevance of Personality and Cognitive Beliefs in explaining Spirituality phenomena, as has happened in the West. As examples, Simpson, Newman, and Fuqua (2007) have reported a substantial relationship between a set of Spirituality measures and the five dimensions of personality while Adegbola (2011) found a positive relationship between Spirituality and Self-Efficacy beliefs.

Accordingly, the link among the Spirituality-Cognitive Beliefs-Personality triad is investigated as part of a more coherent and comprehensive understanding of Spirituality in a Malaysian context.

1.2. Purpose of the Study

There were two major parts of the present study, each with their separate but not entirely independent purposes.

In the first part, I sought to determine whether the Western domains and the models of their constructs were trans-culturally applicable to Malaysia. Hence, to make the instruments applicable to Malaysian participants, I translated and investigated the psychometric properties of five Malay-translated instruments: (i) *The Expressions of Spirituality (ESI)*, (ii) *The Big Five Inventory (BFI)*, (iii) *The Irrational Beliefs Scale (IBS)*, (iv) *The Children's Perceived Self-Efficacy Scale*, and (v) *The Multidimensional Health Locus of Control (MHLC)*. Therefore, one of the purposes of this study was to report on the approach adopted to maximize the semantic and conceptual equivalence between the original and the translated versions. A separate discussion of the translation/validation issues of each key variable which impacts Spirituality will be presented in subsequent chapters.

In Part 2 of this thesis, I wanted to establish the pattern of relationships between Spirituality and Personality in a sample of Malaysian young adults. Subsequently, I sought to determine whether Cognitive Beliefs, represented by *Irrational Beliefs, Self-Efficacy and Locus of Control Beliefs*, mediate the Personality-Spirituality relationships. On the basis of FFT (McCrae & Costa, 2008b), I hypothesized that the effect of Personality on Spirituality would be mediated by Cognitive Beliefs (section 1.8).

1.3. Contribution of the Study to Research and Practice

Generally, this study is built on a methodology of test translation and validation in the Malaysian context. For one, this study advances research by demonstrating the methodology for meticulously translating and adapting the instruments for Malaysian participants. I, while principally adopting Brislin's (1970) translation/back-translation technique, also incorporated the approach first described by Brislin (1980) where several bilingual individuals translated the English-language version to the Malay-language version. The rigorous translation process used in this study may maximize the feasibility and acceptability of the Malay-translated instruments.

This study also contributes to our methodological understanding by demonstrating the application of Structural Equation Modelling (SEM) in ascertaining the validity and reliability of the Malay-translated instruments. For instance, in this dissertation, I employed one-factor congeneric models to maximise the reliability of composite and latent variables (Holmes-Smith & Rowe, 1994). I have also conducted two multi-factor confirmatory factor analyses with the purpose of identifying any cross-loadings between the constructs. The use of both steps improves the validity of the translated version of the instruments and advances our understanding on the sophisticated modelling.

My research also seeks to add to the scant literature examining the association between Spirituality, Personality predispositions, and Cognitive Beliefs in a multicultural Malaysian context. It is the first study to investigate the effect of Personality traits and Cognitive Beliefs on Spirituality in Malaysian young adults, and explain the observed relationships in terms of the Five-Factor Theory. This study also fills an existing gap associated with the inconsistencies in the Personality-

Spirituality relationship found in previous studies (Cramer, Griffin, & Powers, 2008; Laher & Quy, 2009).

Finally, other than the theoretical contributions, the results of this study can be utilized by health practitioners aiming to promote the Well-Being of their clients by means of Spirituality. Cognitive Beliefs, found as modifiable factors in therapeutic interventions (Spörrle, Strobel, & Tumasjan, 2010), offer more insights in predicting Spirituality, in addition to Personality predispositions which are less susceptible to change. The findings of the current study directed the practitioners to the opportunity of utilizing Cognitive-Behavioural Therapies (CBT) as a method of increasing their client's level of Spirituality by modifying their Cognitive Beliefs. Further details of these contributions are discussed in Chapters 6 and 7.

1.4. Scope of the Study

My investigation of individual differences is limited to Personality predispositions, though other dimensions of individual differences certainly exist, such as mood and ability (Cooper, 2002). Relatively, personality is operationalized with measures of the Big Five Inventory, which assess only five dimensions of Personality, namely, Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to Experience (John, Donahue, & Kentle, 1991).

The investigation of the mediation effect between Personality and Spirituality is restricted to cognitive variables only, such as Irrational, Self-Efficacy and Locus of Control beliefs, though it is acknowledged that other variables such as physiological, affective and behavioural might have an influence on the relationship between Personality predispositions and Spirituality (Lang, 1968). Cognitive variables were chosen based on the rationale that cognitions are the major determinant of our behaviour and emotions, thus our life experiences (Corey, 1996).

1.5. Overview of Research Methodology

The basic design selected to investigate the research questions of this study was a quantitative, cross-sectional design. Only when I have reasonably operationalized variables can I properly study their domains, structures, and interrelationships in a quantitative way. Quantitative validation depends on good measures, which can be achieved by validating the models and the cross-cultural interrelationships that show that differences are universal.

The research design was implemented by administering a packet of questionnaires including all five instruments for measuring this study's constructs. In order to see whether the study models hold cross-culturally, I translated the instruments using translation-back translation and the committee approach. I then validated the models and the variables' interrelationships based on classical test theory.

Participants were students at a Malaysian public university recruited via flyers explaining the study's general purpose and inviting their participation by paper and pencil or online using SurveyMonkey. The 437 respondents were randomly allocated to a *Calibration* sample of 236 (M_{age} = 21.2, SD = 1.69) and a *Validation* sample of 201 (M_{age} = 21.1, SD = 1.83). Further elaboration on the methodology of this study occurs in Chapter 2.

1.6. Research Questions

In acknowledgement of the main purposes of this study, which are to translate and validate the instruments within Spirituality, Personality predispositions, and Cognitive Beliefs domains, and to examine the structural relationships between a number of valid study variables from within each of these domains, quantitative method research was applied to address the following questions.

1. Are the Malay-translated instruments semantically and conceptually equivalent to their original English instruments?
2. Are the Malay-translated instruments purported to measure the variables in this study valid and reliable?
3. What is the relationship between Spirituality and Personality in the Malaysian context?
4. Do Cognitive Beliefs as represented by Irrational, Self-Efficacy and Locus of Control Beliefs mediate the relationship between Spirituality and Personality?

Specific research questions and hypotheses are presented in subsequent chapters.

1.7. Definition of Key Terms

In this section, the definition of the specific terms central to this study is offered.

- **Spirituality** is conceptually defined as "one's personal relationships to larger, transcendent realities, such as God or the universe" (Piedmont, Ciarrochi, Dy-Liacco, & Williams, 2009, p. 163). On the other hand, Spirituality is operationally defined with five dimensions which consist of "*Experiential/Phenomenological Dimension (EPD), Cognitive Orientation Towards Spirituality (COTS), Existential Well-Being (EWB), Paranormal Beliefs (PARA),* and *Religiousness (REL)*" (MacDonald, 2000a, p. 2).
- **Personality** is conceptually defined as "dimensions of individual differences in tendencies to show consistent patterns of thoughts, feelings, and actions (McCrae & Costa, 2003, p. 25)". Personality is operationally defined with five dimensions that comprise of "*Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to Experience*" (McCrae & John, 1992, p. 177).

- **Irrational Beliefs** refer to "those cognitions, ideas, and philosophies that sabotage and block people's fulfilling their basic, or most important, Goals" (Ellis, 1984, p. 20). Irrational Beliefs is operationally defined with ten components of Irrational Beliefs namely "*Need for Approval, Need for Achievement, Demand About Others/Other Rating, Awfulizing, Emotions Are Externally Caused, Usefulness of Being Concerned, Problem Avoidance, Importance of the Past, Demands About Life, Discomfort Anxiety"* (Boelen and Baars, 2007, p. 137).
- **Perceived Self-Efficacy** is a construct "measuring people's beliefs in their capabilities to produce given attainments" (Pastorelli et al., 2001, p. 87). Perceived Self-Efficacy is operationally defined with three domains of Self-Efficacy namely "*Perceived Academic Self-Efficacy, Perceived Self-Regulatory Self-Efficacy, Perceived Social Self-Efficacy"* (Bandura et al., 1996, p. 1211).
- **Locus of Control** refers to "internal versus external control of reinforcement" (Rotter, 1990, p. 489). In this study, Locus of Control is operationally defined with three aspects of LOC, namely "*Internal Health Locus of Control, Chance Health Locus of Control, Powerful Others Health Locus of Control*" (Wallston, Wallston & DeVellis, 1978, p. 161).
- **Use of "I".** "I" is judiciously used as appropriate in recognition of singular authorship in this dissertation in accordance with the recommendation by the Publication Manual of the American Psychological Association (APA; 2010) "Make certain that every word means exactly what you intend to mean" (p. 68) and "To avoid ambiguity, use a personal pronoun rather than the third person" (p. 69).

The next section reports on the proposed conceptual framework adopted in this study.

1.8. Proposed Conceptual Framework

Based on one of the FFT postulates that Personality traits are biologically based and thus less prone to external influences, as well as the research questions raised earlier, a conceptual model of the relationships between Spirituality and Personality predispositions incorporating Cognitive Beliefs variables is proposed (see Figure 1.1).

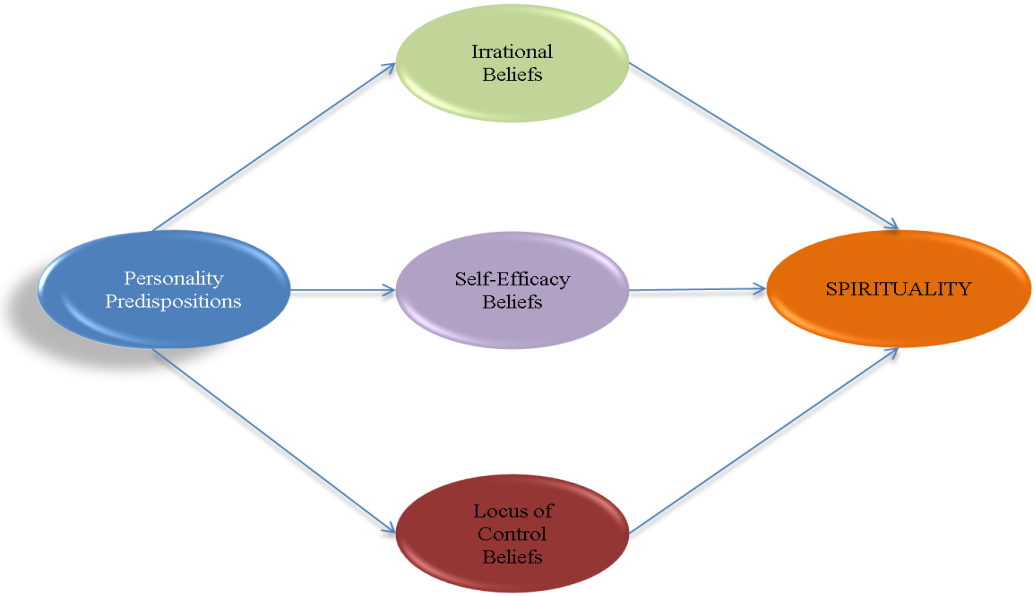

Figure 1.1. Proposed conceptual framework

1.9. Organization of the Thesis

Overall, this dissertation is framed in two parts. Chapter 1 provided an overview of this study together with the research problem. It also illustrated the purposes and the contributions of the study. Chapter 1 also introduced this study's research methodology and the key terms. Additionally, the conceptual framework of this

study was proposed and concluded with the structure of the research. The details of the methodology for Part 1 of this study are presented in Chapter 2 and include the research design, selection of the sample, data collection tasks, and data analysis procedures. The data analysis procedures contain data editing, coding, and screening. Chapter 2 also details the rationale and methodology of translations adopted in this study.

Part 1, *the establishment of the measurement models*, consists of Chapters 3, 4, and 5. Specifically, Chapter 3 contains literature and research related to the key variable of this study, Spirituality. Additionally, Chapter 3 also lays the theoretical perspectives for investigating Spirituality in the Malaysian context. Other than that, Chapter 3 reports the measurement of Spirituality, which includes the translation process of the instrument into Malay. This is followed by the translation and validation results of the instrument used to measure Spirituality. This chapter concludes with the discussion on the influence of selected demographic variables on Spirituality.

While Chapter 3 presents the details of Spirituality, Chapter 4 reviews the prior literature regarding Personality that includes its relationship with Spirituality. Chapter 4 also includes the translation and validation results of the instrument used to measure Personality in the current study. Finally, Chapter 5 presents the review on Cognitive Beliefs variables, namely, Irrational, Self-Efficacy, and Locus of Control Beliefs. It includes the assessment of the translation and the valuation of the validity of the instruments used to measure these three cognitive variables.

Part Two, *the evaluation of the structural models and the study's conclusion*, consists of Chapters 6 and 7. In general, Chapter 6 pulls together findings reported in Chapters 3, 4, and 5. Chapter 6 details a methodological approach to this study's

model generation and testing. Chapter 6 also includes the results of the mediation testing and discusses the practical implications of the mediation findings. Conclusions are then drawn, followed by further research possibilities. Chapter 7 presents the synopsis and the concluding remarks, coupled with the contributions and limitations of this study. Chapter 7 concludes with suggestions for future research.

1.10. Chapter Summary

All in all, this chapter established the need and purpose for the present study, summarized its research questions, its designs and contributions, and provided the structure of the thesis. The next chapter presents and discusses the research methodology adopted in the current study.

CHAPTER 2: Research Methodology

This chapter considers the research methodology underpinning this study in six sections. Firstly, I consider the research design adopted in this study. Secondly, the data collection methods are outlined. Thirdly, the participant details are described, followed by a report of the administration of the measures. Fourthly, there is a brief description of the measures, including the processes involved in adapting them to a Malaysian context and the pilot testing of the measure is also provided. Fifthly, the ethical procedures that have to be applied to this research are explained. This is followed by the description of procedures applied for the statistical analysis, which includes the description of data preparation, screening and the actual data analysis.

2.1. Quantitative Paradigm

This study is empirical and quantitative, reflecting a positivist paradigm that has been well established for scientifically exploring life phenomena. More specifically, quantitative paradigm has been defined as: "A means for testing objective theories by examining the relationship among variables. These variables, in turn, can be measured, typically on instruments, so that the numbered data can be analysed using statistical procedures" (Creswell, 2009, p. 4).

According to Creswell (2009), quantitative strategies of inquiry are favoured when the research intends to "identify factors that influence certain outcomes and/or to understand the best predictors for the outcomes" (p. 19). A quantitative approach is also able to provide concrete and straightforward answers to the study of attitudes, beliefs, and motives from a sample of population of interest. These correspond well to the objectives of this research (see Chapter 1).

I recognize that positivist–quantitative methods have limitations. For example, these methods cannot be used in research where the objective is to derive enriching

knowledge of people's life (Glaser, 2002). They are also unsuitable for the investigation of phenomena where prior knowledge regarding variables of interest is limited (Creswell, 2009). However, having reviewed these, I consider that no such limitations apply to this research.

Considering a main objective of this investigation is to validate psychometric measures used to assess Spirituality, Personality, and Cognitive Beliefs constructs, it is evident that well-established classical test theory (quantitative methods) provides the tools for sophisticated statistical analysis such as structural equation modelling.

2.1.1. A cross-sectional survey design.

Study design can be conceptualized as two types: cross-sectional and longitudinal. The research questions in this study call for a cross-sectional design because it allows the specific research questions to be answered, that is, to empirically investigate associations between factors such as Personality with Spirituality at a given point in time, with the intention to build a more complex model of the relationships between the variables. Equally important, it allows for data collection from a large sample at a single time. This fulfils the requirements for validation involving sophisticated statistical analysis such as Structural Equation Modelling (SEM), workable only with a large sample size. Finally, it offers a relatively economical and efficient method.

In adopting a cross-sectional approach, there are also important limitations that need to be recognized. A major concern in cross-sectional design is the inability to determine the causal relationship between the variables. Although cross-sectional studies are able to provide evidence of a relationship between, say, variable X and variable Y, they cannot establish whether X causes Y or vice versa. Another common

criticism of cross-sectional study design is its inability to identify individual variations in growth and development (Cohen, Manion, & Morrison, 2011).

However, these limitations do not pose significant problems here since firstly, this research utilized SEM as the main method of analysis. SEM methodology allows for an investigation of causal relationships amongst the factors (Holmes-Smith, 2011) discussed in detail in section 2.6.3.1. Accordingly, the structural model "specifies the manner by which particular latent variables directly or indirectly influence (i.e. "cause") changes in the values of certain other latent variables in the model" (Byrne, 2010, p. 13). Secondly, this research did not involve identification of individual's specific patterns of growth or changes. Therefore, the adoption of a cross-sectional study design in this research is justified considering that it is not affected by any of the limitations mentioned above. In the next section, the data collection methods used in this study are described.

2.2. Data Collection Method

Cross-sectional surveys most commonly use self-report inventories, generally paper-based, to gather information from participants (Creswell, 2009). However, in keeping with technological developments, this research also utilizes internet-based administration. The justifications for these data collection methods are discussed in the next section.

2.2.1. Paper-based survey mode.

This research principally depended on a paper and pencil format for delivering the questionnaires. The target population is university students and since it is gauged that their most common experience has been with printed versions of questionnaires, this is adopted. Yet, it is recently reported that the use of mixed-mode data collection may help boost response rate, particularly in an educated population (Greenlaw &

Brown-Welty, 2009), therefore the alternative is to deliver online, together with the printed questionnaires.

2.2.2. Online-based survey mode.

In order to construct the online version of the questionnaire, a software package known as SurveyMonkey (www.surveymonkey.com) was used. SurveyMonkey is chosen because it involves a reasonable cost, is user-friendly and has an additional feature that can make the survey anonymous (IP addresses of the respondents cannot be traced), which is initially essential to this study.

Several researchers have outlined some advantages to online data collection that are relevant to this research. Firstly, an online questionnaire offers participants the freedom of responding at their own convenience, which may contribute to an increase in response rates. Furthermore, internet-based survey administration is less time consuming and more straightforward. Finally, it allows for automatic data entry, which may reduce the errors in transcribing and coding (Windle & Rolfe, 2011).

Conversely, there are some drawbacks to online-based questionnaires, such as sample frame and response bias (Windle & Rolfe, 2011). Sample frame bias can be loosely described as the availability of the survey only to those with internet access. This, however, does not pose a problem to this research because the target population is university students, who presumably have internet access on campus. With regard to response bias, to which there may be a difference in the response between those who responded online with those who do not, Windle and Rolfe (2011) argue that this problem may also be encountered with other methods of data collection, not only with online surveys (response bias is addressed in section 2.2.3.1). Based on the evidence presented above, there is no reason not to utilize internet-based questionnaires, particularly in light of the practical benefits it may offer.

2.2.3. Issues associated with self-report inventories.

Self-report inventories presented in paper-pencil format and/or on the web, as adopted in this research, can be subject to response bias and common method variance, which are discussed next.

2.2.3.1. Response bias.

As mentioned in 2.2.2, there is a concern regarding response bias as to whether the paper-based responses are similar to internet based if both methods are used concurrently in one study.

One of the recommended ways to examine response bias is to test for factor invariance across groups using SEM (Byrne, 2010). However, it is not feasible for this study due to limited sample size in the internet-based survey (n = 54). According to Boomsma and Hoogland (2001), in using SEM, estimation problems such as nonconvergence and improper solutions may occur in samples less than 200. Alternatively, the Mann-Whitney U test (a non-parametric alternative to an independent-samples *t* –test) is used in this study to explore possible response bias. The results indicated that there were no significant differences in terms of responses given on the paper-based and online-based formats (refer to Appendix A for the full test results). Therefore, it can be concluded that response bias is not a threat to this study's conclusions.

2.2.3.2. Common method variance (CMV).

In addition to response bias, the use of self-reports for data collection has also been associated with the presence of Common Method Variance (CMV). According to Podsakoff, MacKenzie, Lee, and Podsakoff (2003), CMV is "variance that is attributable to the measurement method rather than to the constructs the measures represent" (p. 879). CMV can occur when different sets of self-reported data are collected from the same respondent and at the same time, with the intention to

interpret any correlation between the variables (Podsakoff & Organ, 1986). CMV is a threat to the validity of findings because it can create false relationships between study variables, leading to both Type 1 and Type II errors (Chang, van Witteloostuijn, & Eden, 2010).

Padsakoff et al. (2003) state that the most common approach to addressing CMV is Harman's one-factor test (or single-factor test). The presence of CMV is assumed when (a) a single factor emerged from the factor analysis or (b) one general factor accounted for the majority of the covariance between the scales (p. 889). Following Padsakoff et al's suggestion, an unrotated factor analysis of all study items was conducted and the results revealed 7 factors in total explaining 40% of the variance. As more than a single factor emerged and a general factor was not responsible for most of the variance, it is reasonable to conclude that CMV is not a threat to the findings in this study.

Having described the data collection method adopted in this study and addressed problems which may arise from the use of self-reports, the next section will look into the samples' demographic characteristics and the administration procedures of the test instruments.

2.3. The Participants

The study population of this research consisted of Malaysian educated young adults aged 18 to 25. Data was collected from students in one of the public universities in Malaysia. Currently, it has 10,318 local undergraduate students that come from all over Malaysia, representing diverse socioeconomic backgrounds.

The student population was used in this study because first, most study instruments in psychological research are validated using college or university students. Indeed, some of the instruments used in this study such as the Expressions

of Spirituality and the Big Five Inventory were validated using college students. This corresponds well to one of the objectives of this research, which is to validate the test instruments. Secondly, as mentioned by several researchers, college students are available and easy to access and more willing to participate in research projects in comparison to other populations (Payne & Chappell, 2008; Wiecko, 2010).

Nevertheless, some researchers have expressed concern regarding the validity of using college/university samples because students are different from the rest of the population in terms of their age, life experiences, and level of education. It is possible that research findings based on this group may not generalize other populations (Payne & Chappell, 2008). However, recent student-based research investigating self-reported problem behaviours, frequency, and attitudes revealed that the behaviours of the college students did not differ significantly from the general population (Wiecko, 2010). Since there is evidence that student behaviours do not deviate significantly from that of the rest of the population, it is justifiable for this research to use university students as research participants.

2.3.1. The sampling method.

A nonprobability sampling is used for this study. According to Shaughnessy, Zechmeister, and Zechmeister (2009), the most common type of nonprobability sampling is convenience sampling. In convenience sampling, participants are chosen based upon their availability and willingness to respond to the survey.

Convenience sampling is chosen first, to fulfil the anonymity requirement of the participants. Convenience sampling requires no participant identification, and they can participate as long as they are available and willing to do so. Second, as time and cost are the main factors to be considered for this research, a convenience

sampling method is appealing because it is easy to conduct and economic (Gravetter & Forzano, 2012).

2.3.2. The sample size.

The sample size for this study is determined by two factors recommended by Christensen, Johnson, and Turner (2011), the research design and the type of statistical techniques used in the research. Since this research is quantitative-oriented, the sample size should be large because "quantitative research is often concerned with the description of characteristics of a large group and/or the identification of differences between groups" (Thomas, 2006, p. 395). Nevertheless, DeVellis (2003) points out that it is difficult to find a consensus on how large a sample should be. In addition, the existence of various "rules of thumb" in determining sample size seems to create more confusion among researchers (Maxwell, 2000).

For that reason, the sample size for this research was determined by the most complicated type of statistical analysis used in this research, the SEM. Kline (2000) notes that in SEM, larger samples will produce less sampling error than smaller samples. He suggests that a small sample size is less than 100, medium sample size is between 100 and 200, and large sample size should consist of more than 200 people. He further states that a more complex model with more parameters needs at least a sample size of more than 200. Based on Kline's suggestions, it was decided that the sample size for this research should be more than 200 in order to minimise sampling error and concurrently achieve adequate statistical power to carry out SEM analysis.

2.3.3. The final study sample.

This study has two phases: (a) pilot-testing and (b) validation model generation study. The procedures for survey administration and the characteristics of participants involved in both phases are described separately in the following sections.

2.3.3.1. Procedures for conducting pilot survey.

In the pilot phase, groups of students on the university campus were approached and asked whether they were willing to answer the paper-based questionnaire. Upon agreement, they were asked to sign the consent form and started to respond to their questionnaire. On completion of the survey, they were asked to identify any items that they found confusing and difficult to understand. Only their feedback on the clarity of the language used on the questionnaire was recorded.

2.3.3.2. Demographic characteristics of pilot sample.

A total number of 20 young adults, 10 men (50%) and 10 women (50%) participated in the pilot study. The participants' ages ranged from 18 to 25 years. Refer to Table 2.1 for the details of participant profiles.

Table 2.1

Participant's Profile in Pilot Study

Characteristics		**Frequency**	**Percent**
Gender	Men	10	50
	Women	10	50
Age (in years)	18-20	6	30
	21-23	9	45
	24-25	5	25
Race/Ethnicity	Malay	12	60
	Chinese	5	25
	Indians	2	10
	Others	1	5

Note. (n = 20)

From Table 2.1, it can be seen that the majority of the participants in this study is Malay, followed by Chinese, Indians, and other ethnic groups, which basically reflects the breakdown of Malaysia's population.

2.3.3.3. Procedures for conducting validation and model generation survey.

Participants were recruited via flyers explaining the study's general purpose and inviting their participation by paper and pencil or online using SurveyMonkey. For those who prefer paper-based questionnaires, they were requested to choose a timeslot in one of the classrooms at the university that suited them. On the other hand, if they prefer an online version of the survey, they can answer the questionnaire by clicking on the survey web page link provided in the flyer and completing it at their convenience. The online version of the questionnaire was open for three months. Refer to Appendix B for the flowchart on the overall processes of recruiting and administering the survey.

2.3.3.4. Demographic characteristics of validation and model generation sample.

Initially, 502 paper and pencil questionnaires were distributed to participants. However, 75 of the questionnaires were not usable because most of the questions were unanswered. The remaining 427 questionnaires were retained for further analyses.

The link to the internet survey was closed after three months with 93 participants. On inspection, 39 questionnaires were discarded due to incompleteness. The final sample for the online survey consisted of 54 students.[1]

The information from 481 participants was subjected to data screening. As a result, 44 participants were excluded due to outliers and violation of assumptions of normality (data screening processes are discussed in section 2.6.2). The final validation and model generation study sample in this research consisted of 437

[1] The proportion of returns retained for the online survey was 58.1%. Based on the data collected, it can be seen that Malaysian students preferred to respond to the traditional paper and pencil version of the questionnaire and it yielded a higher response rate in comparison to the online survey.

students with 193 (44.2%) men and 244 (55.8%) women. The participants' ages ranged from 18 to 25 years, with a mean of 21.15 (SD = 1.754). Eighty percent of the participants are Malay and 83.8% of the participants are Muslims. This diverse demographic reflects the cultural diversity of contemporary Malaysia.

As one of the purposes in this study is to validate the measures, the sample needed to be randomly split into calibration and replication samples. Using SPSS version 20, the 437 respondents were randomly allocated to a calibration sample of 236 (M_{age} = 21.2, SD = 1.69) and a replication sample of 201 (M_{age} = 21.1, SD = 1.83). Specifically, I used the "compute" instruction available in the SPSS and split the sample into 60:40 ratios. Refer to Table 2.2 and 2.3 for each of the group's demographic characteristics.

Table 2.2

Participant's Profile in Calibration Sample

Characteristics		**Frequency**	**Percent**
Gender	Men	108	45.8
	Women	128	54.2
Age (in years)	18-20	84	35.6
	21-23	132	55.9
	24-25	20	8.5
Race/Ethnicity	Malay	188	79.7
	Chinese	28	11.9
	Indian	10	4.2
	Others (indigenous)	10	4.2
Religion	Islam	196	83.0
	Christianity	9	3.8
	Buddhism	24	10.2
	Hinduism	7	3.0
	Others	0	0.0
Total Household Income	Less than RM2000	112	47.5
	RM2001 – RM3000	65	27.5
	RM3001 – RM4000	25	10.6
	RM4001 – RM5000	14	5.9
	RM5001 – RM6000	7	3.0
	RM6001 and more	13	5.5

Note. (n = 236)

Table 2.3

Participant's Profile in Replication Sample

Characteristics		Frequency	Percent
Gender	Men	85	42.3
	Women	116	57.7
Age (in years)	18-20	77	38.3
	21-23	102	50.7
	24-25	22	11.0
Race/Ethnicity	Malay	163	81.1
	Chinese	23	11.4
	Indian	6	3.0
	Others (indigenous)	9	4.5
Religion	Islam	170	84.5
	Christianity	5	2.5
	Buddhism	20	10.0
	Hinduism	4	2.0
	Others	2	1.0
Total Household Income	Less than RM2000	98	48.8
	RM2001 – RM3000	38	18.9
	RM3001 – RM4000	21	10.4
	RM4001 – RM5000	11	5.5
	RM5001 – RM6000	8	4.0
	RM6001 and more	25	12.4

Note. (n = 201)

As reflected in both tables, splitting of the sample resulted in n = 236 for the calibration sample and n = 201 for the validation sample. Inspection of the tables revealed that the demographic characteristics of the calibration sample are comparable to those of the replication sample.

2.4. The Measures

A packet of questionnaires was prepared to enable validation and subsequent investigation of the relationship between Spirituality and key factors such as Personality and Cognitive Beliefs. The questionnaires asked about participants' Spirituality, Personality, Irrational, Self-Efficacy, and Health Locus of Control Beliefs. A copy of the questionnaire is attached in Appendix C.

Section A consists of 10 demographic items, designed to generate information regarding personal descriptors. An additional item "*Have you answered this questionnaire before*" is included as a screening item, to ensure no redundancy in the information collected.

For Section B, all the items were adopted from the Expressions of Spirituality scale (ESI; MacDonald, 2000a). It is a 32 item self-report instrument that utilizes a 5-point Likert scale ranging from *Strongly Disagree* to *Strongly Agree*. This scale is designed to measure five dimensions of Spirituality: Cognitive Orientation towards Spirituality, Experiential/Phenomenological Dimension of Spirituality, Existential Well-Being, Paranormal Beliefs, and Religiousness. Scale scores are computed by summing the item responses for all items belonging to a dimension to arrive at the dimension scores. It has been reported that the ESI has well-established reliability, convergent, and discriminant validity (MacDonald, 2000a).

The 44 items in Section C were adopted from the Big Five Inventory (BFI; John et al., 1991). BFI measures five major domains of personality: Neuroticism (N), Extraversion (E), Openness to Experience (O), Agreeableness (A), and Conscientiousness (C). Eight items measure the dimension of Extraversion and Neuroticism, respectively, nine items each measure Agreeableness and Conscientiousness and ten items measure the dimension of Openness. Items are scored on a 5-point Likert scale ranging from "Disagree Strongly" to "Agree Strongly". Scale scores are computed as the participant's mean item response (i.e. adding all items scored on a scale and dividing by the number of items on the scale). Soto and John (2009) reported high internal reliability in which Cronbach's alpha calculations ranged from .81 to .88, with a mean of .85. It was also reported that the

BFI has demonstrated substantial convergent and discriminant validity (John, Naumann, & Soto, 2008).

The 20 items in Section D were designed to measure the respondents' irrational thinking. The items were adopted from the Belief Scale (IBS; Malouff & Schutte, 1986). A psychometric review of measures of Irrational Beliefs has reported that this scale demonstrates good split-half and test-retest reliability (Terjesen, Salhany, & Sciutto, 2009). Additionally, the Belief Scale has established content and concurrent validity evidence such as correlations with self-report measures of depression and hostility (Malouff, 2009).

The 37 items in Section E were constructed to measure respondents' Self-Efficacy. All the items were adopted from The Children's Perceived Self-Efficacy Scale (CPSE; Bandura, 1990). The items were purported to represent three dimensions of human functioning: academic self-efficacy, social efficacy, and self-regulatory efficacy. This self-report instrument utilizes a 6-point Likert scale ranging from "Not at all" to "Extremely Well". According to Bandura et al. (1996), the internal reliabilities for this dimension is .80.

Finally, in Section F, all 18 items are adopted from the Multidimensional Health Locus of Control Scale (MHLC; Wallston, Wallston, & DeVellis, 1978) . This scale contains three 6-item subscales: "internality", "powerful others externality", and "chance externality". The score on each subscale is the sum of the values circled for each item on the subscale. Wallston (2005) reported that MHLC has moderate reliability and its validity has been demonstrated in numerous studies.

It should be noted that all measures described above were developed in the West. Measures developed for a particular culture need to be translated and adapted

if it is going to be used in a different culture such as Malaysia. The translation and adaptation process will be discussed thoroughly in the next section.

2.4.1. Translation and adaptation of study instruments for the Malaysian context.

Researchers can either construct a new instrument to measure their study variables or adapt existing instruments for a new research context. The construction of a questionnaire is assumed to be simple, but it is actually a sophisticated science backed by the well-established discipline of psychometrics. Due to its complexity and time consuming nature, most researchers prefer to translate and adapt previously developed and validated psychological assessment instruments (DeVellis, 2003). Moreover, McCartney, Burchinal, and Bub (2006) point out that development of a new instrument is not recommended if an existing instrument is already well-established. Taking these facts into consideration, it was decided that the instruments for this research are not to be developed; instead they will be translated and adapted to suit the needs of Malaysian participants.

Although the merits of translating and adapting existing instruments are well-established, some pitfalls associated with inadequate translation have been identified (Behling & Law, 2000). While this practice may conserve time and effort, poor instrument translation may contribute to differences in findings across cultures (De Fruyt et al., 2009). It may either reflect the true cultural/developmental differences or inferior data quality samples. Findings from cross-cultural research have shown that poor translation and adaptation of instruments also contributed to a lower validity and reliability of the translated instruments in comparison to original versions (Weeks, Swerissen, & Belfrage, 2007). For those reasons, studies that require translation and adaptation of the existing instruments, including this study, need to

include adequate information on the validation processes of the translated instruments.

2.4.2. Validation of the translation.

The validity and reliability of the translated version of the instruments are maximized when they are semantically and conceptually equivalent to their original versions (Van Leeuwen, 2004). Semantic equivalence is generally understood as “the meaning of each item is the same in each culture after translation into the language of each culture”, while conceptual equivalence is referring to “the instrument is measuring the same theoretical construct in each culture” (Flaherty et al., 1988, p. 258). These issues will be discussed separately in the next sections.

2.4.2.1. Semantic equivalence.

Semantic equivalence can be achieved by using appropriate translation methods such as back-translation and the committee approach (Behling & Law, 2000; Van de vijver & Tanzer, 2004). Brislin’s (1970, 1980) translation/back-translation technique is adopted in this study in an attempt to establish semantic equivalence because it is considered to be the best technique for translating and adapting the instruments into different research contexts. Many researchers agree that it is the most reliable and widely used translation method (for examples, refer to Brislin, 1986; Cha, Kim, & Erlen, 2007; Geisinger, 2003; McGorry, 2000; Yu, 2004).

Yet, there are other researchers who argue that translation/back translation technique merely evaluates the accuracy of the translation which sometimes may not be applicable psychologically (Van de vijver & Tanzer, 2004). It is therefore suggested that the use of the translation/back translation approach is incorporated with the committee approach first described by Brislin (1980). In the committee-based approach, several individuals translate the English-language version to the target language version. The use of this approach allows for an effective

identification of translation errors and conceptual fallacies (Pan & De la Puente, 2005). While the combination of translation/back-translation and committee approaches is complicated and relatively costly, its efficiency for establishing semantic and content equivalence is acknowledged (Smit, Van den Berg, Bekker, Seedat, & Stein, 2006). For that reason, both translation methods are used in this study.

In this study, however, some variations are done to Brislin's translation/back translation and the committee approach due to time and budgetary constraints. The actual procedures conducted in this study are outlined as below:

1. Three translators (A, B and C)[2] independently translated the English version of the instruments into Malay.
2. The author of this dissertation and another bilingual translator (D)[3] compared and discussed inconsistencies in the three versions of the Malay-translated instruments. A draft version of the instruments was produced after consensus was reached.
3. Another translator (E),[4] who had not seen the original English version, translated the draft back into the English language.
4. Two native English speakers (F and G)[5] worked independently on the original version and the back-translated version comparing the similarity in language

[2] All translators (A, B and C) are bilingual with Malay as a first language, who completed tertiary education in both Malaysia and Australia and are thus knowledgeable about both cultures.

[3] D is bilingual and is currently completing her doctorate in Counselling Psychology at Monash University in Australia.

[4] E is bilingual and teaches psychology courses in a Malaysian private university. E was instructed to not refer to the instrument's original version and instead to treat the Malay version as the original.

[5] F and G are Australians, faculty members of the Faculty of Education, Monash University and are currently completing their doctorates in Psychology at Monash University, Australia.

and meaning (on a Likert-type scale of 1 to 7, with 1 “not at all comparable/similar” to 7 “extremely comparable/similar”). Items scoring less than an average of 4 were revised; those scoring more than an average of 4 were retained in the questionnaire (Nintachan & Moon, 2007).

5. Steps (1) to (3) were repeated until the translated version was comparable to the original English version. Another bilingual expert (H)[6] compared the reconciled version with the original version: the resulting Malay experimental versions were then ready for initial validation with a calibration sample of respondents.

A schematic presentation of the entire process involved in translating and adapting the English version of the test instruments into the Malay version is attached as Appendix D. Having completed the translation process, the next step is to evaluate semantic equivalence across the two versions of the instruments.

Testing for semantic equivalence: Item comparability and interpretability.

The importance of establishing the equivalence between the source language and the target-language version of the instruments is acknowledged by many researchers (Nintachan & Moon, 2007; Willgerodt, Kataoka-Yahiro, Kim, & Ceria, 2005). In this study, semantic equivalence is tested based on the procedures demonstrated by Sperber et al. (1994). In general, the two versions are evaluated in terms of language and interpretability. For Sperber et al. (1994), comparability of language means “the formal similarity of the words, phrases and sentences” while similarity of interpretability refers to “the degree to which the two versions would engender the same attitude response even if the wording was not the same” (p. 506). As previously mentioned (section 2.4.2.1), both native English speakers are requested to compare

[6] H is a psychiatrist in one of the Malaysian public hospitals. She is currently completing her doctorate in Psychology at Monash University, Australia.

the two versions in terms of the similarity in language and meaning. Items with an average score of less than 4 are considered not to demonstrate adequate equivalence to the original versions and need revision whereas those with an average score of 4 or more 4 are retained in the questionnaire.

On balance, although translation methods such as back-translation and committee approach were used to ascertain semantic equivalence between the original and the translated version of the instruments, and subsequently enhance the validity of the translated versions, it may also threaten what the original instruments measure. While certain cultural and religious factors were taken into account in the translation, these were done in a manner that did not threaten the integrity of the underlying factors of the original instruments. The integrity of the original instruments can be ascertained if the same factor structure is found from the translated version. This brings us to the issue of conceptual equivalence, discussed in the next section.

2.4.2.2. Conceptual equivalence.

Conceptual equivalence is achieved when the two versions of a scale "exhibit a general similarity in factorial structure" (Behling & Law, 2000, p. 37). This can be established with the use of confirmatory factor analysis (CFA). The evidence of conceptual equivalence is supported when the same number of factors emerges across the original and translated version of the instruments.

The results for the validation of the translation will be reported and discussed in subsequent chapters. The next section however, will look into the ethical requirements in conducting this research.

2.4.3. Preliminary testing of the translated measures.

The translated instruments were piloted before actual distribution. This pilot study serves the purpose of pre-testing the survey questionnaire to check for its adequacy and clarity in language. The pilot testing was conducted after obtaining approval from the Monash University Human Research Ethics Committee (MUHREC).

2.5. Ethical Application and Approval

It is a requirement of Monash University that any research involving human participants must obtain ethical approval before research can be conducted. Ethical approval was therefore sought from the Monash University Human Research Ethics Committee (MUHREC) prior to data collection. The approval to conduct this research was granted on 9 August 2010 (with project approval number CF10/1290 – 2010000679, attached as Appendix E (I).

As part of the ethics requirement, all participants need to be informed of all aspects and nature of the research before they agree to participate in the research. These are explained to them via the Explanatory Statement. The Explanatory Statement is provided separately to each group of participants (pilot study/paper – based questionnaire/online questionnaire, see Appendix E[II], E[III] and E[IV]). The participants for the pilot survey are also furnished with a written consent form (see Appendix F) while the paper-pencil and online survey participants are told in the Explanatory Statement that returning the completed survey implied their consent to participate in this research.

In addition, as part of MUHREC's requirement, permission is sought from the university in Malaysia to recruit its students as participants. As the initial purpose of this research project is to investigate problem behaviour issues (among other

variables previously described in Chapter 1) in Malaysian young educated adults, this research is classified as high-risk. As such, it is imperative to ensure that the identity of the respondents remains anonymous and that there is no way of identifying them. Storage of data collected adheres to the university's regulations and the use of anonymous data will be restricted only to this research.

2.6. Procedure for Statistical Analyses: An Overview

Once data collection is completed, the next stage is to prepare the data for further analyses. The next few sections describe the process of data coding and screening, followed by the statistical analyses performed in this research. Refer to Figure 2.1 for an overview of the processes involved in preparing the data for further analyses.

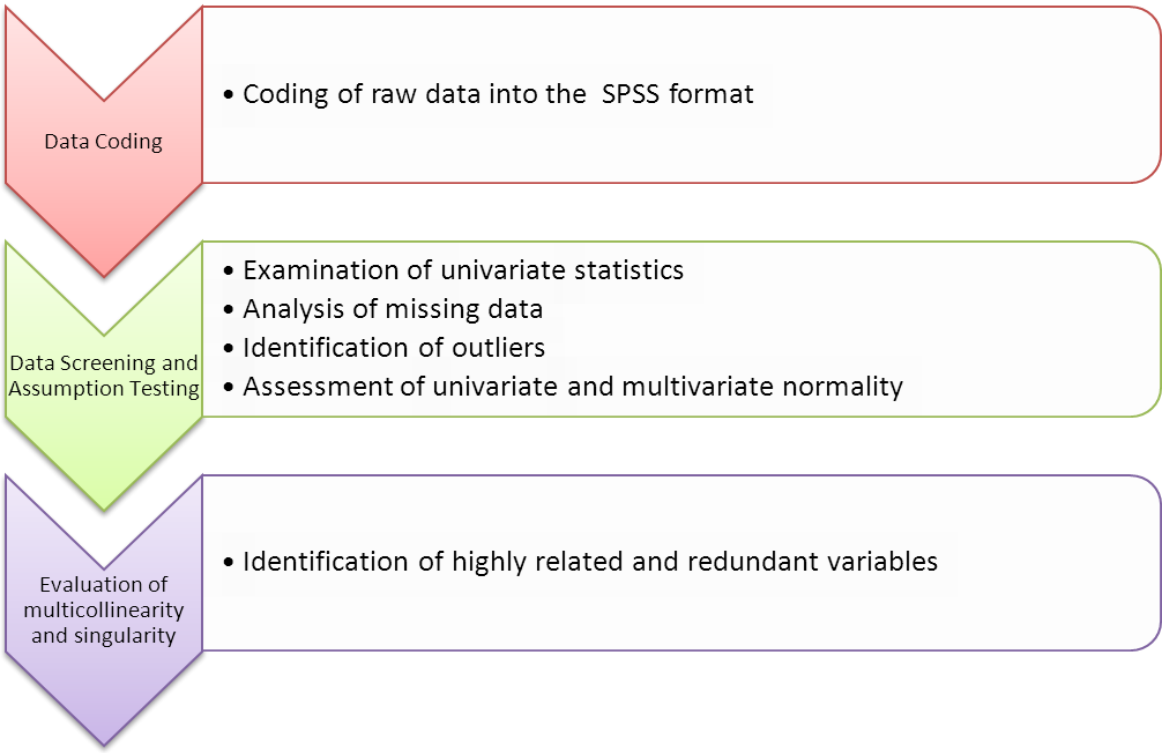

Figure 2.1. A schematic representation of the analytical processes.

2.6.1. Data coding.

The first step in data analysis is data coding. According to Pallant (2011), coding refers to the process of "converting the information obtained from each participant into a format that SPSS can understand" (p. 11). Hence, a coding sheet which contains information on the definition and label of each variable is prepared. The numbers assigned to each response are also recorded. The coding sheet for all measures used in this study is attached as Appendix G.

2.6.2. Data screening and assumption testing.

Prior to doing any analyses, it is essential to screen the raw data for any inaccuracies and errors, such as mistakes when entering data, missing data, and outliers. In this section, the relevant data screening techniques outlined by Tabachnick and Fidell (2007) and Hair, Black, Babin, and Anderson (2010) are used as guidance. The details of the techniques are described in the following sections.

2.6.2.1. Examination of univariate descriptive statistics.

According to Tabachnick and Fidell (2007), the first step in data screening is to examine the univariate descriptive statistics, using a descriptive program such as SPSS frequencies. A thorough check on the means, standard deviations, minimum and maximum values for each variable revealed that the values were all reasonable, ensuring the accuracy of the data entry. The accuracy of the data entry into the data set was 100.00%. However, the data also revealed that there were a number of variables with missing values, which will be discussed next.

2.6.2.2. Analysis of missing data.

Tabachnick and Fidell (2007) suggests that if it is a large data matrix and the pattern of missing data is random (less than 5%), the problem is less serious, and any method for dealing with missing data will produce almost the same results. With this guideline, the pattern of missing data in the current data file is examined using SPSS

Missing Values Analysis (MVA). It was observed that less than 5% for each case have missing values. Given the small number of missing data, concerns surrounding estimation with missing information are moot. However, since the current data is to be used in SEM, the presence of incomplete data makes it impossible for the program to calculate Modification Indices (MI),[7] which is paramount to the investigation of the research questions (to be described in detail in section 2.6); therefore the missing data needs to be handled.

Tabachnick and Fidell (2007) suggest that the most reasonable approach to handle missing data is by using the Expectation-Maximazation (EM) method. EM is suitable for cases without a great deal of missing data and scores that are missing randomly. SPSS (MVA) performs EM to produce imputed values for missing data and simultaneously generates the Little's MCAR (Missing Completely at Random) test statistic that can be used to determine the randomness of the missing data (Hair et al., 2010). In this research, the Little's MCAR test showed a Chi Square = 15075.752 with degree of freedom = 14878, and a significance level of 0.126, which was statistically non-significant, indicating that most likely the data were missing at random (Little & Rubin, 2002). The use of the EM method in handling the missing data in this research is therefore justified. Since missing data is replaced using the EM method, no cases are deleted at this stage of data screening. The use of EM imputed the missing values and produced a new data set which can be used for further analyses.

[7] MI represents the decrease in the value of the chi-square that would results if the parameter was freed to be estimated in a revised model (Homes-Smith, 2010, p. 5.18)

2.6.2.3. Identification of univariate and multivariate outliers.

Having imputed the missing values in the current data set, the next step involves the identification of outliers. A case is said to be an outlier when it has an extreme score on one variable (univariate outlier) or it has extreme scores on two or more variables (multivariate outlier). The "presence of outliers can lead to both Type I and Type II errors" (Tabachnick & Fidell, 2007, p. 72) and may affect the overall results of the study.

In this study, the univariate outliers are identified by inspecting the standardized z-scores of the variables. The variables with standardized z-scores of ± 3.29 were identified as potential outliers (Tabachnick & Fidell, 2007). Refer to Appendix H for the list of univariate outliers found in this study. Interestingly, a closer inspection showed that cases 357 and 434 may represent a respondent characteristic, which is yes-saying to most items in the questionnaire. In light of this, it is justifiable that case 357 and 434 are excluded from further analysis.

The rest of the outlier cases were checked one by one. A detailed inspection of these cases showed that these extreme values were indeed from the intended population and a legitimate part of the sample, which did not justify their exclusion from further analyses. The retention of these cases for subsequent analyses however, may affect results of analyses.

In this situation, Tabachnick and Fidell (2007) suggest to transform the variables to reduce the impact of outliers. According to Hair et al. (2010), "a transformation, such as taking the logarithm or square root of the variable, creates a new variable and eliminates the undesirable characteristics, allowing for a better measure of the relationship" (p. 161). Even so, there are other researchers who claim that transformation of the variables may interfere with the interpretation of the end

results, because interpretation is made based on the transformed variables. Yet, Tabachnick and Fidell (2007) argue that transformation of problematic variables may improve the normality of the distribution (which will be discussed in the next section) and the results of analyses. Parallel with Tabachnick and Fidell's argument, it is decided that three variables in this study, those with the most outliers, are to be transformed (refer to Appendix H).

For the ESI scale, most outliers were detected in item "I practice some form of prayer". The recommended approach for making transformation such as reflect and logarithm (Pallant, 2011; Tabachnick & Fidell, 2007) was applied, which improved the normality of the distribution. Other problematic items were from the Multi-Dimensional Health Locus of Control. Logarithmic transformations were made to both items "If I become sick, I have the power to make myself well again" and "I can pretty much stay healthy by taking good care of myself", resulting in a better distribution for both variables.

With respect to the rest of the outliers, a recommendation from Tabachnick and Fidell (2007) to recode the data was followed. Recoding the data means that the outliers were recoded to the next lowest or highest value in the typical range. For instance, one outlier case in the Big Five Inventory scale was caused by a response of *strongly disagree* to item "considerate and kind to almost everyone". The response was recoded to the next lowest score, *disagree*. By doing this, the impact of univariate outliers in the data set was reduced. Similar action was conducted for the rest of the outliers in the other scales.

With the problem of univariate outliers handled, the next step is to deal with the multivariate outliers. Multivariate outliers are detectable through the computation of Mahalanobis distance (MD), which can be described as the "distance of a case from

the centroid of the remaining cases where the centroid is the point created at the intersection of the means of all the variables" (Tabachnick & Fidell, 2007, p. 74). In this study, the results revealed that the maximum score for MD was 270.944, which exceeds the critical value of 208.1 (χ^2 value at $\alpha = .001$ with 149 df), indicating the existence of multivariate outliers. On close examination, it was found that there were 42 cases with a Mahalanobis distance greater than 208.1.

It has been suggested that the outliers can either be retained or deleted from subsequent analyses (Hair et al., 2010). In this study, the decision to delete the cases with multivariate outliers was made based on the fact that outliers can have a profound impact on the results generated from a complex statistical technique such as SEM (Holmes-Smith, 2011). In addition, the exclusion of 42 cases from the data set resulted in 437 cases for further analyses, which according to Kline (2005) is large and appropriate for complicated SEM techniques. Kline also asserts that deletion of outlier cases may contribute to multivariate normality, which is discussed in the next section.

2.6.2.4. Assessment of multivariate normality.

Arbuckle (2007) emphasizes the importance of meeting the assumption of multivariate normality, especially for studies using SEM analyses. The assumption of multivariate normality is satisfied when each study variable and all pairs of variables are normally distributed (Tabachnick & Fidell, 2007). Of import to SEM application is data that are not "multivariate kurtotic, the situation where the multivariate distribution of the observed variables has both tails and peaks that differ from those characteristic of a multivariate normal distribution" (Byrne, 2010, p. 103). This is because statistical research has shown that multivariate kurtosis tends to severely impact tests of variance and covariance, which SEM is based on.

The assumption of multivariate normality can be tested by examining Mardia's normalized estimate of multivariate kurtosis (Mardia, 1970), which can be generated in AMOS software (Byrne, 2010). According to Bentler (2005, cited in Byrne, 2010), Mardia's coefficient of more than 5 is indicative of non-normally distributed data. The results of the multivariate normality test are presented in Appendix I.

As can be seen in Appendix I, the data in this study revealed a high Mardia's multivariate coefficient for each of the scales used to measure the study variables, indicating non-multivariately normal data. As a consequence, the maximum likelihood (ML) estimation method, a typically used estimation method in AMOS is not appropriate for this study since such non-normal data distribution adversely affects chi-square values, fit indices, and standard errors (Byrne, 2010). In light of this, this study adopts a procedure known as "Bollen-Stine bootstrapping" (Bollen & Stine, 1992) to accommodate the violation of multivariate normality. This method is described in detail section 2.6.3.

2.6.2.5. Evaluation of variables for multicollinearity.

Another important assumption that needs to be satisfied in conducting multivariate analysis is multicollinearity. Multicollinearity refers to situations when variables are too highly related, for example .90 (Weston, Gore, Chan, & Catalano, 2008).

The practical way to detect multicollinearity among the variables is by calculating the squared multiple correlation (SMC) between each variable and all the rest of the variables. Multicollinearity is detected when the SMC >.90, suggesting that the variable is highly related to the others in the set (Kline, 2005). The best way to deal with multicollinearity is to remove one of the redundant variables (Weston et al., 2008). On inspection of the current data set, no multicollinearity was evident,

suggesting that the variables are not highly correlated or redundant with one another (see Appendix J). Therefore, at this stage, no variables were removed from the data set.

2.6.2.6. Section summary.

In the data screening stage, several steps such as examination of data entry, assessment of missing data, inspection of outliers and assessment of normality have been undertaken as an attempt to prepare the data so it is in the best form for multivariate analysis.

The data screening processes have identified 44 cases that should be eliminated from further analysis. As a result, 437 cases were retained with 3 variables logarithmically transformed for subsequent analysis, such as confirmatory factor analysis and structural equation modelling, which will be discussed next.

2.6.3. Data analysis.

Data analysis in the present research is conducted in two stages. The first stage involves validating the scales used in the study. In the second stage the hypotheses on the relationships between the variables are examined. This section seeks to describe how SEM can be used for refining the structures of the scales and further the model building.

2.6.3.1. Structural Equation Modelling (SEM).

SEM is chosen as the analysis tool to investigate the psychometric properties of the scales and to investigate the relationship between spirituality and socio-psychological variables like Personality predispositions, Self-Efficacy, Irrational, and Locus of Control Beliefs. This is because of SEM's unique ability to provide several indexes of model-based reliability and validity (Holmes-Smith, 2011) and at the same time explain the relationships among multiple variables (Hair et al., 2010). Specifically, SEM allows causal relationships among both unobserved and observed

variables to be modelled. Furthermore, SEM can partition out the measurement error in the estimation process, revealing a true relationship between the variables (Holmes-Smith, 2011). Another appealing feature of SEM is its ability to provide various goodness-of-fit indices, which can be used to assess and evaluate measurement model validity (Byrne, 2010).

Holmes-Smith (2011) observed that "SEM is a hybrid of factor analysis and multivariate regression which allow researchers to create factors and investigate causal relationships amongst the factors" (p. 1.1). As reported by Byrne (2010), there are two types of factor analysis, namely, exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). EFA is conducted when there is no prior knowledge of the relationships between the observed and the latent variable while CFA is carried out when one has prior theoretical and/or empirical knowledge of the relations between the indicator variables and the factors. However, SEM is a priori and thus takes a confirmatory rather than exploratory approach to the analysis of a theoretical model (Byrne, 2010). CFA is a type of SEM that allows for the evaluation on the relationship between observed and latent variables (Brown, 2006).

In essence, SEM consists of two sub-models, (a) measurement model and (b) structural model. The combination of both models makes up the full structural model. In a measurement model (where the CFA elements are found), the relationships between the observed and latent variables are highlighted. On the other hand, the structural model highlights the relations between the unobserved variables (Byrne, 2010). Before turning to the actual model-building task, the next section will describe how the model parameters are estimated or fitted.

Parameter estimation in SEM.

According to Ullman (2007), parameter estimates are "fundamental to SEM analyses because they are used to generate the estimated population covariance matrix for the model" (p. 680). Several methods can be used in model estimation such as Maximum Likelihood (ML), Generalized Least Squares (GLS), and Asymptotically Distribution-Free (ADF). However, only the ML estimation method will be discussed in this dissertation because according to Kline (2005) this is the most widely used approach in estimating parameters.[8] In fact, Hoyle (2000a) claims that "the use of an estimation method other than ML requires explicit justification" (p. 478), emphasizing the usefulness of the ML method in parameter estimation.

However, as previously mentioned in section 2.6.2.4, the Mardia test in this study indicated the violation of multivariate normality. In this case, it is not suitable to use the ML method of estimation because ML works under normal distributional assumption. Under this circumstance, the Bollen-Stine bootstrapping method is pursued as a remedy in lieu of the recommendation by several researchers such as Byrne (2010), Bollen and Stine (1992), and Zhu (1997).

Byrne (2010) states that "bootstrapping serves as a resampling procedure by which the original sample is considered to represent the population" (p. 330). Basically, in bootstrapping, multiple sub-samples are created by randomly redrawing samples, with replacement from the original sample to produce bootstrap statistics that adjusted for the lack of multivariate normality (Zhu, 1997, p. 46). As a general rule, the Bollen-Stine adjusted p-value of less than 0.05 ($p<0.05$) indicates that the model is not a good fit and should be modified or respecified (Holmes-Smith, 2010).

Model fit assessment.

[8] ML estimation procedure is preferred than GLS because GLS is greatly affected by misspecification while ADF method is criticized for the need of an extremely large sample size (Hoyle, 2000a)

Once the parameter in the model is estimated using the Bollen-Stine bootstrap procedure, the next step is to evaluate the consistency of the theoretical model with the empirical data. This can be achieved with the evaluation of the goodness-of-fit indices generated from the estimation procedure (Byrne, 2010).

However, a plethora of fit indices generated from each estimation procedure seems to cause conflicting views among the SEM experts on which fit indices should be reported and the cut-off values for each one (Hooper, Coughlan, & Mullen, 2008). Nevertheless, some researchers such as Bollen and Long (1993), Byrne (2010), and Martens (2005) recommend that a variety of fit indices should be simultaneously reported in order to get a more holistic indication on the consistency between the specified model and the empirical data.

SEM literatures have indicated that the overall chi-square test of model fit[9] is the most commonly reported fit index (Hu & Bentler, 1999; Weston et al., 2008). However, some researchers have argued that the chi-square test is very sensitive to sample size and model complexity in which there is a possibility that a Type I error[10] will be committed if the sample size is large. Accordingly, the sensitivity of model chi-square to sample size can be reduced by dividing the chi-square values with the degrees of freedom for the model, resulting in the *normed chi-square* (χ^2/df) (Holmes-Smith, 2011; Kline, 2005). Some researchers prefer to use the normed chi-square not only because it acknowledges the complexity, it can also be referred to as an index of model parsimony (Holmes-Smith, 2011). Taking the sensitivity of the chi-square test to sample size and model complexity into account, this research

[9] Chi-square statistics tests the hypothesis that there is no difference between the matrix of implied variances and covariances ($\hat{\Sigma}$) and the matrix of empirical sample variances and covariances (S) (Holmes-Smith, 2011, p. 7.2).

[10] Committing Type I error may lead researchers to reject an acceptable model, when the opposite is true.

reports both the model chi-square statistic and its normed chi-square. However, due to the violation of multivariate normality assumption as previously discussed, the Bollen-Stine adjusted p-value is reported rather than its respective normal chi-square p-value.

Given the limitations with the chi-square test statistics, Bollen and Long (1993, p. 6) stated that most researchers agree that "the chi-square test statistic should not be the sole basis for determining model fit". Therefore, following the recommendations of Kline (2005) and Hu and Bentler (1999), other fit indices such as the Root Mean Square Error of Approximation,[11] the Standardized Root Mean Square Residual,[12] the Tucker Lewis Index, and the Comparative Fit Index[13] are also reported in this study. According to Hooper et al. (2008, p. 56), these indices have been found to be "most insensitive to sample size, model misspecification and parameter estimates", as cautioned by Hu and Bentler (1999). The fit indices employed in the current research are summarized in Table 2.4, together with their recommended threshold.

[11] The Chi-square, Normed chi-square and Root Mean-Square Error of Approximation test statistic is a type of fit statistics which measures the degree of exact fit between the specified model and the sample data (Holmes-Smith, 2011, p. 7.3).

[12] The Standardized Root Mean Square Residual is a standardized measure of the average difference between population and sample per element of the variance-covariance matrix (Holmes-Smith, 2011, p. 7.4).

[13] The Tucker Lewis Index and the Comparative Fit Index is a type of incremental fit indices which measure how much better the fitted model is compared to some baseline model (Holmes-Smith, 2011, p. 7.5).

Table 2.4

Selected Goodness-of-Fit Measures

Test Statistics	Abbreviation	Accepted Level	Interpretation
Chi-Square (with its associated degrees of freedom and probability of significance difference)	χ^2 (df, p)	p > 0.05 (for multivariate normal data)	Greatly affected by sample size and model complexity. Therefore, should be used in conjunction with other fit indices.
Bollen-Stine p-value		P > 0.05 (for non-normal data distribution)	The Bollen-Stine adjusted p-value should be used to address the issue of non-normal data.
Normed Chi-square	χ^2/df	$1.0 < \chi^2/df > 5.0$	Values close to 1 indicate good fit but values less than 1 may indicate overfit.
Root Mean-Square Error of Approximation	RMSEA	RMSEA < 0.08	
Standardized Root Mean-Square Residual	SRMR	SRMR < 0.08	Large values for SRMR when all other fit indices suggest good fit, may indicate outliers in the raw data.
Comparative Fit Index	CFI	CFI > 0.90	A value greater than 0.90 is needed in order to ensure that misspecified models are not accepted.
Tucker Lewis Index	TLI	TLI > 0.90	Although values between 0.90 – 0.95 may still be considered to be satisfactory

Source: Adopted from Holmes-Smith (2011, p. 7.7), Kline (2005) and Hu and Bentler (1999).

2.6.3.2. Multi-step approach to fitting structural equation models.

There are a number of approaches to model building, such as the one-step, two-step and four-step approach.[14] In this thesis, however, a two-step model building approach as recommended by Anderson and Gerbing (1988) and Jöreskog (1993; 2000) was adopted. Principally, the two-steps involve (a) estimate the measurement parts of the model first and note the parameter estimates and (b) run the full model but use the parameter estimates established in step a to fix the measurement part of this full model (Holmes-Smith, 2011, p. 12-2). A position on the two-step approach to modelling was made to redress the concern with a one-step approach (whole model is handled in a single step, hence unable to identify the source of model misfit) and four-step approach (incapable of determining the correct number of factors) (Bollen, 2000). The steps of model building adopted in this research is summarised in Figure 2.2.

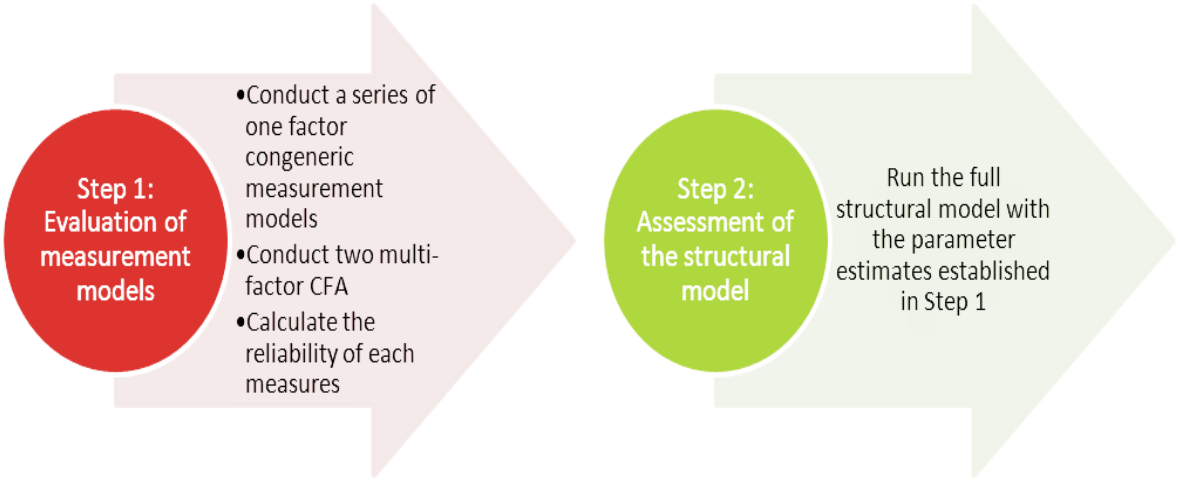

Figure 2.2. A two-step approach to model building.

[14] Some researchers such as Hayduk and Glaser (2000) proposed a one-step approach to model building where the latent variable and the measurement models is modelled simultaneously in one step whereas Mulaik and Millsap (2000) suggest a four-step approach to modelling. In this approach, the steps involved are (i) estimating an exploratory factor analysis, (ii) tests the confirmatory factor analysis, (iii) tests the measurement and structural model simultaneously, and (iv) test a priori hypotheses. Readers are directed to Bollen (2000) for a discussion on modelling strategies.

Estimation of one-factor congeneric measurement models.

The first step involves estimating a series of one factor congeneric measurement models. According to Holmes-Smith (2011), a one-factor congeneric model represents the "regression of the set of observed indicator variables on the single latent variable" (p. 9-2), or the relationships between a single latent variable and the indicator variables.

The assumption underlying this model is that the observed items measuring the latent construct do not offer equal weight in accounting for the variance in the observed variables and its associated measurement errors (Berry & Shipley, 2009). The application of this model analysis allows for identification and removal of items that are not truly measuring the latent variables, resulting in the improvement of the reliability and validity of composite measures.

In single factor congeneric model, any indicator variables that appear to be unsatisfactory are removed from the scale, permitting the large data sets to be reduced to a manageable level (Holmes-Smith & Rowe, 1994). In the removal of items, consideration is paid to the goodness of fit indices, modification indices, and reliability. Other advantages of fitting one-factor congeneric measurement models include the fact that the fit indices generated can be presented as evidence of construct validity of the scales (Holmes-Smith, 2010).

In the congeneric model, item reliability (indicated by the *Squared Multiple Correlations;* SMC) can be used to indicate the relationship between an item and its underlying latent variables. Then, the model (without the unsatisfactory item) is run again to observe the impact of item removal to that particular single factor. The process is repeated until a satisfactory model is gained or until a set of valid items

together with accurate weightings that can be applied to the items to form very accurate composite scores is established (Holmes-Smith & Rowe, 1994).

Despite the advantages offered by the use of congeneric models as an approach to ascertain the validity and reliability of the scales, some researchers have argued that this technique may lead to the loss of information as items were removed in an attempt to gain acceptable fit indices (Holmes-Smith & Rowe, 1994).

Having acknowledged this limitation, the use of congeneric measurement models as an approach to assessing the validity and reliability of research constructs in the present research was especially attractive because the remaining items can be considered as the best reflection of that particular trait, with maximum validity and reliability.

To summarize, item deletion is warranted when it (a) has SMC < 0.30, (b) displays low regression weights, and (c) has several error covariances[15] (Berry & Shipley, 2009, p. 61). Nevertheless, item elimination must not be done haphazardly but rather be guided with substantive and/or empirical rationale (Byrne, 2010).

Two multi-factor CFA.

In the second step of the measurement model evaluation, two multi-factor CFA analyses are conducted, with the purpose of identifying any cross-loadings between the constructs. Cross-loading items will be deleted from the scale, to ensure that each construct is reflected with only unique items (Holmes-Smith, 2011). The removal of cross-loading items will optimize the scale's discriminant validity.

The source of model misspecification can be detected by inspecting the standardized residual covariances (SRC) and the MI (Byrne, 2010; Holmes-Smith, 2010). The residual covariances are the "difference between the sample covariance

[15] An item with error covariance may indicate that the content of that item is overlapping with another item.

matrix and the model predicted covariance matrix". Significant misfit can be identified when the standardized residual values exceed ± 1.96. If and when misfit is identified, it is advisable to either estimate additional parameters or delete the problematic item from the model (Holmes-Smith, 2010, p. 5.17).

In addition, MI can also be used to detect the potential source of model misspecification. According to Byrne (2010), large MIs are indicative of factor cross-loadings. As such, it is reasonable to re-specify a model by estimating the parameters that exhibit the largest MI. Accordingly, the re-specification of the CFA models was made if and when:

a) The SRC values > ± 1.96 and/or

b) The largest MIs exhibited by the items in that particular scale.

This completes my discussion on the first step of the two-step approach to model building. The second step in this approach will be discussed in detailed and applied in Chapter Six, where I will evaluate the full structural model of Spirituality-Cognitive Belief-Personality.

Determination of scale validity.

The steps in the evaluation of the measurement models provide the evidence of convergent,[16] construct,[17] and discriminant[18] validity (Anderson & Gerbing, 1988;

[16] According to Hair et al. (2010), convergent validity is "the extent to which indicators of a specific construct converge or share a high proportion of variance in common" (p. 689).

[17] Construct validity "exists when the measure is a good representation of the variable the researcher intends to measure" (Holmes-Smith, 2011, p. 9-24).

[18] Discriminant validity is the "extent to which a construct is truly distinct from other constructs" (Hair et al, 2010, p. 689).

Holmes-Smith, 2011). Refer to Table 2.5 as to how validity can be assessed in SEM analyses.

Table 2.5

SEM's Model-Based Validity

Types of Validity	Can be achieved with
Convergent	The factor loading is significantly different from 0 (statistical significance is assessed with the critical ratio) which can be identified from the Regression Weights column in AMOS output. C.R values >1.96 or p-values <0.05 indicates statistical significance at the .05 level.
Construct	A well-fitted one-factor congeneric measurement model, which can be determined from the goodness-of-fit indices.
Discriminant	Nested models[19] (Rotgans & Schmidt, 2011) with chi-square difference test. It can be concluded that the two constructs are distinct if the chi-square test statistics shows a worsening model fit when the correlation between the two constructs is constraint.

Determination of scale reliability.

Once the validity of the measures is determined, the next step is to calculate the reliability of each construct. There are several ways to calculate this such as using the traditional *Cronbach's alpha; Werts, Rock, Linn and Jöreskog's "maximised" reliability; and Hancock and Mueller's "maximised" reliability*, also known as *Coefficient H*.

However, in the case of this dissertation, I decided not to use the traditional Cronbach's alpha because in congeneric models, Cronbach's alpha tends to underestimate the true reliability of the measures, as calculation of the reliability is

[19] According to Holmes-Smith (2010), the nested model is a more widely accepted approach in determining the model-based discriminant validity.

based on equal factor loadings and measurement errors.[20] The Werts, Rock, Linn and Jöreskog's "maximised" reliability is favoured against the Cronbach's alpha but due to the complex mathematical formula of the Werts, Rock, Linn, and Jöreskog's "maximised" reliability, Coefficient *H* is a more practical choice than the other two. The use of Coefficient *H* allows for a maximised reliability of congeneric measures (Holmes-Smith, 2011). A cut-off value of .70 for Coefficient *H* is recommended (Hancock & Mueller, 2001).

2.6.3.3. Model cross-validation assessment.

In model cross-validation, a model that has been generated and modified in one sample is fitted to a new sample of data. Model cross-validation is essential if substantial modifications have been made to the original model (Holmes-Smith, 2011).

Considering the original instruments used in this study have to be translated into Malay, and substantial re-specifications need to be made, it is necessary for this research to conduct model cross-validation to ascertain that the model established did not "capitalised on chance relationships within the sample that are not present in another sample" (Holmes-Smith, 2011, p. 7.17).

Testing factorial invariance across samples.

In this study, the model generated with the calibration sample is cross-validated with the data collected from the replication sample. According to Byrne (2010), cross-validation involves testing for factorial invariance across groups, which can be achieved by imposing equal constraints on the factor loadings across calibration and replication groups (available in AMOS 19). Comparisons of model fit (between the

[20] As previously mentioned, in congeneric models, the composite score of the measures is based on **unequal** factor loadings and measurement errors.

configural model[21] and the model where the factor loadings are constrained equal across groups) are made. The invariance of the models is typically evaluated in terms of the $\chi^2_{difference}$ tests. Evidence of noninvariance is demonstrated if the $\chi^2_{difference}$ values are statistically significant.

2.7. Chapter Summary

This chapter has presented the research methodology and method of analysis used in this study. This is a quantitative study aimed to determine the relevance of Western Spirituality, Personality traits, and Cognitive Beliefs constructs for the cross-cultural Malaysian context by translating and validating these scales into the Malay language and a Malaysian context. Further, it seeks to generate a comprehensive model of relationships between these variables. The following chapters present the validation results of each of the study variables.

[21] A model in which all parameters are estimated for the calibration and replication groups simultaneously; no parameters are constrained equal across groups (Byrne, 2010, p. 267)

CHAPTER 3: Spirituality

This chapter aims to discuss the concept of Spirituality and to determine the relevance of Spirituality constructs derived from the Western context for an Eastern context, as represented by Malaysian culture. The overall structure of this chapter takes the form of eight main sections, including this introductory section. Section two begins with a discussion on the significance of Spirituality in human life. The third section discusses the concept of Spirituality whilst the fourth section lays out the theoretical foundations of Spirituality. The next section looks at how Spirituality is operationalized in the Malaysian context. The sixth and seventh section refers to the validation process of the ESI. The final section discusses and summarises the overall results of the survey.

3.1. The Significance of Spirituality in Life

Interest in Spirituality has been on the rise, especially recently, as evidenced in the increased number of published studies in this field (MacDonald & Friedman, 2002). Prominent psychologists such as Freud, Allport, Jung, and Maslow argue that a holistic understanding of a person must include the element of Religion and Spirituality (Hill et al., 2000). Furthermore, Tseng (2004) asserts that a person's "spiritual beliefs often form the foundation of their being" (as cited in Laher & Quy, 2009, p. 509), indicating the importance of Spirituality in our lives.

A perusal of Spirituality literature indicates that many people argue that Spirituality is an important element in human life (Kim & Esquivel, 2011) because of evidence that it can contribute to many health outcomes, quality of life, and Well-Being (Sawatzky, Ratner, & Chiu, 2005). For instance, many studies have

documented the positive relationship between Spirituality and life outcomes like satisfaction and happiness, as well as a beneficial effect on psychological and social problems such as depression and substance abuse (Moreira-Almeida, Neto, & Koenig, 2006). Most empirical research also supports Spirituality's beneficial potential to help others ameliorate and cope with illness (Büssing, Ostermann, & Matthiessen, 2007).

Recognizing the importance of Spirituality in our life, it is predictable that a considerable amount of research has been directed towards understanding Spirituality as a domain. This involves understanding and appreciating that researchers continue to differ in their understanding of Spirituality because in essence, the domain involves much that is subjective and individualistic by nature (Coyle, 2002). Thus, the next section will discuss the nature of Spirituality, as an attempt to understand these complexities.

3.2. Understanding Spirituality

Religion and Spirituality are two core concepts widely recognised in the psychology of religion (Hood, Hill, & Spilka, 2009). A literature search through *PsycINFO* in 2009 showed that the terms *spirituality, religiosity* or *religion* were mentioned in articles over 37,000 times (Piedmont et al., 2009).

Such recognition of the role of religion and Spirituality in human functioning suggests that there should be agreement on the number of key variables/constructs, and that if this is not so, which in fact is the case, then there is work to be done in unifying a standard set of constructs (Bredle, Salsman, Debb, Arnold, & Cella, 2011; Hill, 2005; Kapuscinski & Masters, 2010). This will be discussed further in the next sections.

3.2.1. The relationship between religiosity and spirituality.

Traditionally, religiosity has not been explicitly differentiated from Spirituality, and the two concepts are regarded by many as synonymous. All phenomena associated with both concepts are elucidated under the term religion. Hence, both terms have been used somewhat interchangeably, both in daily activities and scholarly research (Hill et al., 2000; Zinnbauer & Pargament, 2005). The question needs to be asked, is there grounds on which to distinguish these two constructs. If there is, on what basis should they be different and what would be the benefits of differing definitions.

Recently, the need to distinguish these two constructs has been recognized. The increasing secularization, particularly in Western cultures, has demonstrated the emergence of Spirituality as a distinct entity from religion (Batson, Schoenrade, & Ventis, 1993; Hill et al., 2000; Hood et al., 2009; Kapuscinski & Masters, 2010; Paloutzian & Park, 2005). The modern conceptualisation regards Spirituality as more personal and psychological than institutional, while religion is seen as more institutional and sociological and not necessarily personal (Hood et al., 2009). The amplified attention in Spirituality as different from Religiousness is evident with the increase of references to Spirituality in the Religion Index from the 1940s and 1950s to the present, and also the number of instruments developed to measure Spirituality (Zinnbauer & Pargament, 2005).

The separation of Religiousness and Spirituality into two different constructs resulted in distinct meanings. In the words of Hood et al. (2009), religion is understood as “the person’s involvement with a religious tradition and institution” while Spirituality “involves a person’s beliefs, values, and behaviour” (p. 9). In this sense, it is reasonable for a person to articulate that he or she is religious but not

spiritual or spiritual but not religious. Some have even suggested that individuals can be very spiritual without being religious (Hatch, Bury, Naberhaus, & Hellmich, 1998).

The distinction between Spirituality and religion is gaining credence. Advocates argue on empirical grounds, not least that research has shown that Religiousness and Spirituality have different correlates. Some examples include the findings that Religiousness is related to higher levels of authoritarianism, self-righteousness, and church attendance while Spirituality is associated with mystical experiences, New Age beliefs, and practices (Zinnbauer et al., 1997). Also, religion is found to be related to conservatism whereas Spirituality is associated with openness to change (Fontaine, Duriez, Luyten, Corveleyn, & Hutsebaut, 2005). Likewise, MacDonald and Holland (2002) found that Existential Well-Being and Cognitive Orientation towards Spirituality significantly predicted proneness to boredom while Religiousness is not a significant predictor.

A cogent example that highlights the difference between Spirituality and religion is found in Zinnbauer et al.'s (1997) mixed-method study with 346 people in Pennsylvania and Ohio (mean age = 40). The findings revealed that, in comparison to a group of respondents who categorized themselves as "spiritual and religious", the respondents who identified themselves as "spiritual but not religious" tended to be less likely to engage in traditional forms of worship, such as attending church, and to hold traditional Christian beliefs. They were also more likely to have had mystical experiences and to view Religiousness and Spirituality as different and non-overlapping concepts.

The same study also found that although evidence suggested that Religiousness and Spirituality are two different concepts, the majority of the respondents (42%)

endorsed the belief that the concepts of Religiousness and Spirituality overlap yet retain distinctive features, 39% believed that Spirituality is a broader concept than religiousness and includes Religiousness, and only 10% stated that Religiousness is a broader concept than Spirituality and includes Spirituality. On top of that, the study revealed that 74% of the respondents rated themselves as both religious and spiritual, which reflects the fact that both constructs are highly related. They also found that the definitions of Religiousness and Spirituality converged in terms of the nature of the sacred such as God, Christ, or the Church, as pointed out by other researchers such as Miller and Thoresen (2003) and Hill and Pargament (2008).

Further support for the distinction between religion and Spirituality comes from a study by Piedmont et al. (2009) which primarily aimed to examine the fundamental structure of two measures: Spirituality as measured by the Spiritual Transcendence Scale (STC) and religiosity as measured by the Religious Involvement Scale (RIS). In the first study, a series of questionnaires were distributed to 467 college students from a Midwestern state university (mean age = 20.4). A majority of the respondents (89%) indicated some type of Christian affiliation. The second study, which served as a replication sample, recruited 654 Filipinos aged 16 to 75 (mean age = 30) with 86% having indicated Roman Catholicism as their religion. Compared to the first study, the second study attempted to examine the factor structure of both STC and RIS using self-report and observer measures.

The structure of both measures was determined using structural equation modelling (SEM). A few outcomes from the study have emerged. First, the results revealed that the model that fit the sample data best is the one that regards religiosity and Spirituality as highly correlated, yet retains sufficient unique variance to permit them to be treated as separate constructs. An attempt to collapse the two constructs

together resulted in a significantly poorer model fit, supporting their discriminant validity. Secondly, this study offers further evidence that the two constructs predict different things in different ways. For instance, religiosity was a significant unique predictor of attitudes toward abortion while Spirituality significantly predicted prosocial behaviour. A second study, which used Filipino samples and both self-report and observer measures, replicated the findings from the first study (Piedmont et al., 2009), confirming the difference between Spirituality and religiosity and the need for researchers to include both constructs in order to get a holistic understanding of a person.

Piedmont et al.'s study is significant in a number of ways. Firstly, the use of SEM allows comparison between various hypothesized models of the causal relationship between religion and Spirituality and allows the model which best fits the sample data to be determined. Secondly, the use of different methods (self and observer reports) in collecting data further enhances the validity of the findings on the recognised basis of multi method (Byrne, 2010). However, a criticism of Piedmont's work is that although the replication sample consists of Filipinos, which represent a different cultural background from the Americans, the majority are still Catholics. Thus, the generalizations of the findings to individuals with a different religious background are still questionable.

My review of the literature suggests that, despite advances in understanding the differences and similarities between religiosity and Spirituality, no definite consensus has emerged among the researchers about their relationship. However, many researchers concur that both share a component of "a search for the sacred" (Emmons & Paloutzian, 2003; Hill et al., 2000; Hill & Pargament, 2008). In other words, both constructs involve individuals' attempts in defining and understanding

aspects of life associated with a divine or holy character (Zinnbauer & Pargament, 2005). It also becomes rather apparent that a dichotomy between religiosity and Spirituality is to be expected, but, a firm separation of the two concepts might be impractical because of the existence of empirical evidence which suggests that most individuals do not distinguish between religion and Spirituality (George, Larson, Koenig, & McCullough, 2000).

In conclusion, it is clear that many researchers have agreed that religion and Spirituality are overlapping constructs, each sharing a search for the sacred and having unique and distinctive features as well as differentially predicting life outcomes.

3.2.2. The complexity in conceptualizing spirituality.

With Spirituality being the focus of this research, and having differentiated religiosity from Spirituality, no further consideration will be given to the literature on religiosity unless it is related to Spirituality in some relevant way.

Despite considerable interest in the question, researchers have been unable to agree on their definition of Spirituality, which reflects the nature of the Spirituality domain as being highly subjective, personal, and individualistic. Scott (as cited by Zinnbauer, Pargament, & Scott, 1999) performed a content analysis of 40 definitions of Spirituality commonly found in Spirituality literature. His analysis revealed that Spirituality was categorized into themes such as “connectedness or relationship, behaviours reflecting sacred or secular beliefs, belief in something transcendent, existential questions and references to institutional structures”. Based on his analysis, Spirituality can generally be conceptualized as “one’s personal relationships to larger, transcendent realities, such as God or the universe” (Piedmont et al., 2009, p. 163). However, variations in the definition of Spirituality led several researchers

such as Lodhi (2011), Moberg (2002), George et al., (2000), and Hill et al. (2000) to conclude that Spirituality is a multidimensional domain which should be defined with multiple component constructs.

A review on recent Spirituality literature also revealed that most research had been undertaken in the context of Western Judeo-Christian tradition, limiting the conceptualizations of Spirituality to what that context offers (Spilka, Hood, Hunsberger, & Gorsuch, 2003). It is therefore anticipated that the conceptualizations of Spirituality are based on this tradition. However, Takahashi and Ide (2003) put forward evidence that religion and Spirituality are understood, conceptualized, and interpreted differently by people in different cultures and religious backgrounds. Some Muslim researchers such as Shamsuddin (1992) and Amer and Hood (2008) contend that the Islamic concept of religion and Spirituality and its measurement is fundamentally dissimilar from Judeo-Christian perspectives.

However, despite the claims that there are differences between the Western and Eastern concept of Spirituality, common ground has been identified within these two streams such as: (a) belief in the existence of a higher power; (b) Spirituality growth can be achieved by obeying God's law and (c) humans can communicate with God through several means such as prayer, worship, and meditation (Naail, Ali, & Mohamed, 2011; Richards & Bergin, 2005). Since there is a possibility that Spirituality concepts derived from the West are relevant to the East, this study sets out to explore this by appropriately translating and validating the chosen Spirituality instrument into the Malay language and testing it in a Malaysian population.

3.2.2.1. Spirituality in the Malaysian context.

Malaysia is one of the developing countries in South-East Asia with a population of 28.3 million. According to the 2010 Malaysian Population and Housing Census,

91.8% are Malaysian citizens while 8.2% are non-citizens. Malaysians are clearly multicultural with approximately 67.4% *Bumiputeras* (which refers to the Indigenous and the Malays), 24.6% Chinese, 7.3% Indians, and 0.7% others. Ethnicity variations resulted in many different expressions of religious views with 61.3% of the population being Muslims, 19.8% Buddhists, 9.2% Christians, and 6.3% Hindus (Census, 2010). As illustrated, three out of four religious views in Malaysia represent non-Judeo-Christian faiths.

Therefore Malaysia, with a predominantly Muslim population, offers an ideal cross-cultural context in which to test the generalizability of Spirituality models and constructs that have their origin in Western culture.

3.2.2.2. The Islamic view of spirituality.

In general, the lives of Muslims are guided by the *Qur'an* (Muslim's Holy Scripture), the *Hadith* (sayings and deeds of the Prophet Muhammad, peace be upon him) and the *Shari'a* (the Islamic law derived from both the *Qur'an* and *Hadith*) (Smither & Khorsandi, 2009). According to the *Qur'an* and *Hadith*, Spirituality is a concept that captures all aspects of a Muslim's life. Therefore, every action that is performed in conjunction with *Allah* (the Arabic name for God) is considered spiritual.

Furthermore, Islam does not view Spirituality as separate from religion, but as a broader construct which encompasses religion (Rassool, 2000). In an Islamic context, the splitting of religion and Spirituality is most likely intolerable because Spirituality cannot exist without religious thoughts and behaviours, and religion is necessary in providing the context in which Spirituality can be expressed (Ahmad, Muhammad, & Amir Abdullah, 2011).

Dimensions of Islamic spirituality.

Preliminary work on the dimensions of Islamic Spirituality was undertaken by Naail, Ali, and Mohamed (2011). In a study involving 405 Muslim working adults, with 50.9% males and 49.1% females, the investigators aimed to identify the construct of Islamic Spirituality in the Malaysian context. The participants were asked to complete a questionnaire, which consisted of items that characterized Islamic Spirituality derived from the *Qur'an*. The items in the questionnaire were grouped into two main categories: Islamic Spirituality (IS; describes the relationship between the Creator and man) and Islamic Social Responsibility (ISR; refers to the relationship between man and man, nature and other creations) (Mohsen, 2007 cited in Naail et al., 2011, p. 168).

For the purpose of this study, only the dimensions of IS are discussed. Building on the *Qu'ran*, Naail et al. hypothesized that IS consists of four latent variables (measured with 17 indicator variables), namely, *Ibadah* (rituals), *Al a'fw* (forgivingness), *Iman bil-lah* (belief in Allah), and *Dhikrullah* (remembrance of Allah). The exploratory factor analyses with varimax rotation revealed the above-mentioned four factors. The four factors were then subjected to confirmatory factor analysis in AMOS in order to ascertain its construct validity. Initial results showed that the four-factor solution did not adequately fit the sample data. Reasonable fit indices however, were achieved following the removal of five problematic items. With this, they concluded that Malaysian Muslim's Spirituality can be described with the aforementioned four dimensions.

The work of Naail et al. made a valuable contribution to the field, as it is one of the few studies that have provided us with an insight on the factor structure of Spirituality in an Islamic context. The use of a sophisticated analysis technique such

as SEM enhanced the quality and validity of the findings. However, a close inspection on the model revealed a very high correlation (r = .90) between *Al-a'fw* (forgiveness) and *Iman* (belief) factor. According to Brown (2006), a factor correlation that exceeds .80 or .85 indicates poor discriminant validity, suggesting that the two constructs are for all intents and purposes the same. Therefore, there is a possibility that Spirituality in the Malaysian Muslim population can be comprehensively described within only three instead of four latent factors.

Another concern with the IS model is with regard to religious context. Even though this model was generated using the Muslims in Malaysia, its applicability to Eastern culture in a broader sense, which includes other religious groups in Malaysia, is questionable because there are substantial differences between Islamic worldviews and other Eastern religious traditions such as Hinduism and Buddhism. For instance, the Hindus and Buddhists believe in the ultimate One, which includes many Gods, along with all of nature and humanity, and spiritual enlightenment can be achieved through "following an ethical path, meditation and self-denial" (Richards & Bergin, 2005, p. 94). The diversity in the Eastern religious traditions led Richards and Bergins (2005) to conclude that it is easier to find commonalities among the monotheistic world religions, which includes Islam and Christianity, in comparison to the Eastern religious traditions. Hence, the adoption of this model in a multicultural society with a variety of religious traditions such as Malaysia should be exercised cautiously.

On balance, the review of the Spirituality literature revealed that although there is diversity in the conceptualization of Spirituality between the West and the East, at a more general level, some clear commonalities are also evident. Hence, one of the objectives of this study is to determine the cross-cultural relevance of Western

Spirituality constructs for an Eastern culture exemplified by a Malaysian context by translating, adapting, and validating a well-established Spirituality instrument (will be described in section 3.5).

Having discussed the components that constitute Spirituality, the next section discusses the relationship between Spirituality and selected demographic variables as a further attempt to enhance our understanding of Spirituality.

3.2.3. Demographic correlates of spirituality.

Many studies have investigated the role of demographic variables such as gender and religious affiliation in relation to Spirituality (Bryant, 2007; Krauss, Hamzah, & Idris, 2007; MacDonald & Holland, 2002; Taylor, Chatters, & Jackson, 2007). Accordingly, this study also investigated the role of these two demographic variables on Spirituality in the Malaysian context.

3.2.3.1. Spirituality and gender.

Spirituality has been studied extensively by gender (Desrosiers & Miller, 2007). For example, Bryant (2007) investigated gender differences on 13 spiritual characteristics using a national and longitudinal sample of 3,680 college students at the University of California. Results indicated that women scored higher than men on Spirituality-related dimensions. This is a valuable study considering that the gender ratio was balanced and the participants represented various religious backgrounds such as Islamic, Jewish, and Catholic. This study's findings confirmed findings by MacDonald and Holland (2002); Hammermeister, Flint, El-Alayli, Ridnour, and Peterson (2005); and Desrosiers and Miller (2007).

There are other studies which report that there are no gender differences in Spirituality (Rich, 2012). An example of such a study is by Imam, Nurullah, Makol-Abdul, Rahman, and Noon (2009). They administered a packet of questionnaires including the Spiritual Well-Being Scale to allow for subsequent investigation of the

relationship between spiritual and psychological health in Malaysian college students. Results revealed that women did not differ significantly from men in terms of their spiritual Well-Being. Imam et al's study, however, may have limited generalizability because it investigated only the Muslim participants, which means that the results may not be applicable to other religious groups in Malaysia.

Taken together, there seem to be inconsistencies in the findings of gender differences in Spirituality. This gives rise to the following research question (RQ1): *Is there any significant gender differences in Spirituality scores among Malaysian young adults in this study?* This will be answered and discussed in section 3.6 below.

3.2.3.2. Spirituality and religious affiliation.

Spirituality is associated with religious affiliation perhaps because religion provides the context in which Spirituality is expressed (Ahmad et al., 2011). Several previous studies have found support for the significant effect of religious affiliation on Spirituality (MacDonald, 2000b; Piedmont & Leach, 2002).

A study by MacDonald (2000b) indicates that religious affiliation does influence the level of Spirituality when he attempted to generate evidence for the usefulness of his five-factor model of Spirituality as measured by the Expressions of Spirituality Inventory (discussed in-depth in section 3.4.1). Using 993 undergraduate students who represent various religious affiliations such as Catholicism, Judaism, and Buddhism as his participants, MacDonald found significant results for three of his Spirituality dimensions (i.e. Cognitive Orientations towards Spirituality, Experiential/Phenomenological Dimension, and Religiousness).

Piedmont and Leach (2002) came to similar conclusions to those of MacDonald, regardless of the difference of the instruments used to measure Spirituality. Piedmont and Leach administered the STS (Piedmont, 1999) which measures Spirituality in

terms of three dimensions: Universality (a belief in the unity and purpose of life), Prayer Fulfilment (a sense of joy and contentment resulted from prayer and/or meditation), and Connectedness (a sense of personal responsibility and connection to others). They administered the STS to 369 Indian undergraduate students. The majority of these students were Hindu (59%), followed by Christian (24%), and Muslim (17%). The results showed that Muslims scored significantly lower than Christians and Hindus on Universality. In terms of Prayer Fulfilment, the Christians scored significantly higher than both the Hindus and Muslims. Piedmont and Leach explain their findings using a motivational perspective. They argue that Religiousness can shape the expression of spiritual aspirations, which usually takes form in a cultural context.

On the whole, the literature seems to support significant religious affiliation differences in Spirituality. Thus, I anticipate the following:

> *Hypothesis 1(H1):* There are significant religious affiliation differences in Spirituality scores among Malaysian young adults.

The implications of H1 will be discussed in section 3.7.

3.3. Theories Pertaining to Spirituality

The inconsistencies in understanding the concept of Spirituality as described above can be explained with Spirituality theories. Nevertheless, it is a challenging task to discuss the theoretical foundations of Spirituality as researchers rarely report these in their studies. A review of the literature indicates that most studies have been directed towards identifying the key indicators of Religion/Spirituality, rather than exploring its underlying theoretical foundation per se because of a number of reasons, including the subjectivity of Spirituality. Researchers like Hood et al. (2009) point out that “there is no all-encompassing theory in general psychology, much less in the psychology of religion and spirituality” (p. 482), suggesting that even a well-

established psychological concept cannot be holistically explained with one grand theory, let alone a broad and elusive concept such as religion and Spirituality which are difficult even to define.

In addition, while theoretically based constructs support the meaning or interpretation of Spirituality, some researchers argue that Spirituality as a theological construct cannot be studied scientifically because it is considered as “merely a figment of folklore, myth, or the collective imagination” (Moberg, 2002, p. 48) and thus cannot be scientifically measured. Conversely, others argue that “science has studied phenomena that were or are not directly observable but that could be inferred indirectly through predicted effects” (Miller & Thoresen, 2003, p. 25) such as subjective states and latent constructs. This lead Miller and Thoresen to conclude that there is no reason for Spirituality not to be studied scientifically.

Such issues have persuaded me that Spirituality can be investigated and explained scientifically. Good science involves theory building, and in that a good Spirituality instrument can also be considered as theory validation. Psychometrics has rules for construct and theory validation, but does not necessarily require a theory per se (Messick, 1995). Considering this, I decided to evaluate one of the Spirituality measures, the development of which was based on the Western five-factor model of Spirituality (refer to section 3.4 for details) as one of my attempts to understand and explain Spirituality in the Malaysian context. I did not attempt to develop the Spirituality instrument because as mentioned in section 2.4.1, the development of an instrument is a sophisticated science backed by the well-established discipline of psychometrics and time consuming. In addition, some researchers such as McCartney, Burchinal, and Bub (2006) assert that the construction of a new instrument is not recommended if an existing instrument is

already well-established, in this case, the Expressions of Spirituality Inventory, which will be discussed in detail in Section 3.4.

Other than the psychometric perspective described above, Spirituality can also be understood and explained from a psychological perspective. Some researchers such as Piedmont (2005) and Hood et al. (2009) claim that Spirituality constructs are basically individual differences dimensions that categorize people according to the degree to which they manifest their Spirituality. In order to expand our understanding on what these dimensions indicate about a person's Spirituality, Piedmont (2005) suggests that these dimensions could be linked with an established model of personality. This is because Spirituality constructs basically reflect the characteristics of traditional personality variables, which will be further explained in the next section.

3.3.1. The current investigation: Integrating the perspectives.

While there are many personality models that can be used as a framework to explore and examine the constructs of Spirituality (Hood et al., 2009), I am drawn to a personality model known as the five-factor model (FFM) of personality. This is because FFM is a well-defined central model in psychology to which linkages with Spirituality are to be expected and are important (Cramer et al., 2008; MacDonald, 2000b). By using the FFM as a reference point, researchers are able to investigate and elucidate the nature of religion and Spirituality constructs within the context of a commonly acceptable theoretical framework. Piedmont (2005) suggests that researchers in the field of religion and Spirituality may be able to interpret their findings using this more sophisticated and broader theoretical model, thus making a significant contribution to a more holistic discussion of human functioning. The integration of knowledge from a field which some assume "cannot be and should not

be studied scientifically" (Miller & Thoresen, 2003, p. 24) with another field of mainstream psychology such as personality might enhance and validate our understanding of human phenomena. A detailed discussion on the FFM is presented in Chapter Four.

The FFM is recognised as the best validated robust model of traits (McCrae & Costa, 1997b), and as such the preferred frame of reference for understanding religion and Spirituality in the broader context of the whole person. This is reflected by the fact that numerous researchers have investigated the association between religion/spirituality and personality reported in the meta-study by Saroglou (2002), where religiosity was found to be consistently related to Agreeableness and Conscientiousness. On the other hand, Piedmont (2005) found Spirituality was associated with Openness and Agreeableness. Other studies have reached similar conclusions with regard to the association between domains of religion/spirituality and personality (for example, refer Löckenhoff et al., 2009; Unterrainer et al., 2010).

The pattern of the relationship between personality and Spirituality provides an insight into their respective natures. By way of illustration, the positive relationship between Spirituality and Openness seem to demonstrate that a spiritual person is more imaginative, exploratory, and creative in his or her journey searching for the sacred and for purpose in life in comparison to a religious person, who is more persistent and control-oriented. In addition, the correlations between religion and Spirituality dimensions with the FFM appear to reveal their overlapping nature (both variables are related to Agreeableness), and at the same time their distinctive features (religiosity is related to Conscientiousness whereas Spirituality is associated with Openness). This seems to resemble the Islamic view of Spirituality which states that

"there is no distinction between Religion and Spirituality. The concept of Religion is embedded in the umbrella of Spirituality" (Rassool, 2000, p. 1479).

Considering the value of personality models in providing an interpretive context for understanding and explaining conceptual dimensions of Spirituality, this study attempts to explore the link between Personality and Spirituality (a detailed discussion on the relationship between these two constructs is provided in Chapter Four).

3.4. Measurement of Spirituality

To recap on the considerations above, a range of disparate definitions have been associated with Spirituality. The lack of precision and clarity in the concept of Spirituality has resulted in the development of various assessment techniques and instruments. For instance, more than 100 instruments have been developed to measure Spirituality (MacDonald & Holland, 2003), though researchers such as McDonald (2000), Slater et al. (2001), and Paloutzian and Park (2005) argue that many of these instruments are not psychometrically strong and therefore should be adopted with caution.

Although many researchers have agreed that Spirituality is a multidimensional construct, there is still a lack of agreement regarding the number of dimensions that make up these constructs. However, according to Staton, Webster, Hiller, Rostosky, and Leukefeld (2003), a comprehensive and contemporary Spirituality measure includes two elements, namely: (a) relationship with God and (b) meaning and purpose in life.

On reviewing existing measures of Spirituality, I concluded that the Expressions of Spirituality Inventory (ESI; MacDonald, 1997, 2000a) based on a meta-study of Spirituality studies, was the preferred measure of the levels of Malaysian young

adults' Spirituality. With most empirical research on the ESI having been undertaken within the context of a Western, Judeo-Christian tradition, a cross-cultural and cross-contextual validation of the instrument is desirable to ascertain cross-cultural universality and relevance.

The ESI is preferred over several other Spirituality measures such as the widely used Spiritual Well-Being Scale (Ellison, 1983) and the STS (Piedmont, 2001) after careful consideration of a number of factors. Firstly, the ESI was developed after taking into account controversy surrounding Spirituality measurements, such as the content domain that comprehensively make up Spirituality (MacDonald, 2000b). As mentioned in section 3.2.2, Spirituality has been defined with 40 elements such as a search for meaning, supernatural beliefs, faith, and trust (Scott, as cited by Zinnbauer et al., 1999). With this in mind, MacDonald conducted an extensive meta-analysis of available theoretical and empirical literatures, in an effort to identify the main pervasive factors or facets of Spirituality. His subsequent model of Spirituality was of a multidimensional construct which includes experiential, cognitive, affective, physiological, behavioural, and social components and is inclusive of "spiritual, religious, peak, mystical, transpersonal, transcendent and numinous phenomenon" (MacDonald, 2000b, p. 158).

Secondly, the ESI was developed through meticulous development practices. The items in the ESI were determined on the basis of factor analytic techniques applied across a representative sample of about 18 pre-existing scales of Spirituality reflecting a broad range of conceptual models of Spirituality. The analysis allowed balanced identification of common underlying Spirituality components in those existing measures (MacDonald, 2000a).

Thirdly, in terms of psychometric properties, the ESI has demonstrated sound reliability ($r > .80$) and excellent factorial, convergent, discriminate, and criterion validity (MacDonald, 2000a). In this regard, the dimensions of Spirituality captured by the ESI have been replicated in cultures and languages significantly different from the West such as India, Japan, and Korea (MacDonald, 2009), though not in a predominantly Muslim population and culture.

Taking together these reasons, the ESI is appealing to this research not only because it was devised meticulously, but because it also represents psychometrically among the most robust dimensions of Spirituality from among a wide array of existing instruments, including Islamic Spirituality (Naail et al., 2011). The ESI reflect different ways in which Spirituality may be expressed both in Western and non-Western contexts.

3.4.1. The expressions of spirituality inventory (ESI).

The original ESI consists of 98 items measuring five components of Spirituality labelled as *Cognitive Orientation toward Spirituality* (COTS; a measure of spiritual beliefs, attitudes and perceptions pertaining to everyday life experiences), *Experiential/Phenomenological Dimension of Spirituality* (EPD; a measure of spiritual experiences); *Existential Well-Being* (EWB; a measure of Spirituality as reflected in the sense of meaning and purpose in life and the ability to cope with life uncertainties), *Paranormal Beliefs* (PAR; a measure of the expressions of Spirituality related to the possibility of paranormal phenomena) and lastly *Religiousness* (REL; a measure of religious attitudes, beliefs, behaviours, and practices).

Subsequently, the ESI has been refined down to 30 items (6 items for each subscale) in part based on the feedback from research participants and other investigators. The revised ESI consists of 32 items of which 7 are reverse worded,

six items for each Spirituality dimension. Two extra items have been included as validity items. The instrument is based on a Likert scale where participants are asked to rate their agreement with each statements from *strongly disagree* (0) to *strongly agree* (4). To get the dimensional score, the score for the six items in each dimension is summed yielding a possible maximum score of 24 and minimum of 0, with higher scores representing a more favourable attitude toward Spirituality. The ESI had been developed and validated principally with university student populations.

In terms of the ESI's psychometric properties, MacDonald (2000a) reports high inter-item reliability, Cronbach's alpha ranging from .80 to .89. MacDonald also reports several types of validity such as discriminant, convergent and factorial validity. The psychometric properties of the revised-ESI and its correlation with other variables such as age, gender, and social desirability were reported to be comparable to the original version of ESI. For example, the alpha reliability for the COTS dimension in the original and revised-ESI is .97 and .87, respectively (MacDonald, 2000a).

While MacDonald's model of Spirituality presents itself as inclusive of most domains of Spirituality that are represented in existing Spirituality scales, it has been criticised for being an atheoretical model of Spirituality, which means that it is not based on any one Spirituality theory. However, MacDonald argues that the lack of an ostensible theoretical basis for his Spirituality model does not detract from its usefulness in Spirituality research, and indeed there is an argument that such an instrument has distinct advantages, especially if it is psychometrically sound. As McDonald points out, the development of the ESI is akin to the development of the Five-Factor Model of Personality (Costa & McCrae, 1992), a well established and

regarded trait model in the study of personality traits (Matthews, Deary, & Whiteman, 2009b).

Despite the strengths in the development methodology of the ESI, there is still concern for potential bias from the norming population used in the scale development processes. While the sample size was large (938), the use of convenience samples of university students might limit the applicability of the measure to other populations (Kapuscinski & Masters, 2010). However, recognising this potential limitation, the population sought for this research was a parallel Malaysian university population.

One significant consideration lies in the applicability of the ESI to Malaysians. As discussed before, the ESI was developed in a largely Western non-Muslim country while Malaysia is a Muslim country with a largely Eastern Muslim culture. This leads us to question whether the ESI is applicable to the Malaysian community. However, as previously mentioned, there is evidence that the dimensions of the ESI were replicated in other non-Western cultures. Thus, I hypothesized the following:

> *Hypothesis 2 (H2):* The Five-Factor Model of Spirituality as captured by the Malay Experimental Version of Expressions of Spirituality (MEV-ESI) is applicable in the Malaysian context.

The implications of H2 will be discussed in section 3.6. The next section, however, will describe the translation process of the ESI for the Malaysian linguistic and cultural context.

3.4.2. The translation of the ESI.

Although the ESI has been translated and used for research in non-English speaking countries such as India and Japan (MacDonald, 2009), an extensive search focussing in particular on Malaysian Spirituality literature failed to locate any research on a translation or validation of the ESI into Malay. This would be required

for a proper cross-cultural determination. Using an English-language version or simply transliterating the ESI into Malay would not suffice, as significant linguistic, cultural and religious differences between West and East would not be appropriately taken into account. As mentioned in section 2.4.2., the translation and adaptation processes of the original ESI for the Malaysian context may threaten the integrity of its underlying factor structure. The integrity of the original ESI can be ascertained if the same factor structure is found in the Malay-translated version (will be discussed in section 3.6.4). Refer to Chapter 2 for the translation methods.

3.4.3. Translation results and discussions.

As discussed in Chapter 2, it is a challenge for a non-English researcher to ensure that the items in the translated questionnaire are semantically and conceptually equivalent to the original version. The translation results are reported in the next sections.

3.4.3.1. Semantic equivalence.

The back-translated version of all 32 items did not reproduce the exact syntax of the original items. As previously discussed in Chapter 2, this illustrates the challenge a non-English researcher has to ensure that the words and phrases in the target language match the semantics of the original English version. Table 3.1 indicates the related problems that were encountered and the strategies as to how these were solved.

Table 3.1

An Excerpt onTtranslation Results in Adapting the ESI for the Malaysian Context.

Item	Language	Statement
1	**Original English**	**Spirituality is an important part of who I am as a person**
	Malay (translated by A)	*Kerohanian merupakan bahagian yang penting kepada saya sebagai seorang manusia*
	Malay (translated by B)	*Kerohanian adalah satu bahagian penting dari diri saya sebagai seorang manusia*
	Malay (translated by C)	*Kerohanian adalah perkara penting berkenaan siapa saya sebenarnya*
	Reconciled version	*Kerohanian merupakan perkara penting menentukan siapa saya sebagai manusia*
	Back-translation	**Spirituality is important in determining who I am as a human being**

It is apparent from Table 3.1 that the back-translation version of item 1 did not produce the exact sentence structure as in the original English version. A closer examination of all 32 items in the ESI (refer to Appendix K for the overall translation/back translation results) showed that none of the items exactly replicated the sentence structure of the original items. Word-for-word transliteration is not appropriate as it would produce awkward and unnatural, and thereby distracting and potentially obscure, Malaysian sentence structures. Modifications need to be made to the Malay sentence to enhance its readability and understandability whilst retaining semantics, a process that results in a difference of literality between the original and the back-translated items.

Further, despite using a rigorous process, the difference in the sentence structures was evaluated as impacting semantic equivalence between the original and target versions. For instance, item 13 “Much of what I do in life seem strained” was back-translated into “Many things I do in my life seem stressful”. Specifically, the word “strained” was back-translated into “stressful”. The word “strained” in Malay may have different connotations from those in English. Malaysians may understand it as “stress” when that is not what the original item tries to convey. A better

understanding of the item may be achieved if the word “strained” is elaborated with multiple words, so that the meaning can be conveyed and interpreted correctly. Following a discussion with the original author of the ESI (D. A. MacDonald, personal communication, June 2011), it was decided that the preferred translation would be based on the whole meaning of the sentence, rather than a simple transliteration. It was agreed that the final back-translated version of item 13 should read as “Most of what I do in my life is stressful and takes a lot of effort”, which is literally different from the original English item, however, the author of the ESI agreed that it captures the meaning and intent of the original item. The preservation of the meaning was then optimized with equivalence testing and this is described in Chapter 2.

Equivalence testing between the English-version and the MEV-ESI.

In this study, items 2 and 13 were found to be incomparable. Refer to Table 3.2 (for full results, refer to Appendix K) for the item details:

Table 3.2

Problematic Items in the Translation/Back-Translation Version of the ESI

No item	Original version	Malay Version			Reconciled Version A	Back-translated Version	Mean Score	Reconciled Version B (Final Version)	Back-translated into English
		A	B	C					
2	I have had an experience in which I seemed to be deeply connected to everything	*Saya mempunyai pengalaman di mana saya merasakan yang saya mempunyai perkaitan yang mendalam dengan segalanya*	*Saya telah mengalami satu pengalaman di mana saya berasa saya dapat memahami segala-galanya*	*Saya berpengalaman bahawa saya rasa saya amat memahami segala-galanya*	*Saya telah merasai satu pengalaman di mana saya berasa saya dapat memahami segala-galanya*	I have gone through an experience where I felt I could understand everything	3	*Saya telah merasai satu pengalaman di mana saya seolah-olah mempunyai hubungan/perkaitan yang kuat dengan segala-galanya*	I have gone through an experience in which I seem to feel a strong connection or association with everything
13	Much of what I do in life seems strained	*Kebanyakan perkara yang saya lakukan dalam hidup ini nampak tegang*	*Banyak benda yang saya buat dalam hidup nampaknya tegang*	*Banyak perkara yang saya buat dalam hidup seolah-olah tegang*	*Banyak perkara yang saya buat dalam hidup nampak tegang*	Many things I have done in my life seems stressful	3	*Banyak perkara yang saya lakukan dalam hidup ini penuh dengan tekanan dan memerlukan usaha yang banyak*	Most of what I do in my life is stressful and takes a lot of effort

As shown in Table 3.2, the two evaluators (refer to section 2.4.1 for the details of the evaluators) agreed that the back-translation versions of items 2 and 13 were not comparable to the original version. The translators reported that the original English versions of both items are a little confusing to begin with as it can be interpreted differently by different people. With reference to item 2, the term "deeply connected" was back-translated to "understand everything". Simple transliteration of the term seemed to produce awkward Malay sentence/syntax and it was difficult to comprehend. To two of the translators, "deeply connected" was best translated as "understand everything". However, it seems to deviate from the original meaning, therefore several discussions had to be conducted between the main investigator and translator D. The Malay version of item 2 was finally produced and it was back-translated as, "I have gone through an experience in which I seem to feel a strong connection/association with everything". The reconciled version was deemed sufficiently comparable to the original item by translator H, who acted as a final evaluator. The same process was conducted with item 13 until satisfactory translations were achieved.

3.4.3.2. Conceptual equivalence.

Preserving semantic equivalence between the two versions is no easy task, and to maintain the content equivalence seems to be even more challenging. As an illustration, an item in the ESI "It is possible to communicate with the dead" is problematic, as in Islam (as majority of the participants in this research is Muslim) it is viewed as very unlikely to be able to communicate with the dead. This is evident based on the verse in the Holy Qur'an, which states that:

إِنَّكَ لَا تُسْمِعُ ٱلْمَوْتَىٰ وَلَا تُسْمِعُ ٱلصُّمَّ ٱلدُّعَآءَ إِذَا وَلَّوْا۟ مُدْبِرِينَ ﴿٨٠﴾

> "Indeed, you will not make the dead hear, nor will you make the deaf hear the call when they have turned their backs retreating." (An-Naml: 27:80).

The verse basically means that the dead are not able to listen to others or make others listen to them, which obviously prevents any communication from occurring. Hence, there is a possibility that this item is not fully applicable to a predominantly Muslim population due to its inconsistency with Islamic teachings and values. The same problem was identified with several more items such as item 14 "it is possible to predict the future" and item 29 "it is possible to leave your body". As suggested by Behling and Law (2000), the problem of conceptual equivalence can be identified and solved with *confirmatory factor analysis (CFA)*. The CFA results of the Malay-translated ESI will be reported in section 3.6.

A closer inspection revealed that these problematic items measure the dimension of Paranormal Beliefs in the ESI. This is as expected because MacDonald (2011a) acknowledges that the inclusion of the Paranormal Beliefs dimension in the ESI may be problematic due to the discrepancies in its specific content, which is evident in his validation studies (MacDonald, 2000b). However, he argues that it is imperative that this dimension is included as one of the Spirituality dimensions because both Eastern and Western religious systems tolerate beliefs in paranormal phenomena such as ghosts, spirits and other invisible creatures (MacDonald, 2011a).

The problem of conceptual equivalence illustrated by paranormal belief items may reduce the scale's validity and reliability. In this study, the validity and reliability of the paranormal belief dimension is evaluated using the technique of CFA in the specialized statistical package AMOS (Arbuckle, 2007). As mentioned in

Chapter 2, CFA allows for identification and removal of items that do not reflect paranormal beliefs, resulting in the improvement of its validity (discussed in section 3.5).

In summary, the adaptation satisfactorily addressed a number of challenges, including the preservation of meaning, which was well-achieved by comparing the similarity in language and meaning between the original and translated versions. When careful translation/back translation processes were completed, the next step involved pilot-testing (refer to section 2.3.3.1) the Malay experimental version of the ESI (MEV-ESI) to evaluate the accuracy of the translations and also its comprehensibility among the participants. The MEV-ESI and English version of the ESI is attached in Appendix C (I) and (II).

The results from a pilot testing of the MEV-ESI revealed that all 20 respondents reported no concerns regarding the clarity of the instructions and questions in the MEV-ESI. As a consequence, the instrument was regarded as ready for the field, without further amendment.

3.5. Methodology, Results and Discussions for the Validation of the MEV-ESI

Refer to Chapter 2 for the details of the methodology adopted for validating the MEV-ESI. In this section, validation results are reported. First, various types of construct validity and reliability (as described in Chapter 2) are considered and applied using two empirical approaches: (a) a two-step process (Jöreskog, 1971) involving one-factor congeneric measurement modelling to ascertain factorial unity and (b) two multi-factor confirmatory factor analysis (CFA) to establish the integrity of the model as a whole. CFA offers item validation analysis within the general Classical Test Theory (CCT) framework by (a) determining sample-specific item parameters by employing simple mathematical techniques and (b) deleting items

based on statistical criteria (Hambleton & Jones, 1993, p. 44) (refer to Chapter 2 for the details of CFA).

3.5.1. Modelling One-Factor Congeneric Measurement Models.

The results of one-factor congeneric measurement models of all five dimensions of Spirituality are reported and discussed in the next sections.

3.5.1.1. A congeneric model of COTS.

The model of COTS includes six items (Figure 3.1). Fit statistics suggested that the hypothesized model fits the data well (refer to Table 2.4 in Chapter 2 for the acceptable level of fit indices). The lowest squared multiple correlations (SMC) of 0.30 were shown by item 16 “I try to take into account all elements in a problem, including spiritual aspect, before I make a decision”. I decided to maintain this item for further analyses because it exhibited an acceptable SMC and regression weight (0.52), as suggested by Berry and Shipley (2009). Therefore, no modification to the model was attempted. The latent factor, COTS explained 61% of variance in the subscale *I believe that paying attention to spiritual growth is important*.

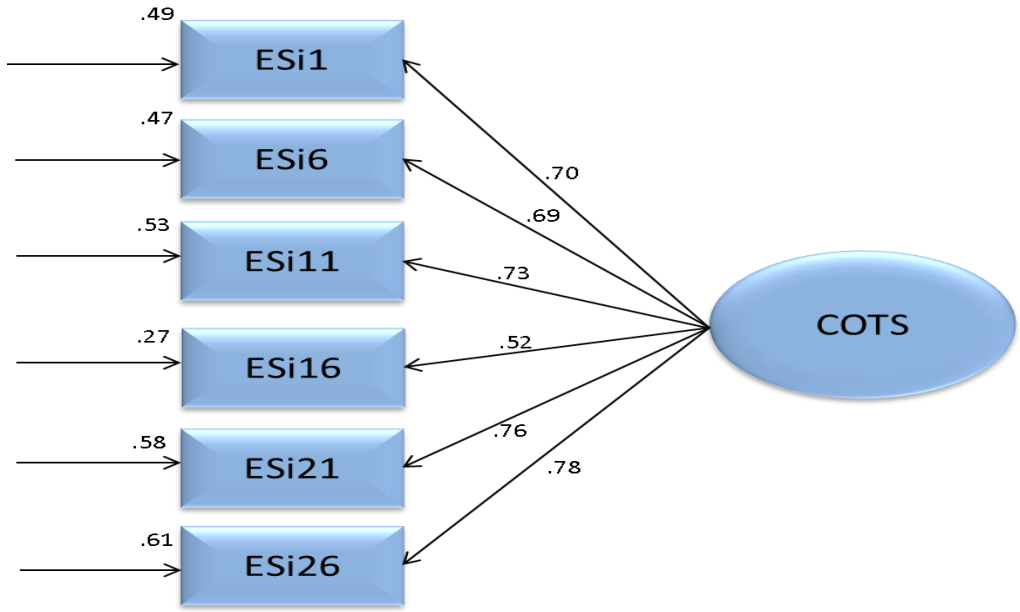

Figure 3.1. A single factor model for the COTS
Note. COTS = Cognitive Orientations Towards Spirituality; Chi-square = 13.80; df = 9; Bollen Stine p-value = .281; CMIN/df = 1.533; SRMR = .028; RMSEA = .048; CFI = .99;TLI = .99.

3.5.1.2. A congeneric model of EPD.

Figure 3.2 showed the fit statistics for the EPD model. All fit indices except for the CFI and SRMR, suggested that the model did not fit the data well, with a possibility that one or more items are poor indicators of the EPD construct in a Malaysian context.

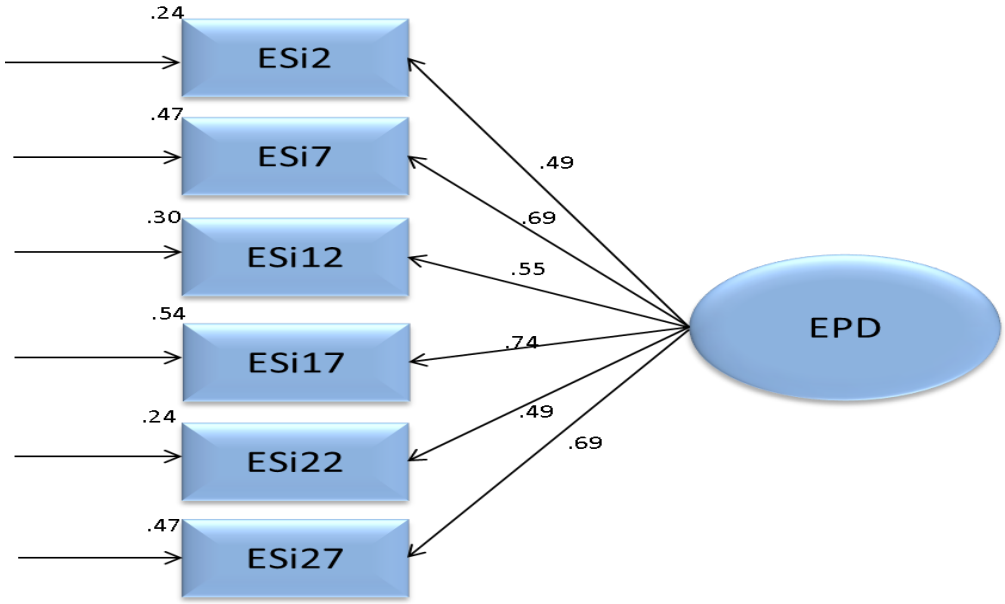

Figure 3.2. A single factor model for the EPD
Note. EPD = Experiential/Phenomenological Dimension of Spirituality;
Chi-square = 23.00; df = 9; Bollen Stine p-value = .02; CMIN/df = 2.555; SRMR = .04;
RMSEA = .08; CFI = .96; TLI = .93.

A closer inspection on the MI suggested that freeing the error covariance between item 2 “I have gone through an experience where I felt I could understand everything” and item 7 “I have gone through an experience where I felt I transcended space and time” would improve the model fit. According to Byrne (2010), covariation between the error terms associated with the two indicators may represent systematic measurement error in item responses, which may be derived from the characteristics of the item or participants, and a high degree of content overlapping (p. 110). In this case, however, it is possible the Malaysian participants perceived the two items as similar in content; those who perceived themselves to be deeply connected to everything are likely to have had transcendental experiences.

Following covariation of the two error terms, all fit indices showed that the model fit the data well (refer to Table 3.3). Yet, the low SMC exhibited by item 2, together with the error covariance, implied that this item was not an adequate indicator of experiential expressions of Spirituality in the Malaysian context. The

reason for deleting this item was that it was confusing and difficult to comprehend, as described in section 3.4.3. This may contribute to its relatively weak association with other items in the scale.

Table 3.3

One-FactorCongeneric Model Analysis of EPD and Refinement with Fit Statistics

		Test Statistics		**Fit Indices**				**Item Statistics**
Biggest (+ve) Modification Index	**Bollen-Stine p**	**Chi-square**	**CMIN**	**RMSEA**	**SRMR**	**CFI**	**TLI**	**Lowest R^2 /Item no**
Original model	.020	23.00	2.555	0.08	0.04	.96	.93	.24/ESi 2 and 22
e2 ⟷ e7	.194	13.014	1.627	0.05	0.03	.96	.97	.19/ESi 2
Remove ESi 2	.745	2.965	.593	0.00	0.02	1.00	1.01	

Note. ⟷ indicates covariation.

The removal of the item resulted in a well-fitted model, as illustrated in Table 3.3. Yet, according to Holmes-Smith (2011), the TLI > 1.00 may indicate overfit. However, he mentioned that a TLI > 1.00 is acceptable in a very simple model such as a measurement congeneric model (P. Holmes-Smith, personal communication, September 2011). In this case, since the TLI value exceeded only by 0.01, I decided that the model was not seriously over-fitted.

Even though the model seemed to fit the data well, the SMC for item 22 was below the recommended level of 0.30. An attempt to remove this item from the model resulted in the model being seriously over-fitted (indicated by the TLI value of 1.021), and therefore item 22 was maintained for further analyses. In the final model, item 17 “I have had an experience as if I were united with a more powerful force than I am” was found to be the largest contributor to the latent trait of EPD.

3.5.1.3. A congeneric model of EWB.

In this study, six items were used to capture the dimension of EWB. All items in this dimension are reverse worded. Figure 3.3 illustrated the standardised parameter estimates and the fit indices for the congeneric measurement model of EWB in the Malaysian context.

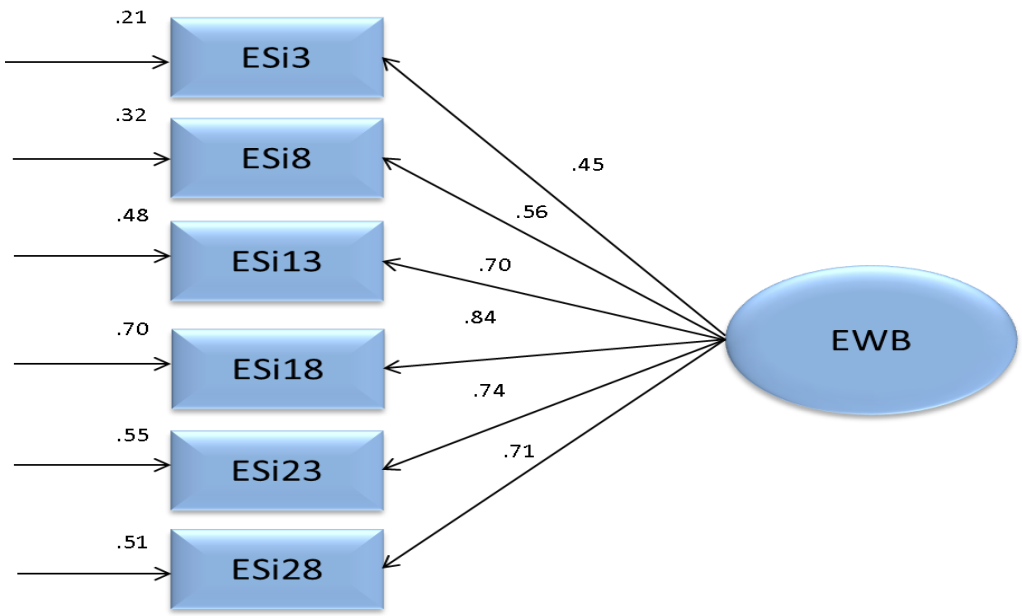

Figure 3.3. A single factor model for the EWB
Note. EWB = Existential well-being; Chi-square = 16.374; df = 9; Bollen Stine p-value = .184; CMIN/df = 1.819; SRMR = .03; RMSEA = .06; CFI = .98; TLI = .97.

From Figure 3.3, it can be seen that the model fit the data well, however, the smallest SMC (0.21) exhibited by item 3 “I often feel that I do wrong things” suggested that this item did not correlate well with the other items in the scale and should be removed to get a more valid and reliable EWB model in the present context. Following modification, all fit indices and SMC were improved (chi-square = 9.376; df = 5; Bollen Stine p-value = .190;CMIN/df = 1.815; SRMR = .03;RMSEA = .06; CFI = .99;TLI = .98). In the final model, item ESi 18 “My life is a mess” (reverse-coded) was the key component of the EWB dimension in the Malaysian context.

3.5.1.4. A congeneric model of REL.

Six observed variables were used to measure the dimension of REL (Figure 3.4).

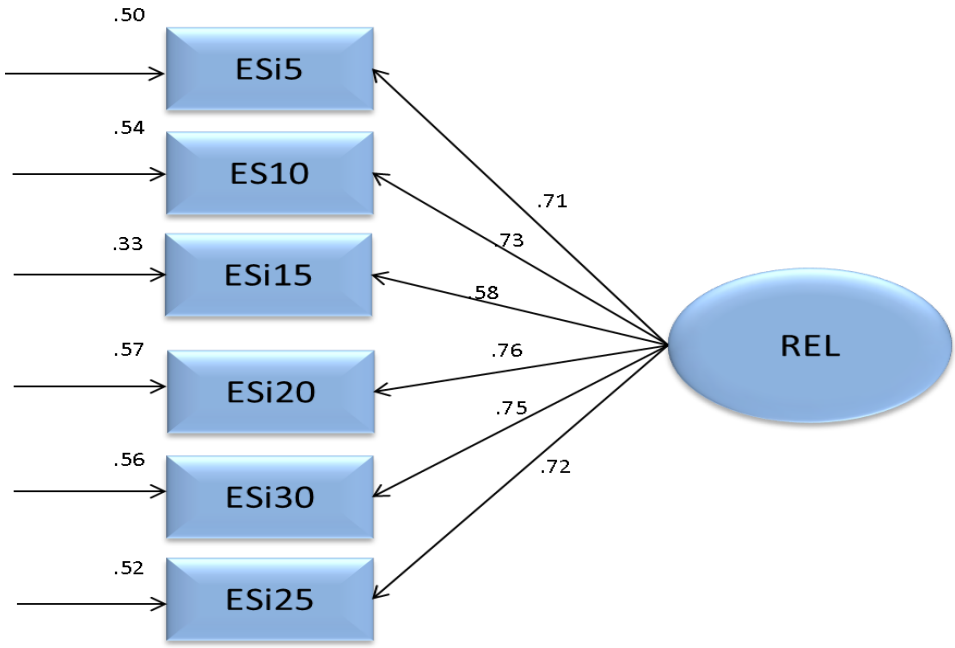

Figure 3.4. A single factor model for the REL
Note. REL = Religiousness; Chi-square = 50.57; df = 9; Bollen Stine p-value = .002; CMIN/df = 5.619; SRMR = .05; RMSEA = .140; CFI = .93; TLI = .88.

The chi-square statistic and fit indices (except SRMR) suggested that the model did not fit the data well. It should be re-specified to produce a better-fit model. An inspection on the MI showed that freeing the error covariance between item 10 “I feel very close to the Almighty” and item 15 “I see myself as a person who is religiously oriented” would improve the model fit (refer to Table 3.4). The covariation of these two error terms seemed to make substantive sense since there was a possibility that these two items share a degree of similarity; a person who feels close to God may also be likely to perceive him or herself as religious.

Table 3.4

One-Factor Congeneric Model Analysis of REL and refinement with Fit Statistics

		Test Statistics		Fit Indices				Item Statistics
Biggest (+ve) Modification Index	**Bollen-Stine p**	**Chi-square**	**CMIN**	**RMSEA**	**SRMR**	**CFI**	**TLI**	**Lowest R^2 /Item no**
Original model	.002	50.57	5.619	0.140	0.05	.93	.88	.33/ESi 15
e10 ⟷ e15	.012	33.438	4.180	0.116	0.04	.96	92	.28/ESi 15
e20 ⟷ e30	.020	25.713	3.673	0.107	0.03	.97	.93	.24/ESi 30
Remove ESi 30	.164	9.665	2.416	0.07	0.02	.99	.97	

Note: ⟷ indicates covariation.

Upon re-specification, a well-fitted model still could not be identified, indicating the need for further modification. The biggest positive MI was exhibited by item 20 “I believe God or the Almighty presents in everything that I do” and item 30 “I believe God or the Almighty is responsible for my existence”. Allowing the error terms to be covaried could possibly mean that there was a degree of collinearity between the associated items. Further inspection of the test statistics suggested that it was appropriate to delete item 30; it displayed the lowest SMC (0.24) together with the error covariance. Following the deletion of item 30, the model fitted the data well, as illustrated in Table 3.4. The final model of REL, as fitted in the Malaysian sample revealed that the item that has the largest weighting and best described the construct of REL was item ESi 25 “I practice prayers or worshipping”.

3.5.1.5. A congeneric model of PARA.

In the ESI scale, paranormal beliefs (PARA) were measured with six items. One of the items (ESi 19) is negatively scored. Figure 3.5 presents the standardized parameter estimates and fit indices for this model.

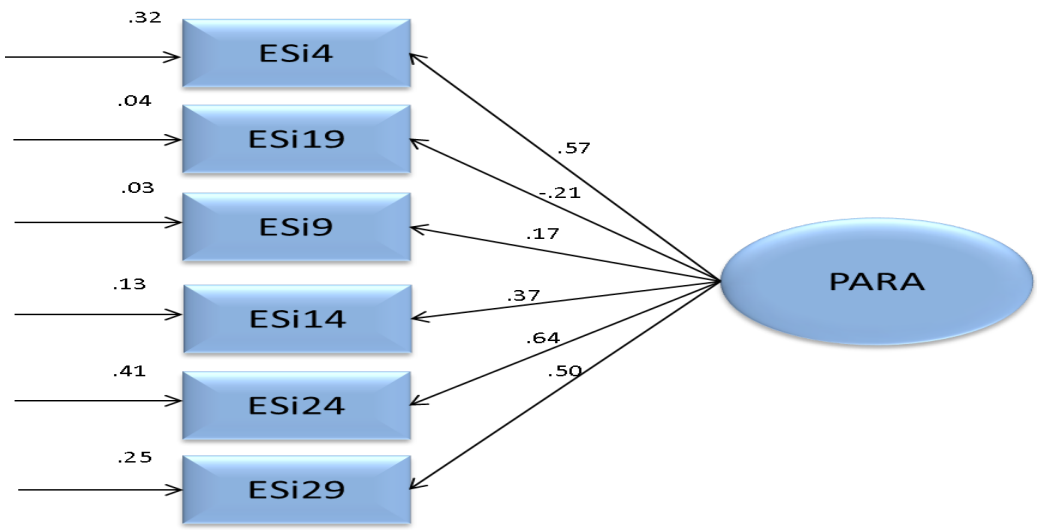

Figure 3.5. A single factor model for the PARA
Note. PARA Chi-square = 35.123; df = 9; Bollen Stine p-value = .004; CMIN/df = 3.903; SRMR = .08; RMSEA = .111; CFI = .78; TLI = .63.

From Figure 3.5, it can be seen that the model did not fit the data well. A closer examination on the MI revealed that the error terms for item 19 “I do not believe in spirits or ghosts” and item 9 “I believe that black magic exists” could be covaried to improve the model fit. The plausible explanation for varying the covariation between the error terms of these two items was that to the Malaysian participants, the two items seemed to be redundant; those who believe in spirits or ghosts tend to believe in witchcraft as well. Upon modification, the fit indices suggested a mixed picture of model fit as there were still unsatisfactory fit indices such as the CFI and the TLI (refer to Table 3.5). Thus, the model should be re-specified.

Table 3.5

One-Factor Congeneric Model Analysis of PARA and Refinement with Fit Statistics

		Test Statistics	**Fit Indices**					**Item Statistics**
Biggest (+ve) Modification Index	**Bollen-Stine p**	**Chi-square**	**CMIN**	**RMSEA**	**SRMR**	**CFI**	**TLI**	**Lowest R^2 /Item no**
Original model	.004	35.123	3.903	.111	0.08	.78	.63	.03/ESi 9
e19 ⟷ e9	.108	16.964	2.121	0.07	0.05	.93	.86	.04/ESi 9
Remove ESi 9	.443	6.255	1.251	0.03	0.03	.99	.97	.06/ESi 19
Remove ESi 19	.449	2.100	1.029	.010	0.02	.99	.99	

Note: ⟷ indicates covariation.

Further examination showed acceptable MI, however, the SMC exhibited by item 9 was very small (0.04). Following the recommendation from Berry and Shipley (2009), this item was removed from the scale. Accordingly, the new model fit the data well, as illustrated in Table 3.5. Although all fit indices were above the recommended cut-off ranges, it should be noted that the SMC for items 19, 14, and 29 were still below the recommended value. This somehow suggested that no more than 30% of the variance in the item is being explained by the latent factor. In this case, the item with the smallest SMC should be dropped one by one from the model. Item 19 was removed, resulting in a better-fitted model, as outlined in Table 3.5.

Nevertheless, the SMC exhibited by items 14 and 29 were still unsatisfactory, thus an *ad hoc* trial was made by excluding item 14 from the model, with this resulting in the model being unidentified. Simply said, the removal of item 14 would result in an empirically untestable model. Thus, these items were retained in the model for further analyses. The retention of these items may have an implication on the reliability of this scale, but this is not anticipated as potentially sizable or

problematic (will be discussed further in section 3.6.3). In sum, it can be seen that in the Malaysian young adult sample, ESi 24 “I think that psychokinesis or moving things with mind power is possible” was the strongest contributor to the PARA dimension.

Having established satisfactory congeneric measurement models for all the ESI Spirituality factors on the basis of satisfactory fit statistics, the next section reports the next steps in ascertaining convergent and construct validity for these factors.

3.5.1.6. Convergent and construct validity of the MEV-ESI

As mentioned in section 2.6.3.2, SEM can be used to establish 3 types of validity: convergent, construct, and determinant. In one-factor congeneric measurement models, the convergent and construct validity can be determined.

An inspection on the Regression Weights table generated by AMOS (refer to Appendix L) revealed that all the observed variables loaded significantly on its intended factor, with C.R. values >1.96 and $p < 0.05$, presenting the evidence of convergent validity for the MEV. Further, construct validity for each dimension of the MEV-ESI scale was demonstrated when the modified model fit the observed data well, as evidenced in all five congeneric models of the MEV-ESI.

3.5.1.7. Section Summary.

On the basis of establishing one-factor congeneric measurement models, five observed variables from four of the latent constructs measuring Spirituality were removed. The deleted items are reported in Table 3.6:

Table 3.6

Summary of Item Deletions after the Modelling of One-Factor Congeneric Measurement Models

Construct	No	Item description	Reason for deletion
COTS	No item deletion as indicated by acceptable model fit indices and satisfactory SMC		
EPD	12	I have been through a mystical experience	Lowest SMC (.22)
EWB	3	I often feel that I do wrong things	Lowest SMC (.21)
REL	30	I believe God or the Almighty is responsible for my existence	Lowest SMC (.24)
PARA	9	I believe that black magic exists	Lowest SMC (.04)
	19	I do not believe in spirits or ghosts	Lowest SMC (.06)

Having examined the congeneric measurement model for each of the MEV-ESI dimension and evaluated convergent and construct validity, the next section reports the results of measurement models two by two as a means of evaluating the discriminant validity of the MEV-ESI as a means of ascertaining and evaluating serious second factor cross-loadings on items.

3.5.2. Modelling two multi- factor confirmatory factor analyses (CFA).

The purpose of modelling two multi-factor CFA is to identify and remove cross-loading items. The results of all five dimensions of Spirituality are reported and discussed in the next sections.

3.5.2.1. A two-factor CFA model of COTS with EPD.

Using the results of the one-factor congeneric models, the combination of COTS and EPD (Figure 3.6) revealed the evidence of misfit, as outlined in Table 3.7:

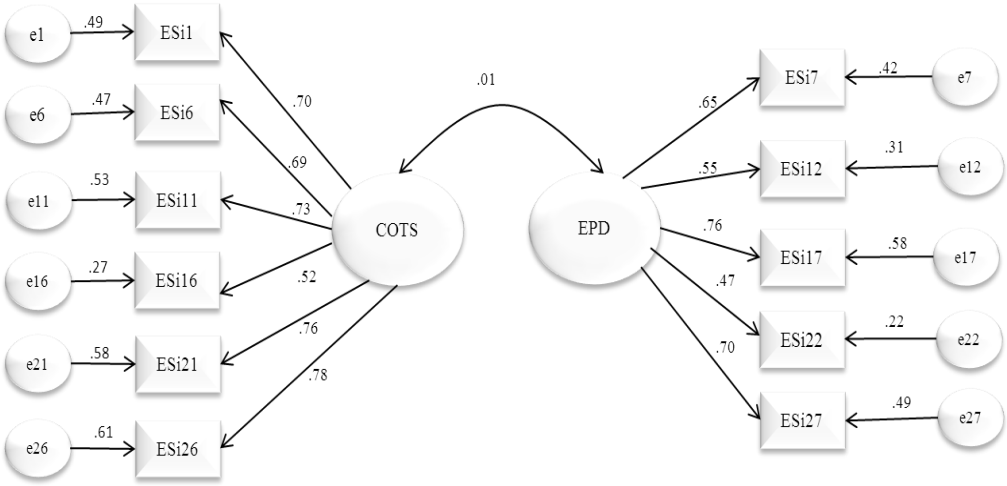

Figure 3.6. CFA model of COTS with EPD

Table 3.7

AMOS output of Standardized Residual Covariances (SRC) (COTS with EPD)

	ESI26	ESI27	ESI22	ESI17	ESI12	ESI7	ESI1	ESI6	ESI11	ESI16	ESI21
ESI26	.000										
ESI27	-.280	.000									
ESI22	3.252	.317	.000								
ESI17	-1.542	-.083	.001	.000							
ESI12	-.065	-.380	.491	.097	.000						
ESI7	.264	.238	-.735	.035	.046	.000					
ESI1	-.293	-.463	2.663	-1.835	-1.893	-.007	.000				
ESI6	-.115	-.623	1.979	-1.806	-.897	.200	1.121	.000			
ESI11	-.176	.668	4.367	.322	1.264	.600	.157	-.125	.000		
ESI16	.521	1.146	3.194	.757	.649	.517	-.827	-.027	-.292	.000	
ESI21	.259	.029	3.190	-1.114	-.769	-.034	-.282	-.598	.271	.304	.000

In examining the SRC matrix, the largest residual value (4.367) was exhibited by items 22 “I have been through an experience where everything seems connected to godliness” and 11 “I have more realisation about my life choices because of my spirituality”, suggesting that these items probably were the ones responsible for the model misspecification. This could mean that item 22, in addition to measuring EPD, also measures COTS; alternatively, that item 11 measures the EPD factor as well as the COTS factor. An inspection of the MIs revealed that the largest parameter was represented by item 22 ← COTS (MI = 22.590). Since the purpose of modelling the

measurement models two by two was to identify only unifactorial items, it was reasonable for item 22 to be removed from the scale.

The model was re-run. The results revealed acceptable SRC values, however, another factor cross-loading was represented by item 11 ← EPD (MI = 4.019), thus it was also removed from the scale. The final result showed that no values greater than ± 1.96 were present in the SRC matrix and that the MIs were all acceptable, indicating unifactorial items.

3.5.2.2. A two-factor CFA model of COTS with EWB.

Modelling the COTS (with only five items) component with the EWB component (Figure 3.7) produced a large value of SRC (2.880) between item 1 "Spirituality is important in determining who I am as a human being" and item 28 "I am an unhappy person", as indicated in Table 3.8. The attraction of both items to the respective opposite factors seem to make substantive sense because "Spirituality is important in determining who I am as a human being" may also be an indicator of one's sense of positive existentiality. It is also possible that in the Malaysian context, "I am an unhappy person" may be more cognitive-perceptual in comparison to a sense of positive Well-Being.

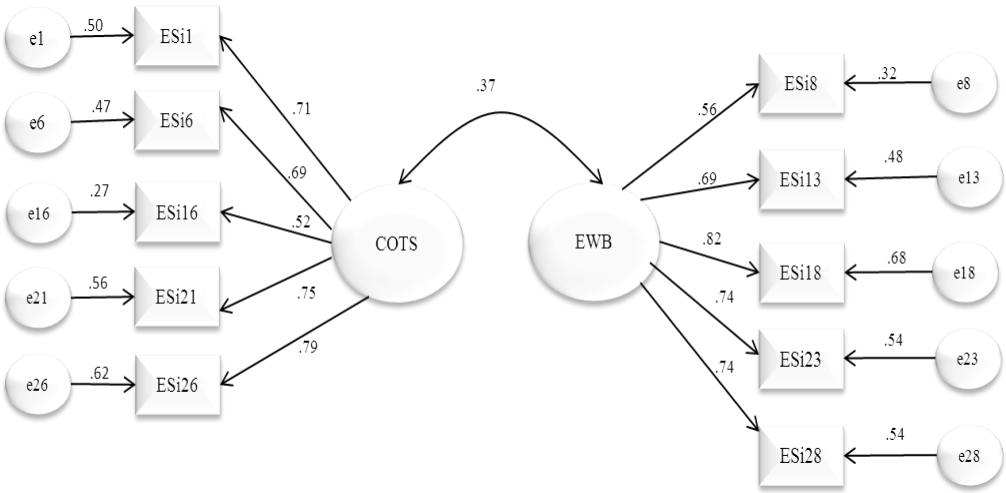

Figure 3.7. CFA model of COTS with EWB

Table 3.8

AMOS Output of Standardized Residual Covariances (SRC) (COTS with EWB)

	ESI28	ESI23	ESI18	ESI13	ESI8	ESI26	ESI1	ESI6	ESI16	ESI21
ESI28	.000									
ESI23	-.595	.000								
ESI18	.100	.086	.000							
ESI13	-.349	.511	.203	.000						
ESI8	.787	.263	-.488	-.593	.000					
ESI26	1.225	-1.070	-.158	-1.034	-.016	.000				
ESI1	2.880	1.121	.803	-.395	1.334	-.389	.000			
ESI6	.923	-.966	-1.378	-.937	.646	-.178	1.074	.000		
ESI16	1.418	-.012	-.531	.217	1.453	.378	-.943	-.120	.000	
ESI21	.832	-.300	-1.022	-.869	1.109	.352	-.183	-.472	.318	.000

The largest MI was exhibited by item 28 ← COTS (MI = 6.294), suggesting a cross-loading of item 28 on the COTS factor, thus this item was deleted from the scale. The modified model revealed satisfactory SRC and MIs; therefore no further model modification was conducted.

3.5.2.3. A two-factor CFA model of CFA of COTS with PARA.

The next step was to model the COTS and PARA pair-wise (Figure 3.8). As can be seen from the SRC matrix (Table 3.9), there was no indication of misspecification in the association between the variables. The MIs also suggested no meaningful sources of modification, indicating no significant cross-loadings.

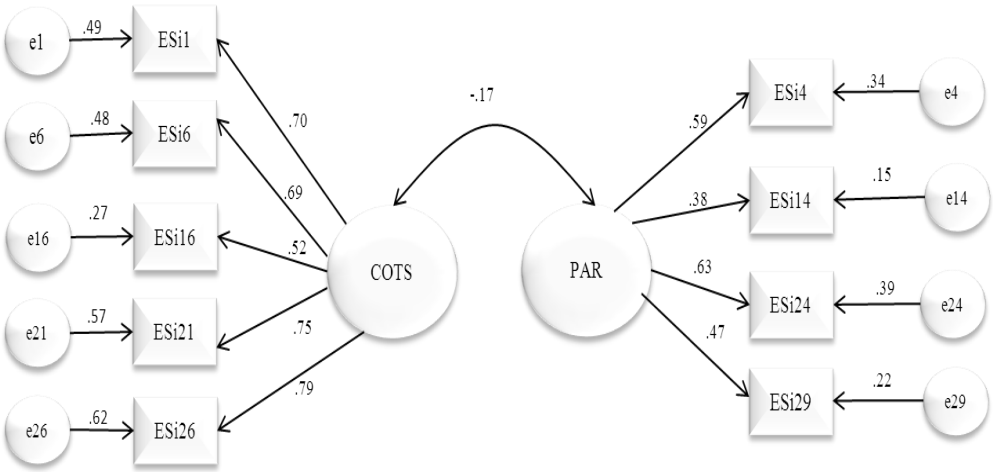

Figure 3.8. CFA model of COTS with PARA

Table 3.9

AMOS Output of Standardized Residual Covariances (COTS with PARA)

	ESI29	ESI24	ESI14	ESI4	ESI26	ESI1	ESI6	ESI16	ESI21
ESI29	.000								
ESI24	.558	.000							
ESI14	-.251	-.506	.000						
ESI4	-.434	-.018	.505	.000					
ESI26	.669	.931	-1.735	.642	.000				
ESI1	.463	-.955	-1.586	-1.183	-.334	.000			
ESI6	.529	.998	-.994	-.491	-.219	1.101	.000		
ESI16	.920	1.834	-.610	-.080	.413	-.863	-.107	.000	
ESI21	-.237	.219	-.351	-.664	.304	-.159	-.538	.330	.000

3.5.2.4. A two-factor CFA model of COTS with REL.

Modelling the COTS component with the REL component (Figure 3.9) had SRC indicating possible misspecification between items 15 and 16, 5 and 6 (Table 3.10).

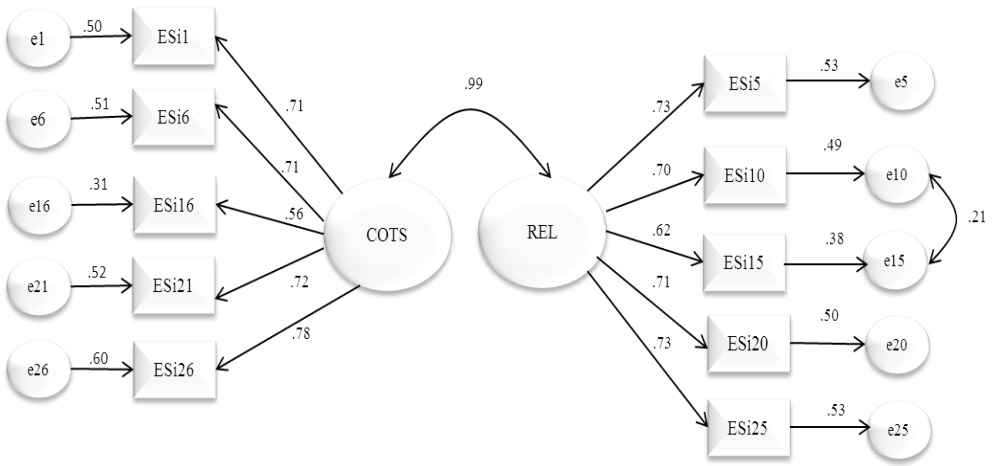

Figure 3.9. CFA model of COTS with REL

Table 3.10

AMOS Output of Standardized Residual Covariances (SRC) (COTS with REL)

	ESI25	ESI20	ESI15	ESI10	ESI5	ESI26	ESI1	ESI6	ESI16	ESI21
ESI25	.000									
ESI20	-.423	.000								
ESI15	.245	-.157	.000							
ESI10	.258	.834	.000	.000						
ESI5	-.527	-.914	-.567	.010	.000					
ESI26	-.693	-.029	-.586	-.392	-.436	.000				
ESI1	.044	-.009	-.270	-.470	.607	-.243	.000			
ESI6	.712	-.792	.020	-.221	2.098	-.325	.823	.000		
ESI16	.427	-.129	4.080	1.089	-.761	.140	-1.238	-.632	.000	
ESI21	.702	.805	.053	-.020	-.922	.787	.099	-.471	.208	.000

As possible sources of misspecification were detected, the MIs were inspected. A review of the MIs revealed one parameter indicative of cross-loading (item 15 ← COTS; MI = 28.339), suggesting that "I see myself as a person who is religiously oriented" was also measuring the dimension of COTS. It made substantive sense because of the way the item was worded "I see myself"; it was possible for the Malaysian participants to regard this item as also measuring their beliefs towards their Religiousness. The item was thus deleted and the model re-estimated. Following the removal of item 15, the SRC and MIs suggested no further cross-loading.

Nevertheless, it should be noted that the size of factor correlation was very high (.99), indicating the possibility that these latent factors represent the same construct (will be discussed in detail in section 3.6.2.11). This correlation however, is expected because according to MacDonald (2000a), these dimensions share a fair degree of common variance although they are conceptually different.

3.5.2.5. A two-factor CFA model of EPD with EWB.

In combining the EPD with EWB (Figure 3.10), the SRC indicated possible misspecification between items 13 “Most of what I do in my life is stressful and takes a lot of effort” and 12 “I have been through a mystical experience” (Table 3.11). It did not make any substantive sense that any of these items were attracted to the opposite factors. Moreover, the MI did not suggest any meaningful modification; therefore, these items were retained for further investigation.

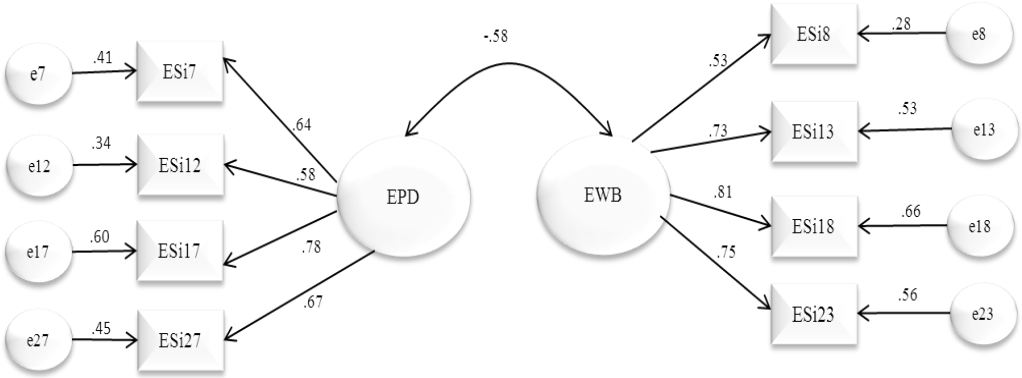

Figure 3.10. CFA model of EPD with EWB

Table 3.11

AMOS Output of Standardized Residual Covariances (SRC) (EPD with EWB)

	ESI8	ESI13	ESI18	ESI23	ESI27	ESI17	ESI12	ESI7
ESI8	.000							
ESI13	-.494	.000						
ESI18	-.010	-.092	.000					
ESI23	.552	.038	.031	.000				
ESI27	1.296	-.506	.267	1.692	.000			
ESI17	-.268	.107	-.500	.283	.109	.000		
ESI12	-1.259	-2.521	-1.371	-.474	-.402	-.274	.000	
ESI7	.958	-.540	1.131	.979	.562	.001	-.142	.000

3.5.2.6. A two-factor CFA model of EPD with REL.

Using the results from previous CFAs, the two by two model of EPD and REL were examined (Figure 3.11). The SRC indicated possible misspecification between item 10 “I feel very close to the Almighty” and item 7 “I have gone through an experience where I felt I transcended space and time” (Table 3.12).

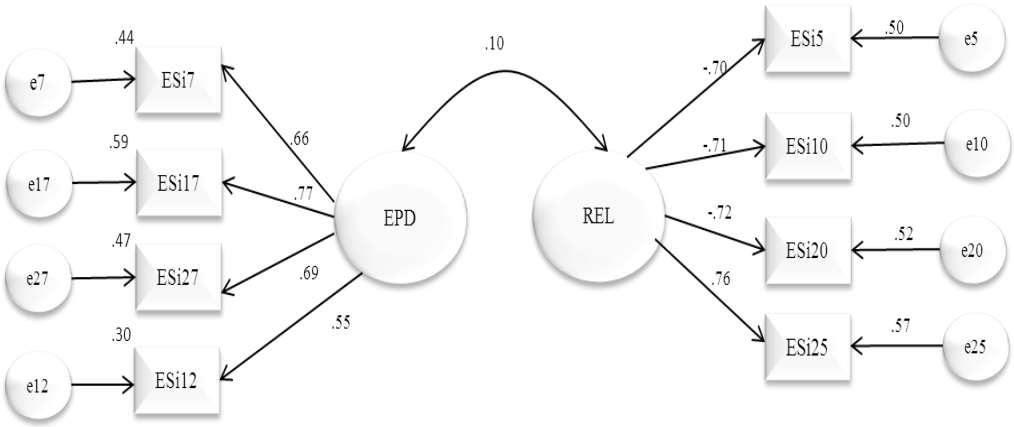

Figure 3.11. CFA model of EPD with REL

Table 3.12

AMOS Output of Standardized Residual Covariances (SRC) (EPD with REL)

	ESI12	ESI5	ESI10	ESI20	ESi25	ESI27	ESI17	ESI7
ESI12	.000							
ESI5	-1.129	.000						
ESI10	1.218	.180	.000					
ESI20	-.040	-.764	.678	.000				
ESi25	.317	-.487	.604	-.046	.000			
ESI27	-.222	.782	1.944	-.221	-.176	.000		
ESI17	.130	-1.007	1.324	-.976	1.271	-.021	.000	
ESI7	.027	1.159	2.301	.401	.729	.233	-.132	.000

An inspection of the MIs revealed that the largest parameter was represented by item 10 ← EPD (MI = 11.446) suggesting that other than measuring REL, it may also measure EPD. It was possible because according to MacDonald (2000a), the EPD dimension describes any spiritual and religious experience. It is most likely that the Malaysian respondents perceived their closeness to a higher power as part of their religious experiences. Hence, I deleted this item from the REL scale. Re-estimation of the parameters resulted in satisfactory SRC and MIs; therefore no further model modification was conducted.

3.5.2.7. A two-factor CFA model of EPD with PARA.

The comparison between the EPD and PARA dimension (Figure 3.12) did not suggest any significant misspecification and MIs, thus no double-loading items were detected (Table 3.13).

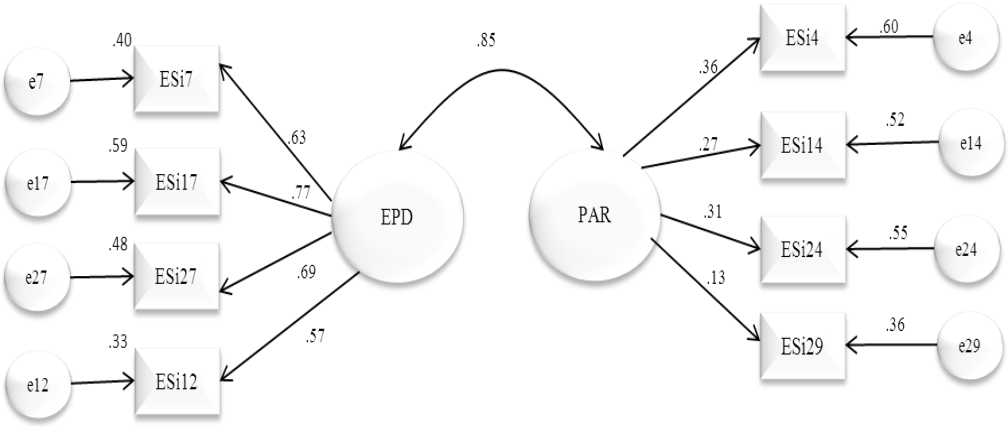

Figure 3.12. CFA model of EPD with PARA

Table 3.13

AMOS Output of Standardized Residual Covariances (SRC) (EPD with PARA)

	ESI12	ESI4	ESI14	ESI24	ESI29	ESI27	ESI17	ESI7
ESI12	.000							
ESI4	.203	.000						
ESI14	.978	-.737	.000					
ESI24	.777	.513	-1.152	.000				
ESI29	.673	.471	-.321	1.924	.000			
ESI27	-.535	-.268	1.311	.052	-1.292	.000		
ESI17	-.162	.503	.419	-.333	-1.078	-.077	.000	
ESI7	.017	-.933	.696	-1.221	-1.077	.476	.193	.000

3.5.2.8. A two-factor CFA model of EWB with REL.

In combining the EWB and REL (Figure 3.13), no further misspecification was detected, as evidenced in Table 3.14. Therefore no modification was made to the model at this stage.

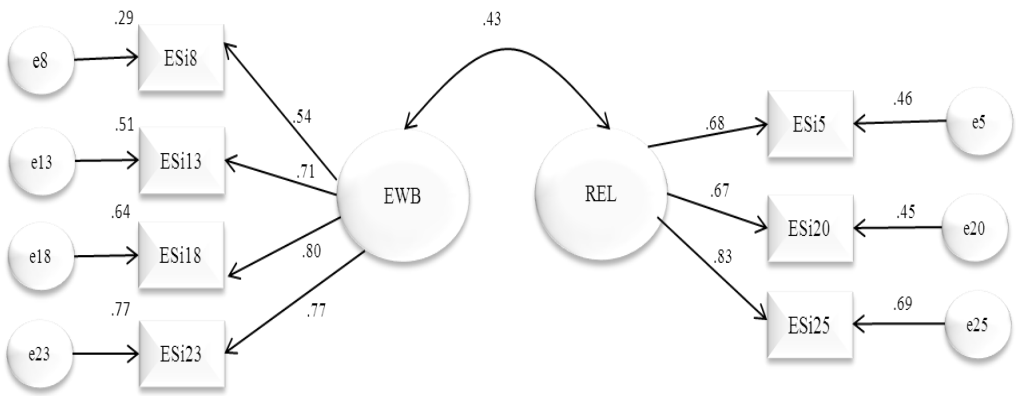

Figure 3.13. CFA model of EWB with REL

Table 3.14

AMOS Output of Standardized Residual Covariances (EWB with REL)

	ESi25	ESI20	ESI5	ESI8	ESI13	ESI18	ESI23
ESi25	.000						
ESI20	.098	.000					
ESI5	-.101	-.014	.000				
ESI8	-.380	.903	1.909	.000			
ESI13	-.521	.061	-1.081	-.531	.000		
ESI18	.243	.508	-1.059	-.061	.185	.000	
ESI23	.310	.841	-.373	.244	-.024	-.050	.000

3.5.2.9. A two-factor CFA model of EWB and PARA.

Modelling the EWB component with the PARA component (Figure 3.14) had SRC indicating possible misspecification between item 14 “It is possible to predict the future” and item 13 “Most of what I do in my life is stressful and takes a lot of effort” (Table 3.15).

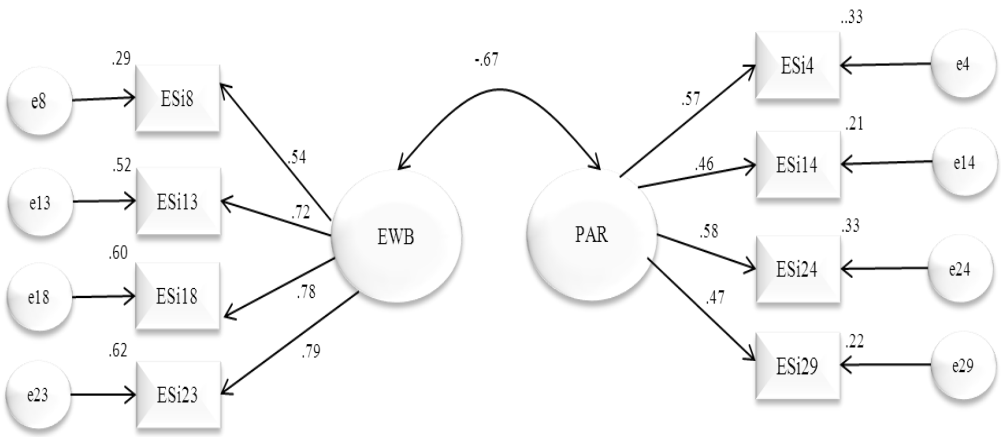

Figure 3.14. CFA model of EWB with PARA

Table 3.15

Amos Output of Standardized Residual Covariances (EWB with REL)

	ESI24	ESI14	ESI29	ESI4	ESI8	ESI13	ESI18	ESI23
ESI24	.000							
ESI14	-.865	.000						
ESI29	.965	-.759	.000					
ESI4	.529	-.080	-.303	.000				
ESI8	.535	-.860	-.286	-.162	.000			
ESI13	.688	-2.451	-.167	-.009	-.534	.000		
ESI18	1.249	-1.116	.929	1.052	.178	.340	.000	
ESI23	-.508	-.114	-.305	-.328	.153	-.282	-.004	.000

An inspection on the MI revealed that the largest meaningful parameter was represented by item 14 ← EWB (MI = 4.841). Such misspecification could mean that although it was postulated to load on the PARA factor, it may also load on the EWB factor. In order to maximize the validity and reliability of the scale, I decided to remove this item from the scale. The final results suggested no further cross-loadings.

3.5.2.10. A two-factor CFA model of REL and PARA.

The final estimation of measurement models two by two involved the REL and PARA factors (Figure 3.15). An inspection on the SRC (Table 3.16) and MI revealed

no significant cross-loadings between the items; therefore no item was removed from the scales.

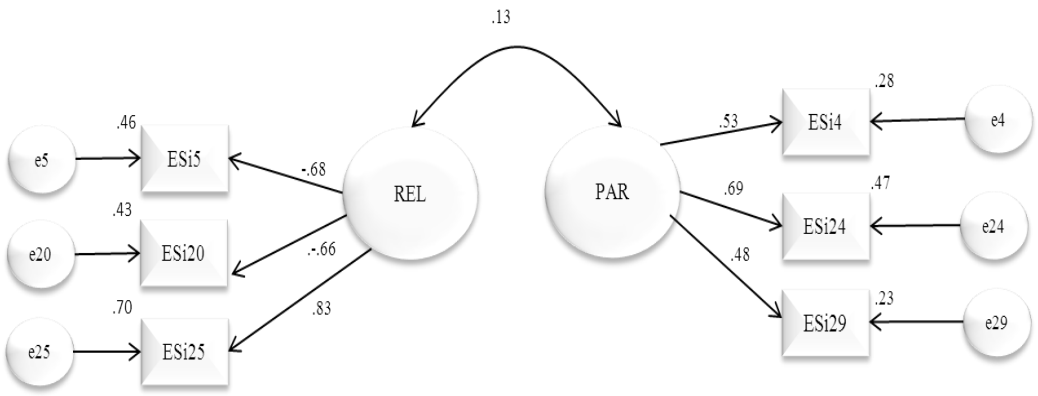

Figure 3.15. CFA model of REL with PARA

Table 3.16

Amos Output of Standardized Residual Covariances (SRC) (REL with PARA)

	ESI29	ESI5	ESI20	ESi25	ESI24	ESI4
ESI29	.000					
ESI5	-.006	.000				
ESI20	.055	.023	.000			
ESi25	.413	-.006	.017	.000		
ESI24	.054	.894	-.078	-.310	.000	
ESI4	-.132	-.259	-.447	.567	.017	.000

Having ascertained that each indicator in the MEV-ESI ESI was unifactorial, the next step was to determine whether these five constructs are distinct from each other.

3.5.2.11. Discriminant validity.

According to Brown (2006), the discriminant validity of the constructs is questionable if the size of the factor correlations exceeded .80. In other words, when the correlation between the two constructs > .80, it is possible that the two factors are highly overlapping and are actually measuring the same construct.

Based on the results of the two multi-factor CFAs above, it can be seen that the size of the factor correlations for the five latent factors that were individually

modelled pair-wise with each of the other factors did not exceed .80, except for COTS with REL and EPD with PARA. Therefore, it is imperative to establish whether discriminant validity holds for these constructs. The results of discriminant validity assessment are presented in Table 3.17.

Table 3.17

Discriminant Validity for the ESI constructs as Determined with Nested Model Method

Constructs	Model	χ^2	df	P	Discriminant Validity
COTS with REL	Unconstrained	27.903	13	0.009	Yes
	Constrained	115.073	14	0.000	
	$\Delta\chi^2$	87.17	1	0.000	
EPD with PARA	Unconstrained	18.548	13	0.138	Yes
	Constrained	76.833	14	0.000	
	$\Delta\chi^2$	58.285	1	0.000	

Note. χ^2 = chi-square; $\Delta\chi^2$ = chi square difference

Based on Table 3.17, it can be seen that the critical value for **$\Delta\chi^2$** for both pairs exceeds the test value (with p-value = 0.00), therefore it can be said that constraining the correlation to 1.00 has significantly worsened the model. These results suggest that discriminant validity holds and it can thus be concluded that these constructs are different constructs.

3.5.2.12. Section summary.

A few multi-factorial items were identified from the modelling of two multi-factor CFA, thus removed from the scale. The deleted items are summarised in Table 3.18:

Table 3.18

Summary of Item Deletions after the CFA

Constructs	Item	Reason for Deletion
COTS with EPD	22	Cross-loading on the COTS factor
	11	Cross-loading on the EPD factor
COTS with EWB	28	Cross-loading on the COTS factor
COTS with REL	15	Cross-loading on the COTS factor
EPD with REL	10	Cross-loading on the EPD factor
EWB with PARA	14	Cross-loading on the EWB factor

As presented in Table 3.18, 6 items were identified as multifactorials, resulting in 20 items (including the validation items) as valid indicators of Spirituality in the Malaysian context.

3.5.3. Model-based reliability analysis.

As previously stated in section 2.6.3.2, the reliability of the Malay-translated version of the ESI was calculated using the Hancock and Mueller's Coefficient *H*. The results revealed that the reliability for COTS, EPD, EWB, REL, and PARA was 0.81, 0.78, 0.82, 0.77 and 0.61, respectively.

The reliability for four of the ESI dimensions was well within the range of the recommended cut-off value of 0.70 (Hancock & Mueller, 2001), except for the PARA dimension. This finding is consistent with findings by D. A .MacDonald (personal communication, June 2012) where he also found that the PARA reliability tends to be on the low side in other cross-cultural samples that he has obtained. Nevertheless, Hair, Black, Babin, and Anderson (2010) claim that reliability between .6 and .7 may be acceptable, given that other indicators of a model's construct validity are good, which has been demonstrated in this study.

A closer inspection of the three valid items measuring PARA (item 4; "It is possible to communicate with the dead"; item 24; "I think that psychokinesis or moving things with mind power is possible"; item 29; "There is possibility that we

can leave our body”) revealed the possibility that conceptual equivalence (as mentioned in section 3.4.3.2) may underlie the problem of the low reliability of this dimension. Perhaps the Western concept of paranormal beliefs and the items designed to measure it cannot fully capture Malaysian’s Spirituality. As mentioned in section 3.4.3.2, MacDonald (2011b) acknowledged that the inclusion of PARA dimension in the ESI scale may be problematic. However, he argued that it is necessary to include this dimension since most Eastern and Western religious systems tolerate beliefs regarding the existence of paranormal phenomena. I therefore decided that even though the reliability of the PARA dimension was on the low side, it should be included in the MEV-ESI to measure the Spirituality of Malaysian young adults.

As mentioned in Chapter 2, conceptual equivalence is achieved when the two versions of a scale exhibit a similar factorial structure. I therefore evaluated the factorial structure of the MEV-ESI, as reported in the next section.

3.5.4. The ESI Model in Malaysian young adults sample.

The results from validation analyses revealed that the ESI model in the Malaysian sample consists of 18 valid items. In order to determine whether the hypothesized five-factor model of the ESI is the best fitting model in the Malaysian context, the fit of four competing models were tested. First, M_1 assumes that all 18 items load on one general Spirituality factor. Second, M_2 assumes that the ESI is best described with only four dimensions (all dimensions excluding PARA to address the issue of low reliability of PARA dimension). Third, in Model $M_{3\text{-original}}$ all 30 original items were allowed to load on its respective five factors and lastly Model $M_{3\text{-respecified}}$ assumes that all 18 items load on its respective hypothesized factor of Spirituality. The goodness-of–fit estimate of these models is presented in Table 3.19.

Table 3.19

Comparison of Alternative Models

Model	χ^2	df	CMIN/df	SRMR	RMSEA	CFI	TLI	$\Delta\chi^2$
M1	805.815	135	5.969	.16	.15	.53	.47	-
$M2_{\text{-4 Factors}}$	130.054	84	1.548	.06	.05	.95	.96	-
$M3_{\text{-original 5 Factors}}$	1409.320	680	2.073	.09	.05	.86	.84	-
$M4_{\text{-respecified 5 Factors}}$	182.239	125	1.458	.05	.04	.95	.96	-
M1 → $M2_{\text{-4 Factors}}$								675.761**
M1 → $M3_{\text{-Original 5 Factors}}$								603.505
$M2_{\text{-4 Factors}}$ → $M3_{\text{-Original 5 Factors}}$								1279.266**
$M2_{\text{-4 Factors}}$ → $M4_{\text{-respecified 5 Factors}}$								52.185
$M3_{\text{-original 5 Factors}}$ → $M4_{\text{-respecified 5 Factors}}$								1277.081**
M1 → $M4_{\text{-respecified 5 Factors}}$								623.576**

Note. **p < .01

A $\Delta\chi^2$test was employed to compare the relative fit of the models. As Table 3.19 shows, the $\Delta\chi^2$ tests were significant for M1 → $M2_{\text{-4 Factors}}$, $M2_{\text{-4 Factors}}$ → $M3_{\text{-Original 5 Factors}}$, $M3_{\text{-original 5 Factors}}$ → $M4_{\text{-respecified 5 Factors}}$ and M1 → $M4_{\text{-respecified 5 Factors}}$. The results indicated that $M2_{\text{-4 Factors}}$ was significantly superior to M1 and $M3_{\text{-original 5 Factors}}$; $M4_{\text{-respecified 5 Factors}}$ was significantly superior to $M3_{\text{-original 5 Factors}}$ and M1. On the other hand, the $\Delta\chi^2$ tests were not significant between M1 →$M3_{\text{-Original 5 Factors}}$ and $M2_{\text{-4 Factors}}$ → $M4_{\text{-respecified 5 Factors}}$, suggesting that M1 did not perform significantly better than $M3_{\text{-original 5 Factors}}$ and $M2_{\text{-4 Factors}}$ did not perform significantly better than $M4_{\text{-respecified 5 Factors}}$. In essence, it can be said that $M2_{\text{-4 Factors}}$ and $M4_{\text{-respecified 5 Factors}}$ performed significantly better than the other models, moreover, their fit indices were within the conventional acceptance limits.

Nevertheless, the test revealed that the $\Delta\chi^2$ between the four-factor and five-factor model was not significant ($\Delta\chi^2$= 52.185, df = 41, p-value = 0.113). Thus, it can be said that there is no significant difference between the two models. This implies that both models explain the data equally well. In this situation, the model with better fit indices is preferred. An inspection on fit indices showed that $M4_{\text{-respecified 5 Factors}}$ model yielded marginally better fit indices than $M2_{\text{-4 Factors}}$ and since it makes sense both theoretically and empirically, $M4_{\text{-respecified 5 Factors}}$ was chosen as the best model that the current data represented (χ^2 = 182.239; df = 125; Bollen Stine *p* = .08; CMIN/df = 1.458; SRMR = .05; RMSEA = .04; CFI = .96, TLI = .95). Thus, Hypothesis 2 was supported. The five-factor model schematically portrayed in Figure 3.16 represents an adequate description of the Spirituality structure in educated Malaysian young adults.

In terms of factorial validity, the CFA's parameter estimates, consistent with MacDonald's (2000b) previous work, supported the five-dimensional structure of Spirituality. Subsequently, the results also showed that conceptual equivalence between the original and translated version of the ESI was achieved. It is rather puzzling that the paranormal beliefs dimension suggested as being conceptually irrelevant during the translation process were relevant Spirituality constructs in a predominantly Muslim population. The three paranormal items ("It is possible to communicate with the dead", "I think that psychokinesis or moving things with mind power is possible", and "There is a possibility that we can leave our body") valid in a Malaysian population reflect the belief in psychic phenomena, rather than religious belief, which seems to be relevant regardless of a person's broader cultural environment. This is a point for further investigation in another study. Future studies

would benefit from employing a mixed-method research design to enable deeper probing into the emic construct of Spirituality.

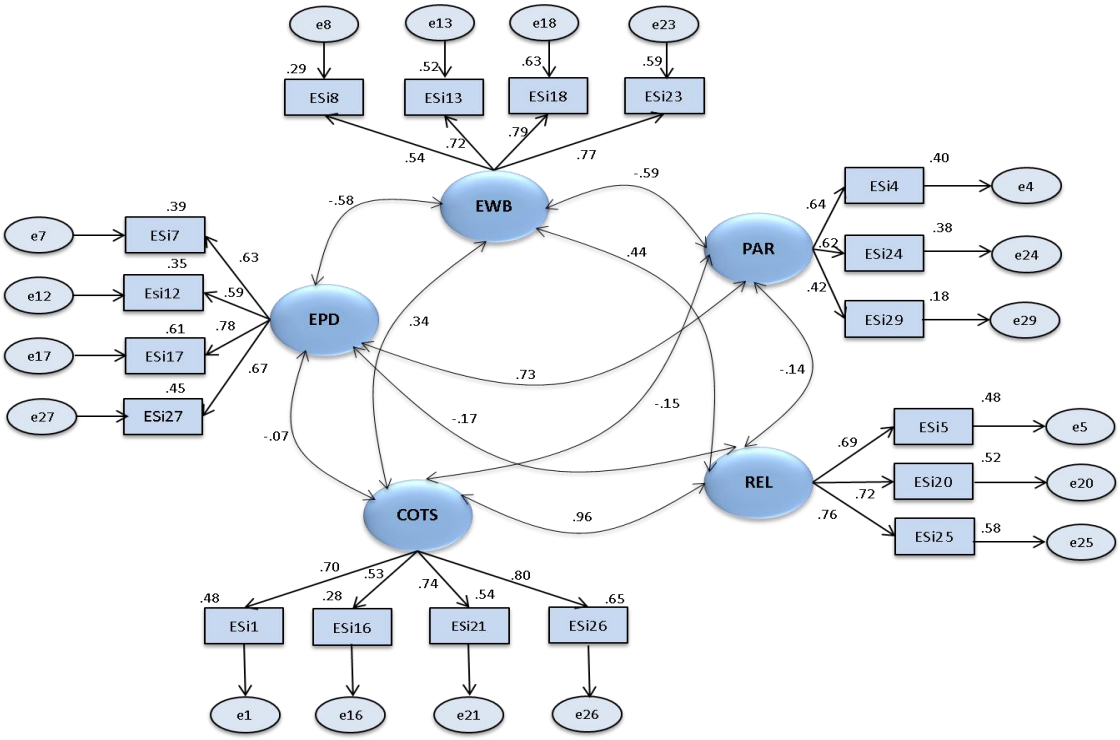

Figure 3.16. Final model of factorial structure for the ESI in Malaysian context

3.5.5. Cross-validation of the five-factor model of the ESI in a replication sample.

As mentioned in section 2.6.3.3, the model generated with the calibration sample is cross-validated with the data collected from the replication sample in order to assess the chance factors. The five dimensional model of the ESI was therefore subjected to testing for invariance across calibration and validation samples. The results are reported in Table 3.20.

Table 3.20

Goodness-of-Fit Indices for Model Cross-Validation ($n_{calibration}$ = 236, $n_{validation}$ = 201)

Model	χ^2	CMIN/*df*	*df*	CFI	TLI	RMSEA
Constrained	388.377	1.477	263	.96	.95	.03
Configural	381.664	1.527	250	.95	.94	.04

Note. χ^2 = chi-square, df = degrees of freedom, CMIN/df = Normed chi-square, CFI = Comparative fit index, TLI = Tucker-Lewis Index, RMSEA = Root mean-square error of approximation.

Computation of the $\Delta\chi^2$ test between configural and constrained model yielded a difference of 6.713 with 13 degrees of freedom and statistically nonsignificant at p = 0.92. The $\Delta\chi^2$ test provided the evidence of multigroup invariance and thus it can be concluded that the model shown in Figure 3.16 is invariant across the calibration and replication sample. The results implied that the model shown in Figure 3.16 is sufficiently invariant across the calibration and replication samples, indicating robustness of the factors.

Taking all results together, I concluded that the five-factor model as captured by the MEV-ESI is relevant and applicable in the Malaysian context as hypothesized earlier; thus H2 was supported.

3.6. Results and Discussions: The Influence of Gender and Religious Affiliation on Spirituality

RQ1 and H1 were investigated using the parametric technique of two by two between-subjects multivariate analysis of variance (MANOVA) even though there is evidence that the scores on the study variables are not normally distributed, as revealed by the Mardia's coefficient (refer to Appendix I). Nevertheless, according to Pallant (2011) MANOVA appears to be "reasonably robust to modest violations of normality (except where the violations are due to outliers)(p. 285). In this

dissertation, I have minimized the effect of outliers by deleting the extreme outlier cases and transforming the variables involved (refer to section 2.6.2). Hence, I considered that outliers did not pose a significant threat to the significant tests of MANOVA performed in this study.

On that basis, I investigated RQ1 and H1 by performing a two by two between-subjects MANOVA on five dependent variables of Spirituality: REL, EWB, EPD, COTS, and PAR. Independent variables were gender (male and female) and religious affiliation (Islam, Christianity, Buddhism, and Hinduism). Preliminary testing of parametric assumptions was conducted with results indicating that the normality, linearity, univariate, and multivariate outliers, homogeneity of variance-covariance matrices, and multicollinearity were all within acceptable limits.

There was no statistically significant difference between males and females on the combined dependent variables, $F (5, 224) = 1.20$, $p = .311$; Pillai's Trace[22] = .03; partial eta squared = .03. These findings indicated that in Malaysian young adults, gender did not have an effect on the expressions of Spirituality. The current findings were consistent with the findings of Imam et al. (2009) where they also found insignificant gender differences between their Malaysian Muslim undergraduate students in their level of religious and existential well-being. The results seemed to suggest that Malaysian young males and females tend to be similar in terms of how they express their Spirituality.

The results of this study challenged those of previous Western studies suggesting that women are more religious than men (Bryant, 2007; MacDonald & Holland, 2002). According to Bryant (2007), it was possible that gender differences in Spirituality were extended based on the findings of gender differences found in

[22] The statistically significant differences among the groups are assessed with Pillai's Trace because this statistic is more robust to unequal N values and violation of assumptions (Pallant, 2011, p. 294).

religiosity, which may be misleading. This is because in some studies, religiosity and Spirituality have been used interchangeably while in other studies these two constructs are treated distinctly (refer to Section 3.2.1).

On the other hand, a significant main effect was found for gender with religious affiliation, F (15, 678) = 5.29, p = .000, Pillai's Trace = .31; partial eta squared = .11, but not by their interaction (gender*religious affiliation), F (15, 678) = 0.81, p = .673. When the results for the dependent variables were considered separately, the only differences to reach statistical significance, using a Bonferroni adjusted alpha level of .01, were EPD, F (3, 228) = 6.12, p = .001, partial eta squared = .08; COTS, F (3, 228) = 5.88, p = .001, partial eta squared = .07 and finally REL, F (3, 228) = 10.6, p = .000, partial eta squared = .21. In order to further investigate the significant main effect for religious affiliation, I conducted one-way ANOVA on the dependent variables that were found significant in the MANOVA. The Levene's test for homogeneity of variance assumption for the five dependent variables were non-significant (p>0.05), suggesting that the data met the multivariate assumption. Table 3.21 presents the univariate effects for religious affiliation, which will be discussed next.

Table 3.21

One-Way ANOVA results for ESI Dimension Scores as a Function of Religious Affiliation

Spirituality constructs	**Religious Affiliation**								**F**	**df**	**P**	**Eta squared**
	Islam		**Christianity**		**Buddhism**		**Hinduism**					
	M	**SD**	**M**	**SD**	**M**	**SD**	**M**	**SD**				
EPD	10.525_c	3.26	14.444_a	3.00	12.375_b	3.03	12.286	3.77	6.551	3	.000	0.08
COTS	16.857_a	2.36	16.000	2.55	14.667_b	1.76	16.143	2.193	6.722	3	.000	0.08
REL	9.019_a	1.12	8.718_c	1.32	7.030_d	.975	8.955_b	.833	22.972	3	.000	0.23

Note. * = $p < .05$. Means with differing subscripts within rows are significantly different at the $p < .05$ based on Tukey HSD test

Univariate ANOVA's indicated significant effects on EPD, $F(3, 232) = 6.551$, $p = .000$, COTS, $F(3, 232) = 6.722$, $p = .000$, and REL, $F(3,232) = 22.972$, $p = .000$. Despite reaching statistical significance, the actual difference in mean scores between the groups for both EPD and COTS was quite small. The effect size, calculated using eta squared, was .08 for both dimensions. In contrast, the calculated effect size for REL was rather large (.23). This means that 23% of the variance in REL is explained by religious affiliation. Further, post-hoc comparisons using the Tukey HSD indicated that Christians scored significantly higher on EPD than Buddhists and Muslims, while Muslims scored significantly higher than Buddhists on COTS. Finally, Muslims scored significantly higher on REL than the other three faiths.

The results of the current study provided partial support for H1 as three of the ESI dimensions (EPD, COTS and REL) were found to be significantly impacted by religious affiliation. The findings are in line with the previous USA research of MacDonald (2000b) where he also found that religious affiliation produced significant results for EPD, COTS and REL. The findings in both cultural contexts (USA and Malaysia) seem to suggest that these particular three dimensions of ESI are consistently affected by religious affiliation.

While MacDonald's study did not report the effect sizes for each of the three Spirituality dimensions, the current findings indicated that religious affiliation explains a rather large proportion (23%) of the variance in REL. The findings revealed that Malaysian Muslim young adults tend to express their Spirituality more through religious behaviour and practice in comparison to other faith groups. This is supported by Haneef et al.'s (2002) values study where they reported that in contrast to other faith groups such as Hindu and Christian, the Muslims tended to place more

emphasis on the “goods of the soul” (e.g. strong faith, wisdom, and good moral character), which is reflected through their religious beliefs and practices. The current findings also seem to be in line with the findings of Krauss, Hamzah, and Idris (2007), where they reported that in comparison to the Hindus, Christians, and Buddhists, the Muslim youths scored highest for ritualic behaviours that reflect Islamic teachings and commands. It was probably due to the nature of Islamic teachings, which require its followers to perform the mandatory five prayers per day (*solat*), fasting (*sawm*), charity (*zakat*) and pilgrimage (*hajj*).

In conclusion, the current results partially supported H1, as Spirituality as conceptualized by Macdonald (2000a, 2000b) was not significantly impacted by gender, but three of the dimensions (EPD, COTS, and REL) were significantly influenced by religious affiliation. Such discrimination carries important understanding to the study of Spirituality and as such adds to the discriminant validity of the MacDonald’s (MacDonald, 2000a) Spirituality instrument.

3.7. Chapter Discussions and Summary

The study sought to determine the cross-cultural relevance of general Western Spirituality constructs for an Eastern culture, represented by Malaysian culture and, more specifically, a Muslim-based population. I hypothesized that an individualistic Western Spirituality measure is a valid measure in capturing the Spirituality of a collectivistic Malaysian young adults sample. The results of this study provided empirical support for the validity and reliability of the MEV-ESI. Another way to view it is that the current findings lend support for the universal utility (generalizability) of the ESI in a context with individuals from diverse faiths, such as in Malaysia.

The SEM performed on the Malaysian data confirmed the five-factor model underlying the ESI, consistent with the findings of existing research that Spirituality is a multidimensional construct (Hill et al., 2000; Moberg, 2002). The current results also support the contention that Spirituality encompasses Religiousness. As previously discussed, there is a divergence of opinion regarding the concept of Spirituality and religion, with some researchers claiming that the recent trend in the field of religion and Spirituality seems to converge on Spirituality as a broader construct than religiosity (MacDonald, 2000b; Zinnbauer & Pargament, 2005). This means that Spirituality includes various phenomena from traditional religious beliefs to the sense of existentiality. This claim was supported with the findings in this research. The results revealed that the model that fits the Malaysian sample data regards Religiousness as one of the dimensions of Spirituality. This finding was anticipated with the majority of the respondents being Muslims who view the "concept of religion as embedded in the umbrella of Spirituality" (Rassool, 2000, p.1479).

The findings in this research also implied that the Western concept of Spirituality can be generalized to predominantly Muslim societies, despite contradictions between the religions from the West and the East. Regardless of the variations between and within them concerning specific religious doctrines and practices, there are also commonalities, including the belief that there is a God and that human beings can receive spiritual guidance and strength from God through prayer and other spiritual practices (Richards & Bergin, 2005). Generally, on a human level, it is encouraging to find basic human commonality, irrespective of culture and religion. It indicates that belief, prayers, and spiritual practices are

universal and fundamental, and therefore a proper study of psychology and a tool for psychologists to use in facilitating the human need for Well-Being.

Further, the MEV-ESI is sufficiently robust to be used in evaluating Spirituality in pluralistic societies such as Malaysia. In so doing, it also means that Malaysians' Spirituality can benefit from studies in other cultures and religious orientations. This is in line with the concept of 1Malaysia that was introduced recently by the Malaysian Prime Minister, Dato' Sri Mohd Najib Tun Abd Razak, which emphasizes the notion of racial harmony and unity in Malaysia (EPU, 2010). The use of the same Spirituality measure can, in a small way, help to promote unity and oneness in the nation regardless of the many different races and religions of Malaysians.

However, I acknowledged that a single quantitative study of this scope has inherent limitations. There may be other Spirituality concepts unique to other religions than Christianity that cannot be quantitatively captured. Quantitative research design is a powerful and well-established research design, but the augmentation by multiple methods and approaches, including mixed methods and qualitative research, as well as further quantitative research can extend the promising conclusions of the current study.

In conclusion, my results promisingly support the Western-based ESI as valid for delineating Spirituality constructs in an Eastern multicultural context, as represented by a sample within the Malaysian context. My results also indicate that attempts should be made to further validate the MEV-ESI by investigating it in relation to other Spirituality measures, such as the Islamic Spirituality scale (Naail et al., 2011). Further, my findings support the ESI as a well-designed, "sociopsychometric" measure meeting Moberg's (2002) criteria: "any well designed sociopsychometric scale to measure it should be appropriate for all people because of

their common humanity, with but minor adaptations for social, cultural, and linguistic differences" (p. 49). The implications of this study's findings are particularly important for any researcher and larger international communities who doubt the usefulness of the ESI in measuring Spirituality in a context other than a Western, Judeo-Christian context.

CHAPTER 4: Personality and Spirituality

This chapter reports the psychometric evaluation of a Western-generated and well-established Personality instrument The Big Five Inventory (BFI), in regard to its appropriateness for the Malaysian context. This involved translating it into the Malay language and validating it using classical test theory. Further, in order to explore the nature of Spirituality in the context of Personality, this chapter reports an investigation of the relationship between Personality and Spirituality in the Malaysian context using the BFI and the Five-Factor Model (FFM) of Personality.

As a precursor to the latter, this chapter also provides a review of the relationship between Spirituality and Personality, justifying the role of Personality in the structural model described in Chapter One. Specifically, the review begins with a description of the importance of Personality in our life, followed by a discussion on the definition of Personality. Then, a brief review on the FFM of Personality is presented in order to inform our understanding of how our Personality is organized. Following this, there is a discussion on the measurement of Personality, to justify the adaptation of the BFI into a Malaysian context. Next, there is a review of the literature pertaining to the associations between Personality and Spirituality. Finally, this is followed by a section on the analyses and the interpretation of this study's results.

4.1. The Significance of Personality in Life

Personality, while having a common popular conceptualisation, is also, more specifically, a recognised domain within psychology concerned with the technicalities of more accurately describing people's typical characteristics, such as

outgoing, warm-hearted or imaginative (Matthews et al., 2009b). The veracity of the Personality constructs is supported by meeting various validity criteria such as predictive validity. For instance, past research has shown that Personality is an important predictor of job performance (Barrick & Mount, 1991); health outcomes such as overweight, obesity and, longevity (Pulkki-Raback, Elovainio, Kivimaki, Raitakari, & Keltikangas-Jarvinen, 2005); psychiatric disorders (Terracciano, Lockenhoff, Zonderman, Ferrucci, & Costa, 2008; Terracciano & McCrae, 2006); and Well-Being (Hagberg, Hagberg, & Saveman, 2002). Personality has also been linked to Spirituality (Simpson et al., 2007), which brings us to the main purpose of this research, that is to elucidate the nature of Spirituality constructs within the framework of Personality. Therefore, the next section will discuss the constructs of Personality and its association with Spirituality.

4.2. Understanding Personality

The growth in the Personality field has led to various conceptualizations of Personality. From among the earliest key proponents, Allport viewed Personality as "the dynamic organization within the individual of those psychophysical systems that determine his unique adjustments to the environment" (as cited in Cloninger, 2009, p. 48) while Cattell later defined Personality as "that which permits a prediction of what a person will do in a given situation" (as cited in Cloninger, 2009, p. 2). More latterly key researchers, McCrae and Costa (2003) propose Personality traits can be defined as "dimensions of individual differences in tendencies to show consistent patterns of thoughts, feelings, and actions" (p. 25).

These differences are but a sample of the wider differences across the entire domain. Personality scholars have a range of perspectives in defining Personality, reflecting a range of differing theoretical presuppositions and orientations. However,

regardless of their theoretical orientations, all Personality psychologists share a core conceptualization of Personality as “psychological qualities that contribute to an individual’s enduring and distinctive patterns of feeling, thinking, and behaving” (Pervin & Cervone, 2008, p. 8). In other words, the concept of Personality is well accepted as referring to a person’s consistent characteristics that may influence his or her overall functioning.

Although there are many perspectives to Personality, Pervin (2002) claims that a well-accepted, established, and effective way of examining and organizing Personality is through the construct of traits. His view is supported by McCrae and Costa (2003), who state that trait perspective is “compatible with a wide variety of theoretical approaches and because they have formed the basis for most research on Personality” (p. 20). The findings from biometric (twin, adoption, and family) studies have shown a substantial contribution of genetics to major Personality traits (Matthews, Deary, & Whiteman, 2009a). Accordingly, this research will focus on the trait approach to Personality.

4.2.1. A trait approach to personality.

Pervin and Cervone (2008) propose that generally, trait refers to “a consistent style of emotion or behaviour that a person displays across a variety of situations” (p. 10). To put it differently, individuals tend to behave, feel, and think in a consistent pattern over some time, across situations and contexts. For instance, if a person has been described as sociable, it is expected that he or she tends to act sociable over time (weeks, months, or even years) and across situations (with family, friends, associates, etc.).

On the issue of consistency of traits cross-culturally, Church et al. (2008) found that trait consistency differ from collectivist and individualistic culture. Their

findings suggested that trait consistency is more prevalent and reliable among the individualists culture than the collectivist. Perhaps this is due to the fact that in collectivistic cultures, behaviour is more influenced by contextual factors such as roles and relationships (Suh, 2002).

Although the trait perspective has been recognized as a sufficient way of examining Personality, there are still some arguments within the perspective itself. Perhaps, the most significant disagreement in trait psychology is concerning the number of trait dimensions necessary to capture the variance in human Personality (Matthews et al., 2009b). A review of Personality literature has shown that the number of factors within which the trait structure can be organized may be somewhat indeterminate, with propositions ranging from as many as sixteen, (Cattell, 1965) to seven (Church, 2000), to six (Ashton & Lee, 2007), to five dimensions (McCrae & John, 1992), down to three (Eysenck, 1970). This is because factors are a convenient way of grouping rather than seeking absolutes. It is, therefore, reasonable to look for the preferred model, rather than "the" model.

One of the developers of one of the most well-known trait instruments, McCrae (2009) recently claimed majority consensus among Personality researchers for his model that human Personality can adequately be captured with five factors. Data obtained from cross-cultural samples from around the world, and from many disciplines, support the utility of this FFM underpinning his Personality instrument (McCrae, 2010). This will be discussed further in the next section.

4.2.1.1. The five-factor model of personality (FFM).

"The widespread acceptance of the FFM in the 1990s led to systematic research on a variety of topics, allowing important advances in our understanding of Personality trait psychology" (McCrae & Costa, 2008b, p. 6). The dominance of the

FFM of Personality as the model of reference amongst the hierarchical models of Personality, such as Eysenck's three-factor model (1990) and Cattell's 16 Personality Factors (2004), is evident by the increasing number of publications related to the FFM. John et al. (2008) remark that the publications on the FFM have increased substantially since the mid-1980s while the publications relating to Eysenck's and Cattell's Personality models is decreasing. In fact, by 2006, the number of publications concerning the FFM exceeded 300 per year in comparison with less than 50 for the two older models of Personality.

Accepting the FFM and its parallel Big Five as seemingly the most appropriate structure for factorially mapping the domain, has most Personality psychologists concurring that human Personality is best summarized in terms of the five broad dimensions. These dimensions are *Extraversion* (the tendency to be warm, sociable, assertive), *Agreeableness* (the tendency to have pro-social orientation towards others), *Neuroticism* (the tendency to experience negative emotions such as anxiety and depression), *Conscientiousness* (the tendency to be well organized, persistent, and reliable) and *Openness to Experience* (the tendency to be imaginative, creative) (Matthews et al., 2009a; McCrae & John, 1992). Table 4.1 lists the five dimensional models of Personality and its illustrative adjectives.

Table 4.1

The Big Five Dimensions and its Relative Adjectives

Factor	Trait Dimension	Illustrative Adjectives Describing the High and Low ends of the Dimension
I	Neuroticism (N) (negative emotions, e.g., anxiety, depression)	Calm-worrying Unemotional-emotional Secure-insecure Not envious-jealous
II	Extraversion (E) (versus introversion)	Quiet-talkative Aloof-friendly Inhibited-spontaneous Timid-bold
III	Openness to Experience (O) (versus closed-minded)	Conventional-original Unadventurous-daring Conforming-independent Unartistic-artistic
IV	Agreeableness (A) (versus antagonism)	Irritable-good-natured Uncooperative-helpful Suspicious-trusting Critical-lenient
V	Conscientiousness (C) (versus undirectedness)	Careless-careful Helpless-self-reliant Lax-scrupulous Weak-willed-goal-directed

Source: Adapted from Mischel, Shoda and Smith (2004), p. 59.

From my discussion so far, it is clear that the majority of scholars agree that the FFM has become one of the most accepted Personality models (Costa & McCrae, 2011; John et al., 2008; McCrae, 2010), although some people such as Block (1995) and Boyle (2008) remain sceptical. Advocates of the FFM claim that this model's robustness and comprehensiveness is backed-up with evidence from numerous empirical researches. For instance, cross-cultural research has found strong support

for the replication of these five dimensions of Personality in various cultures, including Malaysia (McCrae, Terracciano, & 78 Members of the Personality Profiles of Cultures Project, 2005; Schmitt, Allik, McCrae, & Benet-Martinez, 2007).

Further evidence supporting the FFM's robustness and comprehensiveness come from lexical studies conducted in dozens of languages where five-factor solutions were discovered (McCrae, 2001; McCrae & Costa, 2008a). However, some researchers have argued that the finding from lexical studies also suggest that fewer or even more than five factors are viable options for capturing the full range of human Personality (Cheung, Cheung, Leung, Ward, & Leong, 2003; De Raad & Peabody, 2005).

On the issue of alternative Personality structures, McCrae (2009) has argued that the different models "added nothing that could not be subsumed by the FFM" (p. 13). For instance, in their study, Ashton et al. (2004) identified a sixth factor labelled as Honesty-Humility. However, McCrae and Costa (2008b) claimed that Honesty and Humility are two concepts that are conceptually and empirically related to the Straightforwardness and Modesty facets of Agreeableness assessed by the Revised NEO Personality Inventory (Costa & McCrae, 1992), hence can be subsumed under the rubric of Agreeableness. With no substantive difference in content coverage, I consider dominance to be an important deciding factor and hence the FFM of Personality to be a most appropriate framework for exploring Malaysian young adults' Personality.

McCrae (2001) further rebutted challenges to the robustness and universality of the FFM of Personality by claiming that some of the trait terms in one culture might be missing or misrepresented in another culture. For instance, poor replication of the Openness factor in Zimbabwe might be due to the lack of Shona-language adjectives

that reflect Openness (Piedmont, Bain, McCrae, & Costa, 2002). Likewise, Mastor, Jin and Cooper (2000) suggested that some of the Openness facets were poorly replicated in their Malaysian sample because they have no counterpart in Malaysian culture. McCrae (2009) also alludes to the possibility that supposed discovery of a new factor called Interpersonal Relatedness in Chinese Personality Assessment Inventory (CPAI) may be attributed to the difference in the number of factors set to be extracted in an analysis. He claimed that:

> In a joint factor analysis with the NEO-FFI, when six factors were examined, the FFM was supplemented with a factor defined by CPAI Harmony, Relationship Orientation, Thrift, Logical Orientation, Self-Orientation, Defensiveness and low Flexibility. However, when only five factors were extracted, the elements of this factor were simply redistributed among A and C factors. It thus appears that the FFM encompasses distinctively Chinese traits. (McCrae, 2009, p. 154)

Such evidence of the FFM's robustness across cultures has played a significant role in its wide acceptance among Personality researchers as the preferred model.

While the FFM is the preferred and apparently best empirically supported model, contrary arguments such as it lacks a theoretical basis have been put out by Block (1995) and more recently by Boyle (2008). But, McCrae and Costa (1996, 2008b) countered by offering the Five-Factor Theory (FFT) "that put the FFM into the context of a functioning Personality system" (McCrae, 2010, p. 60). In general, the FFT is a contemporary version of the trait theory (McCrae & Costa, 2008b). The details of the FFT are discussed in section 4.2.1.

The critique that the FFM has no established theoretical basis is one example of the types of significant criticisms levelled at the FFM over the years. Despite a

number of other similar critiques, the research community has nonetheless accepted the FFM currently as the most viable and preferred comprehensive and balanced model of cross-culturally relevant traits. The model arguably offers the best Personality taxonomy successfully used in numerous cultures and applications, justifying its appropriateness for this study.

The five-factor theory (FFT).

The FFT (Figure 4.1) is a recognition and response to FFM being atheoretical. Basically, FFT attempts to explain the function of trait in our life (McCrae & Costa, 2008a). Since the FFT is not a focus in this research, extended consideration is not warranted other than a brief description in order to make sense of FFM findings found in extant literatures.

McCrae and Costa (2008b) argue that a fundamental premise of FFT is that Personality traits, listed under the *basic component* category are biologically based and will not be affected with external influences, as articulated by McCrae et al. (2000) “traits are endogenous dispositions that follow intrinsic paths of development essentially independent of environmental influences” (p. 173). However, over time, traits interact with the environment to produce *characteristic adaptations* (all learned skills) and in some cases maladaptation, which in turn interacts with the situation to produce *objective biography* (outcomes which refers to everything a person does, thinks or feels) (McCrae & Costa, 2008a). As an illustration, in the FFT perspective, one might find that he or she is susceptible to Irrational Beliefs because he or she has an inborn propensity for being neurotic, and has undergone a number of significantly aversive life events. Figure 4.1 illustrates the components of Personality system described by the FFT.

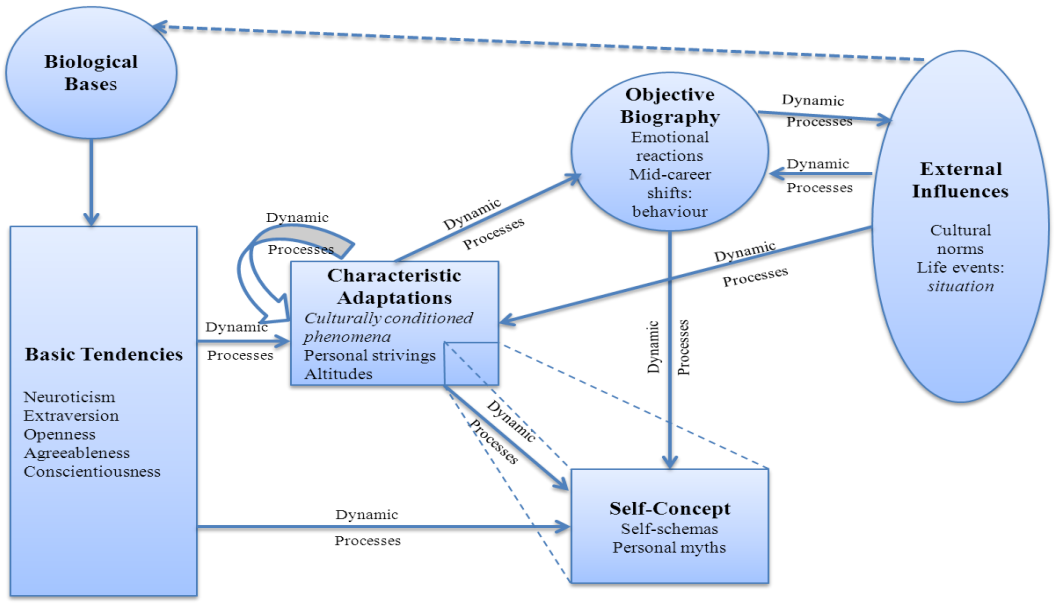

Figure 4.1. The five-factor theory Personality system. Adopted from McCrae and Costa (2008), p. 163.

Costa and McCrae (2011) and McCrae and Costa (2008a) claim that the strongest support for the FFT is through cross-cultural studies where Personality structure was found to be invariant across cultures. Cross-cultural findings also revealed universality in age and sex differences in Personality, with young adults higher in Neuroticism, Extraversion, and Openness and lower in Agreeableness and Conscientiousness in comparison to older adults. In terms of sex differences, women are found to be more anxious and tender-minded while men are more assertive and open to ideas (Costa & McCrae, 2006). Such findings offer compelling evidence of the FFT.

Adversaries of the FFT challenge the postulate that traits are endogenous and completely immune to environmental influences. Social Investment Theory (SIT) proposes the environmental effects on changing personality over long period of time. Specifically, personality traits development is largely the result of social role expectations (Roberts, Wood, & Smith, 2005). They assert that there is significant

evidence that appears to point towards the influence of environmental factors on Personality traits. For instance, researchers have shown that work experiences, experience of divorce, and acculturation are in some ways related to Personality changes (McCrae, Yik, Trapnell, Bond, & Paulhus, 1998; Roberts, Caspi, & Moffitt, 2003; Roberts, Helson, & Klohnen, 2002). McCrae and Costa (2008b) argue that these findings were ambiguous and inconsistent. Despite such debate, McCrae and Costa acknowledge that under certain conditions the environment (such as psychotropic medications and psychotherapy) may influence Personality traits, though this has not been reliably researched.

Considering the contrasting findings concerning the FFT, while definitive conclusions cannot be drawn regarding its utility in interpreting a large body of findings using the FFM, its postulates nevertheless grant us a better understanding of Personality traits. Despite the opinions of some critics, there is a widespread acceptance that the FFM offers a sufficient way of accounting for the variation in most Personality traits (McCrae, 2009) and can be theoretically interpreted with an evidence-based FFT (McCrae, Gaines, & Wellington, 2012).

Having made the case for the adequacy of the FFM in describing human Personality, the next section presents an overview of literature relevant to Personality.

4.2.2. Review of personality measurement literature.

In this section, literature pertaining to the measurement of Personality across cultures and how Personality relates to Spirituality is reviewed. This literature review is in order to understand the existing empirical basis of the relationship between Personality and Spirituality.

4.2.2.1. Measuring personality across cultures.

Impressive research findings have been reported on the universality of FFM across various cultures (see Allik & McCrae, 2004; De Fruyt et al., 2009; Eap et al., 2008; Piedmont & Chae, 1997; Schmitt et al., 2007). However, as mentioned before, some inconsistencies were found on the factor structure of the Big Five. For instance, Cheung and colleagues (2003) found an additional factor in their Chinese samples and seven underlying Personality factors were uncovered in Spanish samples (Benet & Waller, 1995). McCrae, Terracciano, & Members of the Personality Profiles of Cultures Project (2005) conducted one large-scale Personality study involving people from 50 different cultures. The findings report that while the factor structure of the Big Five was replicated in most of the 50 cultures such as Germany, Spain, and Australia, in several developing countries such as Malaysia, Lebanon, Botswana, Nigeria, and Morocco the factor structures were not so clearly replicated.

McCrae and colleagues suggest that the imperfect replications in these cultures might be due to poor data quality. There were a few reasons that may explain why the data quality was poor. Firstly, there was a possibility that a Western questionnaire might not have been appropriate to be used in non-Western cultures, or appropriately translated. English Personality terms in a Western context may not hold the same meaning and might reveal a different underlying Personality structure in another cultural context (Worrell & Cross, 2004). In other words, it is possible that Personality concepts relevant in one culture do not carry the same relevance in another culture. Secondly, the poor quality of the data obtained in non-Western cultures may have been because the particular respondents did not properly understand the questions, perhaps inexperienced with answering questions in that format (McCrae et al., 2005). Some researchers such as Nintachan and Moon (2007)

and Hilton and Skrutkowski (1990) propose that the poor understandability of the items may be due to inadequate translations of the items from English into another languages.

In Malaysia, some studies have examined Personality structure of Malaysians. Earlier on, Mastor et al. (2000) and Muhamad (2006) demonstrated that the Big Five factors were replicated in the Malaysian sample although the Personality dimension of Openness to Experience was not clearly replicated. The same findings have been reported in two-large scale studies by McCrae et al. (2005) and Schmitt et al. (2007). On the contrary, in their study, Yap and Othman (2010) found that only four Personality factors can be recognized through exploratory factor analyses. All items for both Conscientiousness and Extraversion were loaded together on Factor 1. Nevertheless, the Openness items were reported to have fair loadings on the intended construct, which contrasted earlier findings.

Nevertheless, it should be noted that the Openness factor is always the most debatable factor (Schmitt et al., 2007; Terracciano, McCrae, Brant, & Costa, 2005). A number of reasons have been cited for this. The first of which has to do with the factor-analytic methodology (Boyle, 2008). In factor analysis, each factor is extracted on the basis of residual variance left from extracting the previous factors (Tabachnick & Fidell, 2007) and after four factors this can become quite minimal, making it very difficult to identify any further substantive factors. Another reason cited is the cultural consequences of Openness (McCrae, 2004). It is possible that in a collectivist culture such as Malaysia (Hofstede, 2001) the meaning of Openness is interpreted differently from that in Western individualistic culture (Mastor et al., 2000). Therefore, while the factor is relevant in such a culture, it may be obscured by a certain degree of denial.

Also, as mentioned before, the mixed findings in Malaysian culture may either reflect the true cultural/developmental differences or lower data quality among samples, caused by poor instrument translation (De Fruyt et al., 2009). A closer look into the published Personality research in Malaysia indicates that the methodological issues and experiences in the work of translation have not been emphasized. For instance, research by Muhamad and Jaafar (2009) only stated that the survey instruments were translated into the Malay language whilst Yap and Othman (2010) stated that the instruments used in their study have been translated from English to both Malay and Mandarin (another language commonly used by Malaysian Chinese).

Rather commendable is the work by Mastor et al. (2000) where they described the process of translation and back-translation of the NEO-PI-R to investigate the applicability of FFM of Personality to Malay culture. Even so, they did not address the methodological issues and problems encountered during the back-translation processes. I consider this to be an important point in motivating the current research. I therefore incorporated the details of translation process and the problems I encountered while translating the current study instruments.

Recently, Teh, Yong, Chong and Yew (2011) surveyed 255 Malaysian graduate students to explore the role of Big Five Personality factors in determining their attitudes towards online entertainment knowledge sharing behaviours. They have validated the BFI (John et al., 1991) prior to the investigation of the relationships between the study variables. The composite reliabilities (calculated using the actual factor loadings) for Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness are 0.70, 0.63, 0.53, 0.65 and 0.80, respectively. The composite reliabilities for all Personality variables except Conscientiousness indicated

acceptable internal reliability with values greater than 0.60. The results from the validity test revealed that convergent and discriminant validity was achieved.

On the whole, literature on cross-cultural applicability of Personality measurement revealed mixed support for the FFM. Nevertheless, it appeared that a large body of cross-cultural research has demonstrated that the FFM of Personality has been supported in various cultures, including Malaysia. This gives rise to the following hypothesis:

> *Hypothesis 3 (H3):* The Five-Factor Model (FFM) of Personality is applicable in the Malaysian context.

The discussion of H3 will be presented in Section 4.4 at page 146.

4.2.2.2. Associations between spirituality and personality.

This section reviews literature that discusses the relationship between Spirituality and Personality. As already reported, both Spirituality and Personality play a significant role in our Well-Being. Given the interest in both Spirituality and Personality and the substantive research in each field, it is somewhat surprising to find that very little research has been conducted to directly investigate the relationship between Personality and variables referring to religious or spiritual concerns (Ozer & Benet-Martínez, 2006, p. 405).

One of the seminal Western studies was undertaken by MacDonald (2000b) using 993 undergraduate students at the University of Windsor, Canada (mean age = 21.02). His study revealed that different domains of Spirituality correlate with different domains of Personality. For instance, Experiential/Phenomenological Dimension of Spirituality (EPD) and Paranormal Beliefs (PARA) correlate most with Openness while Religiousness (REL) with Agreeableness and Conscientiousness. Cognitive Orientation towards Spirituality (COTS) display the strongest association with Agreeableness and Existential Well-Being (EWB) correlate strongly and

negatively with Neuroticism. MacDonald concluded that all dimensions of Spirituality, with an exception of EWB are independent of the FFM of Personality. It appeared from MacDonald's study that EWB reflects the positive pole of Neuroticism. With his findings, MacDonald (2000b, p. 154) concluded that "the dimensions of the FFM appear to differentially relate to the major elements of Spirituality but are nevertheless conceptually unique".

In the United States, Simpson, Newman, and Fuqua (2007) surveyed 190 adults in their study aimed to investigate the structure of Spirituality and its relationship with Personality. Factor analysis with four frequently referenced Spirituality instruments, including the Spiritual Well-Being Scale and Spiritual Assessment Inventory, revealed the emergence of three underlying components, which were named as Positive Relationship with God (PRWG), Negative Relationship with God (NREWG), and Utilitarianism (refers to religious experiences in a utilitarian context). They also found that each of the five Personality dimensions (measured with the NEO Five-Factor Inventory) was significantly correlated with the PRWG, while Extraversion was the only dimension that did not correlate significantly with NREWG. However, no significant relationship was found between Utilitarianism and the Personality dimensions. The authors concluded that individuals with healthier spiritual orientation also tend to possess positive Personality traits. However, causal relationships cannot be established due to the correlational nature of their study.

In extending the above findings, Laher and Quy (2009) conducted a study aimed to examine the relationship between Personality and Spirituality in an African context. While their findings concurred with the previous (MacDonald, 2000b), their findings also suggested that the relationship between Spirituality and Personality was not consistent. They concluded that there is "no single trait that seems to account for

Spirituality" (p. 515), suggesting the ubiquitous nature of Personality-Spirituality traits relationship.

A literature review of Personality and Spirituality in the Malaysian context in several databases such as PsycINFO, Medline, ERIC and Web of Science failed to locate any research reporting any relationship between the two. However, there are a few studies that indirectly discussed Spirituality and Personality such as Krauss et al. (2005) and Krauss et al. (2007), which explored "Muslims Religious Personality". In essence, Krauss et al. (2005, 2007) found that the measure they developed, the Muslim Religiosity-Personality Measurement Inventory is valid and reliable for use with Islam, Christianity, Buddhism, and Hinduism. Also, they reported that in their sample, the Religious Personality can be described with three dimensions namely, self (self-directed), social (interpersonal-interactive), and Ritual (formal worship). Examples of another research include those by Setiyawati and Abdul Rahman (2007) which reported on Spirituality and Personality correlates of organizational citizenship behaviour and Mohamad, Mokhtar, and Samah (2011) which discussed Spirituality as an indicator of personal growth. The absence of research in regard to the relationship between Spirituality and Personality in a Malaysian context is regrettable considering the utility of FFM as a reference point for investigating and interpreting conceptual dimensions of Spirituality, as discussed earlier in Chapter Three.

In view of the overall discussion so far, it seems that some relationships between Personality traits and Spirituality have been established. Furthermore, the specific ways in which Spirituality is related to Personality suggests a conceptual uniqueness of these dimensions in relation to FFM of Personality. While there is some evidence suggesting certain relationships, there is insufficient evidence on which to base any

definitive conclusions. This gives rise to the following research question (RQ2): *What is the relationship between Spirituality and Personality in the Malaysian context*? This will be addressed in section 4.5.

4.3. Measurement of Personality

In this section, the methodology for measuring Personality is presented. Additional evidence on the attractiveness of FFM is apparent through the development of numerous instruments to measure these five dimensions. Some of these well-known instruments include the Revised NEO Personality Inventory (NEO-PI-R, Costa & McCrae, 1992), the NEO Five Factor Index (NEO-FFI, Costa & McCrae, 1992), the 100-item Trait Descriptive Adjectives (TDA, Goldberg, 1990) and the Big Five Inventory (BFI, John et al., 1991). Perhaps the most comprehensive instrument designed to measure the FFM is the NEO-PI-R. The recognition of NEO-PI-R as the tool for assessing the five Personality dimensions is obvious when it was translated into many different languages and distributed to thousands of people in dozens of cultures around the world (Schmitt et al., 2007). The NEO-PI-R has already been translated into over 30 languages, including Malay (Mastor et al., 2000).

4.3.1. The English-version of the BFI.

Even though the comprehensiveness of the NEO-PI-R in measuring the Big Five Personality dimensions is well documented, some researchers such as Benet-Martinez and John (1997), Soto and John (2009), and Egan et al. (2000) argued that it is rather lengthy (consists of 243 items) and may not be economical to use in many clinical and research settings. When time and cost is a serious consideration, a shorter and briefer, though comparatively robust, measure is called for and for this the BFI was developed.

The BFI was developed to represent the Big Five prototype definitions (see John et al., 2008). The BFI includes 44 items divided into five subscales: Extraversion (8 items), Agreeableness (9 items), Conscientiousness (9 items), Neuroticism (8 items), and Openness (10 items). The items are measured on a 5-point Likert scale, ranging from *strongly disagree* to *strongly agree*. Some of the items are reversed scored to control response biases. Scale scores are computed as the participant's mean item response. Examples of items are: "is talkative (Extraversion)" and "is helpful and unselfish with others" (Agreeableness). Please refer to Appendix C(I) for the full version of the English BFI.

The BFI items are easy to understand as it uses short phrases based on the trait adjectives that serve as the prototypical markers of the Big Five. John et al. (2008) further claim that the brevity of the BFI does not sacrifice its good psychometric properties. As an example, in U.S. and Canadian samples, the alpha reliabilities average above .80. In terms of validity, the BFI demonstrate substantial convergent and divergent relations with other Big Five instrument such as the NEO-PI-R.

Given the brevity and reasonable psychometric properties of the BFI, I consider it an appropriate instrument to assess the five Personality dimensions in a Malaysian context. Even though findings using a Malay-translated version of the BFI have been reported (for examples see Muhamad & Jaafar, 2009; Schmitt et al., 2007; Yap & Othman, 2010), the translation and validation process of this scale has not been reported.

In the current study, the BFI was translated using the translation method described in Chapter Two, resulting in the Malay experimental version of the BFI (MEV-BFI) (Appendix C [II]). The translation results are presented in the next sections.

4.3.1.1. Semantic equivalence.

As with the Spirituality items translated in Chapter Three, translation of items in the MEV-BFI typically did not reproduce into an exact transliterated copy of the original items. As an example, item “is reserved” was back-translated into “is less open”. A mere transliteration of this item into the Malay language may result in several words such as “*terpelihara*” or “*dikhaskan*”, which can ambiguously be interpreted as put aside or specially allocated for a particular person or at a particular time. These terms however, did not rightfully capture the intent of the original item. Please refer to Appendix K for the full results of the translation/back-translation of the BFI.

Equivalence testing between the English BFI and the MEV- BFI.

A problem in maintaining the semantic equivalence across languages was evident in the translation process of the BFI, to which end equivalence testing between the English BFI and the MEV-BFI was conducted using the procedures described by Sperber, DeVellis and Boehlecke (1994), described in Chapter Two.

Equivalence testing which was conducted by two native English speakers (refer to Chapter Two for details), indicated that 5 items in the MEV-BFI were not comparable to its original items (full results are shown in Appendix K). Please refer to Table 4.2 for the details of the non-semantically equivalent items:

Table 4.2

Problematic Items in the Translation/Back-Translation version of the BFI

No item	Original version	Malay Version			Reconciled Version A	Back-translated Version	Mean Score	Reconciled Version B	Back-translated into English
		A	B	C					
1	Is talkative	*Kuat bercakap*	*Peramah*	*Ramah*	*Peramah*	Is friendly	2	*Banyak bercakap*	Is talkative
16	Generates a lot of enthusiasm	*Sentiasa bersemangat*	*Sering menghasilkan sikap sangat berminat terhadap sesuatu situasi atau pekerjaan*	*Menghasilkan minat*	*Menghasilkan minat yang tinggi*	Creates strong interest	3.5	*Sentiasa bersemangat*	Often enthusiastic
18	Tends to be disorganized	*Tidak teratur*	*Tidak teratur/tidak kemas*	*Tidak teratur*	*Agak tidak teratur*	Is quite unmanageable	2	*Cenderung untuk menjadi tidak kemas*	Tends to be not organized
27	Can be cold and aloof	*Tidak berapa gemar bergaul dengan orang lain*	*Boleh menjadi seorang yang tidak peramah*	*Kadangkala tidak mesra*	*Adakalanya tidak berapa gemar bergaul dengan orang lain*	Sometimes does not really mix around with other people	2	*Boleh menjadi dingin dan menyendiri*	Can be cold and distant
41	Has few artistic interests	*Agak meminati bidang artistik*	*Mempunyai minat artistik yang terhad*	*Minat seni tertentu*	*Agak meminati bidang artistik*	Is quite interested in artistic domain	1	*Mempunyai minat artistik yang terhad*	Possess limited artistic interests

As can be seen in Table 4.2, some of the words are ambiguous and untranslatable into Malay. For instance, “generates a lot of enthusiasm” was literally translated into “creates strong interest”, which according to the English evaluators was not equivalent. This is because enthusiasm can be understood in many other different ways such as “strong excitement” or “eager enjoyment”. Similarly, to the Malay translators, “Is talkative” was misunderstood as “Is friendly”. It seemed that the word *talkative* was equated with *friendly*, which has a different meaning in English.

A semantic problem was also detected in the item “can be cold and aloof”, when it was misinterpreted into “sometimes does not really mix around with other people”. Perhaps the translators tried to capture the whole meaning of the sentence rather than literally translating it. However, since the word *cold* itself is rather ambiguous (can be treated as either adjective or noun), the intent of the item cannot be fully comprehended. It is likely that this item can be best understood with more elaboration on the concept and the context, so the meaning can be truthfully captured.

In this study, the clarity of item “has few artistic interests” was questionable because two of the translators had misunderstood this item as “is quite interested in artistic domain”, which significantly deviated from the original meaning. A simple transliteration may lead to an invalid item and may cost the validity of the scale as a whole. For all five problematic items, re-translations were conducted and the results were compared until satisfactory translations were achieved, as illustrated in the last column in Table 4.2. The final version of the MEV-BFI was deemed to be semantically equivalent to the original BFI.

4.3.1.2. Conceptual equivalence.

Problems associated with conceptual equivalence were not detected in the MEV-BFI. Perhaps, Personality traits are not unique to any one culture, as hypothesized by the FFT, and also as evident in many cross-cultural researches (McCrae et al., 2005; Schmitt et al., 2007). This can further be confirmed with the CFA, which will be discussed in section 4.4.

To summarize, the findings from this study demonstrated the importance of establishing the equivalence between the source language and the target-language versions of the surveys, so as to enhance the scale's reliability and validity. Having reached satisfactory item equivalence, the next step was to pilot test the MEV-BFI.

Similar to the MEV-ESI, all 20 respondents reported no concerns regarding the clarity of the instructions and questions in the MEV-BFI. Further amendment was therefore unnecessary and it was ready for validation.

4.4. Validation Results and Discussions

In this section, the results for one-factor congeneric measurement model and two multi-factor confirmatory factor analyses are presented. The same cut-off criteria for evaluating model fit applied in Chapter Three were used.

In this research, five single-factor congeneric models (Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to Experience) of the latent variables were evaluated and discussed.

4.4.1. A congeneric model of extraversion.

In the English BFI, Extraversion is measured with eight items (Figure 4.2). All fit indices suggested that the model did not fit the Malaysian data well, indicating the need for model re-specification.

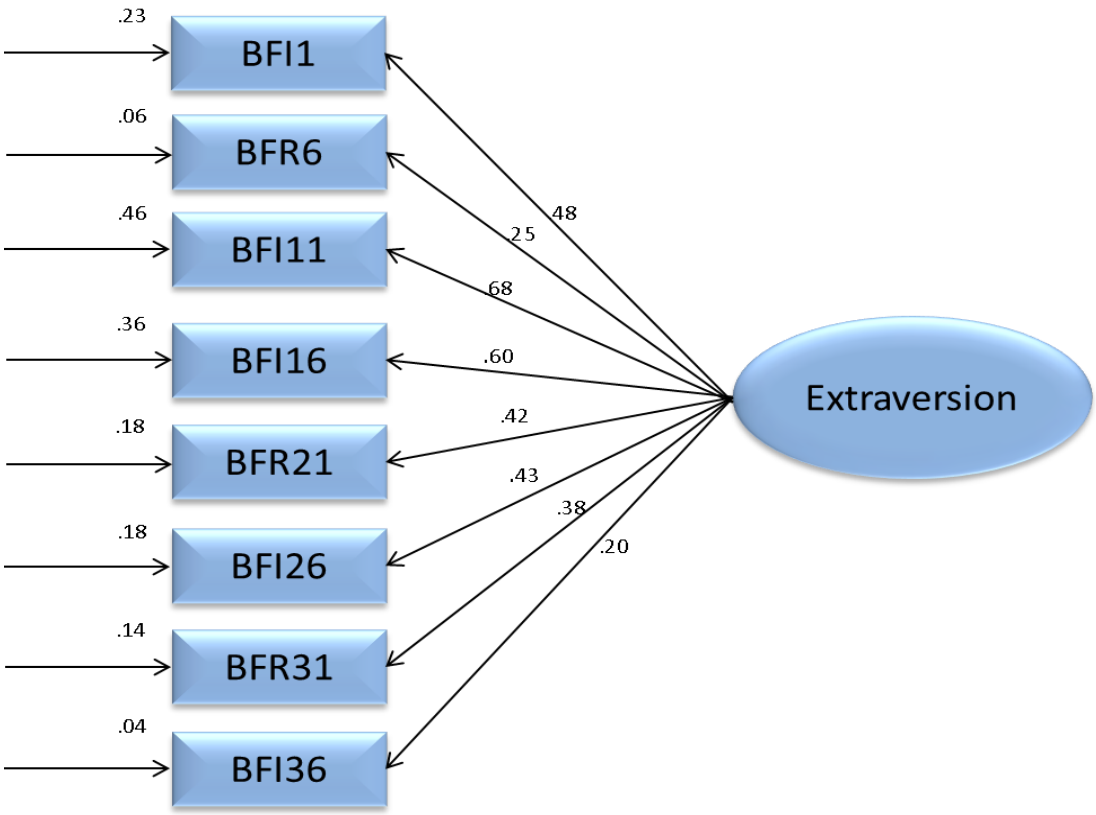

Figure 4.2. A single factor model for Extraversion
Note. BFR6, BFR21 and BFR31 are negatively worded items; Chi-square = 112.027; df = 20; Bollen Stine p-value = .002; CMIN/df = 5.601; SRMR = .09; RMSEA = .140; CFI = .65; TLI = .51.

For this reason, the Modification Indices (MI) was examined. The MI suggested that freeing the error covariance between BFI1 “talkative” and BFR21 “is rather quiet” would improve the model fit. The pairing of error terms associated with both items could mean that there is high degree of overlap in non-relevant item content, despite the wording of the items being quite distinct (Byrne, 2010). Since the overall model fit was still unsatisfactory, it was decided that item 21 should be removed

from the scale based on its low SMC (0.03), suggesting it may have minimal variance accountable for in terms of Extraversion that it was intended to indicate.

Following the removal of BFR21, the fit indices were still inadequate. MIs suggested that there was a possibility of non-relevant content overlap between BFI1 “talkative” and BFI36 “likes socialising”. Since it makes substantive sense that those who perceived themselves as talkative are also very likely to be outgoing, the error covariance between these two items was set free to be estimated. Even though the overall fit indices improved, the cut-off criteria still were not met. An inspection on the SMC suggested that BFI36 should be removed from the scale, which resulted in a significant improvement in model fit. Even so, the SMC for BFR6 “is less open” was very low (0.05), reflecting its disconnection with the rest of the Extraversion items. An attempt to remove it from the scale resulted in a seriously overfit model (TLI = 1.02), therefore it was decided that at this stage, this item will be retained. Refer to Table 4.3 for the steps taken to improve the model fit of Extraversion trait in the Malaysian sample.

Table 4.3

One-Factor Congeneric Model Analysis of Extraversion and Respecification Statistics

	Test Statistics		**Fit Indices**					**Item Statistics**
Biggest (+ve) Modification Index	**Bollen-Stine p**	**Chi-square**	**CMIN**	**RMSEA**	**SRMR**	**CFI**	**TLI**	**Lowest R^2 /Item no**
Original model	.002	112.027	5.601	0.140	0.09	.65	.51	.04/BFI36
e1 ⟷ e21	.006	60.50	3.184	0.100	0.07	.84	.77	.03/BFI36
Remove BFR21	.05	29.996	2.143	0.07	0.06	.90	.85	.03/BF36
Remove BFI36	.206	14.264	1.585	0.05	0.04	.94	.94	.05/BFR6

Note. ⟷ indicates covariation

The final well-fitted model of Extraversion in a Malaysian context is illustrated in Figure 4.3. As can be seen from Figure 4.3, BFI11 “is full of energy” was the key indicator of Extraversion trait in Malaysian young adults. The latent factor, Extraversion, explained 56% of variance in the subscale “is full of energy”.

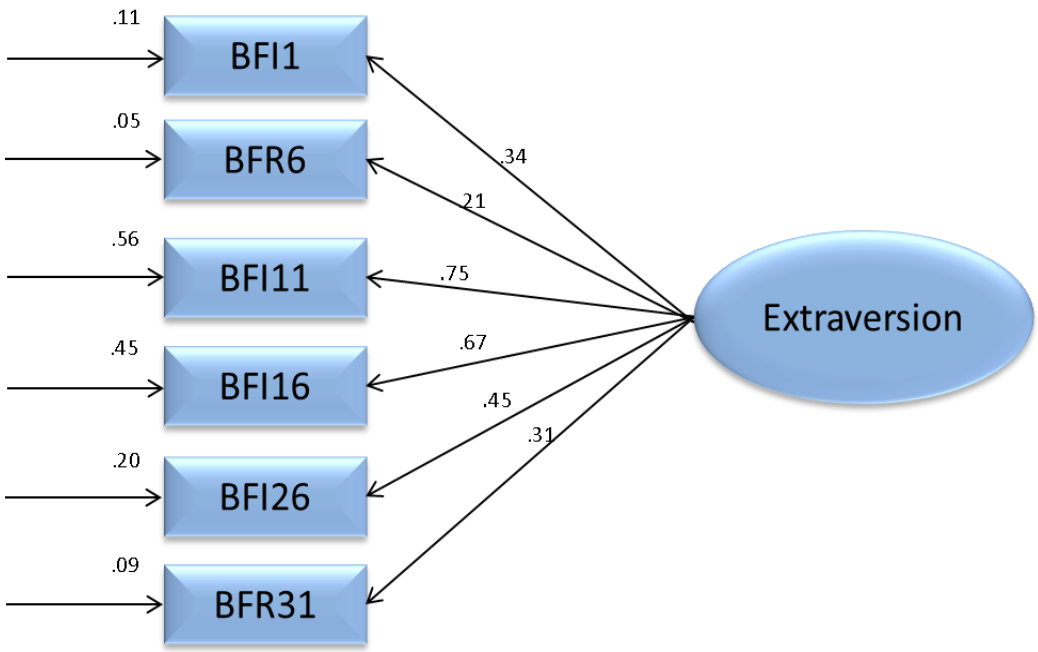

Figure 4.3. A revised single factor model for t Extraversion
Note. Chi-square = 14.264; df = 6; Bollen Stine p-value = .206; CMIN/df = 1.585; SRMR = .04; RMSEA = .05; CFI = .96; TLI = .94.

4.4.2. A congeneric model of agreeableness.

Nine observed variables were used to measure the Agreeableness dimension (Figure 4.4).

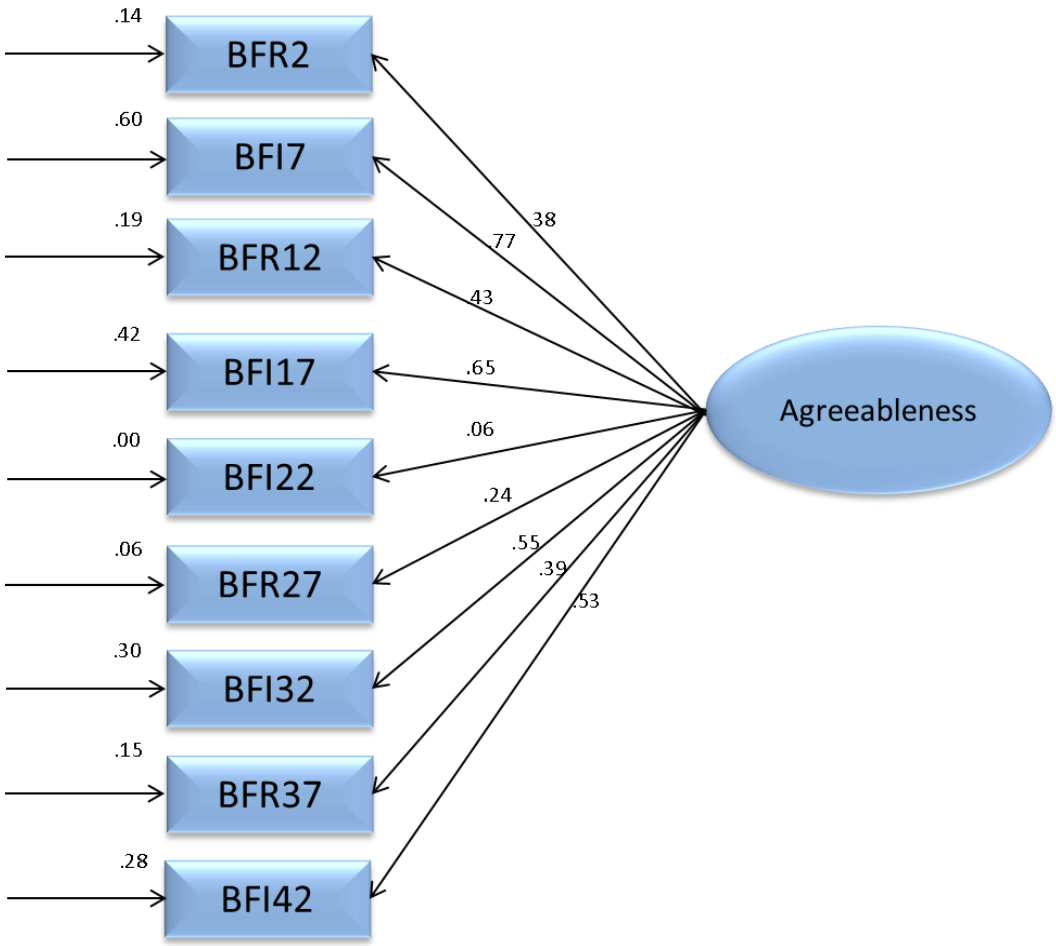

Figure 4.4. A single factor model for Agreeableness
Note. BFR2, BFR12, BFR27 and BFR37 are negatively worded items;
Chi-square = 229.203; df = 27; Bollen Stine p-value = .002; CMIN/df = 8.489; SRMR = .15; RMSEA = .179; CFI = .57; TLI = .43.

The chi-square statistic and fit indices suggested that the model did not fit the data well and that there was a need to consider adjustments. The MI showed that the model fit can be improved by co-varying the error terms of BFR12 “creates dispute with other people” and BFR37 “sometimes untactful to other people”. The most feasible explanation appeared to be that these two items share a degree of similarity in terms of extraneous non-agreeableness specific; a person who starts quarrels with others tends to be rude to others as well. However, even with the pairing of the error terms, the fit indices were still inadequate. Further inspection on the SMS indicated

that it was reasonable to remove BFR37 because of its lowest correlation with other items in the scale (0.011).

Upon re-specification, satisfactory chi-square statistic and fit indices still could not be achieved. The biggest positive MI was exhibited by item BFR12 and BFR27 “can be cold and distant”. At this stage, it was considered that the error term of BFR12 needed to be co-varied again, suggesting it should be dropped from the scale. The removal of BFR12 resulted in better model fits, albeit still unsatisfactory. The MI suggested that the error terms of BFR2 “tends to find fault with other people” and BFR27 should be freed. Further inspection on the SMC suggested that it was appropriate to delete BFR27, as it displayed the lowest SMC (0.011). The deletion of BFR27 resulted in acceptable fit indices; however, the SMC of BFI22 “is generally easy to trust other people” was very low (0.03), reflecting little commonality with the rest of the Agreeableness items. The irrelevance of this item was probably due to the age of the respondents where according to Steinberg (2013), adolescents undergo changes in their cognition where they does not accept other people’s point of view unquestioningly, instead they evaluate the view against other possible beliefs. Perhaps, this is the reason why BFI22 does not represent Agreeableness factor in this sample .As a result of these considerations, BFI22 was removed from the scale. Table 4.4 summarizes the re-specification steps in fitting the Agreeableness model in the Malaysian sample.

Table 4.4

One-Factor Congeneric Model Analysis of Agreeableness and Respecification Statistics

	Test Statistics			Fit Indices				Item Statistics
Biggest (+ve) Modification Index	**Bollen-Stine p**	**Chi-square**	**CMIN**	**RMSEA**	**SRMR**	**CFI**	**TLI**	**Lowest R^2 /Item no**
Original model	.002	229.203	8.489	0.179	0.15	.57	.43	.003/BFI22
e12 ⟷ e37	.002	171.844	6.609	0.154	0.14	.69	.57	.011/BFI22
Remove BFR37	.002	130.471	6.524	0.153	0.12	.69	.57	.013/BFI22
e12 ⟷ e27	.002	82.035	4.318	0.119	0.10	.82	.74	.013/BFR27
Remove BFR12	.002	53.441	3.817	0.109	0.09	.85	.78	.013/BFR27
Remove BFR27	.190	13.060	1.451	0.044	0.04	.98	.97	.026/BFI22
Remove BFI22	.459	4.967	.993	0.000	0.03	1.00	1.00	

Note. ⟷ indicates covariation

It should be noted that in the final model, the SMC of BFR2 (.07) was inadequate, but it was maintained in the scale because its deletion would result in an over-fitting model. The final model of Agreeableness, as fitted in the Malaysian sample (Figure 4.5) revealed that the item with the largest weighting and best described Agreeableness was BFI7 “likes helping other people and not selfish”.

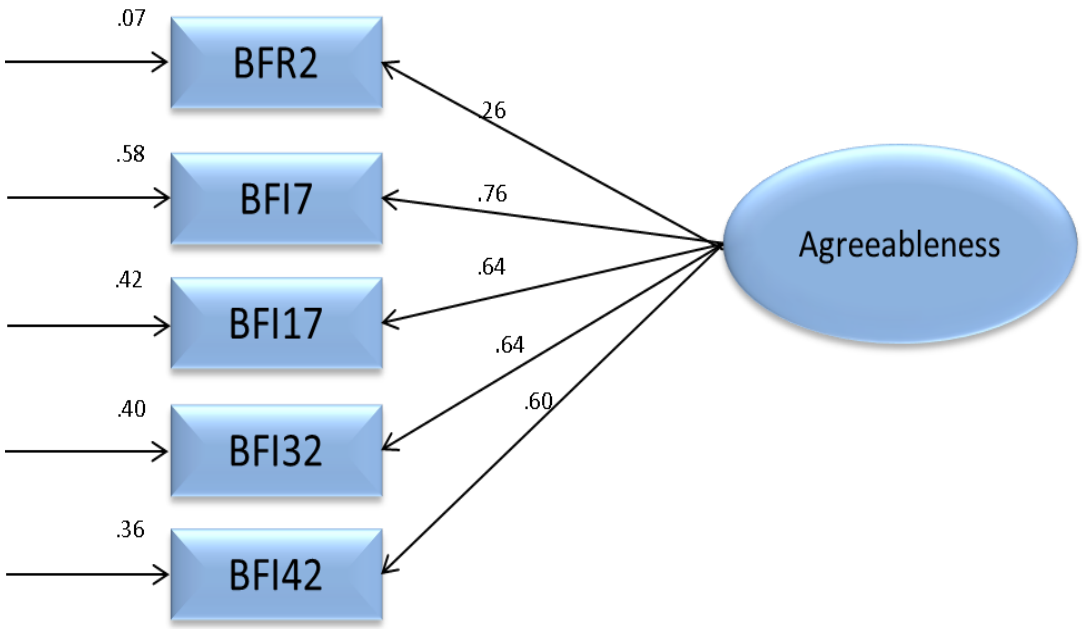

Figure 4.5. A revised single factor model for Agreeableness
Note. Chi-square = 4.967; df = 5; Bollen Stine p-value = .45; CMIN/df= .993; SRMR = .026; RMSEA = .000; CFI = 1.00; TLI = 1.01.

4.4.3. A congeneric model of conscientiousness.

The original model of Conscientiousness consists of 9 items (Figure 4.6). The overall model fit appeared inadequate and needed modification.

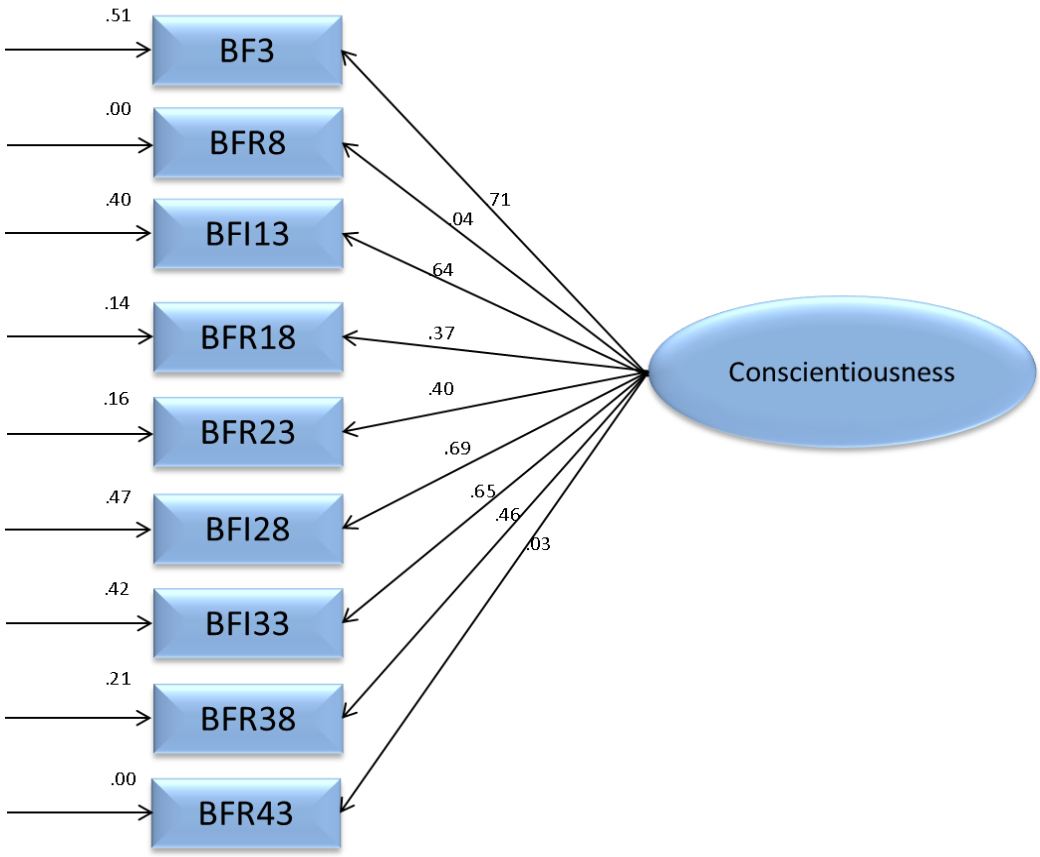

Figure 4.6. A single factor model for Conscientiousness
Note. BFR8, BFR18, BFR23 and BFR43 are negatively worded items;
Chi-square = 145.160; df =27; Bollen Stine p-value = .002; CMIN/df = 5.376; SRMR = .105; RMSEA = .136; CFI = .73; TLI = .64

Expected change statistics of error covariances revealed a misspecification associated with BFR18 “tends to be not organized” and BFR23 “is quite lazy”. It is understandable that these two items overlap because a lazy individual may also become disorganized, and so it was decided that the associated error terms were to be co-varied. Further, the lowest SMC (.000) was exhibited by BFR43 “has short attention span” suggesting that as an item that shared no significant variance with the factor, it should be removed from the scale. Upon deletion, significant MIs were still identified between BFI3 “does work in precision and perfection” and BFR18 as well as BFR8 “is sometimes careless” and BFR23. Looking at the SMC it was evident that BFR18 and BFR8 exhibited the lowest SMC. Both items were removed from the

scale. The removal of both items resulted in significant improvement model fit (as shown in Table 4.5), however, the RMSEA was still unacceptable. The MI and SMC further suggested that BFR23 should be deleted from the scale. Upon deleting BFR23, the better-fit model was identified, with significant enhancement to the overall fit of the model (Table 4.5).

Table 4.5

One-Factor Congeneric Model Analysis of Conscientiousness and Respecification Statistics

	Test Statistics		**Fit Indices**					**Item Statistics**
Biggest (+ve) Modification Index	**Bollen-Stine p**	**Chi-square**	**CMIN**	**RMSEA**	**SRMR**	**CFI**	**TLI**	**Lowest R^2 /Item no**
Original model	.002	145.160	5.376	0.136	0.11	.73	.64	.001/BFR43
e18 ⟷ e23	.002	94.188	3.623	0.106	0.09	.84	.78	.000/BFR43
Remove BFR43	.002	46.814	2.464	0.079	0.06	.93	.90	.001/BFR18
Remove BFR18	.004	34.442	2.460	0.079	0.06	.93	.90	.001/BFR8
Remove BFR8	.026	24.262	2.696	0.085	0.05	.95	.92	.117/BFR23
Remove BFR23	.758	3.200	.634	0.000	0.01	1.00	1.01	

Note. ⟷ indicates covariation

The final Conscientiousness model in the Malaysian sample was illustrated in Figure 4.7. As can be seen, the SMC of BFI38 “makes plans and follows the planning” did not display an acceptable SMC; however, an attempt to exclude it from the scale resulted in a seriously overfit model, therefore at this stage, it will be retained in the scale. From the results, we can see that the largest weighting and best described Conscientiousness was BFI3 “does work in precision and perfection”.

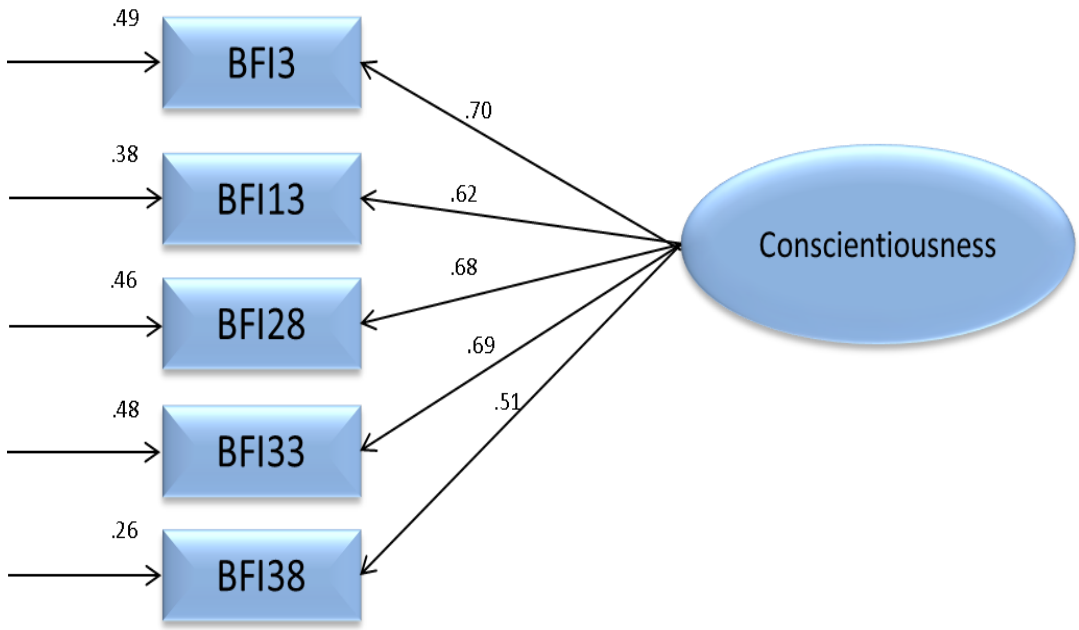

Figure 4.7. A revised single factor model for Conscientiousness
Note. Chi-square = 3.200; df = 5; Bollen Stine p-value = .758; CMIN/df = .634; SRMR = .017; RMSEA = .000; CFI = 1.00; TLI = 1.01.

4.4.4. A congeneric model of neuroticism.

Neuroticism was measured by eight items. Figure 4.8 showed that the model did not fit the Malaysian data well with a significant chi-square value, $\chi^2(20) = 96.544$; Bollen-Stine p-value = 0.002. Hence, model re-specification is indicated.

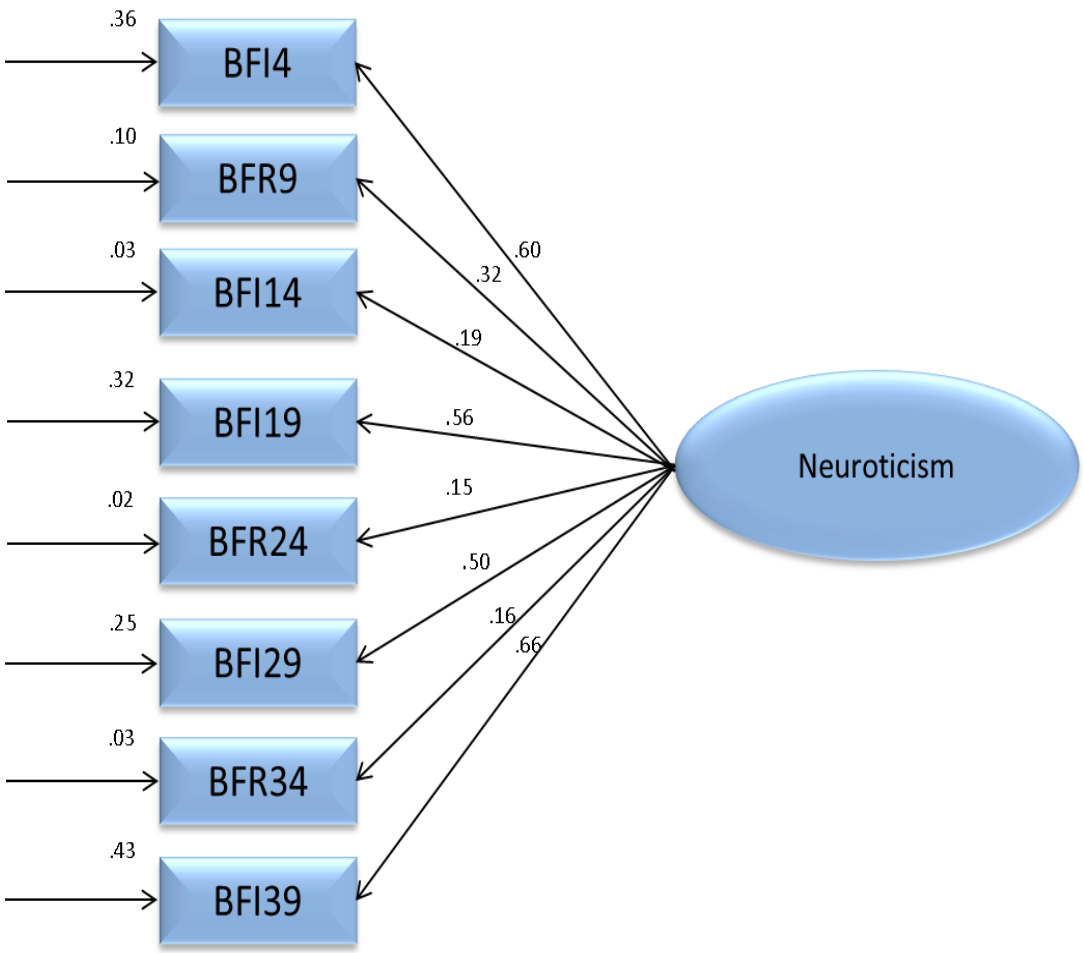

Figure 4.8. A single factor model for Neuroticism

Note. BFR9, BFR24, BFR23 and BFR34 are negatively worded items; Chi-square = 96.544; df =20; Bollen Stine p-value = .002; CMIN/df = 4.827; SRMR = .101; RMSEA = .128; CFI = .66; TLI = .53.

Statistics from MI and SMC indicated a significant problem with BFR9 "is calm and able to control stress efficiently", suggesting that deletion of this item should result in a decrease of the χ^2 statistic and significant improvement in the other fit indices. Yet, its actual deletion only marginally affected the overall fit statistics, indicating further re-specification as needed. An adhoc attempt revealed that improvement in the overall model fit could be achieved by co-varying the error terms for BFR24 "is emotionally stable, not easily upset" and BFR34 "keeps calm in stressful conditions". Since both items showed relatively poor correlations with all

other items in the scale (SMC of 0.009), it was decided that both items should be deleted. The deletion of these items resulted in a well-fitted model, as shown in Table 4.6.

Table 4.6

One-Factor Congeneric Model Analysis of Neuroticism and Respecification Statistics

	Test Statistics		**Fit Indices**					**Item Statistics**
Biggest (+ve) Modification Index	**Bollen-Stine p**	**Chi-square**	**CMIN**	**RMSEA**	**SRMR**	**CFI**	**TLI**	**Lowest R^2 /Item no**
Original model	.002	96.544	4.827	0.128	0.10	.66	.53	.023/BFR24
e9 ⟷ e34	.002	61.030	3.212	0.097	0.08	.81	.73	.010/BFR9
Remove BFR9	.050	32.180	2.299	0.074	0.06	.88	.82	.009/BFR24 &34
Remove BFR24	.132	16.457	1.829	0.060	0.05	.95	.91	.007/BFR34
Remove BFR34	.108	10.179	2.036	0.060	0.04	.96	.93	.005/BFI14

Note. ⟷ indicates covariation

As can be seen from Table 4.6, the SMC for BFI14 “is sometimes stressed” was unacceptable. An attempt to remove it from the scale resulted in an over-fitting model, thus it was retained. The final well-fitted model of Neuroticism in the Malaysian sample is shown in Figure 4.9. The best item to describe Neuroticism trait in the sample was BFI39 “is easily panicked”.

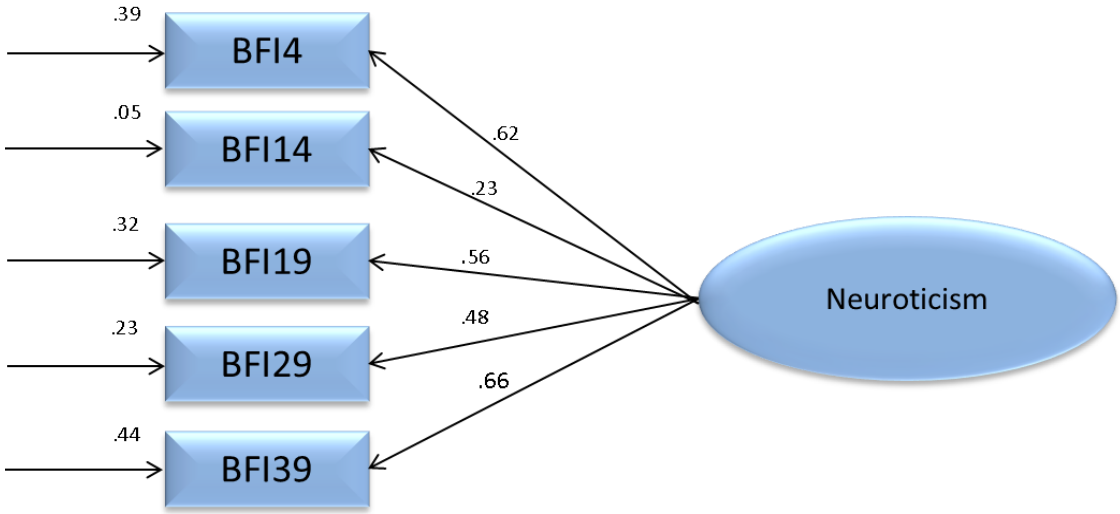

Figure 4.9. A revised single factor model for Neuroticism
Note. Chi-square = 10.179; df = 5; Bollen Stine p-value = .108; CMIN/df = 2.036; SRMR = .044; RMSEA = .066; CFI = .96; TLI = .93

4.4.5. A congeneric model of openness to experience.

In the BFI, Openness is measured with ten items. Figure 4.10 shows the standardized parameter estimates and fit indices used to evaluate this model. It can be seen that the model was a poor fit to the data with $\chi^2(35) = 78.145$; Bollen-Stine p-value = 0.018 and inadequate fit indices.

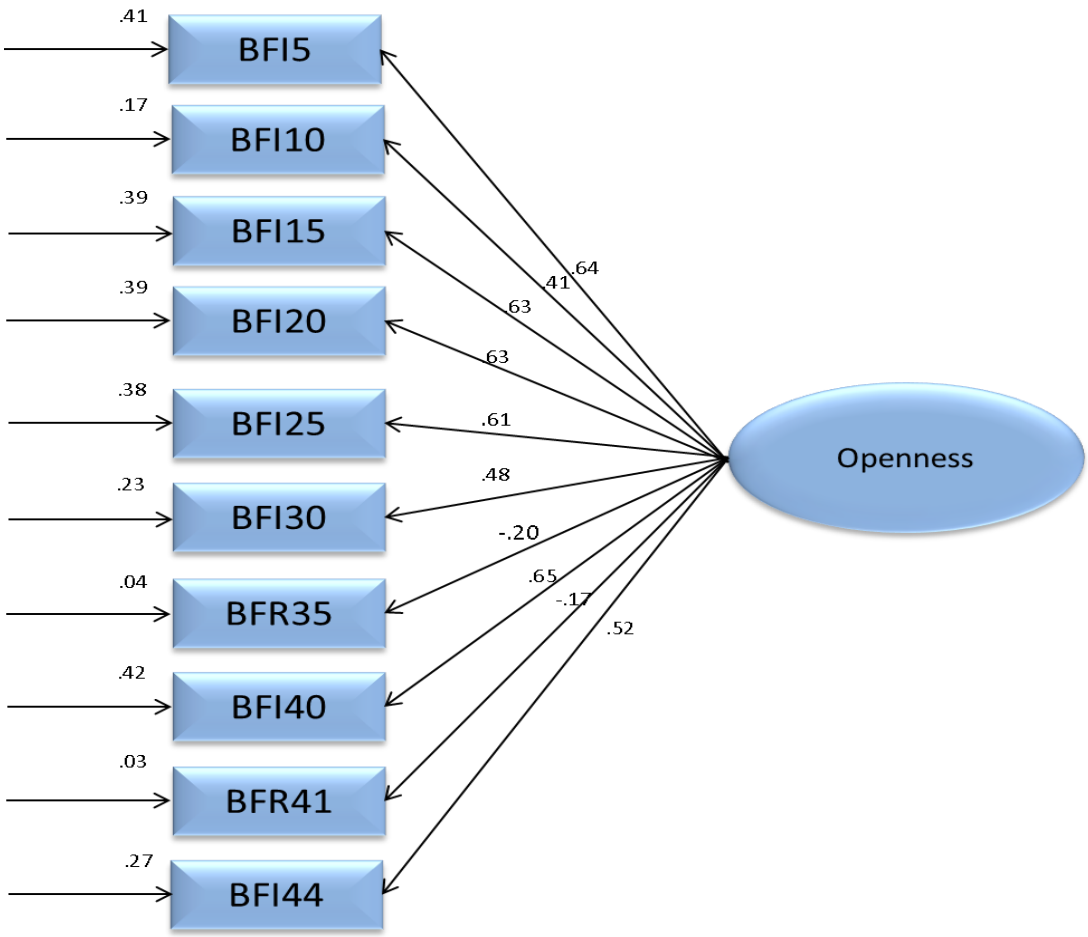

Figure 4.10. A single factor model for Openness
Note. BFR35 and BFR41are negatively worded items; Chi-square = 78.145; df = 35; Bollen Stine p-value = .018; CMIN/df = 2.233; SRMR = .059; RMSEA = .072; CFI = .90; TLI = .87.

Subsequently, this model was subjected to re-specification. The findings of initial analysis revealed that BFR41 “possess limited artistic interests” was responsible for the poor fit. The error covariances showed that misspecifications were associated with BFR35 “prefers routine jobs”. The plausible reason to remove BFR41 was that it represented miss-specified error covariances and the construct Openness explains only 17% of the variance in BFR41. Furthermore, it was identified earlier as a problematic and confusing item in the translation process described above.

Even though the overall model fit indices were significantly enhanced upon the removal of BFR41, the SMC of BFI5 “is original, comes up with new idea” suggested that it is an unreliable indicator of Openness (Table 4.7). The results, upon deletion of BFI5 indicated acceptable fit indices; however the SMC of BFR35 was still inadequate, therefore it was removed from the scale.

Table 4.7

One-Factor Congeneric Model Analysis of Openness and Respecification Statistics

	Test Statistics		**Fit Indices**					**Item Statistics**
Biggest (+ve) Modification Index ⟷	**Bollen-Stine p**	**Chi-square**	**CMIN**	**RMSEA**	**SRMR**	**CFI**	**TLI**	**Lowest R^2 /Item no**
Original model	.018	78.145	2.233	0.072	0.06	.90	.87	.03/BFR41
e35 e41	.038	70.430	2.071	0.068	0.05	.92	.89	.03/BFR41
Remove BFR41	.094	51.573	1.910	0.062	0.05	.94	.92	.04/BFI5
Remove BFI5	.160	35.006	1.750	0.057	0.05	.95	.93	.04/BFR35
Remove BFR35	.321	21.198	1.514	0.047	0.04	.98	.96	.17/BFI10

Note. ⟷ indicates covariation

The final model of Openness acceptable in the Malaysian sample is displayed in Figure 4.11. It should be noted that in the final model, the lowest SMC was exhibited by item BFI10 “is interested to know about many things”; however, it needs to be retained in the model because its exclusion will result in a seriously over-fitted model.

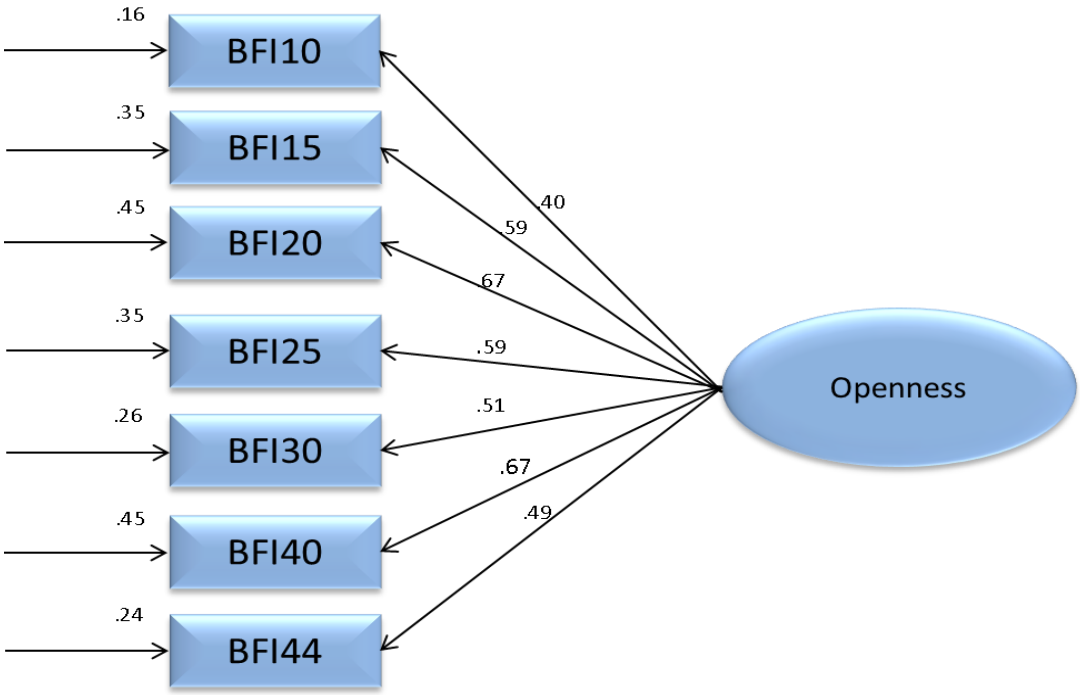

Figure 4.11. A revised single factor model for Openness
Note. Chi-square = 21.198; df = 14; Bollen Stine p-value = .321; CMIN/df = 1.514; SRMR = .040; RMSEA = .047; CFI = .98; TLI = .96.

In summary, after re-specifications, the fit statistics from all five congeneric measurement models of Personality were within the acceptable range of fit as established in Chapter Two. It is worthwhile to note that the resulting scale was reduced in size in comparison to the original English version. Nevertheless, the shorter MEV-BFI scale not only reflects the cross-culturally relevant five Personality dimensions, but also can be considered as a good measuring instrument assessing the five Personality factors for examining the relationship of Personality and Spirituality (the implications of the shorter scale will be discussed in detail in section 4.4.9). The next section of this study will look into how the results from one congeneric measurement model can be used to support the evidence of convergent and construct validity of the MEV-BFI.

4.4.6. Convergent and construct validity of the MEV-BFI.

As described in section 3.6.1.6 earlier, convergent validity can be determined by examining the Regression Weight table, generated by AMOS program (refer to Appendix L). From this data it can be seen that all the observed variables loaded significantly on their intended factor, as evidenced by C.R values > 1.96 and $p < 0.05$. This means that all regression weight estimates had absolute values that were significantly different from zero and thus should all be retained as part of the model.

In conclusion then, the construct validity for all purged sub-scales in the MEV-BFI was supported with all five adjusted one-factor congeneric measurement models achieving satisfactory fit with the Malaysian data, as shown in Figures 4.3, 4.5, 4.7, 4.9, and 4.11 above. This implies that the Big Five factors are all discernible in a Malaysian population that is, the model is culturally relevant.

To summarize, from the modelling of one-factor congeneric measurement models, eighteen indicator variables were removed from five latent constructs measuring Personality. The deleted items are listed in Table 4.8:

Table 4.8.

Summary of Item Deletions after the Modelling of One-Factor Congeneric Measurement Models of Personality

Construct	Item
Extraversion	BFR21; BFI36
Agreeableness	BFR12; BFI22; BFR27;BFR37
Conscientiousness	BFR8; BFR18; BFR23; BFR43
Neuroticism	BFR9, BFR14, BFR24; BFR34
Openness	BFI5, BFI10, BFR35, BFR41

It should be noted that most of the deleted items were the negatively worded items (“is reserved”, “tends to be quiet and is sometimes shy”, “inhibited”). The result was consistent with a recent study by Leung, Wong, Chan, and Lam (2013) where they also found that most items that were removed from their Chinese-translated BFI were negatively worded. It seemed that in the Malaysian and Chinese sample, reversed items did not represent the Personality constructs well. Perhaps Malaysian youths cannot fully comprehend the content of the items. Furthermore, according to DeVellis (2003), it is possible that the poor performance of negatively worded items is caused by the respondents’ confusion in expressing their strength of agreement with that particular item.

Similar findings have been reported in Malaysia where researchers found that their Malaysian respondents had difficulties in interpreting and dealing with negatively worded items. These items were also deleted from further analyses as the inclusion of the items would compromise the scale’s reliability and validity (Idris & Dollard, 2011). It has also been suggested that the inclusion of reversed items in a scale can actually be detrimental to the reliability and validity of the test scores (Barnette, 2000). It is therefore reasonable that in this study, some of the negatively worded items can be considered as non-significant and were dropped from further analysis. In sum, the results from one congeneric measurement model revealed 26 valid items for measuring the above-mentioned five Personality dimensions in the Malaysian context.

Having examined the congeneric measurement model for each of the dimensions of the MEV-BFI scale and evaluated its convergent and construct validity, the next section described the processes involved in modelling two multi-factor CFAs seeking to further enhance the scale’s discriminant validity, as recommended by Jöreskog

(1971) and Anderson and Gerbing (1988) in their two/four-step model building process.

4.4.7. Modelling two multi-factor CFAs.

Based on the results from modelling the one congeneric models, ten pairs of two multi-factor CFAs were evaluated. The results are reported and discussed in the next sections.

4.4.7.1. A two factor CFA model of extraversion with agreeableness.

The combination of Extraversion and Agreeableness revealed the evidence of misfit, as illustrated in Table 4.9:

Table 4.9.

AMOS Output of Standardized Residual Covariances (SRC) (Extraversion with Agreeableness)

	BFR2	BF42	BF32	BF17	BF7	BFI	BF11	BF16	BF26	BFR6	BFR31
BFR2	.000										
BF42	-.283	.000									
BF32	-.928	.242	.000								
BF17	.619	-.515	.398	.000							
BF7	.803	-.150	.026	-.049	.000						
BFI	-5.347	.854	-.816	-1.860	-.803	.000					
BF11	-1.279	.969	-.273	-.997	-.527	.798	.000				
BF16	-.296	.375	-.253	1.412	.381	-.433	-.210	.000			
BF26	-.699	.350	1.086	-1.991	-.190	1.628	.671	-.272	.000		
BFR6	4.413	-.118	-1.786	.772	.919	-.253	-.083	-.136	-.610	.000	
BFR31	-.625	.105	-3.600	-1.946	-.841	2.378	1.716	-.311	-.664	1.411	.000

From the SRC matrix, it can be seen that the large residual values (-5.347 and 4.413) were reported for item BFR2 “tends to find fault with other people”, suggesting it is unacceptably multi-factorial. An inspection of the MIs showed that the largest parameter was represented by BFR2 ←Extraversion, and the item was therefore deleted from the scale. The re-run of the modified model revealed another multi-factorial item BFR31 “is sometimes shy, conceals feelings” which cross-loaded on Agreeableness factor. The removal of BFR31 resulted in acceptable SRCs and MIs, indicating the absence of multi-factorial items at this stage.

4.4.7.2. A two-factor CFA model of extraversion with conscientiousness.

Modelling Extraversion dimension with Conscientiousness dimension did not indicate any significant misspecification and MIs, as illustrated in Table 4.10.

Table 4.10

AMOS Output of Standardized Residual Covariances (SRC) (Extraversion with Conscientiousness)

	BF38	BF33	BF28	BF13	BF3	BFI	BF11	BF16	BF26	BFR6
BF38	.000									
BF33	.275	.000								
BF28	-.766	-.021	.000							
BF13	-.227	.589	-.525	.000						
BF3	.214	.271	.383	-.358	.000					
BFI	-.346	.114	-1.909	.577	.583	.000				
BF11	.444	-.803	-.306	.828	-1.151	.757	.000			
BF16	.201	-.934	1.256	.058	-.251	-.446	.231	.000		
BF26	1.162	1.309	-1.109	-.317	.967	1.298	.240	-.722	.000	
BFR6	-1.371	-.405	.920	.650	-.353	-.219	.141	.162	-.682	.000

Although the presence of multi-factorial items could not be detected, it should be noted that the size of factor correlation between Extraversion and Conscientiousness was very high (.91), suggesting the possibility that in the Malaysian context, Extraversion and Conscientiousness are somehow considered generally indistinguishable, or mostly co-existent. This rather surprising conflation of two established conceptually distinct factors (McCrae & John, 1992) will be further considered in section 4.4.8.

4.4.7.3. A two factor CFA model of extraversion with neuroticism.

The comparison between Extraversion and Neuroticism dimensions suggested several significant cross-loadings onto items BF6 “is less open” with BF29 “can be moody”, BF19 “often worries” and BF4 “is depressed, sad” (Table 4.11).

Table 4.11

AMOS Output of Standardized Residual Covariances (SRC) (Extraversion with Neuroticism)

	BF39	BF29	BF19	BF4	BFI	BF11	BF16	BF26	BFR6
BF39	.000								
BF29	-.079	.000							
BF19	.132	.070	.000						
BF4	-.051	-.007	-.041	.000					
BFI	1.185	1.248	-.867	-.194	.000				
BF11	.207	.701	1.515	.159	.198	.000			
BF16	.151	-1.204	.736	-1.028	-.508	.082	.000		
BF26	.715	1.229	.850	2.561	1.254	.132	-.008	.000	
BFR6	-4.763	-3.977	-3.911	-5.843	-.487	-.456	-.075	-.835	.000

Therefore, I inspected the MIs. The largest parameter was represented by BFR6 ← Neuroticism (MI = 49.413), suggesting that other than measuring Extraversion, it may also measure Neuroticism. It is possible that the introverts (opposite of extraverts) who tend to be quiet and retiring sometimes can be mistaken as moody and depressed, resulting in them being characterized as suffering from Neuroticism. Therefore, it was decided BFR6 be removed from the scale. The final results suggested no further significant cross-loadings.

4.4.7.4. A two factor CFA model of extraversion with openness.

Next, I evaluated the two by two model of Extraversion and Openness. The SRCs indicated that the largest misspecification (3.942) was between BF15 “is intelligent, profound in thinking” and BF16 “often enthusiastic” (Table 4.12).

Table 4.12

AMOS Output of Standardized Residual Covariances (SRC) (Extraversion with Openness)

	BF44	BF40	BF30	BF25	BF20	BF15	BFI	BF11	BF16	BF26
BF44	.000									
BF40	.363	.000								
BF30	1.272	1.045	.000							
BF25	.427	-.004	.001	.000						
BF20	.353	1.216	.545	-.651	.000					
BF15	-1.012	-.247	-.696	-.872	-.095	.000				
BFI	1.768	-1.081	-1.707	-.498	-1.393	.125	.000			
BF11	.081	-1.647	-1.219	.834	-.205	.421	.401	.000		
BF16	-2.758	-1.388	-1.508	.631	-1.199	3.942	-.284	.377	.000	
BF26	1.090	-.836	-.364	3.014	-.348	.808	1.040	-.449	-.569	.000

The MIs also revealed that although BF15 was postulated to load on the Openness factor, it may also load on the Extraversion factor. Such misspecification could mean that Malaysian respondents seem to perceive intelligent and ingenious individuals as also being enthusiastic. I decided to delete BF15 from the Extraversion scale. Re-estimation of the parameters resulted in the identification of other multi-factorial items BF25 “is inventive in nature” and BF26 “has an assertive personality”. A review of the MIs revealed one parameter indicative of cross-loading (BF25 ← Extraversion; MI = 16.630), suggesting that in a Malaysian context “is inventive in nature” was also measuring some aspects of Extraversion. The item was deleted and the model re-specified. The final results suggested no other multi-factorial items.

4.4.7.5. A two factor CFA model of agreeableness with conscientiousness.

In combining Agreeableness and Conscientiousness, the SRCs indicated possible misspecifications between BF33 “does something efficiently” and BF32 “is considerate and kind hearted to almost everyone” (Table 4.13). However, it did not make any substantive sense that these items were attracted to the opposite factors,

and the MIs did not demonstrate any meaningful modification. Therefore, I decided that these items should not be removed at this stage.

Table 4.13

AMOS Output of Standardized Residual Covariances (SRC) (Agreeableness with Conscientiousness)

	BF38	BF33	BF28	BF13	BF3	BF7	BF17	BF32	BF42
BF38	.000								
BF33	.361	.000							
BF28	-.046	-.295	.000						
BF13	.118	-.140	-.438	.000					
BF3	.845	-.119	.838	-.384	.000				
BF7	-1.567	-.439	.346	.757	.017	.000			
BF17	-.396	-1.163	-.139	1.555	-.519	.292	.000		
BF32	-.487	2.133	-1.171	-.464	-1.237	-.044	.373	.000	
BF42	.095	.587	.746	.076	-.080	-.140	-.470	-.065	.000

Nevertheless, the factor correlation between Agreeableness and Conscientiousness was high (.87), indicating the possibility that these factors were insufficiently discriminant. This correlation is surprising considering that a number of past studies which have utilized translated versions of the BFI had reported relatively low intercorrelations between these two factors (ranged from .20 to .27; for details please see Denissen, Geenen, van Aken, Gosling, & Potter, 2008; Rammstedt & John, 2007) (will be discussed in detail in section 4.4.8).

4.4.7.6. A two factor CFA model of agreeableness with neuroticism.

The next comparative assessment involved Agreeableness and Neuroticism. The SRCs (Table 4.14) and MIs did not demonstrate any significant misspecification, that is, no further modification was indicated.

Table 4.14

AMOS Output of Standardized Residual Covariances (Agreeableness with Neuroticism)

	BF39	BF29	BF19	BF4	BF7	BF17	BF32	BF42
BF39	.000							
BF29	.026	.000						
BF19	.115	-.001	.000					
BF4	.031	-.015	-.185	.000				
BF7	-.072	-.270	-2.001	-1.360	.000			
BF17	.513	-.555	.685	-1.756	-.031	.000		
BF32	1.576	1.533	.255	1.389	-.177	.258	.000	
BF42	2.005	-.156	1.170	-.573	.072	-.287	.284	.000

4.4.7.7. A two factor CFA model of agreeableness with openness.

The comparison between Agreeableness and Openness (Table 4.15) did not indicate any significant misspecification and MIs; therefore, the items were retained.

Table 4.15

AMOS Output of Standardized Residual Covariances (Agreeableness with Openness)

	BF44	BF40	BF30	BF20	BF7	BF17	BF32	BF42
BF44	.000							
BF40	-.167	.000						
BF30	.612	-.278	.000					
BF20	.087	.321	-.464	.000				
BF7	-1.576	-1.182	-.082	-.541	.000			
BF17	-1.447	-.882	-.357	-.919	.586	.000		
BF32	.154	.729	1.491	.009	-.149	.102	.000	
BF42	1.011	1.288	1.142	.777	.123	-.413	-.367	.000

4.4.7.8. A two factor CFA model of conscientiousness with neuroticism.

Modelling Conscientiousness with Neuroticism dimensions had SRC demonstrating possible misspecification between BF4 “is depressed, sad” *and* BF38 “makes plans and follows the planning” (Table 4.16).

Table 4.16

AMOS Output of Standardized Residual Covariances (Conscientiousness with Neuroticism)

	BF39	BF29	BF19	BF4	BF3	BF13	BF28	BF33	BF38
BF39	.000								
BF29	-.084	.000							
BF19	.014	-.050	.000						
BF4	.085	.049	-.080	.000					
BF3	-.208	-1.267	-.475	.470	.000				
BF13	-.658	-.108	-1.154	-1.974	-.410	.000			
BF28	-.485	-1.370	-.365	-1.230	.358	-.227	.000		
BF33	.866	.468	-.425	1.276	-.215	.453	-.134	.000	
BF38	1.719	.700	.664	2.809	.300	.100	-.392	.291	.000

An inspection on the MI revealed that the largest parameter was represented by BF38 ←Neuroticism (MI = 10.659). This can be taken to imply that BF38 was also measuring an aspect of Neuroticism. Perhaps to Malaysian participants, "*makes and follows through the plan*" reflects unrealistic ideas, which partly defines Neuroticism. Thus, it was decided to remove BF38. This removal resulted in another pairing of misspecification between BF4 and BF33 "*does something efficiently*". The MI suggested the cross-loading of BF33 on Neuroticism factor. The removal of BF33 resulted in satisfactory SRCs and MIs.

4.4.7.9. A two factor CFA model of conscientiousness with openness.

Next, I evaluated the CFA model of Conscientiousness with Openness. The SRCs indicated no significant cross-loadings (Table 4.17).

Table 4.17

AMOS Output of Standardized Residual Covariances (Conscientiousness with Openness)

	BF44	BF40	BF30	BF20	BF3	BF13	BF28
BF44	.000						
BF40	-.164	.000					
BF30	1.061	-.231	.000				
BF20	.329	-.047	-.150	.000			
BF3	-.915	1.003	-.451	-.696	.000		
BF13	-1.573	-.328	-.658	.681	.110	.000	
BF28	-1.362	.757	.599	.281	-.057	-.004	.000

4.4.7.10. A two factor CFA model of neuroticism with openness.

Finally, I considered the modelling of Neuroticism with Openness factors. The SRCs revealed a misspecification between BF39 “easily panicked” and BF20 “has strong imagination” (Table 4.18).

Table 4.18

AMOS Output of Standardized Residual Covariances (Neuroticism with Openness)

	BF4	BF19	BF29	BF39	BF44	BF40	BF30	BF20
BF4	.000							
BF19	-.165	.000						
BF29	.104	-.125	.000					
BF39	.188	-.067	-.016	.000				
BF44	1.218	.625	.302	.519	.000			
BF40	-.413	.196	-.596	1.384	-.549	.000		
BF30	-.591	.511	1.549	-.720	.578	-.177	.000	
BF20	-1.724	1.775	-.222	-2.772	-.025	.340	-.104	.000

The MI suggested that the largest meaningful parameter was demonstrated by BF20, which means that although it was postulated to load on the Openness factor, it may also load on the Neuroticism factor. Since the purpose of modelling two multi-factor CFA is to eliminate multi-factorial items, I decided to remove BF20 from the Openness scale. The final results indicated no further multi-factorial problems with the remaining items.

Although the results indicated no more cross-loading items, the five-factor model for the MEV-BFI still did not attain satisfactory fit indices (χ^2 = 249.911; df = 125; Bollen Stine *p* = .002; CMIN/df = 1.999; SRMR = .06; RMSEA = .07; CFI = .89, TLI = .86). Some researchers such as Berry and Shipley (2009) and Hair, Black, Babin and Anderson (2010) assert that low factor loading of the indicators (less than 0.50) signify potential measurement problems, thus should be removed from the scale. An inspection on the factor loadings revealed five items with less than the recommended level of 0.50 (BF1, BF26, BF29, BF44 and BF32). The removal of these items resulted in a model with acceptable fit to the data (χ^2 = 90.947; df = 55; Bollen Stine *p* = .06; CMIN/df = 1.654; SRMR = .05; RMSEA = .05; CFI = .96, TLI = .94).

4.4.8. Discriminant validity.

Discriminant validity for the BFI constructs was evaluated using the nested model method (refer to section 2.6.3 for the details). The same method was applied earlier to evaluate the Spirituality scale in section 3.6.2.11.

In examining the size of factor correlations exhibited from modelling two multi-factors CFAs described above, the size of the factor correlations for Extraversion with Conscientiousness and Agreeableness with Conscientiousness exceeded .80, challenging adequate discriminant validity for these constructs. Accordingly, a series of chi-square difference tests were conducted and the results are illustrated in Table 4.19.

Table 4.19

Discriminant Validity for the BFI constructs as Determined with Nested Model Method

Constructs	Model	χ^2	df	P	Discriminant Validity
			13		
Extraversion with Conscientiousness	Unconstrained	35.642			Yes
	Constrained	157.92	14		
	$\Delta\chi^2$	122.27	1	0.000	
Agreeableness with Conscientiousness	Unconstrained	19.008	13		Yes
	Constrained	120.133	14		
	$\Delta\chi^2$		1	0.000	

Note. χ^2 = chi-square**;** $\Delta\chi^2$ = chi square difference

From Table 4.19, it can be seen that the differences in chi-square between the constrained and unconstrained model were significant ($p < 0.05$) for both pair of constructs, with the critical value for **$\Delta\chi^2$** exceeding the test value, implying a good evidence of discriminant validity.

In support, extant studies also suggested that all factors of the Big Five are correlated to some extent (Costa & McCrae, 1992; Musek, 2007; van der Linden, te Nijenhuis, & Bakker, 2010). A very recent study by Leung, Wong, Chan, and Lam (2013) supported the results of the current study when they found quite strong correlations (exceeding values of 0.4) between Extraversion, Agreeableness, Conscientiousness, and Openness to Experience in their Chinese sample in Hong Kong. The discriminant validity of their Chinese-translated BFI was established using the multitrait-multimethod technique. Thus, it can be concluded that each pair of constructs in the current study was sufficiently distinct despite the high factor size correlations found in the current study and discriminant validity holds.

4.4.9. Section discussion and summary.

The modelling of two multi-factor CFAs resulted in the identification of a number of multifactorial items, which were deleted from the scales (summarized in

Table 4.20). In total, 8 multi-factorial items and 5 low loading items were discovered and thus eliminated for subsequent analyses. As such, 13 items were found to be valid indicators of five Personality dimensions of Malaysian young adults.

Table 4.20

Summary of Item Deletions after the CFA

Constructs / Item No		**Reason for Deletion**
Extraversion and Agreeableness	BFR2	Cross-loading on Extraversion
	BFR31	Cross-loading on Agreeableness
Extraversion with Neuroticism	BFR6	Cross-loading on Neuroticism
Extraversion with Openness	BF15	Cross-loading on Extraversion
	BF25	Cross-loading on Extraversion
Conscientiousness with Neuroticism	BF38	Cross-loading on Neuroticism
	BF33	Cross-loading on Neuroticism
Neuroticism with Openness	BF20	Cross-loading on Neuroticism
BF1, BF26, BF29, BF44, BF32		Low factor loading (less than 0.50)

Nevertheless, it might be considered somewhat concerning that out of 44 items purported to measure the five Personality dimensions, only 13 were found to be valid in a Malaysian context. It has been claimed that “long instruments tend to have better psychometric properties than short instruments” (Gosling, Rentfrow, & Swann Jr, 2003, p. 505). Yet, some researchers such as Burisch (1997) and Rammstedt and John (2007) argued that even though longer scales were claimed to be psychometrically superior than the shorter ones, the latter were preferable when they exhibited acceptable psychometric properties. In fact, a few studies on the assessment of the shorter form of the Big Five Personality dimensions (using one or two items per dimension) revealed that these instruments demonstrate adequate

psychometric properties and are valid as Personality measures (Gosling et al., 2003; Rammstedt & John, 2007).

To my knowledge, the original BFI has not been subjected to the rigours of single-factor congeneric modeling and paired factor comparisons to achieve optimal unidimensional measurements. However, the results from two studies conducted in Turkey (Camgoz & Karapinar, 2011) and Hong Kong (Leung et al., 2013) using Turkish and Chinese translated version of the BFI revealed frustrating overall fit with their respective data. In both studies, an acceptable model fit was achieved upon removal of several items.

Many researchers have applied CFA in their attempt to examine the model fit of the FFM of Personality (Benet-Martínez & John, 1997; Denissen et al., 2008; John et al., 2008). The assessment of the model fit of the five factors individually, as measured by the NEO-FFI (NEO Five-Factor Inventory; Costa & McCrae, 1992) has been reported by Gignac, Bates and Jang (2007). Their results led them to recommend:

> Each proposed facet/dimension should be examined and refined, individually, according to both theory and empirical CFA results. Such a process would be consistent with the two-step procedure commonly endorsed in SEM research. Until this is achieved, it makes little sense to evaluate the FFM based on models that incorporate all five dimensions, simultaneously. (Gignac et al., 2007, p. 1061)

Hence, although it is possible that a loss of information might occur due to the removal of the items, I considered that the MEV-BFI was a sufficient instrument to assess the Personality of Malaysian young adults as it has demonstrated satisfactory validity. Next, I evaluated the reliability of each of these dimensions.

4.4.10. Model-Based reliability analysis.

As with Spirituality scales, the reliability of the MEV-BFI was calculated using Hancock and Mueller's Coefficient *H*. The results demonstrated that the reliability for Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to Experience were 0.74, 0.77, 0.70, 0.70 and 0.60, respectively.

Generally, the findings revealed that the reliability for Extraversion, Agreeableness, Conscientiousness and Neuroticism was within the recommended cut-off value of 0.70, with the exception of Openness to Experience. This finding was consistent with previous Malaysian findings where the reliability of the Openness dimension seemed to be the lowest among the five Personality dimensions (Mastor et al., 2000; Muhamad, 2006; Yap, 2009). Perhaps, the low reliability exhibited by Openness dimension reflects a difference in the way Malaysians conceptualized Openness. As speculated by Schmitt et al. (2007), "because Asian cultures tend to be more collectivist, may be that openness takes on a different form or function in more collectivist cultures" (p. 203). Perhaps in the future, Malaysian researchers should qualitatively investigate how the Malaysians conceptualize Openness.

Having said that, a reliability value of 0.60 is considered acceptable as according to Hair, Black, Babin, and Anderson (2010, p. 92), "reliabilities with values of 0.60 to 0.70 deemed the lower limit of acceptability". Thus, at this stage, I decided to maintain Openness as one of Personality dimensions of the Malaysian young adults. In the next section, I report on the factorial structure of the MEV-BFI in order to consider conceptual equivalence with the English BFI.

4.4.11. The BFI Model in Malaysian young adults sample.

As discussed in previous sections, thirteen items were found to optimally measure the five Personality dimensions of Malaysian young adults. In order to determine whether Personality dimensions are best represented as five dimensions as suggested by the FFM of Personality in the West, the fit of four competing models were tested by means of CFA. First, M1 assumed all 13 items load on one general Personality factor. Second, in model $M_{2\text{-}4\ Factors}$, only 4 dimensions were evaluated (all dimensions excluding Openness to address the issue of low reliability). Third, $M_{3\text{-original 5 Factors}}$ assumed that the BFI was best described with all 44 items loaded on its respective five factors as hypothesized by the FFM of Personality. And lastly, model $M_{3\text{-respecified 5 Factors}}$ assumed that all 13 items loaded on its respective five hypothesized factor of Personality. The goodness-of-fit (GOF) estimates of these models are illustrated in Table 4.21.

Table 4.21.

Comparison of Alternative Models

Model	χ^2	df	CMIN/df	SRMR	RMSEA	CFI	TLI	$\Delta\chi^2$
$M_{1\text{-}1\ Factor}$	249.265	65	3.835	.100	.11	.771	.725	-
$M_{2\text{-}4\ Factors}$	69.979	38	1.842	.046	.06	.945	.933	-
$M_{3\text{-original 5 Factors}}$	2892.8	892	3.243	.147	.09	.4654	.431	-
$M_{3\text{-respecified 5 Factors}}$	90.947	55	1.654	.048	.05	.955	.937	-
$M_{2\text{-}4\ Factors} \rightarrow M_{3\text{-respecified 5 Factors}}$								20.968

As evident from Table 4.21, only $M_{2\text{-}4\ Factors}$ and $M_{3\text{-respecified 5 Factors}}$ models' GOF were within the conventional acceptance limits. Therefore, a difference in a chi-square test was employed to determine if the five-factor model of MEV-BFI fits better than the four-factor model. The test revealed that the $\chi^2_{difference}$ between the

four-factor and five-factor model was insignificant (χ^2difference = 20.968, df = 17, p-value = 0.228). Thus, it can be said that there was no significant difference between the two models, indicating that the models explained Malaysian data equally well. Nonetheless, I decided that $M_{3\text{-respecified 5 Factors}}$ was the preferred model for representing Personality in a Malaysian context because at a theoretical level it aligns better with the Big 5 model as well as exhibiting marginally better GOF indices (χ^2 = 90.947; df = 55; Bollen Stine *p* = .06; CMIN/df = 1.654; SRMR = .05; RMSEA = .05; CFI = .96, TLI = .94) in comparison to $M_{2\text{-4 Factors}}$. Thus, Hypothesis 3 was supported. The five-factor model schematically portrayed in Figure 4.12 represents an adequate description of the Personality structure in educated Malaysian young adults.

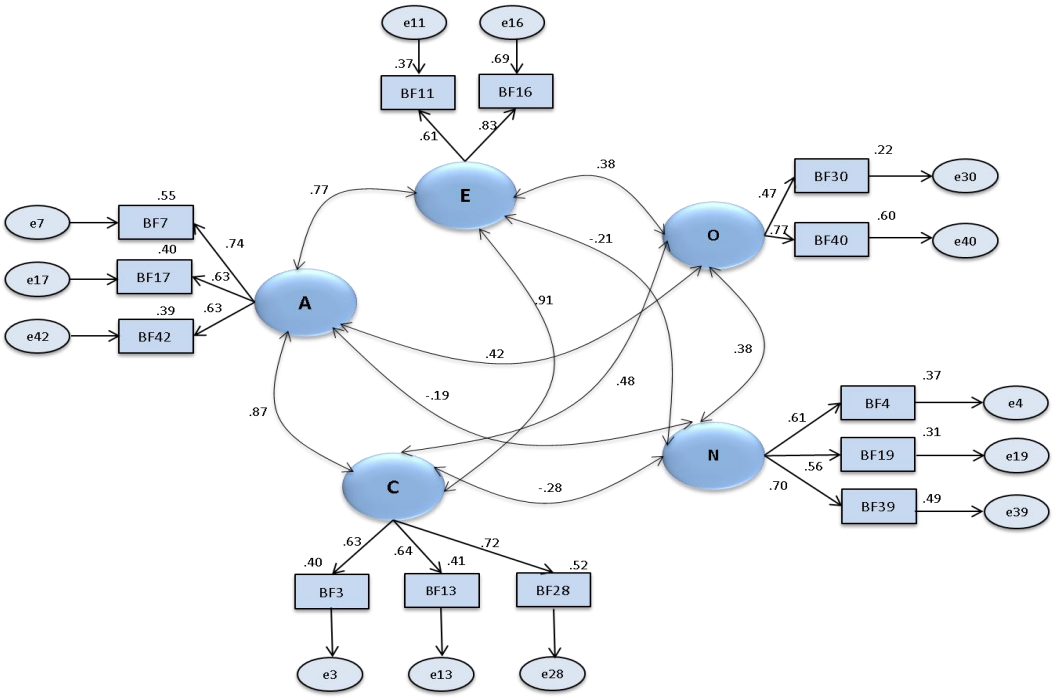

Figure 4.12. Final Model of Factorial Structure for the MEV-BFI in Malaysian Context.
Note. E=Extraversion; A=Agreeableness; C=Conscientiousness; N=Neuroticism; O=Openness

Overall, my findings from the CFAs demonstrated that conceptual equivalence between the original BFI and MEV-BFI is sufficiently evident. The results also showed that Personality cross-culturally, at least in the Malaysian context, looks to be best represented as five distinct constructs as suggested in most current Western Personality literature.

4.4.12. Cross-validation of the FFM of the BFI in a replication sample.

As my further attempt to validate the MEV-BFI, the five dimensional model of the FFM was subjected to the tests of invariance for factor variances. The results are reported in Table 4.22.

Table 4.22

Goodness-of-Fit Indices for Model Cross-Validation ($n_{calibration}$ = 236, $n_{validation}$ = 201)

Model	χ^2	CMIN/*df*	*df*	CFI	TLI	RMSEA	$\Delta\chi^2$
Constrained	211.283	1.718	123	.93	.92	.04	
Unconstrained	190.986	1.736	110	.94	.91	.04	20.297

Notes: χ^2 = chi-square, df = degrees of freedom, CMIN/df = Normed chi-square, CFI = Comparative fit index, TLI = Tucker-Lewis Index, RMSEA = Root mean-square error of approximation.

Computation of the $\chi^2_{\text{difference}}$ test between constrained and unconstrained model yielded a difference of 20.297 with 13 degrees of freedom and statistically non-significant at p = 0.09. Given these findings, I can conclude that all measures of Personality are operating equivalently for both calibration and validation groups. Taken together, the results revealed that in the Malaysian context, Personality is well described by a five-factor model covering Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to Experience.

Having determined that the MEV-BFI was valid and reliable for measuring the Personality of the Malaysian young adults, the next section will report the relationship between Personality and Spirituality in the Malaysian context.

4.5. Results and Discussions: The Relationship between Personality and Spirituality

In order to answer the RQ2 (section 4.2.2.2), which was to determine the relationships between Personality and Spirituality, correlations were computed for each of variables of interest. The relationship between Personality (as measured by the MEV-BFI) and Spirituality (as measured by MEV-ESI) was investigated using Spearman's Rank Order correlation coefficient (r_s) due to the non-normality of the data (described in section 2.6.2.4). According to Cohen (1988, pp. 79-81), a weak correlation is indicated by a correlation coefficient between 0.10 to .029, a medium correlation is suggested by a correlation coefficient between 0.30 to 0.49 and, finally, a strong correlation is proposed by a correlation coefficient between 0.50 to 1.0. Results bearing on the intercorrelations between the five personalities and each of the five Spirituality factors are presented in Table 4.23.

Table 4.23

Spearman's Rank Order Correlations Between Measures of the Five-Factor Model (FFM) Personality Traits and ESI Dimensions

Variable	Extraversion	Agreeableness	Conscientiousness	Neuroticism	Openness
COTS	.16*	.24**	.28**	-.08	.05
EPD	.03	-.01	-.07	.20**	.16*
EWB	.05	.14*	.21**	-.43**	-.08
PARA	.08	-.06	-.08	.25**	.16*
REL	.09	.12	.20**	-.05	.06

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).
Note. COTS=Cognitive Orientation toward Spirituality; EPD= Experiential/Phenomenological Dimension of Spirituality; EWB = Existential Well-Being; PARA= Paranormal Beliefs; REL=Religiousness

For the discussion purposes, only significant and meaningful correlations will be discussed in this section. Based on Cohen's interpretation of correlations, it can be

seen from Table 4.23 that Cognitive Orientation toward Spirituality (COTS) significantly correlated most with Conscientiousness, followed by Agreeableness and Extraversion. The Experiential/Phenomenological Dimension of Spirituality (EPD) associated the most with Neuroticism while Existential Well-Being (EWB) obtained its strongest negative correlations with Neuroticism, followed by Conscientiousness and Agreeableness. Paranormal Beliefs (PARA) dimension demonstrated the strongest association with Neuroticism. Finally, no statistically significant correlations were found between four dimensions of Personality with REL, except for Conscientiousness.

From the results, I can deduce that Religiousness and the other four dimensions of Spirituality as measured with the MEV-ESI overlap yet retain distinctive features, as discussed in Chapter Two. In other words, aspects of Spirituality and Religiousness share something in common (Hill & Pargament, 2003), that is a dutiful attitude, competence, and self-discipline towards faith involvement. They differ in that Spirituality involves more aspects of emotional stability and even-temperedness while religiosity is more relevant to perseverance, goal-directed and to follow norms and rules. The results also allow us to conclude that in the Malaysian context, a person rating high on Spirituality is inclined to exhibit positive aspects of Personality such as assertiveness, compassion, persistence, and emotionally stability.

However, it is worthwhile to note that although there are quite a few significant correlations in several correlation matrices, it is possible that the ‘significant’ correlations are produced merely by chance. This can be adjusted by applying the Bonferroni adjustment to keep the alpha at a reasonable level (Pallant, 2011). However, this was not conducted in this thesis. While I recognize this problem, the various hypotheses would be examined using the significance levels actually given in

the tables. Perhaps this technique can be applied in future research to rule out the possibility of significant results when in fact it could have occurred by chance.

Nevertheless, it is interesting to find that generally, the correlations between dimensions of Personality and Spirituality can be considered weak. This basically indicates that Personality and Spirituality are substantially independent of one another. However, as mentioned in Section 1.1., an exploration of the issue whether Spirituality constructs are simply some aspects of Personality is beyond the scope of this study, and therefore will not be discussed further.

In sum, results from interpreting the correlations suggested that each of the five Personality dimensions have numerous correlations with Spirituality domains that appear to be consistent with those of MacDonald (2000b), although there are some notable differences. For instance, in contrast to MacDonald's study, this study found no significant relationship between Openness and COTS and Extraversion and EWB. It seems that the results of this study also concurred with the findings of Laher and Quy (2009) on the ubiquitous relationships between Personality and Spirituality. Considering this, I decided to investigate the qualifying conditions and underlying mechanisms framing the relationship. Consequently, the role of more proximal causes such as cognition processes through which Personality may influence Spirituality is reported, explored, and discussed in detail in Chapter Five.

4.6. Chapter Summary

In summary, this chapter reported on refining a translated instrument in the process of seeking to determine the applicability of a Western-generated Personality inventory for Eastern, Malaysian culture. The questions that guided the discussion in this chapter were:

- Is the FFM of Personality, as captured with the BFI, applicable to Malaysians?
- What is the relationship between Personality and Spirituality in a Malaysian context?

The results of this study provided empirical support to the proposed H3 and research question 2 (RQ2).

A confirmatory factor analysis was useful in analysing survey questions in order to answer H3. Two key findings were identified: 1) Modifications and revisions need to be made to the English BFI in order to establish a valid and reliable Personality measurement in a Malaysian context, which resulted in the development of the MEV-BFI and, 2) The CFA's parameter estimates supported the five-dimensional structure of Personality, providing further support to the FFM of Personality.

MEV-BFI items were examined via correlation analyses in order to explore RQ2. The results demonstrated that some inconsistencies were found on the relationship between Personality and Spirituality in this and past studies. In view of this, in Chapter Five, I evaluate the role of some cognitive factors (i.e. Irrational Beliefs, Self-Efficacy, and Locus of Control) as potential mediators in influencing the relationship between Personality and Spirituality. Chapter Five will also include validation results of instruments used to measure these cognitive factors.

CHAPTER 5: **Spirituality, Personality and Cognitive Beliefs**

This chapter presents the psychometric evaluation of Cognitive Belief constructs in preparation for testing the full structural equation modeling in Chapter Six. This chapter is divided into three parts. Part I reports work on refining and clarifying the structure of Irrational Beliefs while Part II and III report on the refining process of Self-Efficacy and Locus of Control, respectively. A discussion of the literature on the relationship between Cognitive Beliefs, Spirituality, and Personality is also included to serve as an empirical basis for hypothesizing their inter-relationships.

5.1. Rationale for choosing Cognitive Beliefs

On the basis of evidence presented in Chapter Four, inconsistencies across extant studies were observed in the pattern of relationships between Spirituality and Personality. In order to explain these it seems appropriate to investigate whether there are other factors influencing the Personality-Spirituality relationships. It is proposed that "the researchers have moved beyond simple demonstration of association between some dimension of Personality and some behavior to consider biochemical, cognitive, affective, and social processes that *explain* the association and conditions under which the process is most likely to influence behavior" (Hoyle, 2000b, p. 954). Ascertaining whether, and also identifying such relations would contribute to the integration of Personality accounts of Spirituality and cognition as proximal cause that can be used as means of interventions.

On that rationale, I decided to explore the role of Cognitive Beliefs with regard to Personality-Spirituality relationships. According to Corey (1996), cognitions are

the major determinant of our behavior and emotions. There is a body of empirical evidence that supports the relationship between Spirituality and Personality traits with cognitive constructs such as Irrational Beliefs and Locus of Control (Davies, 2006; Tobacyk & Milford, 1983; Tobacyk & Tobacyk, 1992), resulting in me asking: Does one's cognitions influence his or her Spirituality and Personality traits? How does a person's belief system affect his or her level of Spirituality and Personality characteristics? Considering these questions is important to better understand the basic tenets of the Personality-Spirituality relationships.

Another reason why I need to consider Cognitive Beliefs in regard to the Personality-Spirituality relationship is because by showing that these beliefs are modifiable (if they are), I am demonstrating that they are useful for intervention purposes. Cognitive Beliefs are regarded as key tenets of Cognitive-Behavioral Therapies (CBT) (Beck, 1976). In particular, CBTs are "based on the premise that psychological disorders are associated with the meanings individuals give to events (rather than to the events themselves) and these meanings are derived from a constellation of core beliefs and assumptions they developed as part of their learning histories" (Beck & Thompkins, 2007, p. 51). Although the formulation of CBTs initially has been to deal with psychological disorders such as depression and substance use, I argue that as a consequence of holding these beliefs, people may develop emotions and behaviours that eventually affect their psychological Well-Being via their Spirituality and Personality. By altering or modifying such beliefs, one's state of Well-Being may be enhanced.

Building on these justifications, this research seeks to explore three cognitive constructs, which are Irrational Beliefs, Self-Efficacy and, Locus of Control as my attempt to delineate the relationship between Spirituality and Personality.

5.2. PART I: Understanding Irrational Beliefs

According to Ellis (1984), Irrational Beliefs are “those cognitions, ideas, and philosophies that sabotage and block people’s fulfilling their basic, or most important, Goals” (p. 20). Stated differently, Irrational Beliefs may prevent individuals from acquiring more realistic thinking that will benefit their life. The endorsement of Irrational Beliefs has been found to be the cause of emotional disturbances (Ellis, 1994).

5.2.1. Measuring irrational beliefs.

In this study, Irrational Beliefs were measured with the Irrational Belief Scale (IBS; Malouff & Schutte, 1986). The twenty items of the IBS were written with the purpose of capturing the ten Irrational Beliefs listed by Ellis and Harper (1975). Nonetheless, a perusal on the IBS literature did not stipulate which of these twenty items represent Ellis and Harper’s ten beliefs (Boelen & Baars, 2007). Therefore, based on their CFA results, Boelen and Bars (2007) listed ten two-item factors representing the ten beliefs, presented in Table 5.1.

Table 5.1

Components and Items of the IBS

Components of Ellis and Harper's Irrational Beliefs	Items of the IBS
Need for Approval	To be happy, I must maintain the approval of all the persons I consider significant
	To be happy I must be loved by the persons who are important to me
Need for Achievement	To be a worthwhile person I must be thoroughly competent in everything I do
	I must keep achieving in order to be satisfied with myself
Demand About Others/Other Rating	Most people who have been unfair to me are generally bad individuals
	Individuals who take unfair advantage of me should be punished
Awfulizing	It is awful when something I want to happen does not occur
	It is terrible when things do not go the way I would like
Emotions Are Externally Caused	My negative emotions are the result of external pressures
	I cannot help how I feel when everything is going wrong
Usefulness of Being Concerned	When it looks as if something might go wrong, it is reasonable to be quite concerned
	If there is a risk that something bad will happen, it makes sense to be upset
Problem Avoidance	It makes more sense to wait that to try to improve a bad life situation
	It is better to ignore personal problems than to try to solve them
Importance of the Past	Some of my ways of acting are so ingrained that I would never change them
	Many events from my past so strongly influence me that it is impossible to change
Demands About Life	Life should be easier than it is
	Things should turn out better than they usually do
Discomfort Anxiety	I hate it when I cannot eliminate an uncertainty
	I dislike having uncertainty about my future

In The Netherlands, Boelen and Baars (2007) investigated the psychometric properties of Dutch-translated version of the IBS with 293 inpatients from a mental health clinic (Mean age = 44.7; SD = 10.6 years). The CFA conducted on the data revealed that the model fit can be improved by combining the four items representing *Need for Approval* and *Need for Achievement* into one single factor labeled as *Demands About the Self*. As well, the four items representing *Usefulness of Being*

Concerned and *Discomfort Anxiety* were formed as a single factor of *Low Frustration Tolerance*. Furthermore, they found that the *Problem Avoidance* factor though relevant to irrationality, exhibited weak reliability ($\alpha = 0.50$) and concurrent validity indices, leading them to suggest the removal of this factor from the overall scale.

The Reliability test, as indicated by the Cronbach's α, also showed that the reliability as a single scale is superior to one or other of its component scales taken separately, leading them to suggest that "at present, it seems safest to use the Belief Scale's total score until future studies have further supported the use of its components" (Boelen & Baars, 2007, p. 138). Nevertheless, the findings from this study should be interpreted with caution because the data were collected from a sample of inpatients in a mental health clinic who were receiving a treatment for mood, anxiety, or adjustment disorders. There is empirical evidence that Irrational Beliefs are related to depressed mood (Szentagotai & Freeman, 2007). Thus, it is probable that Irrational Beliefs expressed by the clinical population may not be generalizable to non-clinical populations.

Recently, Al-Heeti, Hamid and Alghorani (2012) evaluated the psychometric properties of the Irrational Beliefs Inventory (IBI; Koopmans, Sanderman, Timmerman, & Emmelkamp, 1994) in an Arabic context using 384 United Arab Emirates University students (Mean age = 20.81; SD = 1.87). They found that only 34 out of 50 items validly measure the Irrational Beliefs among Arab University students. They also reported that the number of items in each component was different from Koopmans et al. (1994). Their results revealed that modifications need to be made to the original IBI in order for its Arabic-translated version to be psychometrically satisfactory.

Results from a number of other studies conducted to examine the psychometric properties of the IBS supported its reliability, construct and discriminant validity (Bridges & Harnish, 2010; Malouff, Valdenegro, & Schutte, 1987; Warren & Zgourides, 1989). Further, the IBS has demonstrated acceptable reliability and validity for its translated versions of Dutch, French and Portuguese (Malouff, 2009). A psychometric review of measures of Irrational Beliefs conducted recently seems to converge with these findings (Terjesen et al., 2009). However, the literature also suggested that for cases where the instruments were to be used in contexts or cultures other than where the original instruments were developed, modifications needed to be carried out to adapt to local contexts. Presumably, as this expectation applies to measuring Irrational Beliefs in a Malaysian context, the following hypothesis is proposed:

> *Hypothesis 4 (H4)*: The Malay Experimental Version-IBS (MEV-IBS) is a valid and reliable measure for assessing Irrational Beliefs in Malaysian young adults.

The discussions and implications of this hypothesis will be presented in section 5.2.9.

5.2.2. The link between spirituality and irrational beliefs.

The relationship between Spirituality and Irrational Beliefs has not been very well established because although much research, especially in the West, has been conducted on Irrational Beliefs (Davies, 2006), little can be found that reports on their relationship with Spirituality. A literature perusal on attempts to connect the five dimensions of Spirituality as captured by the ESI and Irrational Beliefs revealed no results. However, there was one study that investigated the relationship between paranormal beliefs (which includes dimensions such as traditional religious belief, psychic belief, witchcraft, superstition, spiritualism, extraordinary life forms and precognition) and Irrational Beliefs (Roig, Bridges, Renner, & Jackson, 1997). This

study found traditional religious beliefs, precognition, and superstition to be positively correlated with irrational thinking.

Such results implied that individuals who hold greater religious, psychic, and superstitious beliefs tend to endorse more maladaptive irrational thinking. The finding was supported by Huntley and Peeters (2005) but inconsistent with those of Macavei and Miclea (2008). Macavei and Miclea found a negative association between Religiousness and Irrational Beliefs. The mixed findings are perhaps explainable in terms of the difference in how these constructs are conceptualized and measured. For instance, in Roig et al's study, Irrational Beliefs were measured using the Irrational Beliefs Inventory (IBI; Koopmans et al., 1994) while Macavei and Miclea utilized Attitudes and Beliefs Scale 2 (ABS 2; DiGiuseppe, Leaf, Exner, & Robin, 1988). Although both measures are claimed to measure Irrational Beliefs, the IBI conceptualized Irrational Beliefs in terms of five dimensions such as Worrying, Rigidity, Problem Avoidance, Demand for Approval, and Emotional Responsibility, while the ABS 2 captured Irrational Beliefs in terms of Self-Downing.

The inconsistencies in the past findings complicate the process of hypothesizing the relationship between Spirituality and Irrational Beliefs in a Malaysian context. In order to extend this sparse empirical evidence, I further investigated the association between Spirituality and Irrational Beliefs. This brings me to the question (RQ3): *What is the relationship between Spirituality and Irrational Beliefs in Malaysian young adults*? The results will be discussed in detailed in section 5.2.10.

5.2.3. The link between personality and irrational beliefs.

With regard to the relationship between Personality and Irrational Beliefs, past research has produced mixed findings. Firstly, Davies (2006) found Irrational Beliefs to correlate positively with Conscientiousness and Neuroticism, but negatively with

Openness: individuals who hold higher levels of Irrational Beliefs are associated with being highly conscientious and neurotic but less open. Davies' results were confirmed with Spörrle, Strobel, and Tumasjan's (2010) results obtained from their investigation on the relationship between Personality and Irrational Beliefs among Alemanian university students.

On the other hand, Sava (2009) found slightly different results with Irrational Beliefs correlating negatively with only Emotional Stability and Agreeableness. Their results implied that high levels of Irrational Beliefs are associated with high levels of Neuroticism (or low levels of emotional stability) and low levels of Agreeableness. However, the results from both studies should be interpreted with caution, considering the low internal consistencies exhibited by the Personality measure used in Davies' study and the Irrational Belief measure utilized in Sava's study.

Nevertheless, the findings can be interpreted as empirical support for a relationship between Irrational Beliefs and Personality. Hence, it could conceivably hypothesized that:

Hypothesis 5(H5): Irrational Beliefs are negatively correlated with Openness and Agreeableness; positively correlated with Neuroticism and Conscientiousness.

This will be further discussed in section 5.2.11.

5.2.4. Irrational belief as the mediating variable between personality and spirituality.

Having explored briefly the Spirituality-Irrational Beliefs and Personality-Irrational Beliefs relationships, this section considers the mediating role of Irrational Beliefs between Spirituality and Personality. As mentioned earlier, researchers have moved beyond demonstrating the simple associations between constructs of interest, in an attempt to examine the causal processes that underlie the influence of

Personality on Spirituality. Consequently, in this study, the role of more proximal cause, such as cognition processes through which Personality may influence Spirituality, is explored.

An exhaustive search of the literature did not locate any studies examining the mediating effect of irrational belief between Spirituality and Personality. However, several empirical studies have indicated support for the mediating role of Irrational Beliefs in other contexts. For instance, in investigating belief in good luck and psychological Well-Being, Day and Maltby (2003) found Irrational Beliefs to mediate the influence of belief in good luck and depression and anxiety. Likewise, Vandervoot (2006) also found a mediating effect of Irrational Beliefs on the relationship between hostility and health. These past studies are considered to be relevant to this study because they provide insights into the mediating role of Irrational Beliefs between several psychological constructs, although not between Personality and Spirituality.

Based on the tenet of FFT that Personality traits will not be affected by external influences (as discussed in section 4.2.1.1), and also by empirical evidence as illustrated above, I expected that Irrational Beliefs would mediate the relationship between all four dimensions of Personality (except Extraversion) and all five dimensions of Spirituality. I attributed this expectation to the established associations between Irrational Beliefs and all dimensions of Personality constructs except Extraversion (section 5.3.3). Therefore, the following hypothesis is posited:

> *Hypothesis 6 (H6):* The influence of Agreeableness, Conscientiousness, Neuroticism and Openness on Spirituality is significantly mediated through Irrational Beliefs.

The discussions and implications of this hypothesis are offered in Chapter Six. In the next section, I report on the translation process of the Irrational Belief Scale.

5.2.5. Translation of Irrational Belief Scale (IBS).

The IBS was translated in accordance to the translation method described in section 2.4.1. The translated version of the IBS from here onwards will be known as the Malay-Experimental Version of the Irrational Belief Scale (MEV-IBS). The translation results are reported and discussed in terms of semantic and conceptual equivalence: Refer to Appendix K for the full results of the translation/back-translation of the IBS.

As expected, most translated items did not reproduce an exact transliterated copy of the original items. Therefore, equivalence testing as described in section 2.4.2. was conducted between the original IBS and the MEV-IBS. From equivalence testing, it can be seen that three items in the MEV-IBS were incomparable to the English IBS in terms of language and interpretation (Appendix K). Refer to Table 5.2 for the details of the non-equivalent items:

Table 5.2

Problematic Items in theTtranslation/Back-Translation Version of the IBS

No item	Original version	Malay Version			Reconciled Version A	Back-translated Version	Mean Score	Reconciled Version B	Back-translated into English
		A	B	C					
6	When it looks as if something might go wrong, it is reasonable to be quite concerned	*Saya merasakan tidak salah untuk saya berasa bimbang apabila sesuatu perkara buruk bakal terjadi*	*Bila keadaan kelihatan akan menjadi tidak terurus, adalah wajar bagi kita untuk menjadi prihatin*	*Bila sesuatu perkara salah, sepatutnya munasabah ambil tahu*	*Saya merasakan tidak salah untuk saya berasa bimbang apabila sesuatu perkara buruk bakal terjadi*	I feel that there is nothing wrong for me to be worried when something bad is going to happen	3	*Bila nampaknya sesuatu mungkin menjadi tidak betul, adalah wajar untuk menjadi prihatin*	When it seems something may be incorrect, it is appropriate to be concerned
7	Life should be easier than it is	*Kehidupan ini seharusnya lebih senang daripada realitinya sekarang*	*Hidup sepatutnya adalah lebih senang dari yang seadanya*	*Hidup seharusnya lebih mudah dari yang sepatutnya*	*Kehidupan ini seharusnya lebih mudah daripada yang sepatutnya*	Life is supposed to be easier than it should be	3.5	*Kehidupan harus lebih mudah dari yang sepatutnya*	Life should be easier than it should
16	Things should turn out better than they usually do	*Setiap perkara dalam kehidupan ini harus menjadi lebih baik daripada yang diharapkan.*	*Keadaan seharusnya lebih baik dari sedia ada*	*Setiap perkara seharusnya bertambah baik dari yang sepatutnya*	*Keadaan seharusnya lebih baik dari yang sedia ada*	Things has to be better than it is	3	*Perkara seharusnya berubah lebih baik dari kebiasaannya*	Things should turn out better than usual

As illustrated in Table 5.2, it was challenging to produce an exact and meaningfully accurate translation of the original items. However, after several discussions with other translators, I managed to reproduce items that were comparable in terms of language and interpretability to the original items.

The MEV-IBS was subjected to preliminary testing. All twenty respondents reported no concerns regarding the clarity of the instructions and questions in the MEV-IBS. It was therefore ready for validation purposes.

5.2.6. Modelling one-factor congeneric measurement model of MEV-IBS.

In this study, Irrational Belief was measured with one latent variable, so no multi-factor CFAs were needed. As mentioned earlier, twenty items were used to measure Irrational Beliefs. Table 5.3 shows the standardised parameter estimates and re-specification statistics for the single factor congeneric model of the Irrational Beliefs in the Malaysian context.

Table 5.3

One-Factor Congeneric Model Analysis of Irrational Beliefs and Respecification Statistics

	Test Statistics			**Fit Indices**				**Item Statistics**
Biggest (+ve) Modification Index	**Bollen-Stine p**	**Chi-square**	**CMIN**	**RMSEA**	**SRMR**	**CFI**	**TLI**	**Lowest R^2 /Item no**
Original model	.002	529.784	3.116	.095	.096	.68	.64	.012/PB1
Remove PB1	.002	388.164	2.571	.082	.084	.77	.74	.013/PB3
Remove PB3	.002	322.318	2.405	.077	.074	.81	.78	.017/PB6
Remove PB10	.002	250.723	2.143	.070	.072	.85	.82	.016/PB6
Remove PB6	.002	210.488	2.064	.067	.068	.87	.85	.075/PB2
Remove PB2	.004	182.933	2.079	.068	.068	.88	.86	.093/PB7
Remove PB7	.004	156.275	2.084	.068	.067	.90	.87	.099/PB15
Remove PB15	.006	129.414	2.022	.066	.061	.91	.89	.105/PB9
Remove PB9	.008	107.223	1.986	.065	.056	.91	.90	.162/PB19
Remove PB19	.022	78.283	1.779	.058	.049	.94	.93	.180/PB16
Remove PB16	.291	47.543	1.358	.039	.040	.98	.97	

As can be seen in Table 5.3, the original model with twenty items measuring Irrational Beliefs did not fit the Malaysian data well, indicated by the large chi-square fit, χ^2 (170) = 529.784; Bollen-Stine p-value = .002, thus indicating the need for re-specification. In order to obtain a well-fitted model, I decided to remove the items with the lowest SMC one by one, since low SMC indicates that the item has little commonality with the latent construct. The well-fitted model of Irrational Beliefs in the Malaysian context is illustrated in Figure 5.1.

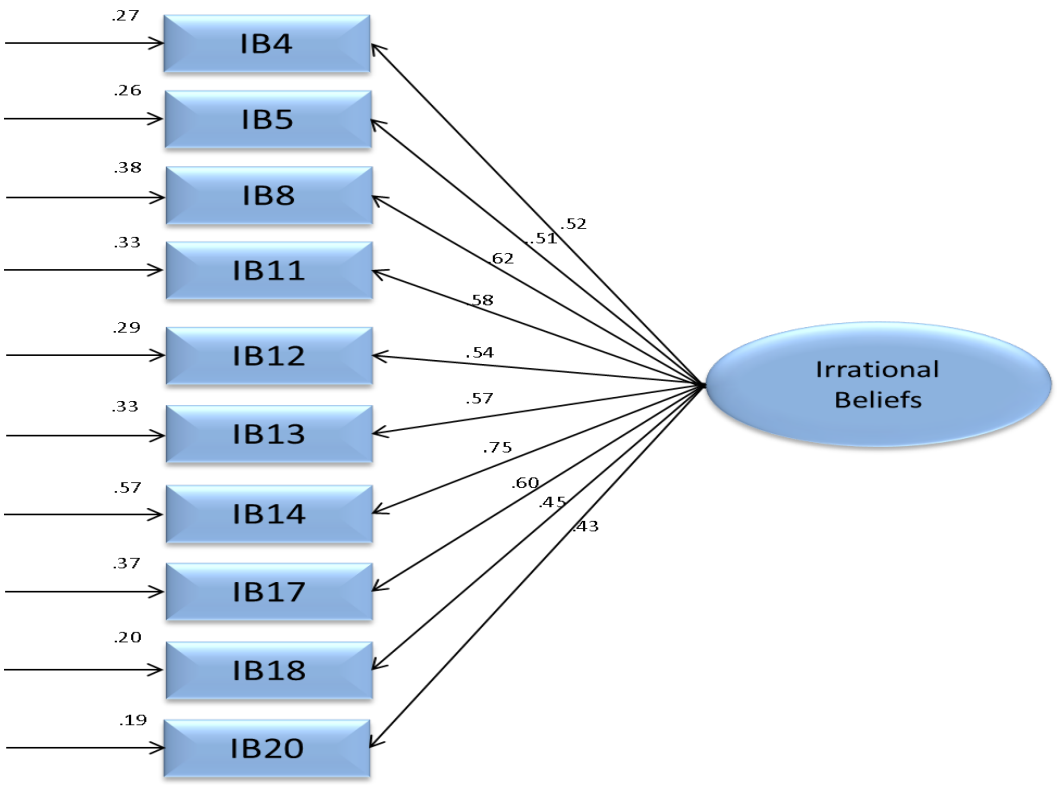

Figure 5.1. A single factor model for the Irrational Beliefs
Note. IB = Irrational Beliefs; Chi-square = 47.543; df = 35; Bollen Stine p-value = .291; CMIN/df = 1.358; SRMR = .04; RMSEA = .04; CFI = .98; TLI = .97.

As can be seen from Figure 5.1, IB14 "it is awful when something does not turn out as I expected" was the key indicator of Irrational Beliefs in Malaysian young adults. The latent factor, Irrational Beliefs, explained 57% of variance in the subscale "it is awful when something does not turn out as I expected".

It was worthwhile to note that the key indicators of Irrational Beliefs in the Malaysian context were item IB14, followed by item IB8 “I feel bad when something I hope for does not take place”. Both of these items made up the Awfulizing factor, which described the person’s exaggeration of a bad event by making it worse than it should be (Bridges & Harnish, 2010). It seemed that the Malaysian young adults are more apt to endorse cognitive errors, which involve the belief in the worst possible circumstances. It is alarming because according to Ellis (1962), Awfulizing is categorized as one of the proximate causes of emotional dysfunction.

5.2.7. Convergent and construct validity of the MEV-IBS.

As seen in Appendix L, convergent validity was supported when all the observed variables loaded significantly on its intended factor, as evidenced by C.R values > 1.96 and $p < 0.05$. Construct validity for the MEV-BS was supported when the one-factor congeneric measurement model fits well to the Malaysian data, as shown in Figure 5.1.

5.2.8. Model-based reliability analysis.

The reliability results of the MEV-IBS, calculated by using the Hancock and Mueller’s Coefficient *H*, revealed a value of 0.82, which is above the recommended cut-off value of 0.70. I therefore considered the MEV-IBS to be a reliable measure to assess the level of Irrational Beliefs in Malaysian young adults.

5.2.9. Cross-validation of the irrational belief model in a replication sample.

Lastly, to further determine the validity of one-factor model of Irrational Beliefs, it was subjected to multi-group analysis. The results are reported in Table 5.4.

Table 5.4

Goodness-of-Fit Indices for Model Cross-Validation ($n_{calibration}$ = 236, $n_{validation}$ = 201)

Model	χ^2	CMIN/*df*	*df*	CFI	TLI	RMSEA	$\Delta\chi^2$
Constrained	163.598	2.071	79	.91	.90	.05	
Unconstrained	155.784	2.116	70	.91	.90	.05	7.814

Note. χ^2 = chi-square, df = degrees of freedom, CMIN/df = Normed chi-square, CFI = Comparative fit index, TLI = Tucker-Lewis Index, RMSEA = Root mean-square error of approximation.

The χ^2 difference test between constrained and unconstrained model showed a difference value of 7.814, with 9 degrees of freedom and statistically non-significant at p = 0.56. Direct comparison of the models revealed that the imposition of constraints did not cause an appreciable degradation in model fit (as revealed by a non significant χ^2 difference). Based on this result, I concluded that the factor loadings are reasonably invariant across groups. The cross-validation results lent further support to the validity of the MEV-IBS.

The current results indicated that several items needed to be removed from the MEV-IBS in order to get a good fit model. To model this one-factor congeneric model resulted in ten irrelevant items that needed to be removed. As a result, only ten items were found to be valid indicators measuring Irrational Beliefs in Malaysian young adults. This was somewhat consistent with Al-Heeti et al.'s (2012) research where they also had to remove some items from their Arabic-translated version of the IBI in order to gain an acceptable measure of Irrational Beliefs.

A closer inspection on the deleted items, however, revealed that six items representing three components of the Irrational Beliefs discussed earlier, namely *Need for Achievement, Problem Avoidance and Demands about Life,* were not applicable in a Malaysian context. It was difficult to compare and discuss the results of this study with past results due to the absence of such Malaysian studies.

However, the findings from extant Western studies offered me further justification for the removal of several poorly performed items. For instance, a prior study by Boelen and Baars (2007) allowed me to question the integrity of the *Need for Achievement* factor as it was also found to correlate strongly with the *Need for Approval* factor, which led them to group both factors together. However, in the current Malaysian study, I decided to delete the *Need for Achievement* factor from the MEV-IBS with the purpose of maximizing its construct validity (Hair et al., 2010).

Referring back to Boelen and Baars's (2007) findings that supported the weak psychometric properties of the *Problem Avoidance* factor, I decided to remove the items representing this factor from the overall MEV-IBS.

In summary, the results from the validity and reliability test revealed that the MEV-IBS to be a valid and reliable measure to assess the level of Irrational Beliefs among the Malaysian adults. The one-factor model for the MEV-IBS provided a good fit for the data: Chi-square = 47.543; df = 35; Bollen Stine p-value = .291; CMIN/df = 1.358; SRMR = .04; RMSEA = .04; CFI = .98; TLI = .97. Taking all results together, I concluded that the one-factor model as captured by the MEV-IBS is relevant and applicable in a Malaysian context as hypothesized earlier (H4). Thus, H4 which proposed that *the MEV-IBS is a valid and reliable measure for assessing Irrational Beliefs in Malaysian young adults* was supported. I now need to report the results on the relationship between Spirituality and Personality with Irrational Beliefs found in the Malaysian context.

5.2.10. Results and discussions: The relationship between spirituality and irrational beliefs.

In order to answer RQ3 (section 5.2.2), the correlation between five dimensions of Spirituality and Irrational Beliefs were tested. The relationship between

Spirituality (as measured by the MEV-ESI) and Irrational Beliefs (as measured by MEV-IBS) was investigated using Spearman's Rank Order correlation coefficient (r_s). The results were interpreted based on Cohen's (1988) benchmark (refer to section 4.5 for details).

As Table 5.5 shows, there was a significant but weak correlation between the Experiential/Phenomenological Dimension of Spirituality, Paranormal Beliefs, and Irrational Beliefs ($r_{s\,=}$ .11, p <.05; $r_{s\,=}$ .23, p <.01), respectively. The moderate negative correlation was obtained by EWB and IB ($r_{s\,=}$ -.32, p <.01). This result implied that individuals who demonstrated high levels of existential Well-Being tend to endorse less maladaptive irrational thinking.

Table 5.5

Intercorrelations of Spirituality and Irrational Beliefs

	Variables	1 IB	2 COTS	3 EPD	4 EWB	5 REL	6 PARA
1.	IB	1.00					
2.	COTS	.06	1.00				
3.	EPD	.11*	-.07	1.00			
4.	EWB	-.32**	.27**	-.36**	1.00		
5.	REL	-.05	.57**	-.10*	.25**	1.00	
6.	PARA	.23**	-.08	.34**	-.29**	-.07	1.00

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).
Note: IB=Irrational Beliefs; COTS=Cognitive Orientation towards Spirituality; EPD = Experiential/Phenomenological Dimension of Spirituality; EWB=Existential Well-Being, REL=Religiousness; PARA=Paranormal Beliefs.

RQ3 considers *whether there is a relationship between Spirituality and Irrational Beliefs in Malaysian young adults*. The results from correlational analysis revealed that there was a positive relationship between Irrational Beliefs and two other dimensions of Spirituality, which was EPD and PARA; and a negative relationship between Irrational Beliefs and EWB.

Taken together, the results suggest that in a Malaysian context, individuals who endorse greater Irrational Beliefs tend to get involved in more mystical and

transpersonal experiences and paranormal phenomena (EPD and PARA), but have less of a sense of meaning and purpose of self (EWB). The results thus far have been consistent with past research, which suggested a positive relationship between Paranormal Beliefs and Irrational thinking (Huntley & Peeters, 2005).

Regrettably, I could not locate any studies examining the relationship between EWB and Irrational Beliefs. Nevertheless, the finding that EWB was negatively correlated with Irrational Beliefs was somewhat expected. This is because extant studies have provided empirical evidence on the inverse relationship between irrationality and general subjective Well-Being (e.g. Froh et al., 2007; Spörrle, Welpe, & Forsterling, 2006). It was therefore reasonable that the present research found that persons who have less of a sense of purpose and meaning in life are more likely to endorse maladaptive irrational thinking.

Contrary to the findings by Macavei and Miclea (2008), however, the present study indicated no significant relationship between Religiousness (REL) and Irrational Beliefs. This discrepancy begs the question of how consistent the relationship between the five dimensions of Spirituality and Irrational Beliefs really is.

Nevertheless, it should be noted that the magnitude of the correlations between Irrational Beliefs and the three dimensions of Spirituality found in this study can be considered as weak to moderate. It would be relevant for future studies to replicate this study, to confirm such a relationship between these constructs before firm conclusions can be drawn.

5.2.11. Results and discussions: The relationship between personality and irrational beliefs.

The proposed hypothesis (H5): *Irrational Belief is negatively correlated with Openness and Agreeableness; positively correlated with Neuroticism and Conscientiousness* (section 5.2.3) was examined by looking at the correlations between five dimensions of personality and Irrational Beliefs. The results obtained from the correlation analysis are shown in Table 5.6.

Table 5.6

Intercorrelations of Personality and Irrational Beliefs

	Variables	1 IB	2 E	3 A	4 C	5 N	6 O
1.	IB	1.00					
2.	E	.01	1.00				
3.	A	-.02	.44**	1.00			
4.	C	-.09	.49**	.53**	1.00		
5.	N	.27**	-.11*	-.13*	-.16**	1.00	
6.	O	.09	.18**	.23**	.23**	.11*	1.00

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).
Note: IB=Irrational Beliefs; E=Extraversion; A=Agreeableness; C=Conscientiousness; N=Neuroticism; O=Openness.

It is apparent from Table 5.6 that only Neuroticism was significantly though weakly correlated with Irrational Beliefs ($r_{s\,=}$ .27, p <.01). Based on this result, it can be said that young Malaysian adults who endorse high levels of Irrational Beliefs are inclined to score higher on the Neuroticism scale and this needs to be explained, as per below.

Hypothesis 5 tested the relationship between the five dimensions of Personality and Irrational Beliefs. The results from correlation analysis suggested a significant and positive but weak relationship between Neuroticism and Irrational Beliefs. This finding corroborates the findings of Davies (2006) and Sava (2009) which showed a

positive relationship between Neuroticism and Irrational Beliefs. Thus, it might be concluded that young Malaysian adults who are tense, anxious, moody, and emotionally unstable tend to endorse more irrational thinking.

A possible explanation for this might be offered from the perspective of FFT. An inborn propensity for being neurotic may have predisposed a person to be illogical and inconsistent with reality. However, considering that I used a correlational approach, I cannot conclude from my findings that the tendency to score high on the Neuroticism scale causes one to acquire more irrational thinking. It would be relevant for future studies to employ an experimental design to confirm this finding. All in all, this result extends previous studies and supports the tentative conclusion that there is a relationship between Neuroticism and Irrational Beliefs.

Contrary to expectations, this study did not find a significant relationship between Openness, Agreeableness, Conscientiousness, and Irrational Beliefs. This rather contradictory result may be due to conceptual and methodological differences. Whereas Davies (2006) used the ten-item short version of the NEO (Gosling et al., 2003) to measure personality and Sava (2009) used ABS-2 (DiGiuseppe et al., 1988) to assess Irrational thinking, this study used the refined MEV-BFI as a personality measure and the MEV-IBS as an Irrational Beliefs measure. The use of different measures may contribute to the different conceptualization and operationalization of personality and Irrational Beliefs constructs used in these studies. Future studies adopting the BFI and the IBS are therefore recommended.

5.2.12. Section summary.

To sum up, this section summarizes the findings of hypothesis testing and the answers to the research question (Table 5.7). The findings answered RQ3 and indicated support for H4 and partial support for H5.

Table 5.7

Summary of Hypotheses and Research Questions

Proposed Hypothesis/Research Question	Findings
H4: The MEV-IBS is a valid and reliable measure for assessing Irrational Beliefs in Malaysian young adults.	Supported
H5: Irrational Beliefs is negatively correlated with Openness and Agreeableness; positively correlated with Neuroticism and Conscientiousness	Partly supported
H6: The influence of Agreeableness, Conscientiousness, Neuroticism, and Openness on Spirituality is significantly mediated through Irrational Beliefs	Will be discussed in Chapter Six.
RQ3: What is the relationship between Spirituality and Irrational Beliefs in Malaysian young adults?	Refer to section 5.2.10.

In the next section, I will discuss another cognitive factor, Self-Efficacy, as a potential mediator, that is as a factor that may influence the relationship between Personality traits and Spirituality.

5.3. PART II: Understanding Perceived Self-Efficacy (PSE)

The term Perceived Self-Efficacy (PSE) refers to "people's beliefs in their capabilities to produce given attainments" (Pastorelli et al., 2001, p. 87). By way of explanation, PSE means a person's belief that he or she possesses the necessary skills or abilities to accomplish given tasks.

Extant research (Maddux & Gosselin, 2012) has shown that Self-Efficacy plays a pivotal role in seven areas: "self-regulation, psychological well-being and adjustment, physical health, psychotherapy, education, occupational choice and performance and collective efficacy among groups and organizations" (p. 207). Based on their findings of nine meta-analyses on Self-Efficacy and the aforementioned areas, Bandura and Locke (2003) claimed that "evidence from these

meta-analyses is consistent in showing that efficacy beliefs contribute significantly to the level of motivation and performance" (p. 87). Bandura (1995) also asserted that people with low sense of Self-Efficacy are prone to experience depression, anxiety and helplessness. Therefore, in general, increasing a sense of Self-Efficacy is associated with an increased belief in a person's own abilities and, in turn, increasingly facilitating success (Maddux & Gosselin, 2012).

According to Luszczynska, Gutiérez-Doña, and Schwarzer (2005), PSE is commonly defined as being task-specific, for instance academic, social skills, or self-regulatory Self-Efficacy. Yet, there are other researchers who view PSE as a generalized sense of Self-Efficacy that refers to a "global confidence in one's coping ability across a wide range of demanding or novel situations" (Luszczynska et al., 2005, p. 81). A prominent researcher in the study of Self-Efficacy, Bandura (1997) has challenged such an approach on the grounds that no individual can feel competent in all areas of functioning. Furthermore, Valentine, DuBois, and Cooper (2004) claimed that in comparison to generalized Self-Efficacy, task-specific Self-Efficacy has been identified as being a better predictor of actual behavior. In view of this, I decided to conceptualize PSE as a set of self-beliefs specific to different domains of functioning, in my attempt to understand the Spirituality-Self-Efficacy-Personality relationship. In the next section, I present a discussion on the measurement of PSE beliefs.

5.3.1. Measuring perceived self-efficacy (PSE).

Maddux and Gosselin (2012) pointed out that Self-Efficacy has been measured in various ways. However, in line with Bandura's (1997) recommendation to measure domain-specific Self-Efficacy, the Children's Perceived Self-Efficacy (CPSE; Bandura, 1990), which intended to measure seven domains of Self-Efficacy,

was adopted in this study. These domains include (*a) academic achievement, (b) self-regulated learning, (c) leisure and extracurricular activities, (d) self-regulatory efficacy, (e) maintaining social relationships, (f) self-assertive efficacy, and (g) meeting others' expectations*. The various domains of Self-Efficacy have allowed me to predict what people are likely to do under more specific circumstances.

Previous research conducted on an Italian sample of children aged 11 to 14 years suggested that the 37 items representing the aforesaid seven domains loaded on three underlying reliable factors: (a) *Perceived Academic Self-Efficacy (PAE),* (b) *Perceived Self-Regulatory Self-Efficacy (SRE),* and finally (c) *Perceived Social Self-Efficacy (PSSE)* (Bandura et al., 1996). Nevertheless, a validation study that investigated the replicability and generalizability of the factor structure of CPSE scales in Italy, Hungary, and Poland revealed that only the generalizability of the PAE and PSSE was supported. The factor structure of SRE was less stable and less reliable, especially in the Hungarian sample (Pastorelli et al., 2001). The researchers explained that their rather contradictory result may have been due to the behavior of the items, which were irrelevant to the latent construct of the SRE and the small number of items (only five items) used to measure the SRE. Even so, the findings seem to suggest that Self-Efficacy should be treated as a "multifaceted attribute rather than as a global trait" (Pastorelli et al., 2001, p. 94).

It is worth noting that CPSE scales were originally developed to measure children's beliefs in seven domains. It was therefore useful to consider whether the CPSE might be applicable to young adults as well. In reviewing the findings of previous research then, a question was asked (RQ4): *Are the factor structures of PAE, SRE and PSSE validated in the Malaysian young adult sample*? This will be

answered and discussed in section 5.3,12. But firstly, I need to consider any potential relationships between Spirituality and Perceived Self-Efficacy.

5.3.2. The link between spirituality and perceived self-efficacy.

This study extends from previous literature that investigates the relationship between Spirituality and perceived Self-Efficacy. An exhaustive search of the literature did not locate any studies exploring the association between the five dimensions of Spirituality as measured with the ESI and PSE, indicating the need to investigate this issue further.

However, I found quite a relevant recent study by Adegbola (2011) that investigated the relationships between Spirituality, Self-Efficacy, and Quality of Life among adults with sickle cell disease in the United States. In her study, Adegbola utilized the Functional Assessment of Chronic Illness Therapy-Spirituality (FACIT-Sp) to measure Spirituality and the Sickle Cell Self-Efficacy Scale (SCSES) to measure Self-Efficacy. The results revealed that Self-Efficacy was strongly and positively related to Spirituality. Based on these results, she concluded that as the level of Self-Efficacy increases, so does the level of Spirituality.

In India, Farooq and Akhtar (2008) examined the relationship between Self-Efficacy, Self-Regulation and Spirituality in adults with ages ranging from 21 to 60 years old. Similar to Adegbola's (2011) results, their results also suggested a significant positive relationship between Self-Efficacy and Spirituality. Based on their findings, Farooq and Akhtar concluded that "Self-Efficacy reinforces regulation and Spirituality" (p. 120). However, the main weakness of Farooq and Akhtar's study was the failure to provide an explanation on how they are related.

In Malaysia, Imam, Nurullah, Mako-Abdul, Rahman, and Noon (2009) conducted a study where they explored the spiritual and psychological health of 358

undergraduate Malaysian students. Again, the research findings demonstrate a positive relationship between Self-Efficacy and Spirituality. In addition, Imam et. al's (2009) regression analyses revealed that Existential Well-being, one of the Spirituality dimensions, predicted Self-Efficacy. They suggested a possible explanation for this might be that Spirituality enhances coping abilities which in turn affects Self-Efficacy. This explanation is plausible considering the profound influence of Spirituality on coping abilities reported in previous studies (Shah et al., 2011).

While the three studies cited above investigated a similar relationship of Spirituality and Self-Efficacy to this study, there are some distinctive differences between these studies and the current one. For instance, in this study, I surveyed young adults aged 18 to 25 years old and utilized CPSE to assess Self-Efficacy while Adegbola (2011) used the Sickle Cell Self-Efficacy Scale, Farooq and Akhtar (2008) used the Self-Efficacy scale, and Imam et al. (2009) adopted the General Self-Efficacy Scale. However, my review of the literature suggested that there is a consistent research finding for a positive relationship between Self-Efficacy and Spirituality, regardless of the sample and self-efficacy inventories used. It can therefore be assumed that:

> *Hypothesis 7 (H7):* Self-efficacy is positively related to Spirituality in a Malaysian context.

The discussion and implications of H7 will be presented in section 5.3.13.

5.3.3. The link between personality and perceived self-efficacy.

Meta analytical studies have found convincing and widespread support indicating that personality constructs are substantially related to Self-Efficacy (Judge & Ilies, 2002; Maddux & Gosselin, 2012; McCrae & Löckenhoff, 2010b). Based on their meta-analytic review, Judge and Ilies (2002) reported that Self-Efficacy relates

positively to Extraversion, Openness, and Conscientiousness while it relates negatively to Neuroticism. Agreeableness, however, has not been shown to have a relationship with Self-Efficacy. Hence, the following hypothesis which I will test is proposed:

> *Hypothesis 8 (H8):* Self-efficacy is positively related to Extraversion, Openness, and Conscientiousness and, negatively related to Neuroticism.

The discussions of H8 will be presented in section 5.3.14.

In conclusion and to summarise, the extant research suggests reasonably clearly that Spirituality, Personality traits, and Self-Efficacy are related. However, attempts undertaken to connect the three domains and their constituent factors are scant. I therefore consider the functional relationship among these domains in the next section.

5.3.4. PSE as the mediating variable between personality and spirituality.

Various theoretical orientations, observations, and understandings have led researchers to propose and investigate PSE as a potential mediator in various psychosocial-life outcomes relationships, specifically those between Spirituality and Well-Being (Siegel & Schrimshaw, 2002), Personality and Subjective Well-Being (Strobel, Tumasjan, & Spörrle, 2011), physical activity and quality of life (Konopack & McAuley, 2012), Personality and career interests (Nauta, 2004), and children's achievement motivation and in-class physical activity (Gao, Lochbaum, & Podlog, 2011). However, an extensive literature search did not locate any studies investigating the mediational role of Self-Efficacy on the Personality-Spirituality relationship.

Nevertheless, as previously discussed in sections 5.3.2 and 5.3.3, there was a certain degree of relationship between Spirituality-Self-Efficacy and Personality-Self-Efficacy that calls for an investigation as to how the three variables are related.

So far, however, there has been no empirical investigation on the link among the Spirituality, Personality, and Self-Efficacy triad. In this study, I therefore have set out to further explore the mediating role of Self-Efficacy in the relation between Personality and Spirituality. In reviewing the findings of previous research discussed above, then, it could be hypothesised that:

> *Hypothesis 9 (H9):* The influence of Extraversion, Openness, Conscientiousness, and Neuroticism on Spirituality is significantly mediated through Self-Efficacy.

The discussions and implications of this hypothesis are offered in Chapter Six.

5.3.5. Translation of the CPSE scales.

The CPSE was translated using the same method described earlier in section 2.4.1. The translated version of the CPSE from here onwards will be known as the Malay-Experimental Version of the Children's Perceived Self-Efficacy scale (MEV-CPSE). For the full results of the translation/back-translation, refer to Appendix K.

In the process of translating the CPSE scales, I recognized that some words needed to be replaced to suit a Malaysian young adult context. For instance, the word "school" and "English literature" was replaced with "university" and "Malay literature", respectively.

As with the other scales translated in this study, the translation of items in the MEV-CPSE also did not reproduce an exact transliterated copy of the original items. However, equivalence testing, as reported in section 2.4.2, indicated that the items in the MEV-CPSE were comparable to its original items (Appendix K), so no re-translations were required.

The results from the pilot testing of the MEV-CPSE revealed that no further amendment was necessary as indicated in the next section, where I present the results of my examinations of the single-factor congeneric models of three latent variables measuring PSE.

5.3.6. Modelling one-factor congeneric measurement model of perceived academic efficacy (PAE).

In this dissertation, 19 items were used to tap the different domains of the young adults' academic activities. Table 5.8 shows the standardised parameter estimates and re-specification statistics for the single factor congeneric model of PAE beliefs in a Malaysian context.

Table 5.8

One-Factor Congeneric Model Analysis of PAE and Respecification Statistics

	Test Statistics		**Fit Indices**					**Item Statistics**
Biggest (+ve) Modification Index	**Bollen-Stine p**	**Chi-square**	**CMIN**	**RMSEA**	**SRMR**	**CFI**	**TLI**	**Lowest R^2 /Item no**
Original model	.002	984.539	6.477	.153	.098	.68	.64	.140/PAE4
Remove PAE4	.002	787.078	5.830	.143	.087	.73	.69	.206/PAE27
Remove PAE27	.002	653.400	5.491	.138	.086	.75	.72	.159/PAE14
Remove PAE14	.002	543.509	5.226	.134	.086	.77	.73	.243/PAE16
Remove PAE16	.002	431.290	4.792	.127	.086	.80	.76	.173/PAE2
Remove PAE2	.002	336.139	4.365	.120	.076	.83	.80	.138/PAE1
Remove PAE1	.002	259.015	3.985	.113	.068	.87	.84	.174/PAE5
Remove PAE5	.002	197.063	3.649	.106	.057	.90	.87	.266/PAE12
Remove PAE12	.020	115.948	2.635	.083	.051	.94	.92	.150/PAE9
Remove PAE9	.084	75.564	2.188	.071	.045	.96	.94	
		47.698	1.767	.060	.040	.97	.96	

From Table 5.8 it can be seen that the original model did not fit the Malaysian data well as demonstrated by the large chi-square fit, χ^2 (152) = 984.539; Bollen-Stine p-value = .002. As my purpose was to maximize construct validity, items with low SMC were eliminated from the latent construct one by one until satisfactory model fit was gained. The rationale for the removal of each of the nine items was based simply on the fact that these items only represent trivial loadings. Upon deleting nine the items, a well-fitted model was identified with reduced χ^2 value from 984.539 to 47.698 (df=27; p=.084). This new model is illustrated in Figure 5.2.

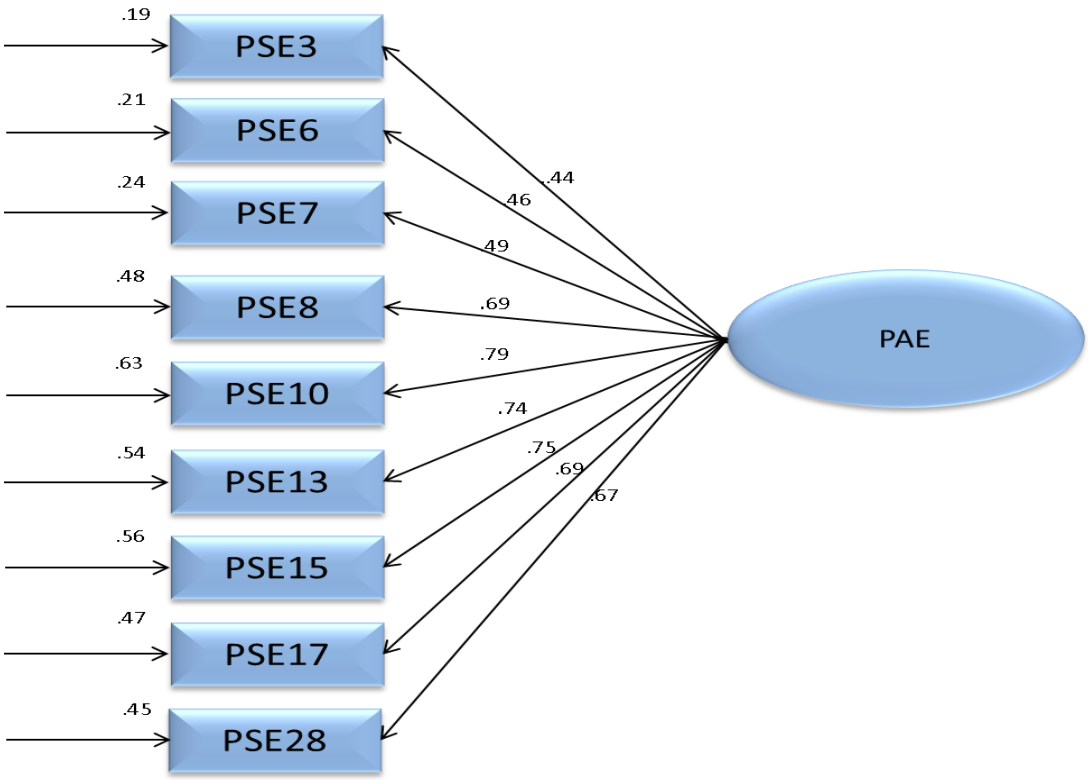

Figure 5.2. A single factor model for Perceived Academic-Efficacy
Note. PAE = Perceived Academic Self-Efficacy; PSE = Perceived Self-Efficacy; Chi-square = 47.698; df = 27; Bollen Stine p-value = .084; CMIN/df = 1.767; SRMR = .04; RMSEA = .06; CFI = .97; TLI = .98.

From Figure 5.2, I can see that the key indicator of PAE is PSE10 "pay attention to university subjects". The latent factor, PAE, explained 63% of variance in PSE10, which dominated the construct. Even though the fit indices for the PAE model were satisfactory, it should be noted that three of the items (PSE3, PSE6, and PSE7) displayed low SMC, suggesting its disconnection with the rest of PAE items. The validity of these three items further investigated in the next step, the estimation of the measurement models two by two (section 5.3.10).

5.3.7. Modelling one-factor congeneric measurement model of self-regulatory efficacy (SRE).

SRE used five items to measure one's capability to resist his or her engagement in high-risk activities. My attempt to model one-factor congeneric measurement model of SRE resulted in an unfit model, χ^2 (5) = 89.65; Bollen-Stine p = .002.

Refer to Table 5.9 for the steps taken to improve the model fit of SRE in the Malaysian sample. The fit indices recorded in Table 5.9 reflect improvement in the model immediately upon the removal of that item.

Table 5.9

One-Factor Congeneric Model Analysis of SRE and Respecification Statistics

	Test Statistics		**Fit Indices**					**Item Statistics**
Biggest (+ve) Modification Index	**Bollen-Stine p**	**Chi-square**	**CMIN**	**RMSEA**	**SRMR**	**CFI**	**TLI**	**Lowest R^2 /Item no**
Original model	.002	89.648	17.930	.270	.090	.79	.59	.186/SRE23
Remove SRE23	.002	18.570	9.285	.188	.051	.95	.84	.208/SRE22
Remove SRE22				*Negative error variance*				

From the data in Table 5.9, it is apparent that my attempt to remove extraneous factors from the model resulted in negative error estimates. According to Holmes-Smith (2011), a negative error variance suggests a serious fit problem and questions the legitimacy of the model for the data. Moreover, there is evidence of the instability of the factor structure of SRE in other populations such as Hungarian (Pastorelli et al., 2001). In considering this, I decided to remove the SRE construct from the PSE scale.

5.3.8. Modelling one-factor congeneric measurement model of perceived social efficacy (PSSE).

Thirteen observed variables were used to measure the PSSE dimension. The original model with thirteen items demonstrated unacceptable fit indices with χ^2 (65) = 700.499; Bollen-Stine *p* = .002. Therefore, the model needs to be re-specified (Table 5.10).

Table 5.10

One-Factor Congeneric Model Analysis of PSSE and Respecification Statistics

	Test Statistics		**Fit Indices**					**Item Statistics**
Biggest (+ve) Modification Index	**Bollen-Stine p**	**Chi-square**	**CMIN**	**RMSEA**	**SRMR**	**CFI**	**TLI**	**Lowest R^2 /Item no**
Original model	.002	700.499	10.777	.204	.100	.69	.63	.370/PSE21
Remove PSE21	.002	177.977	3.409	.103	.056	.93	.91	.211/PSE36
Remove PSE36	.002	149.072	3.549	.104	.051	.93	.91	.145/PSE35
Remove PSE35	.014	97.500	2.955	.091	.045	.96	.94	.347/PSE34
Remove PSE34	.044	57.973	2.319	.075	.044	.97	.96	.189/PSE31
Remove PSE31	.096	38.913	2.048	.067	.041	.98	.97	

As shown in Table 5.10, five items need to be moved one at a time because each attained only trivial loadings. The new model with reduced χ^2 value from 700.499 to 38.913 (df=27; p=.084) is illustrated in Figure 5.3.

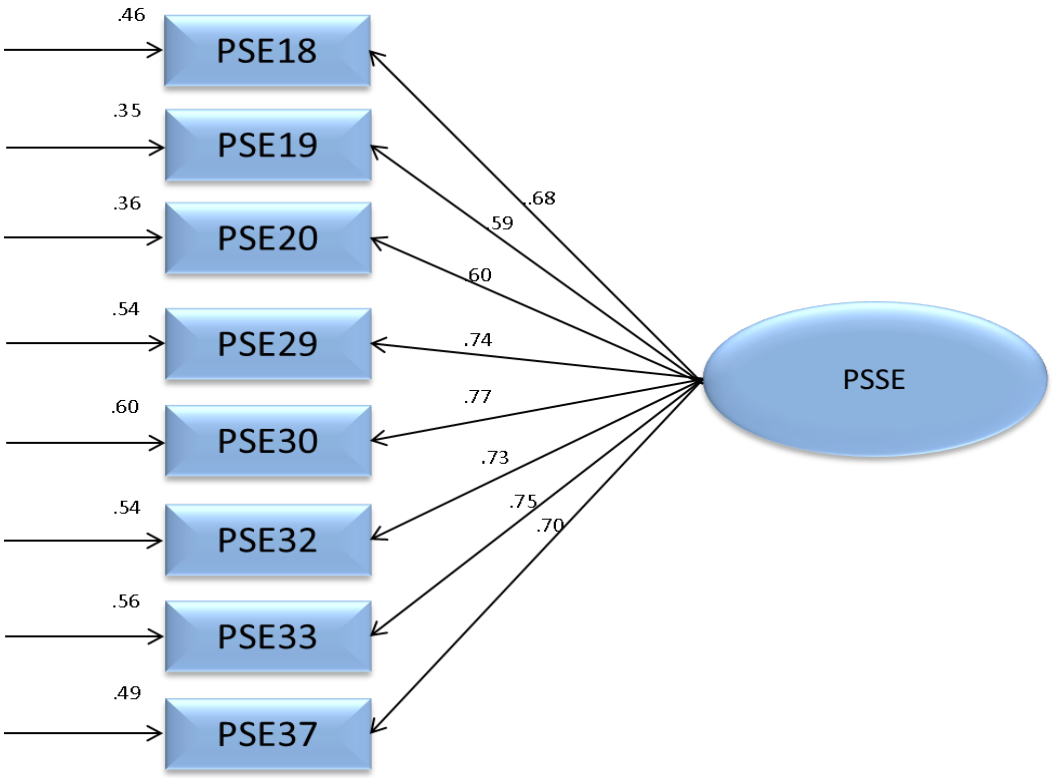

Figure 5.3. A single factor model for Perceived Social-Efficacy
Note. PSSE = Perceived Social Self-Efficacy; Chi-square = 38.913; df = 19; Bollen Stine p-value = .096; CMIN/df = 2.048; SRMR = .041; RMSEA = .07; CFI = .98; TLI = .97.

From Figure 5.3, it can be said that the latent factor PSSE explained 60% of variance in the subscale PSE30 "live up to fulfil what is expected by yourself". This basically means that to Malaysian young adults, "live up to fulfil what is expected by yourself" was the key item defining their PSSE. At this stage, the removal of five items resulted in a complete set of satisfactory fit indices.

5.3.9. Convergent and construct validity of the MEV-CPSE.

Convergent and construct validity of the MEV-CPSE is determined by examining the Regression Weight table (refer to Appendix L). From this data it can be seen that all the observed variables loaded significantly on their intended factor, as evidenced by C.R values > 1.96 and $p < 0.05$, supporting the convergent validity of the measurement model.

5.3.10. Modelling two multi-factor CFAs: PAE with PSSE.

To eliminate non-trivial cross-loading items from the scale, the PAE dimension was modelled pair-wise with PSSE dimension with the factor pairs being allowed to co-vary freely. Modelling PAE with PSSE indicated significant misspecification and MIs, as illustrated in Table 5.11.

Table 5.11

AMOS Output of Standardized Residual Covariances (SRC) (PAE with PSSE)

	PSE28	PSE17	PSE15	PSE13	PSE10	PSE8	PSE7	PSE6	PSE3	PSE37	PSE33	PSE32	PSE30	PSE29	PSE20	PSE19	PSE18
PSE28	.000																
PSE17	-.238	.000															
PSE15	-1.440	.080	.000														
PSE13	-.249	.253	1.596	.000													
PSE10	-.181	-.797	.181	1.057	.000												
PSE8	-.160	-.277	-.315	-.346	.809	.000											
PSE7	-1.065	.022	-.042	-.177	.585	.495	.000										
PSE6	-.965	-.156	1.363	.647	.001	.471	2.266	.000									
PSE3	-.881	.143	.302	.142	-.286	-.464	1.222	1.715	.000								
PSE37	.036	.355	.057	-1.080	-1.056	-.832	-.385	-1.134	-.061	.000							
PSE33	.490	.310	-.255	-1.134	-.814	.288	-.559	-.730	1.253	.478	.000						
PSE32	.173	.312	-.396	-1.332	-.820	.332	-1.131	-1.528	-.635	-.128	1.732	.000					
PSE30	1.091	-.966	.368	-1.050	.236	-.002	-.084	-.782	.192	.809	.139	.129	.000				
PSE29	3.879	.241	-.900	-.327	.058	-.404	-.604	-1.112	-.778	.006	-.313	-.336	.190	.000			
PSE20	.215	-.422	-.334	-1.115	-.058	-.041	.169	-.155	1.116	.115	-.556	.264	-.290	-.330	.000		
PSE19	.171	-.344	-.549	-1.374	.004	-.121	-.193	.007	.949	-.095	-.181	.333	-.436	-.130	.000	.000	
PSE18	.057	2.886	1.046	-.216	.175	.351	.752	-.051	-.306	.004	-1.001	-.287	-.889	-.545	1.573	1.490	.000

From Table 5.11, we can see that the large residual value (3.879) was displayed by the item PSE28 “Fulfil what your lecturer expects from you” and PSE 29 “Fulfil what your friends expect from you”. The MIs suggested that the largest parameter was displayed by PSE28←PSSE, justifying its deletion from the scale. The re-run of the modified model suggested that item PSE17 “self-motivated to do college work/tasks” and PSE 19 “learn sports skill” as potentially sharing significant variance with PSSE and PAE dimension respectively. I decided to remove both items. This was undertaken, with no further multi-factorial problems with the remaining items.

Taking the results altogether, from the modelling of one-factor congeneric measurement models, nine indicator variables were removed from the PAE and five from the PSSE. As well, three items were deleted following pair-wise modelling. In addition, the SRE construct, as measured with the MEV-CPSE was found to be irrelevant to the Malaysian community.

5.3.11. Discriminant validity.

In this section the discriminant validity of the MEV-CPSE was investigated by conducting the chi-square difference between two models: the constrained model and the unconstrained model. The results demonstrated that the difference in chi-square between the two models was significant ($\Delta\chi^2 = 54.20$, $p < 0.005$, $df = 1$) (Table 5.12). The discriminant validity of the MEV-CPSE was supported with the critical value for $\Delta\chi^2$ exceeds the test value of 3.84.

Table 5.12

Discriminant Validity for the Self-Efficacy Constructs as Determined with Nested Model Method

Constructs	Model	χ^2	df	P	Discriminant Validity
PAE with PSSE	Unconstrained	148.5	88		Yes
	Constrained	202.7	89		
	$\Delta\chi^2$	54.20	1	0.000	

Notes. χ^2 = chi-square; $\Delta\chi^2$ = chi square difference

5.3.12. Model-based reliability analysis.

The reliability of the MEV-CPSE was calculated using Hancock and Mueller's Coefficient *H* because it allows for a maximised reliability of congeneric measures (Holmes-Smith, 2011). The results demonstrated that the reliability for PAE and PSSE were 0.86 and 0.89, respectively. I therefore considered that both subscales of the MEV-CPSE have demonstrated satisfactory reliability. In the next section, I report the factorial structure of the MEV-CPSE in order to consider conceptual equivalence with the English BFI.

5.3.13. The PSE model in Malaysian young adults.

Based on my evaluation of the modeling of one-factor congeneric and two multi-factors CFAs, I found seven items each validly and reliably measuring the PAE and PSSE dimensions in Malaysian context. In a further attempt to evaluate the validity of these dimensions, the fit of three competing models were tested. Specifically, in Model $M_{1\text{-original 3 Factors}}$, all three dimensions as captured by the original CPSE were evaluated. Then, $M_{2\text{- respecified 1 Factor}}$ assumed all 14 items load on one general Self-Efficacy factor. Lastly, model $M_{3\text{-respecified 2 Factors}}$ assumed that all 14 items loaded on its respective two hypothesized factor of Self-Efficacy. Refer to Table 5.13 for the goodness-of-fit (GOF) estimates of these models.

Table 5.13

Comparison of Alternative Models

Model	χ^2	df	CMIN/df	SRMR	RMSEA	CFI	TLI	$\Delta\chi^2$
M1-original 3 Factors	2699.369	626	4.312	.09	.12	.65	.63	
M2-respecified 1 Factor	195.684	77	2.541	.05	.08	.92	.90	-
M3-respecified 2 Factors	141.488	76	1.862	.05	.06	.95	.94	
M2- respecified 1 Factor → M3-respecified 2 Factors								54.196**

Note. **p < .01

As shown in Table 5.13, the GOF estimates for models $M_{2\text{- respecified 1 Factor}}$ and $M_{3\text{-respecified 2 Factors}}$ were within the conventional acceptance limits. I therefore need to determine which of these two models best represented the Malaysian data. Using a chi-square difference test, I found that the $\chi^2_{\text{difference}}$ between the one-factor and two-factor model was significant (χ^2difference = 54.196, df = 1, p-value = 0.000). The results allowed me to conclude that there was a significant difference between the two models. In other words, $M_{3\text{-respecified 2 Factors}}$ performed significantly better than $M_{2\text{- respecified 1 Factor}}$.

On answering RQ4*: Are the factor structures of PAE, SRE, and PSSE validated in the Malaysian young adult sample*, the results of this study showed that in Malaysian young adults, Self-Efficacy is best described with two dimensions: Perceived Academic Efficacy and Perceived Social Efficacy (Figure 5.4).

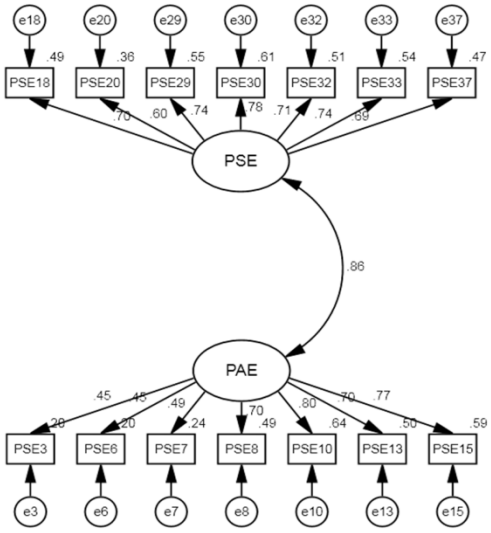

Figure 5.4. Final Model of Factorial Structure for the MEV-CPSE in Malaysian Context
Note. PSSE = Perceived Social Self- Efficacy; PAE = Perceived Academic Efficacy

In terms of factorial validity, the CFA's parameter estimates did not support the three-dimensional structure of Self-Efficacy as operationalized with the CPSE scale. Yet, the evidence from this study seems to suggest that Perceived Self-Efficacy should be treated as "a multifaceted attribute rather than as a global trait", as claimed by Pastorelli et al. (2001, p. 94).

The results from CFAs revealed that only PAE and PSSE were valid for the Malaysian young adults. The results seem to be congruent with Pastorelli et al's (2001) findings where they also reported the instability of the factor structure of SRE in their Italian, Polish and, especially, Hungarian sample.

This result may be explained by a number of different factors. As suggested by Pastorelli et al's (2001), it is possible that the items designed to measure SRE were not really measuring the construct. Perhaps the construct of SRE is defined

differently by Malaysian young adults. Future research needs to investigate how Malaysians understand and perceive SRE.

Moreover, the SRE items can be considered as sensitive items as participants were asked to respond to questions such as “resist peer pressure to drink beer, wine or liquor?”, which may raising socially sensitive biased responses. Researchers such as Tourangeau and Yan (2007) reported that “there is some evidence that asking sensitive questions lowers response rates and boosts item nonresponse and reporting errors” (p. 878). The sensitivity of the questions might contribute to the instability of the factor structure of SRE in the Malaysian sample. Other Malaysian researchers who are interested in investigating Perceived Self-Efficacy in a Malaysian context are recommended to give more focus on SRE. Perhaps the items for assessing SRE factor are designed in such a way so that the effect of socially sensitive responses can be minimized.

As previously noted, the original CPSE scales were designed to assess children’s Self-Efficacy beliefs. Therefore caution must be applied as the findings might not be transferable to the sample of young adults. Future researchers who are interested to investigate Self-Efficacy beliefs using the CPSE with young adult participants are recommended to first validate this scale before study conclusions can be made.

5.3.13.1. Cross-validation of the perceived self-efficacy model in a replication sample.

The two-factorial structure of the MEV-CPSE was further validated by subjecting it to the tests of invariance for factor variances. The results were reported in Table 5.14.

Table 5.14

Goodness-of-Fit Indices for Model Cross-Validation ($n_{calibration}$ = 236, $n_{validation}$ = 201)

Model	χ^2	CMIN/*df*	*df*	CFI	TLI	RMSEA	$\Delta\chi^2$
Constrained	368.055	2.244	164	.922	.914	.053	
Unconstrained	360.631	2.373	152	.920	.905	.056	7.424

Note. χ^2 = chi-square, df = degrees of freedom, CMIN/df = Normed chi-square, CFI = Comparative fit index, TLI = Tucker-Lewis Index, RMSEA = Root mean-square error of approximation.

Table 5.14 shows the results obtained from the computation of the $\Delta\chi^2$ test between unconstrained and constrained models. It is apparent from this table that the difference in χ^2 was not significant ($\Delta\chi^2(12) = 7.424$). I therefore considered that the model illustrated in Figure 5.4 is invariant across the calibration and replication sample. Stated differently, the results obtained in the multi-group analysis demonstrated that the dimensionality of the MEV-CPSE is the same across samples, further supporting its validity with this Malaysian sample.

In conclusion and to summarize, I found that the CPSE, originally designed to assess children's Self-Efficacy beliefs was only partly applicable and valid for the sample of Malaysian young adults because one of the factors, SRE, could not be validated in this sample. Therefore, in a Malaysian context, the PSE is operationalized with only two dimensions: Perceived Social-Efficacy and Perceived Academic Efficacy. In the next section, I will discuss the results I obtained concerning the relationship between Spirituality and PSE.

5.3.14. Results and discussions: The relationship between spirituality and PSE.

This study set out with one of the aims being that of examining the relationship between Spirituality and Self-Efficacy. To this end, Hypothesis 7 predicted that *Self-*

Efficacy is positively related to Spirituality in a Malaysian context. The results from correlation analysis were reported in Table 5.15.

Table 5.15

Spearman's Rank Order Correlations Between Measures of Spirituality and Self-Efficacy

	Variables	1 PSSE	2 PAE	3 COTS	4 EPD	5 EWB	6 REL	7 PARA
1.	PSSE	1.00						
2.	PAE	.52**	1.00					
3.	COTS	.30**	.26**	1.00				
4.	EPD	-.01	-.01	-.07	1.00			
5.	EWB	.12**	.11*	.27**	-.36**	1.00		
6.	REL	.25**	.21**	.57**	-.10*	.25**	1.00	
7.	PARA	.01	-.05	-.08	.34**	-.30**	-.07	1.00

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).
Note. PSSE=Perceived Social Self-Efficacy; PAE=Perceived Academic Efficacy; COTS=Cognitive Orientation towards Spirituality; EPD = Experiential/Phenomenological Dimension of Spirituality; EWB=Existential Well-Being, REL=Religiousness; PARA=Paranormal Beliefs.

From the data in Table 5.15 it can be seen that Perceived Social Efficacy and Perceived Academic Efficacy both demonstrated a significant and positive but weak relationship with all dimensions of spirituality except the Experiential dimension of Spirituality and Paranormal Beliefs. However, a moderate correlation was obtained by Perceived Social Efficacy and Cognitive Orientation towards Spirituality (r_s = .30, p <.01). In general, the results suggested that increased social and academic efficacy were associated with increased Cognitive Orientation towards Spirituality, Existential Well-Being and Religiousness. Therefore, H7 was supported.

On a correlational level, my results resemble the findings of existing research; Self-Efficacy is positively related to Spirituality. From the perspective of MacDonald's (2000a) Spirituality model, it makes reasonable sense that PSSE and PAE are positively related to COTS, EWB, and REL.

A possible explanation for this might be that COTS captures one's "beliefs, attitudes, and perceptions regarding the nature and significance of Spirituality as well as the perception of Spirituality as having relevance and import for personal functioning" (MacDonald, 2000a, p. 4). Perhaps one's engagements in spiritual actions enhance his or her academic and social efficacy. The outcome, that the COTS had the strongest relationship with the PSSE, is novel. This extends the practical value to the Self-Efficacy literature as COTS may act as a significant factor in influencing other dimensions of Self-Efficacy. These findings corroborate the findings of Imam et al (2009), who found that there is a positive but weak relationship between Self-Efficacy and existential and religiosity Well-Being.

While I cannot provide a conclusive explanation on the issue due to the correlational nature of my analyses, several researchers have considered the mediating role of hope and optimism in delineating the relationship between Spirituality and Self-Efficacy. Based on their observation, they suggested that self-efficacious individuals demonstrate a higher sense of hope and optimism, which may cause an increased overall sense of Well-Being (Hill & Pargament, 2003; Imam et al., 2009; Matheis, Tulsky, & Matheis, 2006).

In discussing the link between Religiousness and Self-Efficacy, Bandura (2003) proffers the view that personal efficacy depends on what can be understood as the concept of proxy agency. In this, people who are going through difficulties and do not have control over their conditions, turn to a proxy agency that has the resources to produce the desired outcomes. Religious people often turn to divine agency through religious means such as prayer to alter unfavorable events. Sommer (1997) states that people are capable "to trust that something greater than themselves is

taking care of things adds to their sense of self-efficacy and builds self-esteem" (p. 77).

Unfortunately, the results obtained from the current study provide no basis for mechanisms of influence, even though speculations on the mechanisms framing the relationship between Spirituality and Self-Efficacy have been provided. Future investigation by other researchers who are interested in examining the Spirituality-Self-Efficacy relationship may make it possible to build causal models that delineate variables that mediate the link between Spirituality and Self-Efficacy.

5.3.15. Results and discussions: The relationship between personality and PSE.

Based on my review of the literature, I hypothesized that *Self-Efficacy is positively related to Extraversion, Openness, and Conscientiousness and negatively related to Neuroticism*. The relationship between each of the five dimensions of Personality (as measured by the MEV-BFI) and PSE (as measured with MEV-CPSE) was initially investigated using Spearman's Rank Order correlation coefficient (r_s).

The results indicated medium positive correlations ranging from .30 to .52 between Extraversion, Agreeableness, and Conscientiousness with both Perceived Social-Efficacy (PSSE) and Perceived Academic Efficacy (PAE), with high levels of Extraversion, Agreeableness and Conscientiousness associated with higher levels of PSSE and PAE. Openness was found to correlate weakly with both dimensions of Self-Efficacy. In addition, Neuroticism was weakly and negatively related to only the PSSE dimension (Table 5.16). Thus, H8 was partly supported.

Table 5.16

Spearman's Rank Order Correlations Between Measures of Personality and Self-Efficacy

	Variables	1 PSSE	2 PAE	3 E	4 A	5 C	6 N	7 O
1.	PSSE	1.00						
2.	PAE	.52**	1.00					
3.	E	.41**	.32**	1.00				
4.	A	.33**	.30**	.44**	1.00			
5.	C	.41**	.43**	.49**	.53**	1.00		
6.	N	-.11*	-.06	-.11*	-.13*	-.16**	1.00	
7.	O	.14**	.15**	.18**	.23**	.23**	.11*	1.00

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).
Note. PSE=Perceived Social Self-Efficacy; PAE=Perceived Academic Efficacy; E=Extraversion; A=Agreeableness; C=Conscientiousness; N=Neuroticism; O=Openness.

Broadly, the present findings were in accordance with the meta-analytic findings reported by Judge and Ilies (2002), which found Extraversion, Conscientiousness, and Openness to correlate positively and Neuroticism to relate negatively with Self-Efficacy. One unanticipated finding was that there was a moderate, positive correlation between Agreeableness and both dimensions of Self-Efficacy. The results implied that in a Malaysian context, people who are higher in Extraversion, Conscientiousness, Agreeableness, and Openness, and lower in Neuroticism tend to develop strong Self-Efficacy beliefs.

Contrary to expectations, this study found a significant positive correlation between Agreeableness and Self-Efficacy. This finding did not agree with Judge and Illies's (2002) assertion that agreeable individuals tend to focus more on cooperative achievements rather that task performance, therefore setting themselves less challenging goals, which in turn affects their level of Self-Efficacy. On the other hand, this finding can be considered to support the idea of Nauta (2004), who found that Agreeableness was positively related to Social Self-Efficacy in her 147 college students in a Midwestern University. It seems plausible that this result was due to the

easygoing interpersonal characteristics possessed by agreeable individuals which led them to feel more confident working and interacting with others and therefore resulted in strong Social Self-Efficacy beliefs. Perhaps a person's tendency towards kindness, altruism, generosity, and compliance foster their Social Self-Efficacy by positively impacting their interpersonal skills and social interactions.

It was, however, worthwhile to interpret the current results from the perspective of Five-Factor Theory (FFT; McCrae & Costa, 1996). According to FFT, "a person's standing on personality factors such as N and C would set upper bounds to his or her ability to exert self-control" (McCrae & Löckenhoff, 2010b, p. 149), or in the case of current research, Self-Efficacy. This can be illustrated briefly by individuals with high level of Conscientiousness and Extraversion, and low in Neuroticism where they are predisposed to set more challenging goals. The attainment of a challenging-set goal in turn enhances Self-Efficacy beliefs (Maddux & Gosselin, 2012; McCrae & Löckenhoff, 2010b). This explains reasonably well why a person with high Conscientiousness and Extraversion and low Neuroticism tends to develop strong Self-Efficacy beliefs.

5.3.16. Section summary.

In summary, this section encapsulates the findings of hypothesis testing and the answers to the research question (Table 5.17). The findings answered RQ4 and indicated support for H7 and partial support for H8.

Table 5.17

Summary of Hypotheses and Research Questions

Proposed Hypothesis/Research Question	Findings
RQ4: Are the factor structures of PAE, SRE and PSSE validated in the Malaysian young adult sample?	Only PAE and PSSE were validated.
H7: Self-Efficacy is positively related to Spirituality in Malaysian context.	Supported
H8: Self-Efficacy is positively related to Extraversion, Openness, and Conscientiousness and, negatively related to Neuroticism.	Partly supported
H9: The influence of Personality on Spirituality is significantly mediated through Self-Efficacy.	Will be discussed in Chapter Six.

5.4. PART III: Understanding Locus of Control (LOC)

Locus of Control (LOC) is another cognitive belief examined and evaluated in this study (refer to section 5.2 for rationales using cognitive beliefs to explain the Personality-Spirituality relationship). Generally, LOC is "concerned with whether one's fate is determined by one's own action or by external forces" (Pastorelli et al., 2001, p. 88).

LOC is a psychological construct derived from Rotter's (1966) social learning theory. Rotter (1966) propound the view that individuals may have an Internal Locus of Control (I_{LOC}) when they have a tendency to believe situations and events are the results of their own behavior. On the other hand, those with the tendency to believe that their situations are the results of external influences are said to have an External Locus of Control (E_{LOC}).

The rationale for including LOC in this study was because past research has recognized the importance of LOC in various domains of human functioning such as

Internet use (Roncancio, Berenson, & Rahman, 2012), psychotic disorders (Thompson et al., 2011), prenatal depression (Richardson, Field, Newton, & Bendell, 2012), psychological health, and religious functioning (Matthew & Andrew, 2012). Research has shown that internal LOC individuals are characterized by high self-esteem and positive feelings of competence, more achievement-oriented, well-adjusted and experience higher levels of Well-Being (Ünsal Si, Nilay Geml, & Haydar, 2007).

5.4.1. Measuring LOC.

The popularity of LOC as "one of the most widely explored concepts across many areas of psychology including clinical, developmental, occupational, personality and social psychology" (Furnham, 1993, p. 443) has led to the development of various assessment techniques and instruments. Harpert and Hill (2011) list and discuss 28 measures that are commonly used to measure LOC, which have been grouped into general, health, age-specific, and parental measures. The measures include Rotter Internal-External Locus of Control Scale (Rotter, 1966), Levenson IPC Scale (Levenson, 1981), Multidimensional Health Locus of Control (Wallston et al., 1978), Crandall Intellectual Achievement Responsibility Questionnaire (Reid & Croucher, 1980), and Parental Locus of Control Scale (Campis, Lyman, & Prentice-Dunn, 1986).

I noted the popularity of Rotter's (1966) scale as evident in more than 50% of the studies investigating LOC (Twenge, Zhang, & Im, 2004; Ünsal Si et al., 2007). However, I opted to adopt the Multidimensional Health Locus of Control (MHLC; Wallston et al., 1978), as my instrument to measure Malaysian young adult's LOC. I rationale that Rotter's scale was designed to measure generalized orientation of LOC,

which some researchers claimed to closely related to the concept of Self-Efficacy (Otto et al., 2011) which has been discussed in previous sections.

In contrast, MHLC which is also widely used and psychometrically sound was designed to measure individuals' control belief over their health (Wrightson & Wardle, 1997). Although MHLC was developed to assess beliefs concerning health, I argued that it can also be applied to other domains such as Spirituality and Personality, as there is overwhelming evidence that these two variables are linked to health (Park, 2012; Smith, Gallo, Shivpuri, & Brewer, 2012). In addition, Willis, Wallston, and Johnson (2000) found that persons who believe that their health is influenced by fate or chance are more likely to get involved in risky behaviours such as drinking alcohol and smoking. The current study will extend our understanding about the role of health control beliefs in the context of Spirituality and Personality.

The MHLC scale measures three aspects of LOC, namely, Internal Health Locus of Control (Int_{HLOC}), Chance Health Locus of Control ($Chance_{HLOC}$), and Powerful Others Health Locus of Control (PO_{HLOC}). Individuals with Int_{HLOC} believe that their own behaviour is responsible for their health whereas those $Chance_{HLOC}$ contribute their state of health to luck, fate, chance or uncontrollable factors. Finally, individuals with a PO_{HLOC} orientation, tend to attribute their level of health to important figures such as health professionals, parents, or physicians (Rock, Meyerowitz, Maisto, & Wallston, 1987).

In general, Wallston (2005) reported that MHLC scales have been used in countless studies, with evidence supporting its modest reliability (Cronbach alphas ranging from .60 to .70). In terms of validity, Wallston further reported "there's plenty of evidence in the published literature to back up an assertion that they do, indeed, measure individual's health locus of control beliefs" (p. 624). Specifically,

past research has produced support for criterion, construct and discriminant validity (Kuwahara et al., 2004; Moshki & Ghofranipour, 2011; Wallston, 2005).

Nonetheless, Otto et al. (2011) examined the factor structure of the translated version of the MHLC in an adult general population sample in Northern Germany. The results from the CFA analyses revealed that the MHLC constructs were best represented with four latent variables instead of the original three-dimensional MHLC construct. The generalizability of dimension Internality and Chance was supported whereas the Powerful Others dimension was split into two dimensions: Formal and Informal Help. This confirmed the earlier findings of Malcarne, Fernandez, and Flores (2005) where they reported the failure to replicate the three-dimensional structure of the original MHLC in their Caucasian, Filipino, and Latino American samples. However, when the scales were revised and shortened to nine items (instead of original eighteen items), the original three-factor structure of MHLC was discovered.

The review of the literature on the validity and reliability of the MHLC revealed support for the factor structure of Int_{HLOC} and $Chance_{HLOC}$. Nevertheless, mix support was found for $PO_{HLOC.}$ This gives rise to the following research question (RQ5): *Are the factor structures of Int_{HLOC}, $Chance_{HLOC}$ and PO_{HLOC} validated in the Malaysian young adult sample*? This will be answered and discussed in section 5.3.12. In the next section, a review of the literature on the link between Spirituality and LOC is presented.

5.4.2. The link between spirituality and LOC.

My search for literature pertaining to the interaction between MacDonald's five dimensions of spirituality and LOC revealed no results. In general, inconsistent results were reported on the relationship between spirituality and LOC. An early

empirical study by Greer (1992) examining the relationship between Personality type, Spirituality, and LOC in an older population found no relationship between Spirituality and LOC.

Of relevance to this study was a study by Gauthier (2001) where she explored the association between an individual's level of Spirituality, Health Locus of Control, participation in wellness activities, and physical health. She measured the Health Locus of Control using the MHLC scale and Spirituality using the Spiritual Involvement and Beliefs Scale (SIBS; Hatch et al., 1998). Results revealed that internal Spirituality was significantly related to internal Health Locus of Control. The results can be taken to suggest that individuals with higher levels of internal Spirituality tend to believe that their own behaviour is responsible for their health.

Another empirical study by Cheshire (2003) designed to investigate the association between Spirituality, Religiosity, and LOC revealed that LOC was significant in predicting Spirituality. However, in her study exploring the relationships among Spirituality, Cognitive Processing, and Personal Control, Bonner (2002) found that high Spirituality was related to one aspect of external LOC known as the unknown forces LOC (used to measure belief in Universal forces, without referring to God) and not related to Int_{HLOC} and $Chance_{HLOC.}$

The mixed evidence on the association between Spirituality and LOC in different research contexts did not provide a basis on which to speculate concerning their relationship in the Malaysian context. This then brought me to formulate question RQ6: *What is the relationship between Spirituality and LOC in Malaysian young adults?* This will be discussed further in section 5.4.13.

5.4.3. The link between personality and LOC.

Research has been found to suggest that there is a relationship between Personality and LOC (Garma, 1992; Raja, Williams, & McGee, 1994). However, the evidence for this relationship is inconclusive cross-culturally. A recent study by Kardum and Hudek-Knezevic (2012) exploring the relationships between five-factor personality traits and specific health-related LOC among 822 Croatians (mean age = 38.58; 53.3% women; 46.7% men) revealed that both Int_{HLOC} and $Chance_{HLOC}$ had weak correlations with personality dimensions of Extraversion, Neuroticism, and Openness (Pearson's *r* ranged from .09 to .17).

Specifically, Int_{HLOC} had positive correlations with Extraversion and Openness and a negative correlation with Neuroticism. In contrast, $Chance_{HLOC}$ demonstrated negative association with Extraversion and Openness, and positive association with Neuroticism. Taken together, these results imply that individuals ascribed to health internal belief have the tendency to be extraverted, open, and emotionally stable. On the other hand, persons who believe that their level of health is a function of chance or luck are inclined to be less extraverted, less open and more neurotic. Nevertheless, with weak correlations ranging from .09 to .17 demonstrated between these variables, considerable caution must be applied in interpreting the results.

Another study performed by Zitný and Halama (2011) that examined the role of Self-Esteem, LOC, and Personality traits as predictors of insensitivity to injustice in a sample of 254 undergraduate students enrolled in universities all around Slovakia served as a valuable precursor to the current study. Among the measures used by Zitný and Halama were the Rotter's Internality-Externality Scale (to assess LOC) and NEO Five Factor Inventory (to assess Personality). Results indicated that all four dimensions of personality (Extraversion, Openness, Agreeableness, and

Conscientiousness) were weakly and negatively associated with Internal LOC. In contrast, Neuroticism was moderately and positively correlated with External LOC.

The results demonstrated that individuals with external beliefs are more likely to be neurotic, while those with internal beliefs are more predisposed to be extraverted, opened, agreeable and conscientious. The findings of Zitný and Halama's study, while offering us more insight on Personality traits-LOC relationship, should be interpreted with caution considering the imbalance in participants' gender ratio (28% males and 72% females). This is because gender has been shown to have a profound influence on the level of LOC (Sherman, Higgs, & Williams, 1997).

Taken together, these studies demonstrated support for the relationships between Personality and LOC constructs in various research contexts. However, the inconsistencies in the findings reported in the extant studies did not allow me to speculate on the association between Personality and LOC in a Malaysian context. This led me to raise the question: (RQ7): *What is the relationship between the five dimensions of personality and Health LOC in Malaysian young adults?* This will be evaluated and discussed further in section 5.4.14.

5.4.4. LOC as a mediating variable between personality and spirituality.

Although research has been carried out on Spirituality-LOC and Personality-LOC relationship, my extensive literature search has revealed that no integrative research investigating a representative set of Personality, Health LOC, and Spirituality has been conducted. Potential mediatory relationships between these three variables remain largely unexplored. Nevertheless, there are a few studies that support a mediating role of LOC. For instance, Ryan and Francis (2010) found LOC to mediate the relationship between religious functioning and psychological health. Also, Fiori, Brown, Cortina, and Antonucci (2006) found that LOC mediates the

relationship between religiosity and life satisfaction. The mediating role of LOC was also confirmed in the relationship between stress and illness in college students (Roddenbery & Renk, 2010). The question that remained to be answered then, (RQ8) was: *Are LOC domains potential mediators in the Personality-Spirituality relationship in a Malaysian context?* The answer to RQ8 will be offered and discussed in Chapter Six.

Having ascertained the concept of LOC and its link with Spirituality and Personality, the next section will report on the issues concerning the translation of the MHLC into the Malaysian context.

5.4.5. Translation of the MHLC Scale.

As with the previous scales used in this study, the MHLC scale was also translated using the same method described earlier in section 2.4.1. The translated version of the MHLC scale from here onwards will be known as the Malay-Experimental Version of the Multi-Dimensional Health Locus of Control Scale (MEV-MHLC). The full results of the translation/back-translation are provided in Appendix K.

The translation of items in the MEV-MHLC also did not reproduce an exact transliterated copy of the original items. Nonetheless, equivalence testing indicated that the items in the MEV-MHLC were comparable to its original items as evidenced in Appendix K. The preliminary testing of the MEV-MHLC conducted on 20 Malaysian young adults indicated no further amendment was required. The MEV-MHLC was ready for the field.

5.4.6. Modelling one-factor congeneric measurement model of Int_{LOC}.

The modelling of the one-factor congeneric measurement model of Int_{LOC} component of the MHLC scale with six observed variables resulted in an unfit

model, χ^2 (9) = 38.898; Bollen-Stine *p* = .002. Refer to Table 5.18 for the steps taken to improve the model fit of Int_{LOC} in the Malaysian sample.

Table 5.18

One-Factor Congeneric Model Analysis of Int_{HLOC} and Respecification Statistics

	Test Statistics		**Fit Indices**					**Item Statistics**
Biggest (+ve) Modification Index	**Bollen-Stine p**	**Chi-square**	**CMIN**	**RMSEA**	**SRMR**	**CFI**	**TLI**	**Lowest R^2 /Item no**
Original model	.002	38.898	4.322	.119	.065	.89	.82	.115/LOC13
Remove LOC13	.331	7.705	1.541	.05	.032	.98	.97	.031/LOC1
Remove LOC1	.427	2.503	1.251	.03	.021	.99	.99	

It can be seen from Table 5.18 that upon removal of two items, one at a time, (LOC13 “When I am sick, I know that I do not take a good care of myself” followed by LOC1 “If I fall sick, I have the strength to make myself well again”), fit indices were within the acceptable range as reported in Chapter Two, suggesting that the model fit the data well. The final adjusted model is presented in Figure 5.5. It can be seen from Figure 5.5 that the latent factor Int_{HLOC}, explained 50% of variance in the subscale LOC12 “my physical health depends on how well I take care of myself”.

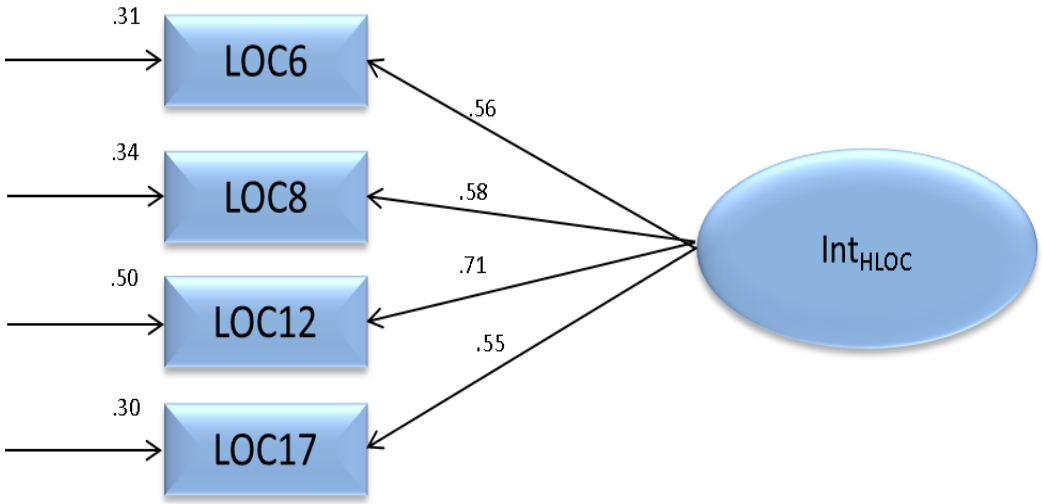

Figure 5.5. Final single factor model for Internal Multi-Dimensional Health Locus of Control

Note. Int_{HLOC} = Internal Health Locus of Control; Chi-square = 2.503; df = 2; Bollen Stine p-value = .427; CMIN/df = 1.251; SRMR = .021; RMSEA = .03; CFI = .99 TLI = .99.

5.4.7. Modelling one-factor congeneric measurement model of $Chance_{HLOC}$.

Six items are used to assess the $Chance_{HLOC}$ dimension in the original MHLC scale. The chi-square statistic and fit indices for this initial model suggested that the model did not fit the data adequately, necessitating adjustments. The steps taken to improve the model fit were reported in Table 5.19.

Table 5.19

One-Factor Congeneric Model Analysis of $Chance_{HLOC}$ and Respecification Statistics

	Test Statistics		**Fit Indices**					**Item Statistics**
Biggest (+ve) Modification Index	**Bollen-Stine p**	**Chi-square**	**CMIN**	**RMSEA**	**SRMR**	**CFI**	**TLI**	**Lowest R^2 /Item no**
Original model	.004	46.978	5.220	.134	.079	.724	.541	.117/LOC9
Remove LOC9	.595	5.558	1.112	.022	.031	.99	.99	

As shown in Table 5.19, satisfactory fit indices (χ^2 (5) = 5.558; Bollen-Stine *p* = .559) were achieved upon the removal of item LOC9 "when I am sick, I just let nature takes its own course". The new model is reported in Figure 5.6.

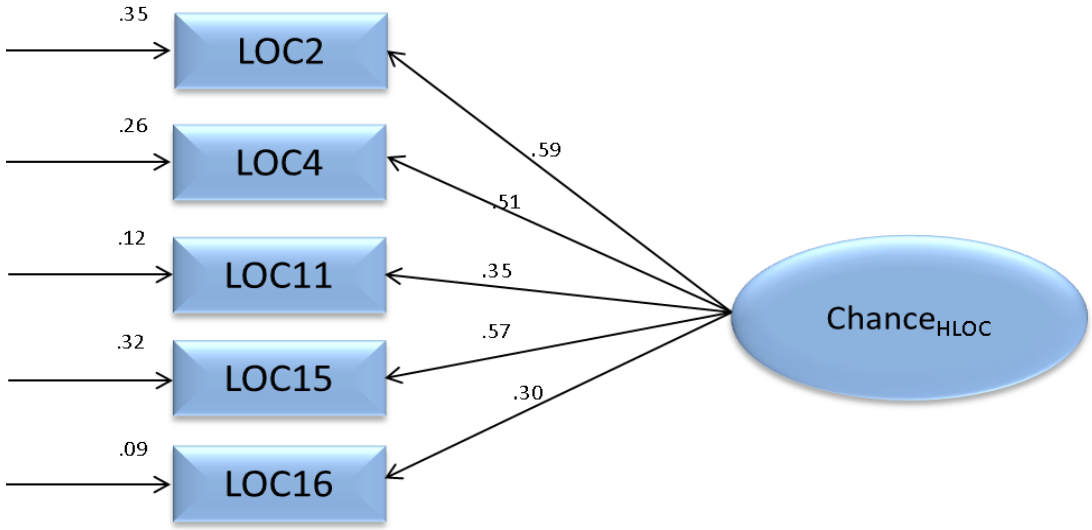

Figure 5.6. Final single factor model for Chance Multi-Dimensional Health Locus of Control
Note. $Chance_{HLOC}$ = Chance Health Locus of Control; Chi-square = 5.558; df = 5; Bollen Stine p-value = .559; CMIN/df = 1.112; SRMR = .031; RMSEA = .02; CFI = .99 TLI = .99

It is apparent from Figure 5.6 that the SMC for LOC16 was inadequate. My attempt to remove it from the scale resulted in a much over-fitted model. I thus decided not to discard any item at this stage. The modelling of one-factor congeneric model of $Chance_{HLOC}$ revealed that the key indicator for this dimension in the Malaysian context was LOC2 "I often feel that no matter what I do, if I feel that I will fall sick, I will fall sick".

5.4.8. Modelling one-factor congeneric measurement model of PO_{HLOC}.

The original model of PO_{HLOC} consists of nine items. The overall model fit appeared inadequate and needed modification.

Table 5.20

One-Factor Congeneric Model Analysis of PO_{HLOC} and Respecification Statistics

	Test Statistics			Fit Indices				Item Statistics
Biggest (+ve) Modification Index	**Bollen-Stine p**	**Chi-square**	**CMIN**	**RMSEA**	**SRMR**	**CFI**	**TLI**	**Lowest R^2 /Item no**
Original model	.002	39.480	4.387	.120	.065	.89	.81	.049/LOC10
Remove LOC10	.012	18.534	3.707	.107	.050	.93	.85	.031/LOC18
Remove LOC18	.070	6.316	3.158	.100	.031	.97	.92	.016/LOC3

As can be seen from Table 5.20, acceptable fit indices were achieved upon removal of item LOC10 “medical experts help me to stay healthy” and LOC18 “Following doctor’s advice as closely as possible is the best way for me to stay healthy”. However, the RMSEA indicated an unacceptable value of > 0.08 (refer to section 2.6.3.1), indicating further modification was in order. I decided to remove LOC3 “If I see a medical specialist consistently, the possibility of catching a disease will be reduced” from the scale due to its low SMC. However, removal of LOC3 resulted in an unidentified model, which means that “the model cannot be evaluated empirically”(Byrne, 2010, p. 33). In considering this, together with the evidence of the instability of this dimension discussed earlier (e.g. Otto et al., 2011), I decided to drop this dimension from the MEV-MHLC scale.

From Appendix L, I can see that all the observed variables loaded significantly on their intended factor, as evidenced by C.R values > 1.96 and $p < 0.05$, supporting the convergent and construct validity of the MEV-MHLC measurement model.

5.4.9. Modelling two multi-factor CFAs: Int_{HLOC} with $Chance_{HLOC.}$

To identify non-trivial cross-loading items, I modelled the Int_{HLOC} with the $Chance_{HLOC.}$ The results are illustrated in Table 5.21.

Table 5.21

AMOS Output of Standardized Residual Covariances (SRC) (Int_{HLOC} with $Chance_{HLOC}$)

	LOC2	LOC4	LOC11	LOC15	LOC16	LOC17	LOC12	LOC8	LOC6
LOC2	.000								
LOC4	.575	.000							
LOC11	.119	-.368	.000						
LOC15	-.128	-.335	-.076	.000					
LOC16	-1.021	-.244	.538	1.100	.000				
LOC17	-.565	-1.787	2.036	-.257	-1.503	.000			
LOC12	.075	1.579	-.472	-.271	1.548	.381	.000		
LOC8	1.011	1.473	-.208	-1.117	3.571	-.171	.279	.000	
LOC6	-1.545	-.511	-3.370	-3.159	-.796	-.509	.080	-.643	.000

It can be seen from Table 5.21 that the largest misspecification was detected between LOC16 “When I fall sick, it is my destiny” and LOC8 “Whatever is wrong with my health is my own fault”. The multifactorial nature and low SMC (previously discussed in section 5.4.7) provided me a basis to exclude LOC16 from the MEV-MHLC scale.

The item was deleted and the model re-specified (Table 5.21). The results suggested another pair of misspecification items; LOC11 “If I stay healthy, it is just my good luck” and LOC6 “I am responsible of my own health”. Furthermore, the MI also showed that LOC6 may also load on $Chance_{HLOC}$ factor. I therefore removed LOC6 from the Int_{HLOC} factor. The final results suggested no other multi-factorial items.

All in all, from the modelling of one-factor congeneric measurement models and two multi-factor CFAs, three items were deleted from the Int_{HLOC} dimension, two items from the $Chance_{HLOC}$ dimension. Further, the PO_{HLOC} dimension was found to be irrelevant in a Malaysian context.

5.4.10. Model-based reliability analysis.

My calculation of Hancock and Mueller's Coefficient *H* demonstrated that the reliability for Int_{HLOC} with $Chance_{HLOC}$ were 0.65 and 0.61, respectively. Although the reliabilities for both constructs were below the range of recommended cut-off value of 0.70 (Hancock & Mueller, 2001), I considered it to be adequate as according to Hair et al. (2010), the reliability between 0.6 and 0.7 is acceptable if other indicators of a model's construct validity are evidenced, and in this case these were the discriminant and convergent validity, as reported in sections 5.4.6 to 5.4.10.

5.4.11. Discriminant validity.

From Table 5.22, it can be seen that the differences in chi-square between the constrained and unconstrained model were significant ($p < 0.05$) for the pair of constructs, with the critical value for $\Delta\chi^2$ exceeds the test value. Thus, I can conclude that discriminant validity holds.

Table 5.22

Discriminant Validity for the Locus of Control constructs as Determined with Nested Model Method

Constructs	Model	χ^2	df	P	Discriminant Validity
IntHLOC with ChanceHLOC	Unconstrained	14.959	13		Yes
	Constrained	89.888	14		
	$\Delta\chi^2$	74.929	1	0.000	

Note. χ^2 = chi-square; $\Delta\chi^2$ = chi square difference

5.4.12. The LOC model in Malaysian young adults sample.

The factorial structure of IntHLOC and ChanceHLOC dimensions was examined by comparing the fit of three competing models. In particular, Model $M_{1\text{-original 3 Factors}}$, evaluated all three dimensions as captured by the original MHLC. Then, in $M_{2\text{-respecified 1 Factor}}$, all seven items load on one general LOC factor. Lastly, model $M_{3\text{-respecified 2 Factors}}$ assumed that all seven items loaded on its respective two hypothesized

factor of LOC. Table 5.23 presents the goodness-of-fit (GOF) estimates of these models.

Table 5.23

Comparison of Alternative Models

Model	χ^2	df	CMIN/df	SRMR	RMSEA	CFI	TLI	$\Delta\chi^2$
M1-original 3 Factors	419.445	132	3.178	.097	.096	.66	.71	
M2-respecified 1 Factor	102.726	14	7.338	.180	.164	.18	.45	-
M3-respecified 2 Factors	14.959	13	1.151	.047	.025	.99	.98	

Note: **p < .01

From the data in Table 5.23, it is apparent that only the M3-respecified 2 Factors model was satisfactory. The two-factor model schematically portrayed in Figure 5.7 represents an adequate description of the personality structure in educated Malaysian young adults.

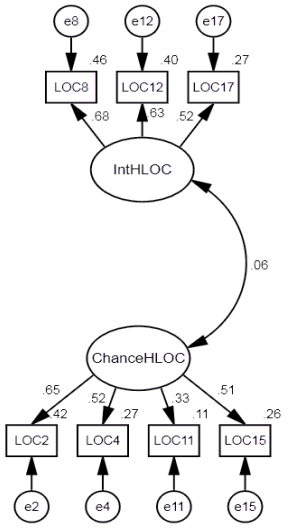

Figure 5.7. Final Model of Factorial Structure for the MEV-MHLC in Malaysian Context
Note. Int_{HLOC} = Internal Health Locus of Control; $\text{Chance}_{\text{HLOC}}$ = Chance Health Locus of Control

RQ5 questions whether *the factor structures of* Int_{HLOC}, $Chance_{HLOC,}$ *and* PO_{HLOC} *are validated in the Malaysian young adult sample*. The findings revealed that in Malaysian young adults, Health Locus of Control is validly described with only two dimensions: Int_{HLOC} and $\text{Chance}_{\text{HLOC}}$ (Figure 5.7).

My evaluation on the validity of the MEV-MHLC revealed that the three-factor structure of the original MHLC was not validated in a Malaysian context. The inconsistency of the finding is not surprising considering that LOC constructs are founded from Rotter's Social Learning Theory (Rotter, 1954) which emphasizes one's own experiences and environment. It is therefore expected that differences may occur in terms of the factorial structure of the LOC construct in the Malaysian sample. This finding supported the view of Rossier, Dahourou, and McCrae (2005) who assert that " LOC might vary across cultures both structurally and in mean level" (p. 228).

This study has been unable to demonstrate the relevance of the PO_{HLOC} dimension in the Malaysian sample. This is rather unexpected because extant research has found that Asians, representing the collectivistic culture are more likely to exhibit external LOC which is likened to "experience feelings of control through alignment with a more powerful individual or party, or through mediation of his or her emotional response" (Stocks, April, & Lynton, 2012, p. 18).

The reason for discrepancy in the findings between the current and past studies is not clear but a reasonable explanation is that it may have something to do with people's adherence to religious beliefs, that is where they tend to place their faith on divine fate rather than other people (Stein, Smith, & Wallston, 1984). This view seems to be relevant to the most important fundamental teaching of Islam, which is faith or belief in *Allah* (Rassool, 2000). Considering that 80% of the participants indicated that they identified with being Muslim, it seems possible that the failure to replicate the PO_{HLOC} dimension was due to the fact that the participants did not believe that their degree of health or illness is determined by any other than *Allah*. Further work to ascertain this possibility is required to establish this.

5.4.12.1. Cross-validation of the MHLC scale in a replication sample.

The results from the comparison of the competing models revealed that the two-factorial structure of Int_{HLOC} and $Chance_{HLOC}$ best represent the LOC model in the Malaysian sample. This model is cross-validated with the data from the replication sample to assess the chance factor (Table 5.24).

Table 5.24

Goodness-of-Fit Indices for Model Cross-Validation ($n_{calibration}$ = 236, $n_{validation}$ = 201)

Model	χ^2	CMIN/*df*	*df*	CFI	TLI	RMSEA	$\Delta\chi^2$
Constrained	69.580	2.245	31	.95	.91	.043	
Unconstrained	63.227	2.432	26	.95	.91	.047	6.353

Note. χ^2 = chi-square, df = degrees of freedom, CMIN/df = Normed chi-square, CFI = Comparative fit index, TLI = Tucker-Lewis Index, RMSEA = Root mean-square error of approximation.

The **$\Delta\chi^2$** test yielded a difference of 6.353 with 5 degrees of freedom and statistically nonsignificant at p = 0.27. Therefore, I can conclude that the model shown in Figure 5.7 is invariant across the calibration and replication sample, indicating robustness of the factors.

5.4.13. Results and discussions: The Relationship between LOC and spirituality.

The inconsistencies found in the literature concerning the relationship between LOC and Spirituality led me to enquire (RQ6): *What is the relationship between Spirituality and LOC in Malaysian young adults?* The relationship between two dimensions of LOC (as measured by the MEV-MHLC) and Spirituality (as measured with MEV-ESI) was investigated using Spearman's Rank Order correlation coefficient (r_s) (Table 5.25).

Table 5.25

Spearman's Rank Order Correlations between Measures of Spirituality and Locus of Control

	Variables	1 $Chance_{HLOC}$	2 Int_{HLOC}	3 COTS	4 EPD	5 EWB	6 REL	7 PARA
1.	$Chance_{HLOC}$	1.00						
2.	Int_{HLOC}	-.13**	1.00					
3.	COTS	-.22**	.24**	1.00				
4.	EPD	.22**	-.09	-.07	1.00			
5.	EWB	-.30**	.16**	.27**	-.36**	1.00		
6.	REL	-.19**	.19**	.57**	-.10*	.25**	1.00	
7.	PARA	.11*	.02	-.08	.34**	-.30**	-.07	1.00

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).
Note. Chance $_{LOC}$=Chance Locus of Control; Int_{LOC}=Internal Locus of Control; COTS=Cognitive Orientation towards Spirituality; EPD = Experiential/Phenomenological Dimension of Spirituality; EWB=Existential Well-Being, REL=Religiousness; PARA=Paranormal Beliefs.

Table 5.25 presents the intercorrelations among the measures of Spirituality and LOC. It is apparent from this table that $Chance_{LOC}$ was associated with all dimensions of Spirituality. However, the strongest correlation was obtained by the Existential Well-Being (EWB) dimension of Spirituality with $Chance_{HLOC}$ (r_s = -.30, p <.01). This result seems to suggest that the more the person believes that their health is a function of fate or luck, the lower their sense of positive existentiality will be. In other words, these people believe that they have no control over their level of health, as it is predetermined. This finding was supported by extant studies exploring the relationship between LOC and Well-Being, which suggests the relationship between a lack of Well-Being with being unable to have control of their life situations (Stocks et al., 2012).

In contrast, Int_{HLOC} was found to have positive but weak correlations with only Cognitive Orientations towards Spirituality (COTS), EWB and Religiousness (REL). The strongest correlation was obtained by COTS with Int_{HLOC} (r_s = .24, p <.01). This can be interpreted as meaning that individuals with the perception or belief that

Spirituality is important for personal functioning may be more prone to believe that their health outcomes are due to their own behaviour.

This contradicts Bonner's (2002) assertion that individuals who are rated high on Spirituality are more likely to believe in the influence of a higher power in controlling their fate. This difference can be explained in part by the different measure used to assess Spirituality. In Bonner's study, Spirituality was assessed with the Fetzer Multidimensional Measurement of Religiousness/Spirituality whereas the current study utilized the MEV-ESI. It is thus feasible that the discrepancy in the findings were due to the different aspects of Spirituality captured by these measures. Clearly though, more research utilizing the ESI needs to be undertaken for the association between Int_{HLOC} and Spirituality to be further established.

5.4.14. Results and discussions: The relationship between LOC and personality.

In order to answer (RQ7): *What is the relationship between the five dimensions of personality and LOC in Malaysian young adults*, the correlation between five dimensions of Personality and LOC were evaluated. The results obtained from the correlation analysis of five measures of Personality and two measures of LOC are presented in Table 5.26.

Table 5.26

Spearman's Rank Order Correlations Between Measures of Personality and LOC

	Variables	1 $Chance_{HLOC}$	2 Int_{HLOC}	3 E	4 A	5 C	6 N	7 O
1.	$Chance_{HLOC}$	1.00						
2.	Int_{HLOC}	-.13**	1.00					
3.	E	.02	.19**	1.00				
4.	A	.06	.20**	.44**	1.00			
5.	C	-.04	.26**	.49**	.53**	1.00		
6.	N	.24**	.07	-.11*	-.13*	-.16**	1.00	
7.	O	.10*	.10*	.18**	.23**	.23**	.11*	1.00

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).
Note. $Chance_{HLOC}$=Chance Locus of Control; Int_{HLOC}=Internal Locus of Control; E=Extraversion; A=Agreeableness; C=Conscientiousness; N=Neuroticism; O=Openness.

Data presented in Table 5.26 show that the strongest magnitude of correlation was obtained between the pair of Neuroticism and $Chance_{HLOC}$ ($r_{s\,=}$ .24, p <.01) and Conscientiousness and Int_{HLOC} ($r_{s\,=}$ .26, p <.01). This finding corroborates the findings of Kardum and Hudek-Knezevic (2012) and Zitný and Halama (2011), who suggested that people who believe that their health levels are controlled by fate or chance are more likely to be neurotic.

In contrast to earlier findings by Kardum and Hudek-Knezevic (2012), Conscientiousness was found to correlate with Int_{HLOC}, which suggests that at least in a Malaysian context, individuals who were dependent and self-controlled were more likely to believe that they are in control of their health level, which may contribute to their greater Well-Being (Stocks et al., 2012). This finding was anticipated because empirical research has found strong evidence of the relationship between LOC and Conscientiousness (Abe, 2005; Judge, Erez, Bono, & Thoresen, 2002; Saint-Germain, Wiernik, Goebel, Van Eendenburg, & Klapperick, 2011).

Even though empirical research has produced evidence for the LOC-Conscientiousness relationship, the reason for such a relationship remains uncertain. It is possible to interpret this relationship within the perspective of Five-Factor

Theory of personality (FFT). In applying FFT, internal LOC is acquired from the interaction of individual's *basic tendencies* (personality traits) and a range of *external influences* (such as life events, cultural norms) (McCrae & Costa, 2008a). For instance, individuals are predisposed to the beliefs that their life outcomes are influenced more by their personal actions because to some extent these are shaped by the conscientious traits, and their life events and experiences. This is a reasonable explanation considering that conscientious individuals who are hardworking, persistent, responsible, and self-controlled (John et al., 2008) are likely to believe they are in control of their life outcomes (Judge & Bono, 2001). Future researchers should investigate the process by how these variables are related to each other and explaining it within the perspective of FFT.

5.4.15. Section summary.

In this investigation, some of the aims were to assess the validity of the MEV-MHLC scale and to evaluate the relationship between Spirituality, Personality, and LOC constructs. Table 5.27 summarizes the emerging questions concerning these aims.

Table 5.27

Summary of Research Questions

Research Questions	Findings
RQ5: Are the factor structures of Int_{HLOC}, $Chance_{HLOC,}$ and PO_{HLOC} validated in the Malaysian young adult sample?	Only Int_{HLOC} and $Chance_{HLOC}$ were validated
RQ6: What is the relationship between Spirituality and LOC in Malaysian young adults?	All five dimensions of Spirituality were associated with $Chance_{HLOC}$; Only COTS, EWB, and REL were related to Int_{HLOC}
RQ7: What is the relationship between the five dimensions of Personality and LOC in Malaysian young adults?	Only N and O dimensions of personality were related to ChanceHLOC; N was the only personality dimension that did not correlate with Int_{HLOC}
RQ8: Are Locus of Control domains potential mediators in the Personality-Spirituality relationship in Malaysian context?	Will be discussed in Chapter Six.

5.5. Chapter Summary and Discussion

This chapter has described my evaluation on the psychometric properties of three Cognitive Belief scales: Irrational, Self-Efficacy, and Locus of Control Beliefs. Additionally, I examined the relationships of these three Cognitive Beliefs with the dimensions of Spirituality and Personality as precursors to testing the full structural equation modeling in Chapter Six, with the purpose to generate integrative models of the relationships between these three variables and to ascertain the cross-cultural applicability of these models.

To address the validity of the Malay-translated version of the cognitive scales adopted in this study, I have employed the confirmatory factor analysis techniques. The results of the analyses revealed: (1) Full support for the factorial validity and

reliability of the MEV-IBS; (2) Partial support for the factorial validity of the MEV-CPSE, because only Perceived Social Efficacy and Perceived Academic Efficacy were validated; and (3) Partial support for the factorial validity of the MEV-MHLC as only Internal and Chance Health Locus of Control were successfully validated.

Nevertheless, the above findings have important implications for research using imported instruments, as these instruments need to be relevant and meaningful for the intended population. While further research into the validity of the IBS, CPSE, and MHLC scale is clearly needed before they can be adapted for other than a Western research context, the current Malay version, however, can be considered an adequate tool for exploring the Personality-Cognitive Beliefs-Spirituality relationships in a Malaysian context.

The findings from existing literature and from the analyses in this study revealed that Personality, Irrational Beliefs, Self-Efficacy, Locus of Control, and Spirituality share some degree of common variance. Having used correlational statistics, the question as to how much shared variance indicates overlap between constructs and factors and how much is attributable to *n* effect size is something I will move on to examine through latent structure modeling. This brings to Chapter Six where I can evaluate the “impact of one latent construct on another in the modeling of causal direction” (Byrne, 2010, p. 7).

CHAPTER 6: The Interplay between Spirituality, Personality and Cognitive Beliefs

In previous chapters, the analysis of measurement models was presented and discussed as the basis for assessing the proposed full structural models. The purpose of this chapter is to test and investigate the hypotheses proposed in earlier chapters.

This chapter is organized as follows: firstly, a description on the analyses strategy adopted for hypotheses testing is presented and discussed. This is followed with results and discussions on the five mediational models of Personality traits → Cognitive Beliefs → Spirituality. This includes the results on the assessment of the full structural model of the variables, providing essential evidence for supporting or rejecting the hypotheses. Finally, this is followed by discussions on the implications and suggestions for future research.

6.1. Mediation Analysis

Before embarking on an application of Structural Equation Modeling (SEM) for the testing of the hypotheses, an outline on the overview of the mediation analysis is presented, as summarised in Figure 6.1:

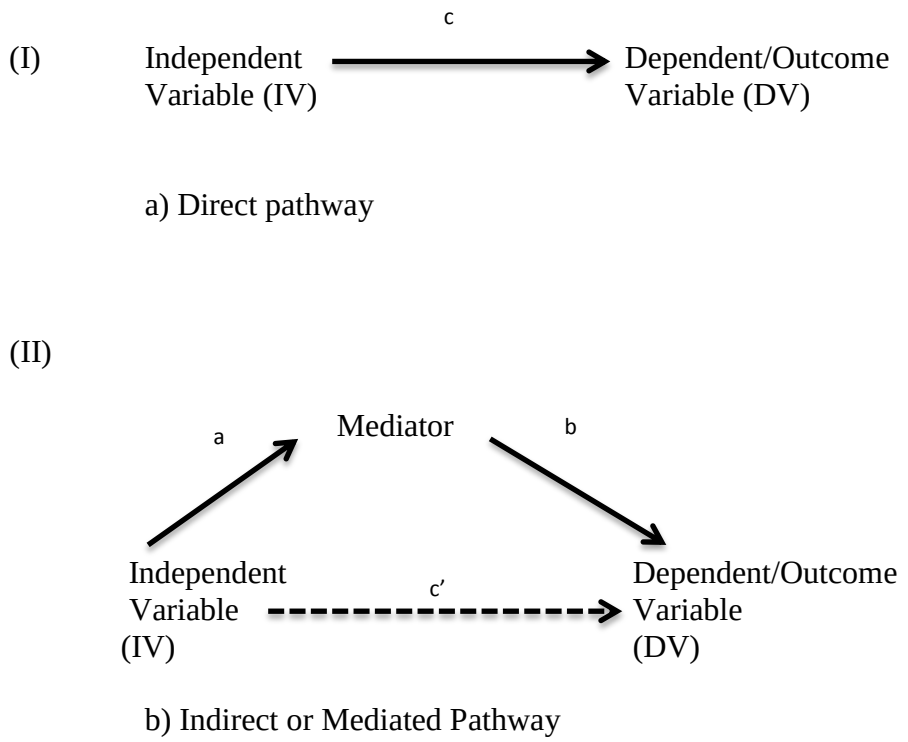

Figure 6.1. Generic mediation model being tested. Adapted from "Mediation Analysis in Social Psychology: Current Practices and New Recommendations" by D. D. Rucker, K. J. Preacher, Z. L. Tormala and R. E. Petty, 2011, *Social and Personality Psychology Compass, 5*, p. 360.

Figure 6.1 depicts the elements of mediation analysis. Path *c* and *c'* represents the *total effect* of independent variable (IV) on the dependent variable (DV) and the *direct effect* of IV on DV respectively. On the other hand, the product *a* x *b* denotes the *indirect effect* of IV on DV. Baron and Kenny (1986) assert that mediation is demonstrated when an IV affects a DV through the mediator. In other words, mediation occurs when the magnitude of *c'* path is smaller than the *c* path.

Figure 6.2 illustrates the model to be evaluated in this research using the SEM. The arguments and support for the hypothesized relationships were drawn from research on Spirituality, Cognitive Beliefs, and Personality (as discussed in previous chapters).

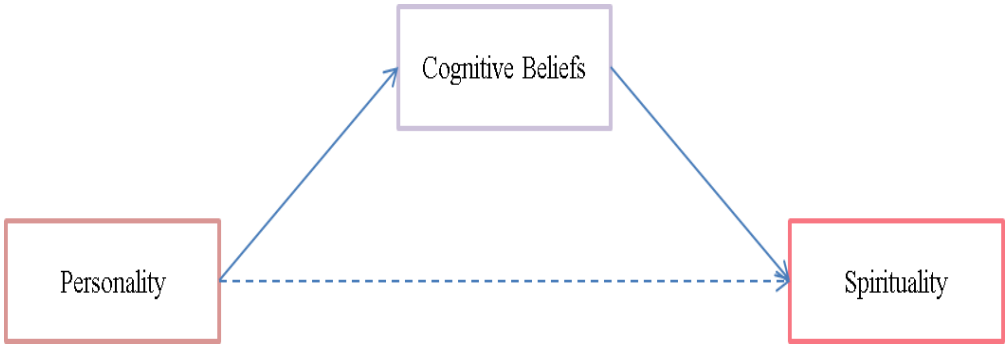

Figure 6.2. Hypothesized Mediating Model

6.1.1. Analysis strategy for establishing mediation model.

In line with current practices in estimating and testing for mediation, the first step was to evaluate intercorrelations among all study variables in order to gain an overview on the pattern of the relationship between these variables (Idris & Dollard, 2011) (Table 6.1).

Next, I selected the model that was most consistent with my data based on the *Goodness-of-Fit* indices. The same criteria for evaluating the model fit described in section 2.6.3.1 were used. Following recommendations by some of the leaders in devising methods for analysing mediation such as Baron and Kenny (1986), Kenny (2008) and Ledermann and Macho (2009), the analysis was started with the estimation of a partial mediational model (i.e. model that allows direct effect between the IV and the DV, which I refer to as M1). This was followed with the testing of the full mediation model (i.e. model in which the direct effect is fixed to zero, which I refer to as M2) and direct effect model (i.e. model with the mediation effect fixed to zero, referred to as M3). The $\chi^2_{\text{difference}}$ test was used to determine which type of the model best fit the current data.

Further, in order to ascertain that the mediational relationships between the study variables are not due to chance, the models were cross-validated using the data from the replication sample. The same cross-validation procedures described in section

2.6.3.3 were used. If $\chi^2_{difference}$ value is statistically non-significant, I can conclude that the models are equivalent and the causal relationships demonstrated in the models have not capitalized on chance factor.

The third step involved testing the mediating effect of the selected model using Baron and Kenny's causal four step-approach (described in section 6.1.2.1). The final step involved testing the significance of the mediation effect, as described in detail in section 6.1.2.2.

6.1.1.1. Baron and Kenny's causal four step-approach.

Accordingly, this study adopted Baron and Kenny's (1986) causal four step-approach to establish the mediation function of Cognitive Beliefs in Personality traits → Spirituality relationship. In this approach, each of the paths in the model is estimated as an attempt to ascertain the function of the hypothesized mediator variables (Hayes, 2009). Figure 6.3 sets out the four steps adopted in establishing full mediation model.

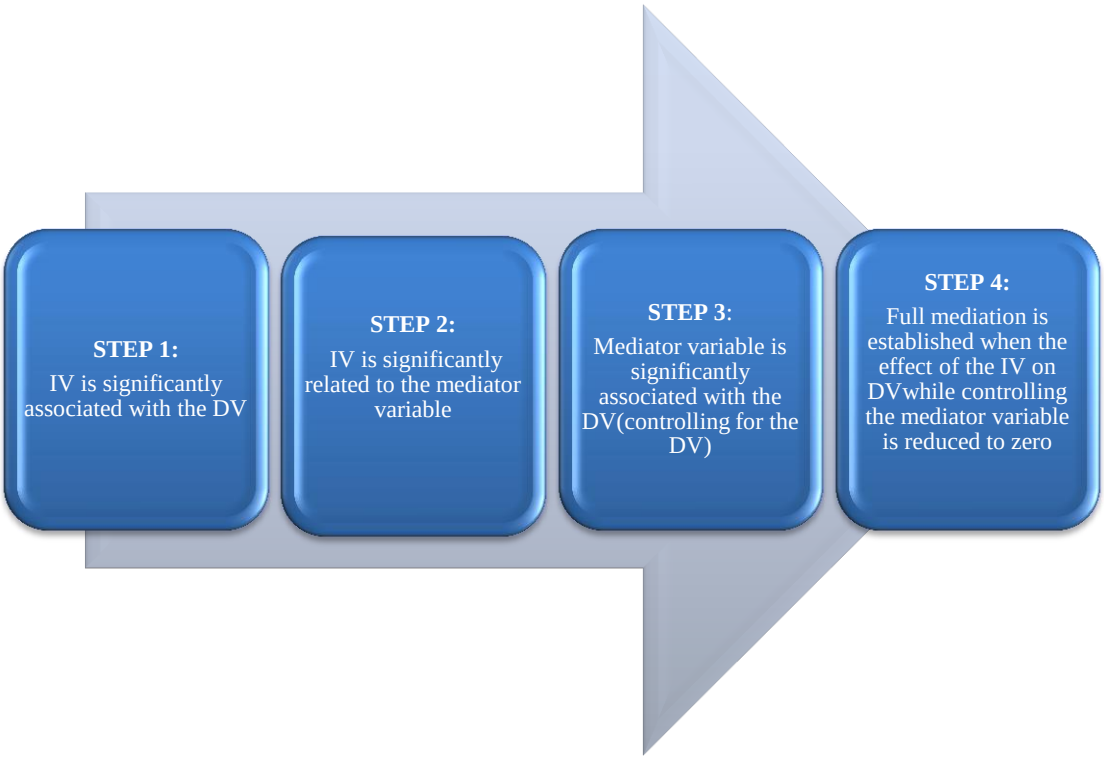

Figure 6.3. A schematic representation of the analytical strategy in establishing full mediation model

As shown in Figure 6.3, the first step involves establishing the condition whereby the IV is significantly related to the DV. According to Baron and Kenny (1986) and Kenny, Kashy, and Bolger (1998), step 1 is undertaken as an affirmation that there is an effect to be mediated. Step 2 and 3 involve estimating coefficient *a* and *b* while the final step is to estimate the path *c'* (Figure 6.1). *Full mediation* (which indicates that the mediator variable completely mediates the relationship between the IV and the DV) has occurred if all four steps are met. Conversely, *partial mediation* occurs when step 4 is not met (Baron & Kenny, 1986).

6.1.1.2. Testing the significance of mediation effect.

Once the mediation effect has been determined, the next step requires testing of the significance of any indirect effects. Among the techniques used are the Sobel test (Sobel, 1982, 1986) and bootstrapping (Bollen & Stine, 1992). In this study, the bootstrap technique was chosen rather than the Sobel test because evidence from

simulation research has led to the conclusion that "bootstrapping is one of the more valid and powerful methods for testing intervening variable effects" (Hayes, 2009, p. 412). Bootstrapping procedures produce a percentile-based bootstrap *Confidence Interval* (CI) that can be used to determine the significance of a mediation effect. Accordingly, "if zero is not between the lower and upper bound, then the analyst can claim that the indirect effect is not zero with 95% confidence" (Hayes, 2009, p. 412). In my study, 5000 bootstrap samples were used as an attempt to obtain reliable estimates of the percentile-based bootstrap CI (Ledermann & Macho, 2009). The completion of this step concludes the testing of the mediational models.

Having outlined the strategy used to estimate and test for mediational models, the next section will illustrate the application of this strategy in investigating the Personality traits → Cognitive Beliefs → Spirituality relationship in a Malaysian context. In this study, the effect of Personality traits and Cognitive Beliefs on Spirituality was analysed separately for each of the five dimensions of Spirituality. This is because they are treated as five distinct scales on which Spirituality can be expressed (Bliss, 2011). Therefore, these five dimensions were investigated separately. The investigation of the Personality → Cognitive Beliefs → Spirituality using SEM was consequently divided into five models: (i) Personality – Cognitive Beliefs – Religiousness (REL); (ii) Personality – Cognitive Beliefs – Existential Well-Being (EWB); (iii) Personality – Cognitive Beliefs – Paranormal Beliefs (PAR), (iv) Personality – Cognitive Beliefs – Experiential/Phenomenological Dimensions of Spirituality (EPD); and (v) Personality – Cognitive Beliefs – Cognitive Orientation towards Spirituality (COTS).

6.2. The Intercorrelations Among Study Variables

As outlined above, firstly, the relationships between the study variables were explored. The intercorrelations between these study variables provide an overview of their relationships. The results are presented in Table 6.1.

From Table 6.1, generally, it can be seen that most of the study variables were significantly related to each other. For instance, Extraversion (E) was related to Perceived Social Self-Efficacy (PSSE) and PSSE was also related to Cognitive Orientation towards Spirituality (COTS). Therefore, it is possible that PSSE mediate Personality traits → Spirituality relationship.

Table 6.1

Descriptive Statistics and Correlations between Study Variables

Variable	M	SD	Items	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Personality																	
1. E	7.49	1.23	2														
2. A	11.35	1.80	3	.52**													
3. C	11.15	1.77	3	.59**	.63**												
4. N	8.55	2.13	2	-.14*	-.17*	.20**											
5. O	7.10	1.31	3	.21**	.29**	.28**	.15*										
Cognitive Beliefs																	
6. IB	32.99	6.02	10	-.01	-.03	-.12	.36**	.12									
7. PSSE	35.11	6.29	8	.52**	.44**	.54**	-.15*	.18**	-.03								
8. PAE	30.01	5.20	7	.41**	.39**	.55**	-.08	.20**	-.01	.69**							
9. $\text{Chance}_{\text{HLOC}}$	16.80	4.71	5	.02	.08	-.05	.33**	.13*	.30**	-.13*	-.04						
10. Int_{HLOC}	15.14	2.17	3	.24**	.25**	.34**	-.09	.13	.08	.44**	.40**	-.19**					
Spirituality																	
11. EWB	13.61	3.15	5	.05	.14*	.21**	-.43**	-.08	-.42**	.17**	.15*	-.40**	.21**				
12. EPD	10.91	3.35	4	.03	-.01	-.07	.20**	.16*	.15*	-.01	-.01	.30**	.12	-.46**			
13. COTS	16.58	2.40	4	.16*	.24**	.28**	-.08	.05	-.08	.41**	.35**	-.30**	.32**	.36**	-.09		
14. REL	8.80	1.25	3	.11	.12	.20**	-.05	.06	-.06	.33**	.27**	-.26**	.25**	.33**	-.12	.71**	
15. PAR	8.50	2.43	3	.08	-.06	-.08	.26**	.16*	.30**	.03	-.07	.15*	.02	-.38**	.43**	-.11	-.09

Note. *N* = 236. E = Extraversion; A = Agreeableness; C = Conscientiousness; N = Neuroticism, O = Openness; IB = Irrational Beliefs; PSSE = Perceived Social Self-Efficacy; PAE = Perceived Academic-Efficacy; $\text{Chance}_{\text{HLOC}}$ = Chance Health Locus of Control; I-LOC = Int_{HLOC} Health Locus of Control; EWB = Existential Well-Being; EPD = Experiential/Phenomenological Dimension of Spirituality; COTS = Cognitive Orientation Towards Spirituality; REL = Religiousness; PAR = Paranormal Beliefs. *p<.05; **p<.01

6.3. Personality → Cognitive Beliefs → Religiousness (REL) Model

The purpose of this section is to gain insight into the contribution of possible mechanisms to the relationship between Personality traits and REL. Therefore, I evaluated a full structural model of Personality →Cognitive Beliefs → REL which consists of eleven latent variables (with their indicators): Extraversion, Agreeableness, Neuroticism, Conscientiousness, Openness, Irrational Belief, Internal Health Locus of Control, Chance Health Locus of Control, Social Self-Efficacy, Academic Self-Efficacy and Religiousness.

The initial Personality →Cognitive Beliefs→Religiousness model (M1) prior to any modification did not satisfactorily fit the data as indicated by the fit statistics (Chi-square (χ^2) = 110.07 with 19 df and Bollen-Stine p-value = .001, CMIN/df = 5.793, CFI = .88, TLI = .65, RMSEA = .143 and SRMR = .08. These statistics indicate that the model needs to be re-specified. The standardized residual covariance matrix (SRMC) suggested that there were four pairs (i.e. Neuroticism – $Chance_{HLOC}$, Openness – $Chance_{HLOC}$, Irrational Beliefs – $Chance_{HLOC}$, Religiousness – $Chance_{HLO}C$) that have values greater than 2. Since $Chance_{HLOC}$ factor was associated with all four problematic pairs, it seems reasonable to exclude it from further analyses. The inspection of the modification indices (MIs) also suggested that deleting $Chance_{HLOC}$ would result in a decrease of the χ^2 statistic of approximately 21.925 (refer Appendix M).

The model without the $Chance_{HLOC}$ factor was re-run. Inspection on the fit statistics suggested that the model still did not satisfactorily fit the data. The information from the MIs showed that freeing the error covariance between Perceived Self-Efficacy and Internal Locus of Control would improve the model fit.

Since it is substantively plausible that persons who believe that their behaviour is guided by their own efforts are likely to also believe in their ability to succeed, these two error covariances were allowed to co-vary. Following this, the model excellently fits the data, ((χ^2) = 17.72 with 9 df , Bollen-Stine p-value = .07, CMIN/df = 1.969, CFI = .99, TLI = .94, RMSEA = .06 and SRMR = .03).

Even though the fit indices for the partial mediation model suggested that it was satisfactory in explaining the speculated links between the constructs, there may be other models that could explain the data better. Therefore, I tested the fully mediation (M2) and the direct effect model (M3) as described in section 6.1.2 to determine which model best fit the current empirical data. The results of these analyses are presented in Table 6.2.

Table 6.2

Comparison of Alternative Models

	Model	χ^2	df	Bollen-Stine *p*	CFI	TLI	RMSEA	CMIN/*df*	(df), $\Delta\chi^2$	Comparison
Hypothesized models (Personality → Cognitive Beliefs → REL)										
MI	Partial mediation	17.72	9	.07	.99	.94	.06	1.969		
M2	Fully mediated	21.70	14	.11	.99	.96	.05	1.550		
M3	Direct effect	37.98	12	.00	.96	.86	.09	3.165	(5), 3.983 *ns*	M1 versus M2
Multigroup Analysis (Calibration versus Replication sample)										
M4	Constrained	110.436	37	-	.91	.90	.06			
M5	Unconstrained	107.747	36	-	.91	.90	.06		(1), 2.689 *ns*	M4 versus M5

Note. N = 236, REL = religiousity; CFI = comparative fit index; TLI = Tucker-Lewis index; RMSEA = root mean square error of approximation; CMIN/*df* = minimum discrepancy divided by the degrees of freedom; **$\Delta\chi^2$ =** chi-square difference test.

From Table 6.2, it can be seen that the fit indices for model M1 and M2 satisfactorily fit the data whereas fit indices such as the TLI and RMSEA for M3 were unsatisfactory. Therefore, comparisons were only made between M1 and M2. Even though some of the fit indices for M2 are slightly better than the fit indices for M1, the $\Delta\chi^2$ showed that M2 did not represent a significant improvement over the M1, meaning that both models explains the data equally well. In this situation, several researchers such as Yuan and Bentler (2004) and Kline (2006) suggest to adopt the more parsimonious model (i.e. model with greater degrees of freedom). Based on their suggestion, it was decided that the assessment for the hypotheses will be based on the results of the fully mediated model (M2) (Figure 6.3).

To support the validity of M2, it was then cross-validated with the data from the replication sample (M4) (see Table 6.2). The results showed that there was no significant improvement in the model when the paths are estimated freely, suggesting model invariance across groups. In other words, the causal relationships demonstrated in the models have not capitalized on chance factor.

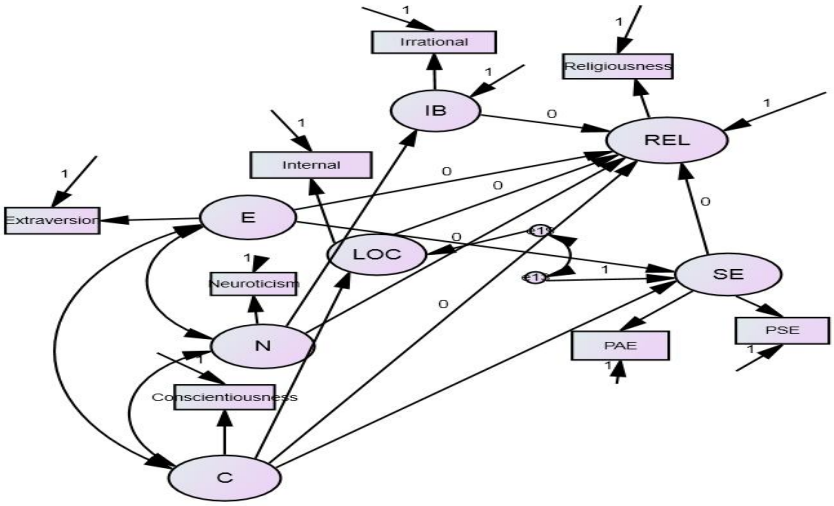

Figure 6.4. Fully mediated model (M2) depicts the relationship between personality, cognitive beliefs and religiousness.
Note. N = 236; (i) Openness and Agreeableness factors were not included in this model because both did not demonstrate any significant relationship with the other variables, (ii) For simplicity, the error terms were not included in the diagram.

Hypotheses testing was based on the fully mediated model (χ^2= 21.7, df = 14 and Bollen-Stine p-value = .11, CMIN/df = 1.550, CFI = .99, TLI = .96, RMSEA = .05). The mediation effect for the selected model was tested using Baron and Kenny's (1986) approach as described in section 6.1.2.1. First, REL was regressed onto each of the Personality dimensions that demonstrated significant relationships with other variables in the full structural model (Extraversion, Neuroticism, and Conscientiousness).

Results showed that only the Conscientiousness-Religiousness path is significant (β = .201, t = 2.667). This justified that only the Conscientiousness→ Cognitive Beliefs → REL mediational path should be investigated further (refer to Appendix N for the Regression Weight Table). The results also showed that path coefficients for

Irrational Beliefs → REL and Locus of Control → REL were not significantly different from zero and need to be dropped from the model. Based on these results, only Conscientiousness → Self-Efficacy → REL mediation route was investigated.

6.3.1. Results and discussions for the mediation effect.

To confirm the hypothesis that Self-Efficacy mediates the relationship between Conscientiousness and REL, I used the bootstrap method in the AMOS software to test for the significance of the indirect effect (please refer Appendix O for the details). The results of these analyses are presented in Table 6.3.

Table 6.3

Mediation of the Effects of Conscientiousness on Religiousness Through Perceived Social Efficacy and Perceived Academic Efficacy

Hypothesis	Direct β without mediator	Direct β with mediator	Indirect Effect			Mediation Type
			β	S.E	95% CI (bootstrap)	
C→SE→ REL	.201*	.064(ns)	.137*	.071	(.135, .413)	Full

Note. C = conscientiousness, SE = self-efficacy, REL = religiousness, β = Beta weight, S.E = standard error, CI = confidence interval, ns = non-significant; Full mediation is observed when direct β with mediator is insignificant
* significant at p < .05

As recommended for a non-normal sampling distribution, I conducted a nonparametric bootstrapping analyses (Hayes, 2009) to test the meditational model of Self-Efficacy beliefs as mediators of the relationship between Conscientiousness and Religiousness. My 5000 sample bootstrapping analysis revealed that the indirect effect of conscientiousness on Religiousness through Self-Efficacy was significant at $p < .05$ (two-tailed) because the confidence interval (CI) for an indirect effect does not include 0 (indirect effect = 0.137, 95% lower bootstrap CI BC = 0.135, upper CI BC, 0.413).

Hypothesis 9 (H9) predicted that *the influence of Extraversion, Openness, Conscientiousness and Neuroticism on Spirituality is significantly mediated through Self-Efficacy*. My results, however, only partially confirmed H9 because evidence has shown that with this Malaysian young adult sample only Conscientiousness increased Self-Efficacy (i.e. academic and social). Indirectly, increasing Conscientiousness led to the increase of one's level of Religiousness via academic and Social Self-Efficacy. The results suggested that the influence of Conscientiousness on Religiousness was fully mediated through Perceived Self-Efficacy. According to Preacher and Kelley (2011), full mediation denotes the large effect of the mediator to the hypothesized relationship. The finding implies that Academic and Social Self-Efficacy fully underlies and explains the relationship between Conscientiousness and Religiousness.

My finding is somewhat consistent with Strobel, Tumasjan, and Spörrle (2011), who found that Conscientious people were higher in Self-Efficacy, which in turn was related to an increased level of life satisfaction. Strobel et al. did not offer any explanation on the possible underlying mechanism framing the relationships. However, they suggest that the influence of Conscientiousness on subjective happiness is exerted through Cognitive Beliefs.

The current finding suggested that Conscientiousness individuals tend to develop a strong sense of Self-Efficacy which increases their level of Religiousness. This is unsurprising considering that the majority of the respondents in this study are Muslim. According to Krauss et al. (2007), the Muslims tend to score highest in the ritual scale than the Christians, Buddhists, and Hindus. Since conscientious individuals are more inclined to be self-disciplined and reliable, they are more likely to adhere to the religious norms and practices such as performing prayers five times a

day and reading the Holy *Quran*. This may contribute to the higher level of Religiousness in this sample.

The conceptual frameworks for this study include the Five-Factor Model (FFM) of Personality and Five-Factor Theory (FFT) of Personality. The mechanisms relating Conscientiousness, Self-Efficacy, and Religiousness reflected patterns of FFT where individuals who are organized, reliable, hardworking, and self-disciplined (some characteristics of Conscientiousness) seem predisposed to develop strong Self-Efficacy beliefs which in turn increases their belief in the existence of a higher power and in engagement in religious practice.

6.3.2. Implications for practice and further research.

The current finding has important implications for both researchers and practitioners in the field of individual differences. While voluminous research has been conducted on Religiousness, few studies have focussed on the processes linking Personality traits and Cognitive factors with Religiousness. The current study is a recognition and response to this limitation.

Religiousness as measured by the ESI assess one's "expression of spirituality through religious beliefs, practice and lifestyle" (MacDonald, 2011b, p. 536). Existing research has shown support for a positive relationship between Religiousness and mental health, mortality and general Well-Being (MacDonald & Friedman, 2002). Ultimately, one's Well-Being can be enhanced through their Religiousness.

Based on the current study's findings, it is conceivable for the practitioners to enhance their clients' Well-Being by identifying and modifying their Self-Efficacy beliefs, which is the premise of Cognitive Behaviour Therapy (CBT). Basically, in

CBT, the clients' negative beliefs about their abilities to tackle difficult tasks is identified, removed, and replaced with new and positive beliefs.

Even though FFT postulates that personality traits are enduring characteristics of the individual and thus are challenging to change, it is still clinically useful because it can provide a holistic picture of the individuals. This in turn, will be able to help practitioners to plan for an appropriate and effective treatment and to anticipate the outcome and course of therapy (Costa, 1991). For instance, research has found that conscientious individuals are more likely to benefit from psychotherapy because they are more willing to tolerate discomfort and uneasiness. In contrast, people low in conscientiousness are unwilling to endure discomfort which may affect the outcome of the treatment (Miller, 1991).

In summary, the results from this study suggest that one's level of Religiousness can be manipulated by modifying his or her Self-Efficacy, perhaps by using the CBT techniques. In turn, the success of CBT can be influenced by his or her personality predispositions. Considering the exploratory nature of this study, future researchers could beneficially conduct confirmatory work to establish the mediational role of Self-Efficacy in the relationship between Personality and Spirituality. Seeing that the participants in this study were college students, it will be interesting to see whether the findings can be generalized to other populations as well. Furthermore, it will be beneficial for future research to include well-being measures in the structural model of Personality-Cognitive Beliefs-Spirituality relationship to further explore and add new knowledge to the field of positive psychology.

6.4. Personality → Cognitive Beliefs→ Existential Well-Being (EWB) Model

An inspection on the fit indices of the initial model that depicts Personality → Cognitive Beliefs → Existential Well-Being (EWB) relations suggested that the

model did not satisfactorily fit the data (Chi-square (χ^2) = 98.098 with 18 df and Bollen-Stine p-value = .001, CMIN/df = 5.450, CFI = .90, TLI = .70, RMSEA = .138, and SRMR = .10). This model needs to be re-specified prior to mediation testing. The information from the SRMC and MIs indicated that Internal Health Locus of Control (Int_{HLOC}) should be removed from the model (see Appendix M).

A re-run model without the Int_{HLOC} factor still did not reach satisfactory fit indices. An inspection on the MIs suggested that the error covariance between (i) Irrational Beliefs and Chance Health Locus of Control ($Chance_{HLOC}$) and (ii) Perceived Social Efficacy (PSE) and Extraversion should be freed as an attempt to reach a satisfactory model. The error covariance between Irrational Beliefs and $Chance_{HLOC}$ was allowed to co-vary since there is empirical evidence that people with Irrational Beliefs are also likely to believe that their life outcomes are due to chance and is controlled by others (Retherford, 2005). It is also reasonable to co-vary the error terms for PSE and Extraversion since some personality theories also suggest that Extraversion does correlate with social skills (Lieberman & Rosenthal, 2001).

Following the covariation of the error terms, the model excellently fits the data as reflected by the fit statistics (Chi-square (χ^2) = 14.221 with 8 df and Bollen-Stine p-value = .12, CMIN/df = 1.778, CFI = .99, TLI = .95, RMSEA = .06, and SRMR = .03. Next, I tested the M2 and M3 models to determine which model satisfactorily fits the current data. The results of these analyses are presented in Table 6.4.

Table 6.4

Comparison of Alternative Models

	Model	χ^2	Df	Bollen-Stine *p*	CFI	TLI	RMSEA	CMIN/*df*	∇(df), χ^2	Comparison
Hypothesized models (Personality → CB → EWB)										
MI	Partial mediation	14.22	8	.12	.99	.95	.06	1.778		
M2	Fully mediated	36.85	13	.00	.97	.89	.09	2.835	(5), 22.629***	M1 versus M2
M3	Direct effect	60.90	12	.00	.94	.76	.13	5.075		
Multigroup Analysis (Calibration versus Replication sample)										
M4	Constrained	30.06	17	-	.99	.95	.04	1.768		
M5	Unconstrained	27.71	16	-	.99	.95	.04	1.732	(1), 2.354 *ns*	M4 versus M5

Note. N = 236, EWB = Existential Well-Being; CFI = comparative fit index; TLI = Tucker-Lewis index; RMSEA = root mean square error of approximation; CMIN/*df* = minimum discrepancy divided by the degrees of freedom.

Table 6.4 shows that M1 (partial mediation model) excellently fits the data. This is supported by the significant $\Delta\chi^2$ test results, indicating that M1 does represent a better model than M2 (Figure 6.5). Hence, hypotheses assessment will be based on the results of M1. M1 was cross-validated with the data from replication sample (M4) (see Table 6.4). The results supported model invariance across group, suggesting that the causal structures established in the model were not due to chance.

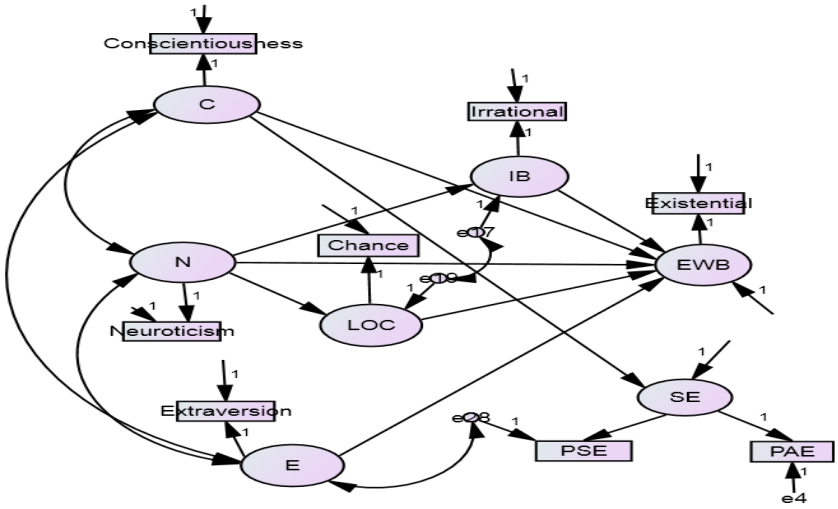

Figure 6.5. Partial mediated model (M1) depicts the relationship between Personality, Cognitive Beliefs and Existential Well-Being.
Note. N = 236; (i) Openness and Agreeableness factors were not included in this model because both did not demonstrate any significant relationship with the other variables, (ii) For simplicity, the error terms were not included in the diagram.

My general assumption was that Cognitive Beliefs partially mediate the relationship between Personality traits and Spirituality. Prior to the testing of the mediation effects, I established the relationship between Conscientiousness, Neuroticism, and Extraversion with EWB. Results showed that only the Neuroticism → EWB path (β = -.431, t =-4.414) was significant (refer Appendix N). Results also suggested that path coefficients for Irrational Beliefs → EWB and

$Chance_{HLOC}$ → EWB were significantly different from zero and should be included in the model.

6.4.1. Results and discussions for the mediation effect.

The results above indicate the need to investigate two mediations using the bootstrapping method: (i) Neuroticism → Irrational Beliefs → EWB and (ii) Neuroticism → $Chance_{HLOC}$ → EWB (Appendix O). The results of the bootstrapping analyses are presented in Table 6.5.

Table 6.5

Mediation of the Effects of Neuroticism on Existential Well-Being Through Irrational Beliefs and Chance Locus of Control

Hypothesis	Direct β without mediator	Direct β with mediator	Indirect Effect			Mediation Type
			β	S.E	95% CI (bootstrap)	
N→IB→ EWB	-.431*	-.319*	-.116*	.031	(-.187, -.063)	Partial
N→$Chance_{HLOC}$ → EWB	-.431*	-.330*	-.101*	.025	(-.152, -.057)	Partial

Note. N = neuroticism, IB = irrational beliefs, $Chance_{HLOC}$ = Chance health locus of control, EWB = existential well-being, β = Beta weight, S.E = standard error, CI = confidence interval; Partial mediation is observed when all three paths are significant.
* significant at p < .05

Results based on 5000 bootstrapped samples indicated that the total effect of Neuroticism on existential Well-Being (EWB) was significant (β = -.431, $p < .05$). Irrational beliefs (indirect effect = -.116, lower 95% CI = -.187, upper 95% CI = -.063) and $Chance_{HLOC}$ (indirect effect = -.101, lower 95% CI = -.152, upper 95% CI = -.057) partially mediated the relationship between Neuroticism and EWB. Because zero is not in the 95% CI, the indirect effect is significantly different from zero at $p < .05$ (two-tailed).

In general, the results provided partial support to Hypothesis 6 (H6) and answered research question 8 (RQ8). Specifically, H6 proposed that *the influence of*

Agreeableness, Conscientiousness, Neuroticism, and Openness on Spirituality is significantly mediated through Irrational Beliefs. RQ8 however, was raised *whether Health Locus of Control acts as a mediator variable in the relationship between Personality and Spirituality.*

My results thus show that Irrational Beliefs and $Chance_{HLOC}$ can be regarded as a partial mediator of the influence of only Neuroticism and no other personality dimensions on EWB. Stated differently, other than the fact of Neuroticism directly influencing EWB, there is also a route via Irrational Beliefs and $Chance_{HLOC}$: people high in Neuroticism are not only predisposed to have a low sense of Spirituality as expressed through means of positive existentiality, but are also higher in Irrational Beliefs and $Chance_{HLOC,}$ which in turn decreases EWB.

Due to the absence of studies investigating Irrational Beliefs and $Chance_{HLOC}$ as a mediator of the influence of Personality factors on EWB, I am unable to discuss my findings in terms of previous research. Nevertheless, it makes substantive sense for both mediators to act as intervening cognitive mechanisms because extant research has shown that people who are tense, anxious, moody, and emotionally unstable tend to endorse more Irrational thinking (Davies, 2006) and experience low levels of well-being (Diener, 2000; González Gutiérrez, Jiménez, Hernández, & Puente, 2005). In regard to $Chance_{HLOC}$, existing research has also suggested that people high in Neuroticism are more likely to hold a belief that luck, fate or chance is responsible for their health and are more likely to experience low levels of subjective Well-Being (Kulshresta & Sen, 2006).

A promising explanation for this might be that an inborn propensity to experience negative affect states such as fear and anger may predispose a person to endorse Irrational Beliefs and believe that the situation is beyond his or her control,

which in turn contributes to low levels of EWB. My findings, then, put me in the position to suggest that Neuroticism causes some differences in Irrational Beliefs and $Chance_{HLOC}$. This may be the reason people high in Neuroticism experience a low sense of inner strength and consequently have less ability to cope with life's demands.

6.4.2. Implications for practice and further research.

The mediation effects of Irrational Beliefs and $Chance_{HLOC}$ on the relation between Neuroticism and EWB found in this study has practical implications for both individuals and clinicians. The Neuroticism-Irrational Beliefs/$Chance_{HLOC}$-EWB model can help individuals to gain a better understanding of the underlying personal and psychological influences on their level of positive existentiality, an effect that ultimately has an impact on objective and subjective Well-Being.

The integrative model of Neuroticism-Irrational Beliefs/$Chance_{HLOC}$-EWB model will also help clinicians and practitioners in health-related industries. In helping clinicians understand that Neuroticism and Irrational Beliefs/$Chance_{HLOC}$ variables are important determinants of EWB, they may treat their clients who are experiencing a low sense of Well-Being using this knowledge, as well as plan and design programs to reduce its impact on their daily functioning. According to the FFT, the level of Neuroticism is relatively fixed; however, it is possible to modify their Irrational and $Chance_{HLOC}$ beliefs using CBT techniques, as discussed in the previous section. The clinical implication is that addressing the Irrational and $Chance_{HLOC}$ beliefs of neurotic patients may improve the effectiveness of the intervention programs.

However, it should be noted that Irrational Beliefs and $Chance_{HLOC}$ only partially mediated the Neuroticism-EWB relationship, which according to Rucker, Preacher,

Tormala, and Petty (2011) may have implications on theory building. They assert that partial mediation alludes to the plausibility of additional mechanisms. Researchers are usually interested in determining whether or not a mediation effect remains established across different contexts and participants. As an illustration, it is possible that Irrational Beliefs mediate the Neuroticism-EWB relationship for Muslims but not Christians. Future research could profitably investigate a hypotheses combining mediation and moderation effects, better known as the mediated moderation or moderated mediation effects (Baron & Kenny, 1986), to re-affirm the mediation effects of Irrational Beliefs and $Chance_{HLOC}$ on the Neuroticism-EWB relationships.

6.5. Personality → Cognitive Beliefs → Paranormal Beliefs (PAR) Model

Next, I investigated a full structural model of Personality →Cognitive Beliefs → Paranormal Beliefs (PAR). Overall, I hypothesized that Cognitive Beliefs would partially mediate the relationship between Personality traits and Paranormal Belief dimension of Spirituality. SEM analyses indicate that the initial model did not satisfactorily fit with the current data, as evidenced in fit statistics (Chi-square (χ^2) = 100.724 with 19 df and Bollen-Stine p-value = .001, CMIN/df = 5.301, CFI = .89, TLI = .69, RMSEA = .14 and SRMR = .11). This model was re-specified based on the information from the SRMC and MIs (see Appendix M).

The SRMC and MIs indicated that four pairs involving $chance_{HLOC}$ factor have an absolute value of standardized residual covariance greater than 2, which suggested that these covariances were not well reproduced by the hypothesized model. This provided a rationale for the $Chance_{HLOC}$ factor to be excluded from further analyses.

Despite this, the re-specified model did not satisfactorily fit the data. The SRMC and MIs further indicated that the Perceived Academic Efficacy (PAE) factor should

be dropped from the model and the error terms for Perceived Social Self-Efficacy (PSSE) and $Internal_{HLOC}$ should be allowed to co-vary to reflect their shared degree of commonality. The error covariance between these two items suggested that in a Malaysian context those who perceived themselves as having the capability to form and maintain social relationships and to manage interpersonal conflicts are also very likely to be in control of their own behaviour. On implementing this modification, a satisfactory model fit was achieved (Chi-square (χ^2) = 10.153 with 8 df and Bollen-Stine p-value = .27, CMIN/df = 1.269, CFI = .99, TLI = .98, RMSEA = .03 and SRMR = .03). Next, I tested M2 and M3 models to determine which model best fits the current data. The results of these analyses are presented in Table 6.6.

Table 6.6

Comparison of Alternative Models

	Model	χ^2	Df	Bollen-Stine *p*	CFI	TLI	RMSEA	CMIN/*df*	∇(df), χ^2	Comparison
Hypothesized models (Personality → CB → PAR)										
MI	Partial mediation	10.153	8	.27	.99	.98	.03	1.269		
M2	Fully mediated	51.616	12	.00	.90	.76	.12	4.301	(7), 41.463***	M1 versus M2
M3	Direct effect	173.836	18	.00	.60	.37	.19	9.659		
Multigroup Analysis (Calibration versus Replication sample)										
M4	Constrained	44.252	29	-	.98	.96	.04	1.526		
M5	Unconstrained	29.281	16	-	.98	.93	.04	1.830	(13), 14.971*(ns)*	M4 versus M5

Note. N = 236, PAR = paranormal beliefs; CFI = comparative fit index; TLI = Tucker-Lewis index; RMSEA = root mean square error of approximation; CMIN/*df* = minimum discrepancy divided by the degrees of freedom.

From the data in Table 6.6, it can be seen that the model of best fit with the Malaysian data is M1- partial mediation model (Figure 6.6). The $\Delta\chi^2$ test results support the notion that the factor loadings were reasonably invariant across validation and replication groups, lending further support to the validity of M1. Taking all these results together, I concluded that the hypotheses assessment should be based on the results of M1.

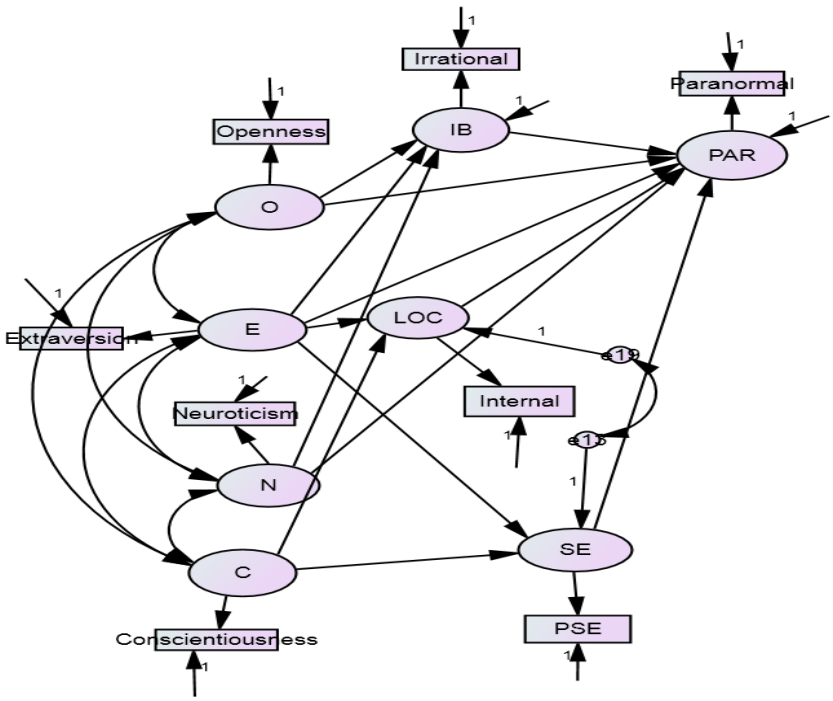

Figure 6.6. Partial mediated model (M1) depicts the relationship between Personality, Cognitive Beliefs and Paranormal Beliefs. *N* = 236.
Note. N = 236; (i) Agreeableness factor was not included in this model because it did not demonstrate any significant relationship with the other variables, (ii) For simplicity, the error terms were not included in the diagram

The regression of Paranormal Beliefs onto four dimensions of Personality (Openness, Conscientiousness, Extraversion, and Neuroticism) revealed that only the Neuroticism-Paranormal (β = .258, t = 2.595) path was significant (Appendix N) .

Results also showed that the path coefficients for Self-Efficacy → PAR and LOC → PAR were not significantly different from zero and can be removed from the model.

6.5.1. Results and discussions for the mediation effect.

Based on the results presented in Section 6.5, only one mediational route will be examined: (i) Neuroticism → Irrational Beliefs → PAR. The results of bootstrap analyses are presented in Table 6.7.

Table 6.7

Mediation of the Effects of Neuroticism and Extraversion on Paranormal Beliefs Through Irrational Beliefs

Hypothesis	Direct β without mediator	Direct β with mediator	Indirect Effect			Mediation Type
			β	S.E	95% CI (bootstrap)	
N→IB→ PAR	.258*	.176 *	.082*	.031	(.032, .155)	Partial

Note. N = neuroticism, IB = irrational beliefs, PAR = paranormal beliefs, β = Beta weight, S.E = standard error, CI = confidence interval; Partial mediation is observed when all three paths are significant.
* significant at $p < .05$

It can be seen from the data in Table 6.7 that the indirect effect for Neuroticism → Irrational Beliefs → PAR was significant (indirect effect = .082, lower 95% CI = 0.032, upper 95% CI = 0.155). Basically, the results from the mediation analysis further confirmed the assumption that the dispositional effects of Neuroticism on Paranormal Beliefs were partially mediated by Irrational Beliefs (H6). In other words, Neuroticism affects Paranormal Beliefs because Neuroticism affects Irrational Beliefs, and Irrational Beliefs, in turn, affect Paranormal Beliefs. Simply said, this finding suggests that Neuroticism partially predicts Paranormal Beliefs because it predisposes people to endorse more unrealistic thinking.

This finding is somehow expected considering that there is evidence of Neuroticism sharing a positive correlation with Irrational Beliefs measures (Davies, 2006) and most Paranormal beliefs are thought to represent Irrational and

maladaptive beliefs (Irwin, 2009; Vyse, 1997). In terms of theoretical relevance, the present finding supports the view that neurotic individuals endorse higher levels of Irrational Beliefs (Sava, 2009) and hold greater psychic, superstitious, witchcraft and spiritualism beliefs (Roig et al., 1997).

6.5.2. Implications for practice and further research.

The findings that support the mediated relationships between Neuroticism-Irrational Beliefs-PAR may have significant practical contributions and implications. An implication of this finding is that both Neuroticism and Irrational Beliefs should be taken into account when investigating the nature of Paranormal Beliefs.

The implications are directed toward both researchers and health care professionals. The current findings offer some insights to researchers from Personality, Cognitive, humanistic, and transpersonal fields who are interested to pursue Paranormal Beliefs phenomena. Neuroticism and Irrational Beliefs are factors that should be taken into account when Paranormal Beliefs are discussed.

The empirically tested model of Paranormal Beliefs provides direction for health care professionals to target Neuroticism and Irrational Beliefs as factors influencing the expression of Paranormal Beliefs. Research has shown that belief in paranormal phenomena such as witchcraft, spiritualism, ESP, psychokinesis, and related matters shares a significant positive relationship with pathology indices such as schizophrenia and schizotypy (MacDonald & Friedman, 2002) and a negative relationship with emotional wellness (Simonian, 2010). Thus, it is possible for clinicians to reduce the negative impact of paranormal beliefs on Well-Being via neuroticism and irrational beliefs. As an example, an intervention program can be designed to reduce the client’s belief in paranormal phenomena. This intervention might seek to lessen paranormal beliefs by training the individuals to identify or

recognize their Irrational Beliefs and replace it with rational ones through CBT techniques.

However, research has indicated that Personality may elicit differences in treatment response. Empirical research has indicated that the effectiveness of CBT is reduced with neurotic patients as Neuroticism predisposed them to experience high levels of negative affect, disrupting the cognitive strategies required for CBT (Bagby et al., 2008). In this case, it is advisable for clinicians to do treatment sequencing (Gaynes, Davis, & Rush, 2005), where patients are to be treated first with pharmacotherapy (drug therapy), then CBT when they are able to grasp the CBT strategies (Bagby et al., 2008).

Nonetheless, it should be noted that in a Malaysian context, Irrational Beliefs partially mediated the Neuroticism-PAR relationship. This means that there is a possibility that there are other psychological factors contributing to the relationship. Further research might investigate other demographic factors such as gender and religious affiliation that may confound the Neuroticism-PAR relationship.

6.6. Personality → Cognitive Beliefs → Experiential/Phenomenological Dimension (EPD) Model

The evaluation of Personality-Cognitive Beliefs-EPD model involved eleven latent variables (with their indicators): Extraversion, Agreeableness, Neuroticism, Conscientiousness, Openness, Irrational Belief, Internal Health Locus of Control (Int_{HLOC}), Chance Health Locus of Control ($Chance_{HLOC}$), Social Self-Efficacy (PSSE), academic Self-Efficacy (PAE), and EPD.

The initial Personality →Cognitive beliefs→EPD model, prior to any modifications produced non-positive definite matrices, suggesting a problematic model. To overcome this problem, the model was re-specified by removing the

variable with the negative variances ($Chance_{HLOC}$). The re-run model, though identified, produced some unsatisfactory fit indices (Chi-square (χ^2) = 40.909 with 10 df and Bollen-Stine p-value = .001, CMIN/df = 4.091, CFI = .96, TLI = .80, RMSEA = .12 and SRMR = .04).

This model was re-specified based on the information from the SRMC and MIs (see Appendix M). The SRMC and MIs indicated that two pairs of indicators, both involving Int_{HLOC} factor, have an absolute value of standardized residual covariance greater than 2, suggesting its exclusion from subsequent specified model. Following this adjustment, a satisfactory model fit was achieved (Chi-square (χ^2) = 19.527 with 14 df and Bollen-Stine p-value = .22, CMIN/df = 1.395, CFI = .99, TLI = .98, RMSEA = .12 and SRMR = .04). The results from the re-specification process suggested that the Health Locus of Control Factor did not exert influence onto the Personality-EPD relationship.

Next, I tested the fully mediated model (M2) and direct effect model (M3) to determine which of the three models is consistent with the current data. The results of these analyses are presented in Table 6.8.

Table 6.8

Comparison of Alternative Models

	Model	χ^2	Df	Bollen-Stine *p*	CFI	TLI	RMSEA	CMIN/*df*	∇(df), χ^2	Comparison
Hypothesized models (Personality → CB → EPD)										
MI	Partial mediation	19.527	14	.22	.99	.98	.04	1.395	(3), 16.238***	M1 versus M2
M2	Fully mediated	37.469	19	.04	.97	.95	.06	1.972	(2), 1.704 (*ns*)	M1 versus M3
M3	Direct effect	21.231	16	.29	.99	.98	.04	1.327	(5), 17.942***	M2 versus M3
Multigroup Analysis (Calibration versus Replication sample)										
M4	Constrained	69.733	33	-	.97	.92	.05	2.113		
M5	Unconstrained	69.516	32	-	.96	.92	.05	2.172	(1), 0.217 (*ns*)	M4 versus M5

Note. N = 236, EPD = experiential/phenomenological dimension of spirituality; CFI = comparative fit index; TLI = Tucker-Lewis index; RMSEA = root mean square error of approximation; CMIN/*df* = minimum discrepancy divided by the degrees of freedom

From Table 6.8, it can be seen that both M1 (partial mediation) and M3 (direct) achieved a good fit with the current data. The $\Delta\chi^2$ test results suggested that M3 did not represent a significant improvement over the M1, suggesting that both models explained the data equally well. Following Yuan and Bentler (2004) and Kline (2005)'s suggestion, M3 was chosen because it was more parsimonious than M1 (Figure 6.7). M3 was then cross-validated with M4. The multigroup analysis indicated model invariance across groups, lending validity support for M3 (Table 6.8). In conclusion, I consequently rejected the mediation model, as it was unable to show satisfactory fit in contrast to the direct effect model.

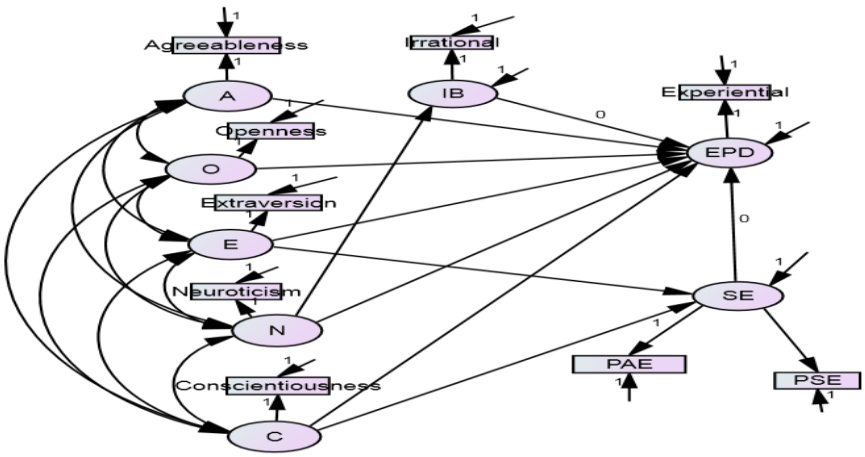

Figure 6.7. Direct effect model (M3) depicts the relationship between personality, irrational beliefs, self-efficacy and EPD. *N* = 236.
Note. N = 236; For simplicity, the error terms were not included in the diagram

In this study, the direct effect model personality-EPD was found to achieve good fit with the current data and was more parsimonious than the partial mediation model. The results implied that the variance in EPD was not accounted for by

Irrational Beliefs and Self-Efficacy factors. In other words, Personality has only a direct effect on EPD. Table 6.9 illustrates the results of these analyses.

Table 6.9

The Direct Effect Model of EPD

Path	Standardized path coefficient	*t*-value
O → EPD	.185*	2.663
N → EPD	.179*	2.696

Note. O = openness, N = neuroticism, EPD = experiential/phenomenological dimension of spirituality
* significant at p < .05

The data from Table 6.9 showed that there were significant immediate relationships between Openness and Neuroticism with EPD, although relatively small in magnitude (with size of effect of .19 and .18 for Openness and Neuroticism, respectively). The results of the current investigation that people who are open-minded, curious and artistic tend to be involved with more spiritual and mystical experiences is not surprising, since MacDonald (2000b) asserted that many previous studies have also found that constructs similar to Openness such as Authoritarianism and Absorption ("openness to absorbing and self-altering experiences") (McCrae & Costa, 1997a, p. 827) tend to be associated with EPD construct.

However, the finding that Neuroticism has an immediate effect on EPD was rather unexpected because it appeared not to be generally consistent with extant research (MacDonald, 2000b). Perhaps this finding is unique to Malaysian young adults, which suggests that people who are emotionally unstable have more spiritual experiences. It is difficult to find a reasonable explanation for this result, but it might be related to the fact that "EPD has been found to have stable neuroanatomical correlates in the frontal, temporal, and parietal lobes" (MacDonald, 2011b, p. 538). This, according to MacDonald suggests that our spiritual experiences are generated by our nervous system. It is reported that the autonomic nervous system of

individuals who score high on Neuroticism is more active (Miles & Hempel, 2004). Thus, it is possible that Neuroticism with its basis in the autonomic nervous system influences the generation of spiritual and mystical experiences.

Although the current study gave us insights into the relationship between Neuroticism and EPD, I acknowledged that it was limited by the use of the BFI, which assesses personality traits at the five-factors level. It is possible that the five factors are too broad to account for individual differences in EPD. The measurement of personality at the facet level, as with the Revised NEO Personality Inventory (NEO-PI-R; Costa & McCrae, 1992), may allow us to delve more deeply into the many distinct personality traits that may be related to EPD. Therefore, it would be useful for future research to investigate the relationship between the nervous system and Spirituality using the NEO-PI-R.

6.6.1. Implications for practice and further research.

MacDonald and Friedman (2002) reported positive associations between spiritual experiences and a healthy orientation toward one's self. Health practitioners who are interested in promoting a healthy self-orientation to their clients may take into consideration the immediate effect of Openness and Neuroticism in generating spiritual experiences, which in turn will affect the clients' healthy orientation. The clinician's knowledge of the clients' personality can be used to aid them to anticipate the outcome, duration and course of suitable therapy (Costa, 1991).

6.7. Personality → Cognitive Beliefs → Cognitive Orientation towards Spirituality (COTS) Model

The full structural model of Personality→Cognitive Beliefs→Cognitive Orientation towards Spirituality was evaluated with eleven latent variables (with their indicators): Extraversion, Agreeableness, Neuroticism, Conscientiousness,

Openness, Irrational Belief, Internal Health Locus of Control, Chance Health Locus of Control, Social Self-Efficacy, academic Self-Efficacy and COTS. The fit indices for the original personality → CB → COTS model indicate that it needed to be re-specified: (Chi-square (χ^2) = 95.663 with 18 df and Bollen-Stine p-value = .001, CMIN/df = 5.315, CFI = .90, TLI = .70, RMSEA = .14 and SRMR = .10).

As in previous models, the re-specification was made based on the information from the SRMC and the MIs. An inspection on the SRMC and MIs suggested that the Int_{HLOC} factor needed to be removed from the model due to the large value of standardized residual covariance. This was supported by the MIs, which indicated that the deletion of Int_{HLOC} factor would result in the largest value change of the χ^2 statistic of approximately 18.798 (Appendix M), justifying its exclusion from the model. The fit indices for the re-run model still did not demonstrate satisfactory results. The SRMC indicated that the $Chance_{HLOC}$ factor needs to be dropped from the model. Following this, the model satisfactorily fit the current data as reflected by the fit indices (Chi-square (χ^2) = 14.928 with 7 df and Bollen-Stine p-value = .07, CMIN/df = 2.133, CFI = 99, TLI = .94, RMSEA = .06 and SRMR = .01). It seems that in this study, Locus of Control did not contribute to the relationship between Personality and COTS.

To determine which model is consistent with the empirical data, three models (M1, M2 and M3) were estimated for comparison. A chi-square difference test was performed. The results are reported in Table 6.10.

Table 6.10

Comparison of Alternative Models

	Model	χ^2	Df	Bollen-Stine *p*	CFI	TLI	RMSEA	CMIN/*df*	∇(df), χ^2	Comparison
Hypothesized models (Personality → CB → COTS)										
MI	Partial mediation	14.928	7	.07	.99	.94	.06	2.133		
M2	Fully mediated	21.658	12	.05	.99	.96	.06	1.805	(5), 6.73 (*ns*)	M1 versus M2
M3	Direct effect	41.738	9	.00	.95	.80	.12	4.638		
Multigroup Analysis (Calibration versus Replication sample)										
M4	Constrained	42.716	25	-	.98	.95	.04	1.709		
M5	Unconstrained	42.305	24	-	.98	.95	.04	1.763	(1), 0.411*(ns)*	M4 versus M5

Note. N = 236, COTS = cognitive orientation towards spirituality; CFI = comparative fit index; TLI = Tucker-Lewis index; RMSEA = root mean square error of approximation; CMIN/*df* = minimum discrepancy divided by the degrees of freedom

It can be seen from Table 6.10 that only the fit indices for M1 and M2 were within the acceptance level. In addition, the chi-square difference test suggested that MI and M2 represent the current data equally well. In this case, M2 was chosen over M1 because it is more parsimonious (Yuan & Bentler, 2004). M2 was then cross-validated with the data from the replication sample (see Table 6.10). The results supported model invariance across groups, suggesting that the causal structures established in the model are not due to chance. Taking all these results together, I concluded that the hypotheses assessment should be based on the results of M2 (Figure 6.8).

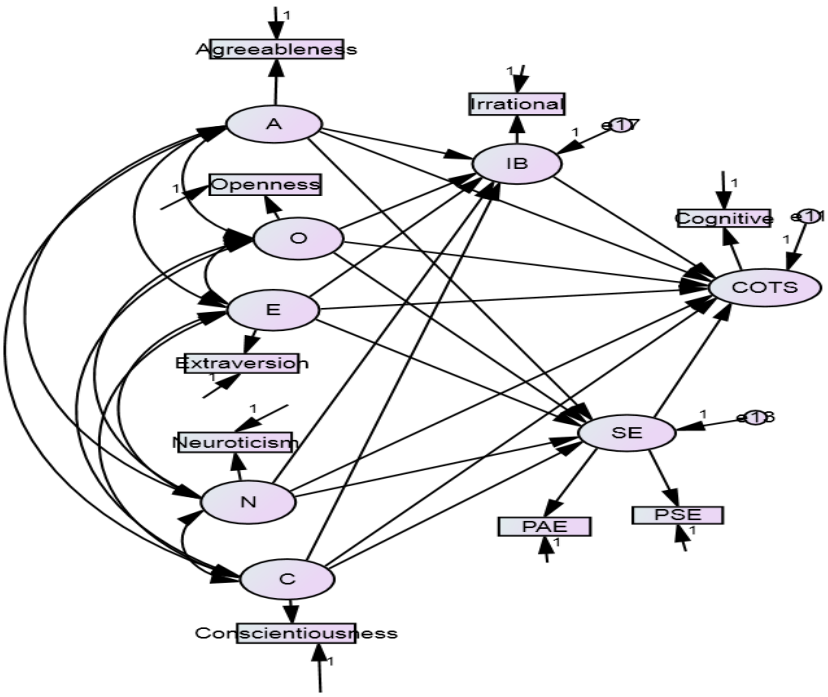

Figure 6.8. Fully mediated model (M2) depicts the relationship between personality, cognitive beliefs and cognitive orientation towards spirituality.
Note. N = 236; For simplicity, the error terms were not included in the diagram

6.7.1. Results and discussions for the mediation effect.

To assess the mediational role of Cognitive Beliefs, first, COTS was regressed onto each of the five dimensions of personality. From the results, it can be seen that only extraversion-COTS was significant (β = .156, t = -2.402) (Appendix N). Results also showed that only the SE → COTS path coefficient was significantly different from zero and needs to be included in the model. Hence, the mediational route that will be evaluated is extraversion → SE → COTS (Appendix O). The result of this analysis is presented in Table 6.11.

Table 6.11

Mediation of the Effects of Extraversion on Cognitive Orientation Towards Spirituality Through Self-Efficacy

Hypothesis	Direct β without mediator	Direct β with mediator	Indirect Effect			Mediation Type
			β	S.E	95% CI (bootstrap)	
E→SE→ COTS	.156*	.107 *	.043*	.054	(.045, .256)	Partial

Note. E = extraversion, SE = self-efficacy, COTS = Cognitive Orientation towards Spirituality, β = Beta weight, S.E = standard error, CI = confidence interval; Partial mediation is observed when all three paths are significant.
* significant at p < .05

As in previous models, the mediational model of Extraversion→ Self-Efficacy → COTS was evaluated with bootstrapping analyses. Results based on 5000 bootstrap samples indicated that the indirect effect of extraversion on COTS was significant (β = .043, SE = .054, lower 95% CI=0.045, upper 95% CI=0.256). The results confirmed the postulation that the dispositional effect of Extraversion on COTS was partially mediated by academic and social Self-Efficacy (H9).

On that note, Extraversion affects COTS because Extraversion affects Self-Efficacy, and Self-Efficacy, in turn, affects COTS. This finding is somewhat in line with past findings that Extraversion was positively related to Self-Efficacy (Judge &

Ilies, 2002; Maddux & Gosselin, 2012). Perhaps extraverts, who prefer interpersonal interactions as well as being energized and optimistic, are predisposed to develop strong academic and social Self-Efficacy. Furthermore, according to McCrae and Löckenhoff (2010a), extraverted individuals with their high assertiveness and energy tend to adopt more challenging tasks for themselves, resulting in high academic and social Self-Efficacy. Consequently, the high level of Self-Efficacy may explain an increase in the level of the COTS.

In sum, the results of this study suggest that Spirituality as manifested in a sense of "beliefs, attitudes, and perceptions regarding the nature and significance of spirituality as well as the perception of spirituality as having relevance and import for personal functioning" (MacDonald, 2000a, p. 4) is influenced by both Extraversion and Self-Efficacy. It appears that the inclination to perceive the importance of Spirituality to personal functioning may be enhanced through the modification of Self-Efficacy beliefs, which will be discussed next.

6.7.2. Implications for practice and further research.

As with other Spirituality constructs, COTS has been linked with Well-Being measures. Specifically, people with high level of COTS tend to have higher levels of self-actualization and ego resiliency and lower levels of depression (MacDonald & Friedman, 2002).

There, it may be of practical importance to mental health professionals to consider COTS, since it has positive effect on Well-Being. It could be possible for them to enhance an intervention program that seeks to bolster the clients' level of COTS by taking into account Extraversion and Self-Efficacy. Increasing one's sense of Self-Efficacy should boost COTS. As mentioned in section 6.4.2, CBT is one of the ways to be adopted to modify or change one's level of Self-Efficacy. The current

finding also suggests that Extraversion is an advantage in the process of increasing the level of academic and social Self-Efficacy.

Nevertheless, in this study, academic and social Self-Efficacy partially mediated the relationship between Extraversion and COTS, which supports the idea that Extraversion has a direct effect on Self-Efficacy and an indirect effect on COTS. The fact that Self-Efficacy partially mediated the relationships between Extraversion and COTS suggests that there might be other variables at work, such as self-concept and self-esteem. It is equally advantageous to consider other related mediators in order to understand if the mediation of COTS is independent of the effects of other psychological variables. Future research aimed at testing such possibilities is warranted.

6.8. Summary and Conclusions of Personality-Cognitive Beliefs-Spirituality Mediation Testing

Because the lack of integrative research investigating a representative set of Spirituality constructs within a unified Personality and Cognitive framework, the objective of this chapter was to determine the relationship between these variables in a Malaysian context.

This chapter has presented the results and discussions of the Personality-Cognitive Beliefs-Spirituality mediation testing. I tested the posited hypotheses using the cross-sectional data. The summary of the results is presented in Table 6.12. Overall, the findings of this study provide empirical evidence of the affects of Personality on Spirituality dimensions. These affects might be influenced by Irrational Beliefs, Self-Efficacy, and $\text{Chance}_{\text{HLOC}}$.

Table 6.12

Summary of the Mediation Testing Results

Hypothesis	Direct β w/o Med	Direct β w/Med	Indirect β	SE	95% (CI)	Mediation Type
C→SE→REL	.201*	.064 (ns)	.137*	.071	(.135, .413)	*Full*
E→SE→ COTS	.156*	.107 *	.043*	.054	(.045, .256)	*Partial*
N→IB→EWB	-.431*	-.319*	-.116*	.031	(-.187, -.063)	*Partial*
N→IB→PAR	.258*	.176 *	.082*	.031	(.032, .155)	*Partial*
N→$Chance_{HLOC}$ → EWB	-.431*	-.330*	-.101*	.025	(-.152, -.057)	*Partial*

Note. C = Conscientiousness, E = Extraversion, N = Neuroticism, SE= self-efficacy, IB = irrational beliefs, $Chance_{HLOC}$ = Chance health locus of control, REL = religiousness, EWB = existential well-being, PAR = paranormal beliefs, β = Beta weight, S.E = standard error, CI = confidence interval; * significant at $p < .05$

The current mediation results provided us with an insight into the different nature of the indirect effects of Personality on Spirituality. Moreover, it also provided some evidence to support MacDonald's (2000a) five-dimensional Spirituality framework, which asserts that REL, EWB, PAR, EPD, and COTS are distinct but correlated Spirituality dimensions. The uniqueness of the five dimensions of Spirituality is evident by the different effects exerted by the Personality and Cognitive variables. Thus, it can be said that the results lend further support to the conceptual distinction between REL, EWB, PAR, EPD, and COTS and offer additional evidence that they are empirically distinct.

All in all, the results of this study revealed that Irrational Beliefs and academic and social Efficacy do mediate certain Personality and Spirituality relationships. However, the same cannot be said about Health Locus of Control because only $Chance_{HLOC}$ was found to exert a mediational influence on Personality-Spirituality

associations. Table 6.13 summarizes the evaluations and answers to the hypotheses and research questions posited in Chapter Five.

Table 6.13

Summary of Hypotheses and Research Questions

Proposed Hypothesis/Research Question	Findings
H6: The influence of Agreeableness, Conscientiousness, Neuroticism and Openness on Spirituality is significantly mediated through Irrational Beliefs.	Partly supported
H9: The influence of Extraversion, Openness, Conscientiousness and Neuroticism on Spirituality is significantly mediated through Self-Efficacy.	Partly Supported
RQ8: Are Locus of Control constructs potential mediators in the Personality-Spirituality relationship in Malaysian context?	Only $Chance_{HLOC}$ acts as a mediator in the relationship between Personality and Spirituality

The key findings not only provide significant practical implications, but they also have theoretical and methodological implications, which will be articulated in Chapter Seven, together with the conclusions and limitations of the present study.

CHAPTER 7: Conclusions and Implications

This final chapter firstly presents an overview of the present research including a brief summary of the research findings. Next, is a discussion on the study's contributions and implications, followed by a consideration of the limitations. This chapter concludes with suggestions for future research.

7.1. Synopsis of the Research

Spirituality, a numinous concept, has been positively associated with valued outcomes such as life satisfaction and happiness, and negatively related to social problems such as depression and substance abuse (Moreira-Almeida, Neto, & Koenig, 2006). However, despite considerable research on the topic, researchers continue to differ in their definitions of Spirituality, often attributed to "spirituality being a subjective, personal and individualistic construct" (Coyle, 2002, p. 589).

The subjectivity and the numinous nature of Spirituality may lead to inconsistencies in understanding its meaning. Thus, in the present study, I elucidated Spirituality by linking it to Personality predispositions within the Five-Factor Model, an established and dominant trait model of Personality. A review of extant research indicated some discrepancies in the relationship between Personality and Spirituality. These discrepancies beg the question of what mechanisms may frame this relationship. In consequence, I decided to pursue the mediational role of Cognitive Beliefs such as Irrational, Self-Efficacy, and Locus of Control beliefs in delineating the Personality-Spirituality relationship.

Fundamentally, this study investigated the psychometric properties of five instruments (i) the Expressions of Spirituality Inventory; (ii) the Big Five Inventory; (iii) the Irrational Belief Scale; (iv) the Children's Perceived Self-Efficacy scale; and

(v) the Multidimensional Health Locus of Control, which were translated into Malay. These translations were systematically and carefully validated in the research process. I also explored the mediational role of Irrational Beliefs, Self-Efficacy, and Locus of Control in the Personality-Spirituality relationship. Research models were developed to validate the proposed effects of these mediator variables on the relationship between Personality and Spirituality.

As an empirical setting, I collected cross-sectional data from students aged 18 to 25 years studying in one of the public universities in Malaysia. The students were given a choice either to respond to a paper-based or online questionnaire. Both types of questionnaire yielded 437 usable responses. However, as one of the objectives of this study is to validate the instruments, these responses were randomly split into calibration (n = 236) and replication (n = 201) groups.

In order to answer the research questions and to evaluate the anticipated hypotheses, I conducted confirmatory analysis using Structural Equation Modelling (SEM) available through AMOS. In the first stage, I evaluated the psychometric properties of the instruments, validating and modifying them by conducting a series of one factor congeneric measurement models to test the homogeneity of the items making up each single factor. Then, I estimated the measurement models two by two to eliminate cross-loading items. Following this, I ran the full structural model using the parameter estimates established in the first stage. Next, as reported in Chapter 6, I tested the proposed structural model of Personality traits → Cognitive Beliefs → Spirituality in a Malaysian context.

In doing this, the current study contributes to the existing body of knowledge by (i) demonstrating the need and efficacy of a thorough and careful translation and adaptation process of Western study instruments into a Malaysian context, (ii)

reporting the validation processes and techniques of the Malay-translated instruments, and (iii) developing and testing an integrative model of the Expressions of Spirituality, Personality and Cognitive Beliefs using structural modelling techniques. The resulting integrative model of Personality traits and Cognitive factors to discover possible determinants of Spirituality also provides important understandings for the design of intervention programs with potential benefits for policymakers, clinicians, and counsellors as well as other researchers. This is the first comprehensive study undertaken in the Malaysian context which simultaneously examines Spirituality from Personality and Cognitive perspectives. As well, it is a precursor to further studies incorporating a finer grained personality structure such as "the NEO-PI-R which integrates six specific by-factor facets" (Saroglou & Muñoz-García, 2008, p. 84).

Table 7.1 presents an overview of the research questions and hypotheses and the findings, relating them to the chapters, as a precursor to more specific and detailed summaries in sections 7.1.1 and 7.1.2.

Table 7.1

Summary of Research Questions and Hypotheses

	Research Questions/Hypotheses According to Chapters	Findings
	CHAPTER THREE	
RQ1	Is there any significant gender difference in Spirituality scores among the Malaysian young adults in this study?	No statistically gender difference was found
H1	There is a significant religious affiliations difference in Spirituality scores among the Malaysian young adults.	Partial support for H1 as only EPD, COTS and REL were found to be significantly impacted by religious affiliation
H2	The Five-Factor Model of Spirituality as captured by the Malay Experimental Version of Expressions of Spirituality (MEV-ESI) is applicable in Malaysian context.	Supported
	CHAPTER FOUR	
H3	The Five-Factor Model of Personality is applicable in the Malaysian context.	Supported
RQ2	What is the relationship between Spirituality and Personality in Malaysian context?	(i) Extraversion correlated with COTS; (ii) Agreeableness correlated with COTS, EWB; (iii) Conscientiousness correlated with COTS, EWB, REL; (iv) Neuroticism correlated with EPD, EWB, PARA; and (v) Openness correlated with EPD, PARA

	Research Questions/Hypotheses According to Chapters	Findings
	CHAPTER FIVE	
H4	The Malay Experimental Version-Irrational Belief Scale (MEV-IBS) is a valid and reliable measure for assessing Irrational Beliefs in Malaysian young adults.	Supported
RQ3	What is the relationship between Spirituality and Irrational Beliefs in Malaysian young adults?	Irrational Beliefs correlated with EPD, EWB and PARA
H5	Irrational Beliefs is negatively correlated with Openness and Agreeableness; positively correlated with Neuroticism and Conscientiousness.	Partly supported
RQ4	Are the factor structures of Perceived Academic Efficacy (PAE), Self-Regulatory Efficacy (SRE) and Perceived Social Self-Efficacy (PSSE) validated in the Malaysian young adult sample?	Only PAE and PSSE were validated
H7	Self-Efficacy is positively related to Spirituality in Malaysian context.	Supported
H8	Self-Efficacy is positively related to Extraversion, Openness and Conscientiousness and negatively related to Neuroticism.	Partly supported
RQ5	Are the factor structures of Internal Health Locus of Control (Int_{HLOC}), Chance Health Locus of Control ($Chance_{HLOC}$) and Powerful Others Health Locus of Control (PO_{HLOC}) validated in the Malaysian young adult sample?	Only Int_{HLOC} and $Chance_{HLOC}$ were validated
RQ6	What is the relationship between Spirituality and Health Locus Of Control in Malaysian young adults?	All five dimensions of spirituality were associated with $Chance_{HLOC}$; Only COTS, EWB and REL were related to Int_{HLOC}

	Research Questions/Hypotheses According to Chapters	Findings
RQ7	What is the relationship between the five dimensions of Personality and Health Locus of Control in Malaysian young adults?	(i) $Chance_{HLOC}$ was related to Neuroticism and Openness; (ii) Int_{HLOC} was related to all dimensions of personality except Neuroticism
	CHAPTER SIX	
H6	The influence of Agreeableness, Conscientiousness, Neuroticism and Openness on Spirituality is significantly mediated through Irrational Beliefs.	Partly supported
H9	The influence of Extraversion, Openness, Conscientiousness and Neuroticism on Spirituality is significantly mediated through Self-Efficacy.	Partly supported
RQ8	Are Locus of Control constructs potential mediators in the Personality-Spirituality relationship in Malaysian context?	Only $Chance_{HLOC}$ act as a mediator in the relationship between personality and spirituality

Note. RQ = Research Question; H = Hypothesis; EPD = Experiential/Phenomenological Dimension of Spirituality; COTS = Cognitive Orientation towards Spirituality; REL = Religiousness; EWB = Existential Well-Being; PARA = Paranormal Beliefs; Int_{HLOC} = Internal Health Locus of Control; $Chance_{HLOC}$ = Chance Health Locus of Control

7.1.1. Synopsis of validation findings.

This section summarizes the interpretation and discussion of the validation findings based on the research questions and hypotheses illustrated in Table 7.1. In addition to that, this section also offers summaries of the inter-correlations among all the study variables, for an overview on the pattern of the relationship between the study's variables.

7.1.1.1. Research question 1.

Is there any significant gender difference in Spirituality scores among the Malaysian young adults in this study?

In order to gain a better understanding on the nature of the five dimensions of Spirituality, which consists of Cognitive Orientation towards Spirituality (COTS), Experiential/Phenomenological Dimension of Spirituality (EPD), Existential Well-Being (EWB), Religiousness (REL), and Paranormal Beliefs (PARA) in a Malaysian context, this study examined the influence of gender on MacDonald's (2000a) five dimensions of Spirituality. The results from a two-way MANOVA revealed no significant association between gender and any of the five Spirituality scores. The finding implied that the young adult males and females are similar in terms of expressing their Spirituality.

Even though the present result was at odds with other studies such as those reported by Bryant (2007) and MacDonald and Holland (2002), there is a viable explanation in that Imam, Nurullah, Makol-Abdul, Rahman, and Noon (2009) reported that they, too, could not find significant gender differences in the level of Spirituality among their undergraduate Malaysian participants. Thus, I considered that in self-reporting in the Malaysian context in contrast to the Western experience, gender does not seem to play a significant influence on the young adults' expressions of Spirituality.

7.1.1.2. Hypothesis 1.

There is a significant religious affiliations difference in Spirituality scores among the Malaysian young adults.

This study investigated further the influence of religious affiliations on the level of Spirituality in Malaysian young adults. Findings from a MANOVA analysis revealed significant differences between religious affiliations with three dimension of Spirituality, namely, EPD, COTS, and REL. Thus, H1 was supported.

Specifically, the findings revealed that in Malaysian young adults, the Christians scored higher on EPD than both the Buddhists and the Muslims. On the other hand, the Muslims scored higher than the other two groups on both COTS and REL. Similar religious affiliation differences have also been reported in the USA (MacDonald, 2000b), suggesting a consistency and universality of these findings across two different cultures.

The large proportion (23%) of variance of the REL that was explained by religious affiliation indicated that the Malaysian Muslim young adults expressed their Spirituality more through religious behaviour and practice in comparison to the other faith groups. This finding was consistent with the findings of Haneef, Selamah, Ruzita, and Hazizan (2002) and Krauss, Hamzah, and Idris (2007). Based on these findings, I concluded that the Muslim youths are more likely to perform ritual behaviours that reflect the Islamic teachings and commands, contributing to their higher level of REL, while for Christians spiritual experiences and relationships are more important. The reason why the Christians scored higher on EPD is not clear, but it may have something to do with the Christian's belief in "Jesus is often considered to have been a mystic" (Levin & Steele, 2005, p. 90). Levin and Steele further asserted that the indication of Jesus being mystical is recorded in the Gospel

of John's description of the ultimate form of transcendence. Future research could be helpful in clarifying this speculation.

7.1.1.3. Hypothesis 2.

The Five-Factor Model of Spirituality as captured by the Malay Experimental Version of Expressions of Spirituality (MEV-ESI) is applicable in the Malaysian context

In order to ascertain the applicability of MacDonald's five-factor model of Spirituality, I first translated the English version of the ESI into the Malay-Experimental Version of the ESI (MEV-ESI). Then, I evaluated its psychometric properties using SEM techniques.

The translation results of the MEV-ESI showed that not all 32 items reproduce the exact syntax of the original items, impacting semantic and conceptual equivalence between the original and the target versions. To optimize the preservation of meaning, equivalence testing was conducted between the two versions. The results from equivalence testing revealed only two incomparable items in the whole MEV-ESI, which were re-translated until satisfactory translations were achieved.

In terms of conceptual equivalence, I identified several items which made up the PARA dimension that might not be applicable to a predominantly Muslim population such as Malaysia. However, this does not seem to pose a threat to the psychometric properties of the MEV-ESI, as the results from the confirmatory factor analyses (CFA) confirmed MacDonald's (2000a) five-dimensional structure of Spirituality in the Malaysian context, that is cross-cultural generalizability.

The MEV-ESI was analysed using Maximum Likelihood CFA routines in AMOS 19 (Goddard, 2000) with bootstrapping. The validity and reliability of the MEV-BFI was evaluated using the one-factor congeneric measurement model and two multi-factor CFAs, as recommended by Jöreskog (1993), a leading statistician in

structural modelling. The results from one-factor congeneric measurement models revealed that the fit statistics for the COTS and EWB models were acceptable. Conversely, most fit indices for the EPD, PAR and REL did not show an acceptable fit, resulting in the removal of a total of four observed variables from these four latent constructs. Further, six multifactorial items were identified and removed based on the results from the modelling of two multi-factor CFA.

The original version of the ESI operationalised 32 items: After the two-step process, only 20 items (including the validation items) were found to be satisfactory indicators of Spirituality in the Malaysian context.

In regard to validity, findings lend support to the discriminant and factorial validity of the MEV-ESI. Using the Nested Model Method in SEM, I established the fact that the five constructs were five distinct constructs. In terms of factorial validity, the CFAs' parameter estimates, consistent with MacDonald's previous work (2000), supported the five-dimensional structure of Spirituality. This study's results also showed that the multidimensional structure of Spirituality was invariant across the calibration and replication samples, subsequently supporting the less possibility that the five-factor model capitalized on chance relationships. I therefore concluded that H2 was more than reasonably supported.

The reliability of the MEV-ESI, which was calculated using the Hancock and Mueller's Coefficient *H* (2001) was within the cut-off value of 0.70, except for the PARA dimension. This finding however, was in agreement with the cross-cultural findings reported by MacDonald (2011b), suggesting that this finding was not only unique to Malaysians.

All in all, results showed that the ESI constructs are relevant for understanding Spirituality in the Malaysian context; however, the CFA results indicate that the

original ESI needed to be modified before it could be used in that context. The validity analyses' results support the construct validity of the five-factor model of Spirituality, as captured by the MEV-ESI. The findings also suggested that the Western Spirituality constructs are generalizable to Malaysian communities with their many religions, traditions, and languages, despite some stark contradictions between religions from the West and East.

7.1.1.4. Hypothesis 3.

The five-factor model (FFM) of personality is applicable in the Malaysian context

In this study, the FFM was assessed with the Big Five Inventory (BFI) that comprised of 44 items divided into five dimensions: Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to Experience.

The English version of the BFI was translated into Malay, resulting in the Malay-Experimental Version of the BFI (MEV-BFI). The back-translated version of all 44 BFI items did not reproduce invariant items, to which end equivalence testing between the English BFI and the MEV-BFI was conducted. The two versions were evaluated in terms of language and interpretability with the two evaluators seeming to agree that the back-translation version of five items were incomparable to the original, because some of the words were ambiguous and untranslatable into Malay. These items were re-translated until satisfactory translations were achieved.

The MEV-BFI, however, demonstrated no problem associated with conceptual equivalence, as evident in the CFA results. The finding confirmed the five-dimensional structure of Personality in the Malaysian context. I therefore concluded that the MEV-BFI has reached satisfactory item equivalence with the original BFI.

Again, the validity and reliability of the MEV-BFI was evaluated using one-factor congeneric measurement model and measurement model two by two. The fit indices for all five congeneric models of the MEV-BFI suggested that the

hypothesized model did not fit the Malaysian data well, implying the presence of some problematic items in the models. These items were removed to enhance the scale's validity and reliability. From this modelling, eighteen items were removed from five personality constructs.

I also deleted eight multifactorial items from my modelling of two multi-factor CFAs, along with five other low-loading items. Altogether, 31 items were removed from the MEV-BFI. The removal of these problematic items resulted in 13 valid indicators of personality dimensions of the Malaysian young adults.

Examination of the eliminated items revealed the poor performance of the negatively worded items such as "is reserved" and "is sometimes shy, inhibited". This was anticipated, given similar findings from other Malaysian research, such as that of Leung, Wong, Chan, and Lam (2013) and Idris and Dollard (2011) where they, too, needed to remove most of the negatively worded items from their study instruments. There were several explanations for this result. First, it was possible that the participants could not fully grasp the content of the items. Another possibility might be respondents' confusion in expressing their degree of agreement with such statements.

The removal of approximately 75% of the MEV-BFI items was considered as possibly causing a loss of information on the holistic representation of Malaysian youths' personality predispositions. In assessing the significance of the loss and the possible need to generate new items, I considered the case made by some researchers who maintain that a shorter and refined instrument is preferable if it can demonstrate acceptable psychometric properties. Further, other researchers such as Camgoz and Karapinar (2011) and Leung et al. (2013) conducting their research in Turkey and Hong Kong, respectively, established the need to remove the problematic items in

their translated version of the BFI to achieve acceptable model fit without apparent loss of essential factor content.

From the CFA results, I established empirical evidence for the discriminant and factorial validity of the MEV-BFI. Even though high factor size correlations were found between the pair of Extraversion and Conscientiousness and Agreeableness and Conscientiousness, the results from the chi-square difference tests revealed that each pair of constructs was sufficiently distinct. In terms of factorial validity, the CFAs' acceptable parameter estimates supported McCrae and Costa's (1989) five-dimensional structure of Personality. H3 was thus supported.

The reliability of the four dimensions of Personality as shown by the Hancock and Mueller's Coefficient *H* (2001) was within the recommended value of 0.70, except for the Openness to Experience dimension, with a marginally acceptable value of 0.60. The low reliability of Openness in this study was somewhat in agreement with other Malaysian studies, which similarly reported the low reliability of the Openness dimension in their sample. Perhaps Openness is differently conceptualized by people in collectivist cultures such as Malaysia, resulting in its different forms and functions. Thus, with the original model confirmed, I considered the shorter and refined MEV-BFI was an adequate instrument to measure the Malaysian young adult's personality for meeting the aims of this study.

To sum up, the results of the CFAs provided empirical evidence for the FFM as the five-factor structure of Personality was successfully captured in the Malaysian sample. This finding gives credence to the Five-Factor Theory of Personality, which assumed that personality traits are biologically based and thus universal and not unique to any one culture. The five-factor model was found to represent an adequate description of the personality structure in educated Malaysian young adults, in

keeping with the claim that "the five-dimensional structure was robust across major regions of the world" (Schmitt et al., 2007, p. 174).

7.1.1.5. Research question 2.

What is the relationship between Spirituality and Personality in a Malaysian context?

The second research question investigated the relationship between the five dimensions of Spirituality and the five dimensions of Personality. Overall, the correlational analyses results suggested that every dimension of Spirituality correlated with dimensions of Personality, albeit differently. For instance, COTS correlated with Conscientiousness, Agreeableness, and Extraversion while EWB associated with Neuroticism, Conscientiousness, and Agreeableness. On the other hand, REL correlated only with Conscientiousness.

In general, the findings offered us insights into the nature of Spirituality constructs within the Personality context (see section 3.3.1). The correlation results suggested that REL and the other four dimensions of Spirituality as measured with the MEV-ESI overlap yet retain distinctive features. The results were parallel with the extant studies which found that some aspects of Spirituality and Religiousness share something in common, such as an attitude of dutifulness and self-discipline towards faith involvement, and they differ in terms of following the norms and rules (Hill & Pargament, 2003). On the whole, the findings suggested that in a Malaysian context, characteristics such as assertiveness, compassion, persistence and emotional stability predispose people to express high levels of Spirituality.

7.1.1.6. Hypothesis 4.

The Malay Experimental Version-Irrational Belief Scale (MEV-IBS) is a valid and reliable measure for assessing irrational beliefs in Malaysian young adults.

To investigate the mediational role of cognitive factors such as Irrational Beliefs, Self-Efficacy, and Locus of Control on the Personality-Spirituality relationship, I

first validated the MEV-IBS used to measure Irrational Beliefs in Malaysian young adults.

As with the Spirituality and Personality scales used in this study, I translated the English version of IBS into the Malay version, known as the MEV-IBS. As most translated items did not reproduce an exact transliterated copy of the original items, I had to conduct equivalence testing between the two versions. The results suggested three incomparable items, which I re-translated until satisfactory translations were achieved.

The results from the CFA indicated that the one-factor model of the Irrational Beliefs, which comprised of 20 items, did not fit the Malaysian data well. The re-specification undertaken resulted in the removal of ten problematic items. The results revealed the poor performance of items representing Need for Achievement, Problem Avoidance, and Demands about Life factors, which I deleted from the overall scale of MEV-IBS.

The validity and reliability of the MEV-IBS was ascertained by means of CFA. The results from the modeling of the one-factor congeneric model supported the convergent and construct validity of the MEB-IBS. Further, factorial validity was supported when the χ^2 difference test indicated that the one-model factor of Irrational Beliefs was sufficiently invariant across the calibration and replication samples to indicate robustness of the factors. The Coefficient *H* of 0.82 suggested the sufficient reliability of the MEV-IBS in the Malaysian context. Taking the results altogether, I concluded that H4 was confirmed.

The final well-fitted model of Irrational Beliefs established that the key factor that described Irrational Belief in the Malaysian sample was Awfulizing. It seemed that the young adults were more likely to place greater importance on the belief that

the worst possible outcome was the most likely to occur. This can be a cause for concern because according to Bridges and Harnish (2010), such dysfunctional cognitions may guide an individual's interpretation of new experiences and, consequently, increase the probability of psychological maladjustment.

7.1.1.7. Research question 3.

What is the relationship between Spirituality and Irrational Beliefs in Malaysian young adults?

In this study, the association between Spirituality and Irrational Beliefs was explored in order to establish the basis of their relationship. The highlight of the correlational analysis result was the moderate negative correlation between the EWB and Irrational Beliefs. This suggested that the Malaysian youths with higher EWB were less likely to endorse Irrational thinking. This finding was somewhat in accord with the finding of existing studies, which found that general subjective Well-Being is inversely related to irrationality. Extending these correlational data, it is likely that intervention directed at altering one's Irrational Belief may increase his or her level of EWB.

7.1.1.8. Hypothesis 5.

Irrational Beliefs are negatively correlated with Openness and Agreeableness; positively correlated with Neuroticism and Conscientiousness.

I performed further correlational analysis to establish the basis of the relationship between Irrational Beliefs and Personality in preparation for testing the full structural model of Personality-Irrational Beliefs-Spirituality. The findings indicated that only Neuroticism was positively related to Irrational Beliefs, thus H5 was only partially supported.

The association between Neuroticism and Irrational Beliefs revealed in a comprehensive review of extant studies (Davies, 2006; Spörrle et al., 2010) could be replicated in my Malaysian sample. Hence, in the Malaysian context, the young

adults with high irrational thinking were more inclined to score higher on the Neuroticism scale. A plausible explanation for this result can be derived from the perspective of FFT, which assumed that people high in Neuroticism are predisposed to develop and maintain cognitive dysfunctions and distortions.

7.1.1.9. Research question 4.

Are the factor structures of Perceived Academic Efficacy (PAE), Self-Regulatory Efficacy (SRE) and Perceived Social Self-Efficacy (PSSE) validated in the Malaysian young adult sample?

This study validated the English version of the Children's Perceived Self-Efficacy (CPSE) scale by first translating it into Malay language (MEV-CPSE). In the process of translating the CPSE, I translated and replaced some words such as "school" with "university" and "English literature" with "Malay literature" to better adapt it to this study's research context. Although the translation of items in the MEV-CPSE also did not reproduce an exact transliterated copy of the original items, the equivalence testing conducted by the two native English speakers indicated that the items in the MEV-CPSE were comparable to its original items.

A one-factor congeneric model was tested for each of the three domains under consideration: PAE, SRE, and PSSE. Based on the results of modelling the one-factor congeneric measurement model of PAE, nine items with low SMC were deleted. I therefore established that the key indicator of PAE was PSE10 "pay attention to university subjects". This means that to the Malaysian young adults, the most relevant indicator of their PAE was paying attention to their university subjects.

The modelling of one-factor congeneric measurement model of SRE resulted in negative error estimates, implying a serious fit problem of this construct in the Malaysian sample. In consequence, I concluded that the SRE construct was not applicable to Malaysian young adults, and thus removed from the MEV-CPSE scale. The decision to eliminate the SRE construct from this study corroborated with the

finding of this dimension's instability in a Hungarian population (Pastorelli et al., 2001).

Further, the results of the modelling of the one-factor congeneric measurement model of the PSSE indicated five trivial loading items, which I deleted. The results also revealed that to Malaysian young adults, living up to fulfil what they expect of themselves was the most relevant indicator of their PSSE level. The pairwise multi-factor CFA between PAE and PSSE identified three multifactorial items, which were removed from the overall scale of the MEV-CPSE as well.

To sum up, the results from the CFAs offered support for the convergent and construct validity of the PAE and PSSE dimensions. Additionally, the results from the chi-square difference test between the constrained model and the unconstrained model of PAE and PSSE provided support for their discriminant validity. Further support for validity was offered with the results from the tests of invariance for factor variances, which clearly established the superiority of a two-factor model over a one-factor model of Perceived Self-Efficacy in a Malaysian context.

Other than the empirical supports for the validity of the PAE and PSSE dimensions, I also found support for their reliability with the value of Coefficient *H* of 0.86 and 0.89, respectively. All in all, from the two-step analysis and refinement established factors supported by items maximising construct validity, I eliminated 17 irrelevant items, together with the SRE dimension from the overall scale of the MEV-CPSE. Consequently, I concluded that only PAE and PSSE dimensions were relevant for describing the Malaysian young adults' Perceived Self-Efficacy.

7.1.1.10. Hypothesis 7.

Self-Efficacy is positively related to Spirituality in Malaysian context.

In this dissertation, I hypothesized that Self-Efficacy is positively related to Spirituality. The correlational analyses revealed several highlights of the results: (i) PAE and PSSE both demonstrated significant and positive, albeit weak relationships with all dimensions of Spirituality except EPD and PARA and (ii) a moderate correlation between PSSE and COTS dimension. Hence, H7 was confirmed.

The results alluded to the observation that as social and academic efficacy increased, so did the level of COTS, EWB, and REL. However, the strength of the relationship was stronger for the PSSE-COTS dimension. Generally, the finding of a positive Self-Efficacy-Spirituality relationship in this study corresponded with extant studies such as those by Imam et al. (2009) and Adegbola (2011). Plausible explanations for this result have been offered by several researchers. For instance, in explaining the relationship between Self-Efficacy and Existential and Religiosity Well-Being, Hill and Pargament (2003) suggested the mediating role of optimism and hope in increasing the overall sense of one's Well-Being. In the current study, I extended the view by examining the mediating role of cognitive beliefs in delineating Personality-Spirituality relationships.

Regrettably, due to the correlational nature of this study's data, while causality cannot be confirmed, the results can be taken to imply that Malaysian young adults' engagement in spiritual actions may enhance their academic and social efficacy, or vice versa.

7.1.1.11. Hypothesis 8.

Self-Efficacy is positively related to extraversion, openness, and conscientiousness and negatively related to neuroticism.

Based on my review of the Self-Efficacy and Personality literature, I speculated that Self-Efficacy should be positively related to Extraversion, Openness and Conscientiousness. Conversely, Self-Efficacy is negatively related to Neuroticism. The finding regarding this hypothesis was promising. Generally, relationships were found between all Personality and Self-Efficacy factors studied. However, contrary to my expectations, I found a significant positive correlation between Agreeableness and Self-Efficacy. For that reason, H8 was only partly supported.

Overall, these findings corroborated previous research attesting to the association between personality predispositions and Self-Efficacy (see Judge & Ilies, 2002). Based on the findings, I concluded that the Malaysian young adults who scored high in Extraversion, Conscientiousness, Agreeableness, and Openness, and low in Neuroticism have a tendency to develop strong Self-Efficacy beliefs. From the FFT perspectives, it was plausible that individuals with high levels of Conscientiousness, Extraversion, Agreeableness, and Openness, and low in Neuroticism are predisposed to set more challenging goals. The attainment of challenging goals, in turn enhances their level of Self-Efficacy.

Even though the association between Personality and Self-Efficacy, which has been repeatedly found in past literature, was replicated in my sample, the correlational nature of this study's data did not allow us to draw definite conclusions regarding the relationship between these variables. However, as Personality traits are considered to be "biologically based properties of the individual that affect the rest of the personality system, but are not themselves affected by it" (McCrae & Costa, 2008a, p. 280), rationally it would affect Self-Efficacy beliefs rather than vice versa.

7.1.1.12. Research question 5.

Are the factor structures of Internal Health Locus of Control (Int_{HLOC}), Chance Health Locus of Control ($Chance_{HLOC}$) and Powerful Others Health Locus of Control (PO_{HLOC}) validated in the Malaysian young adult sample?

Next, I investigated whether the factor structures of Internal Health Locus of Control (Int_{HLOC}), Chance Health Locus of Control ($Chance_{HLOC}$) and Powerful Others Health Locus of Control (PO_{HLOC}), measured with the Multidimensional Health Locus of Control (MHLC) were validated in the Malaysian young adult sample.

The results from the translation of the original MHLC into the Malay Experimental Version of the MHLC (MEV-MHLC) indicated that the translated items did not reproduce an exact transliterated copy of the original items. Nonetheless, equivalence testing indicated that all the items in the MEV-MHLC were comparable to its original items.

In investigating the validity of the MEV-MHLC, the results from one-factor congeneric measurement models have shown that initially, the fit statistics for the $Int_{HLOC,}$ $Chance_{HLOC}$ and PO_{HLOC} models were unacceptable. The elimination of two items from the Int_{HLOC} dimension, and one item from the $Chance_{HLOC}$ dimension resulted in a well-fitted model of Int_{HLOC} and $Chance_{HLOC}$ in a Malaysian context. Nevertheless, for the PO_{HLOC} dimension, re-specification of the model produced a model that cannot be evaluated empirically. Since this result indicated the irrelevance and instability of this dimension in a Malaysian context, I removed this dimension from the overall MEV-MHLC scale.

The pairwise multi-factor CFA that was conducted to identify cross-loadings between Int_{HLOC} and $Chance_{HLOC}$ revealed two multifactorial items which were subsequently removed. In brief, three items from Int_{HLOC} dimension and two items from $Chance_{HLOC}$ were eliminated, and the PO_{HLOC} dimension was dropped from the

overall scale of the MEV-MHLC. Since satisfactory goodness-of-fit measures were achieved from the modelling of one-factor congeneric measurement models and the pairwise multi-factor CFA, I can conclude that the convergent and construct validity of the MEV-MHLC was confirmed.

In addition to the convergent and construct validity, the discriminant validity of the MEV-MHLC was established when the significant results from the chi-square difference test between the constrained model and the unconstrained model of Int_{HLOC} and $Chance_{HLOC}$ were obtained. Further support for the factorial validity of the MEV-MHLC was attained when the results from the tests of invariance for factor variances revealed that the two-factor model was superior to the one-factor and the three-factor model of the MHLC.

In terms of reliability, my calculation of *Coefficient H* revealed that the reliability for Int_{HLOC} and $Chance_{HLOC}$ was .65 and 0.61, respectively. Even though the value was below the recommended cut-off value of 0.70, I reasoned that it was acceptable when it was backed-up with convincing evidences of construct, convergent and discriminant validity as previously demonstrated and discussed in Chapter 5.

On the whole, the CFA results from the modelling of the MEV-MHLC scale have revealed that in a Malaysian context, only the dimensions of Int_{HLOC} and $Chance_{HLOC}$ can be validated well enough.

7.1.1.13. Research question 6.

What is the relationship between Spirituality and Health Locus Of Control in Malaysian young adults?

In answering RQ6, the correlation results revealed that all five dimensions of Spirituality correlated with $Chance_{HLOC}$, with the strongest correlation obtained by the EWB dimension of Spirituality with $Chance_{HLOC}$. This finding indicated that in

the Malaysian context, young adults who were inclined to believe that their health was a function of fate or luck tends to have a lower sense of positive existentiality. Somewhat similar relationships were found in the extant studies of LOC and Well-Being (Ünsal Si et al., 2007).

Further, a positive but weak relationship was found between COTS, EWB and REL, and Int_{HLOC}. The strongest correlation was demonstrated by COTS with $Int_{HLOC.}$ In this case, individuals who believe that Spirituality was important for their personal functioning were more likely to believe that their own behaviour was responsible for their health. The present findings, however, are inconsistent with those of Bonner (2002). These inconsistent findings can perhaps be explained by methodological choices such as choice of instrumentation and data analysis techniques made in these studies.

7.1.1.14. Research question 7.

What is the relationship between the five dimensions of Personality and Health Locus of Control in Malaysian young adults?

One of the aims in this study was to examine the relationship between each of the five Five-Factor Model of Personality, as captured by the MEV-BFI, and Locus of Control constructs. Consistent with previous studies, the present study found Neuroticism to be significantly related to $Chance_{HLOC}$. The finding suggested that persons who score high on Neuroticism were more inclined to contribute their state of health to luck, fate, chance or other uncontrollable factors.

The correlational analyses results also suggested that in the current Malaysian sample, Conscientiousness was positively related to Int_{HLOC}. This relationship I found makes reasonable sense considering that highly conscientious people with characteristics like self-control and determination would be expected to believe that

their life outcomes are more likely to be influenced by their own actions rather than other external influences.

Thus far, in the present study, I found empirical evidence supporting the adequate psychometric properties of the MEV-ESI, MEV-BFI, MEV-IBS, MEV-CPSE and MEV-MHLC. Following that, I explored the mediational role of Irrational Beliefs, Self-Efficacy, and Locus of Control to delineate the Personality-Spirituality relationship in the Malaysian context and to see whether the resulting integrative model holds cross-culturally.

7.1.2. Synopsis of mediation findings.

Another purpose of this study was to investigate the mediating effect of Cognitive Beliefs on the Personality-Spirituality relationship. In this section, I summarized and concluded my findings on the mediation analyses conducted between Personality-Cognitive Beliefs-Spirituality factors.

7.1.2.1. Hypothesis 6.

The influence of Agreeableness, Conscientiousness, Neuroticism and Openness on Spirituality is significantly a lot mediated through Irrational Beliefs.

To ascertain the mediational role of Irrational Beliefs, I tested the Personality-Irrational Beliefs-Spirituality model. I found that in the Malaysian context, the dispositional effects of Neuroticism on two dimensions of Spirituality, namely, EWB and PARA were partially mediated by Irrational Beliefs. These findings demonstrated that Neuroticism predict EWB and PARA because it predisposes people to hold more maladaptive and irrational beliefs which in turn decreases their EWB, and increases their belief in paranormal phenomena.

These findings somewhat corroborated previous findings attesting to the important role of Neuroticism in endorsing more Irrational thinking, which may lead

to lower levels of overall Well-Being, and highlight the role that Irrational Beliefs may demonstrate in turning individual dispositions into expressions of Spirituality.

7.1.2.2. Hypothesis 9.

The influence of Extraversion, Openness, Conscientiousness and Neuroticism on Spirituality is significantly mediated through Self-Efficacy

I further investigated the mediating effect of Self-Efficacy beliefs in the Personality-Spirituality linkage. The mediational analyses revealed two highlights of the results: (i) Self-Efficacy acted as a full mediator in the relationship between Conscientiousness and REL and (ii) Self-Efficacy acted as a partial mediator in the Extraversion-COTS linkage.

In the Malaysian context, the effect of Conscientiousness on REL was fully mediated through Self-Efficacy beliefs, indicating the strong effect of Self-Efficacy on the Conscientiousness-REL linkage. Hence, conscientious individuals were more inclined to develop strong Academic and Social Self-Efficacy beliefs, which were linked to higher engagement in religious practice, such as prayer and meditation. One explanation for this result centres on the fact that individuals who are organized, reliable, self-disciplined and conformed to the norms of organizations are predisposed to endorse strong Self-Efficacy beliefs, and this in turn increases their commitment towards faith involvement.

Other than that, Self-Efficacy beliefs were also found to partially mediate the Extraversion-COTS relationship. In other words, Extraversion affects COTS through its influence on Self-Efficacy beliefs. This finding demonstrated that extravert individuals who are commonly described as sociable, assertive and optimistic are more inclined to develop high Academic and Social Self-Efficacy beliefs, which in turn enhanced their belief that Spirituality is important to their daily functioning.

7.1.2.3. Research question 8.

Are Locus of Control constructs potential mediators of the Personality-Spirituality relationship in Malaysian context?

In investigating the role of Locus of Control constructs as potential mediators of the Personality-Spirituality relationship, I found that only the $Chance_{HLOC}$ acted as a partial mediator between Neuroticism and EWB. The result implied that people rated high in Neuroticism were more likely to score higher in $Chance_{HLOC}$, which in turn decreased their sense of positive existentiality. This finding was in keeping with my review of extant studies, which also found a positive relationship between Neuroticism and $Chance_{HLOC}$, which can be expected to eventually affect overall Well-Being. This study provided evidence that some individuals scoring high on Neuroticism traits were more vulnerable to the ascription of health external beliefs, which consequently contributed to their low sense of positive existentiality.

To sum up, my results demonstrated that (i) Self-Efficacy beliefs as operationalized with Academic and Social Self-Efficacy acted as a full mediator in the Conscientious-REL linkage and partial mediator in the Extraversion-COTS relationships, (ii) Irrational Beliefs acted as a partial mediator in both Neuroticism-EWB and Neuroticism-PARA linkages and lastly, (iii) $Chance_{HLOC}$ performed as a partial mediator in the Neuroticism-EWB relationship. The practical implications of these findings were previously discussed in Chapter Six.

Thus far, I concluded that the present validation results add to a collection of literature that supported the psychometric properties of the instruments used in this study such as the ESI, BFI, IBS, CPSE, and MHLC scales. The mediation results, on the other hand, make an original contribution by extending the prior literature in regard to the Personality-Cognitive Beliefs-Spirituality linkages.

7.2. Contributions and Implications of the Study

This study has several important implications that will now be discussed, including (a) theoretical implications, (b) methodological implications, and (c) practical implications. Practical implications, however, have been previously discussed in Chapter Six and will not be discussed again here.

7.2.1. Theoretical contributions and implications.

Firstly, this study has made several theoretical contributions with respect to the application of the theories and models generated from the West into different cultural settings. The findings from this study offered empirical evidence on the applicability and generalizability of such theories and models in a Malaysian context. This study was able to ascertain that the five-factor model of Spirituality, as claimed by MacDonald (2000a) is an appropriate and well-fitting model of Spirituality for the Malaysian context. These findings provide important evidence for any international academic researcher who is in need of a solid and reliable theoretical framework to guide the development of their research questions and hypotheses. This is because as previously discussed, most empirical research on Spirituality has been conducted within the context of a Western, Judeo-Christian tradition, and therefore the validity of this construct in other research traditions has, to this point, not been ascertained. The current study's findings lend support to the cross-cultural universality and relevance of Spirituality constructs in context other than a Western, Judeo-Christian one.

Secondly, the findings in this study extended theoretical significance to the existing literature by developing and testing an integrative model of Personality and Cognitive Beliefs in predicting MacDonald's (2000a) five dimensional Spirituality.

The findings extended the support for the cross-cultural validity of the models and their interrelationships in the existing literature.

Also, the integrative model of Personality traits-Cognitive Beliefs-Spirituality offered a theoretical explanation on their direction of relationship. Through the use of SEM, I found that the initial causal (Personality traits) influenced the outcome variable (Spirituality) through the mediating variables (Irrational, Self-Efficacy, and Locus of Control Beliefs). Stated differently, the integration of Personality and Cognitive Beliefs factors to explore Spiritual constructs provided evidence for a sequence of events on how one's Personality influences his or her expressions of Spirituality through Cognitive Beliefs. An implication of these findings was that Personality traits that are well defined, genetically driven, and validated predispositions as well as Cognitive factors should be taken into account when Spirituality is investigated. This information can be used to develop targeted interventions aimed at increasing or enhancing one's expressions of Spirituality.

The results of my study facilitate a better theoretical understanding and holistic discussion on the nature of Spirituality within the context of the FFM of personality, a well-defined central model in Psychology. As previously discussed, some researchers have argued that Spirituality cannot be scientifically studied due to its unempirical nature. However, by linking it with the Personality model, which is considered as a "mainstream theoretical model in the social sciences" (Piedmont, 2005, p. 254), researchers are able to establish the construct validity of a Spirituality scale. Additionally, linking Spirituality constructs with the FFM allows researchers to establish the incremental validity of Spirituality scales (Piedmont, 2005). For instance, in this study, EWB was found to correlate with Conscientiousness, which has been shown to be an acceptable predictor of Well-Being (Weiss, Bates, &

Luciano, 2008). Consequently, this knowledge allows researchers to identify which aspects of Spirituality contribute to and predict Well-Being. In summary, the interpretive value of findings using a more sophisticated and broader theoretical model such as the FFM was enhanced, countering the claims made by some researchers that Spirituality cannot be scientifically studied due to its numinous nature.

There are also theoretical implications that concern the FFM of Personality. As discussed in Chapter 4, the FFM has been criticized as being atheoretical. In response, McCrae and Costa (1996, 2008b) offered the Five-Factor Theory (FFT) to explain the findings using the FFM framework. The basic postulate of FFT is that personality traits are "biologically-based properties of the individual that affect the rest of the personality system, but are not themselves affected by it" (McCrae & Costa, 2008a, p. 277). With this postulation underlying the FFM, I assume that individuals are predisposed to Irrational and maladaptive beliefs because to some extent these beliefs are shaped by the genes driving Neuroticism predispositions and their life experiences, which in turn affects their sense of positive existentiality. By interpreting the findings using the FFM, I am able to link it to the entire nomological net of research associated with the FFM.

Overall, the findings of this study refined our understanding on cross-cultural validation of the adaptation and generalization of the existing Western constructs and models for a Malaysian context. The findings also informed and expanded our theoretical understanding on the cross-cultural replicability of the Spirituality-Cognitive Beliefs-Personality traits interrelationships.

7.2.2. Methodological contributions and implications.

In addition to the theoretical relevance of the findings in this study indicating the associations between Personality, Cognitive Beliefs and Spirituality, and the predictive value of Personality for Spirituality, this study also raised and considered a number of important methodological implications for future practice. First, the present study contributed by demonstrating the importance of doing more than simply transliterating scales by adapting and translating the questionnaires in a careful, measured, and thorough manner using classical test theory and sophisticated modeling now more readily available with the increase in desktop computing power. In the process, this study demonstrated that the validity and reliability of the translated version of the questionnaires can be maximized by establishing that they are semantically and conceptually equivalent to their original versions.

Second, the empirical findings of the present study also advanced elucidation, conceptualization, and refined operationalization of the Spirituality, Personality, and Cognitive Beliefs constructs by means of CFA. Based on this study's results, I concluded that concepts such as Spirituality, Personality, and Irrational Beliefs were best operationalized as their previously hypothesized structures confirming the validity of these cross culturally. However, I could not confirm the factorial structure of Perceived Self-Efficacy (which captures only the Academic and Social Efficacy dimensions) and Health Locus of Control (which captures only the Int_{HLOC} and $Chance_{HLOC}$ dimensions). The use of CFA as a basis for finding discrepancies or confirming cross-cultural validity is based on Classical Test Theory, which justifies SEM as a method. Methodologically, the present study contributed by establishing adequate support for the validity of the measures used.

Third, the current findings add substantially to our knowledge by demonstrating the application of SEM with AMOS software for the purpose of data analyses. The many advantages of SEM, as mentioned in section 2.6.3.1, allow us to test for the causal relationships among both unobserved and observed variables. Subsequently, SEM is also able to provide various goodness-of-fit indices, which can be used to assess and evaluate measurement model validity and reliability (Byrne, 2010).

7.3. Limitations of the Study

Aside from the commonplace limitations of a quantitative approach discussed in section 2.1, some study-specific limitations also need to be acknowledged. The most apparent limitation within the scope of this study pertained to the generalizabilility of the findings. Since this study was conducted using university students from only one large, urban Malaysian university, further research will be needed to consider whether these findings are generalizable to the general population, particularly in the light of studies that have found significantly higher levels of religiosity related variables in, for example, rural Muslims youth (Krauss et al., 2006). Therefore, this study may only represent possibly relatively low spirituality interests and experiences of students in urban universities. Nevertheless, as an initial study, limiting the study to a specific university cohort is not a serious problem so long as the limitations are fully appreciated; it is a common practice in psychological research where researchers used respondents from one university or location, provided that an adequate sample size for the research is obtained.

Some limitations of the current investigation also resulted from the study design, as this is such a cross-sectional design, it cannot provide definite information about the direction of causal relationships, although there may be strong intuitive suppositions. For instance, although this study's result suggested that Personality is

linked to Spirituality, I cannot ascertain that it is in fact Personality factors that affect Spirituality or vice versa. However, considering the basis of FFM, which considers that personality traits are biologically based and are not affected by external influences, I assumed that Personality factors are more likely to be independent variables, with Spirituality factors being the dependent variables, rather than the other way around.

Finally, it needs to be acknowledged that, as an initial study, much of the analysis concerned fairly inclusive higher order constructs, and not any finer grained lower order constructs of Personality, such as in the NEO facets, or in religious orientation, particular religious affiliations or denominations (Löckenhoff et al., 2009; Saroglou & Muñoz-García, 2008). Such finer grained constructs often elucidate more specific but at times opposing relationships. Including them in a single higher order factor can attenuate if not act as potential confounds of the relationships in the proposed Personality-Cognitive Beliefs-Spirituality models. More specifically, investigating some of the relationships elucidated in this research with finer grained lower order factors and facets may give a cleaner and clearer explanation and understanding of interactions.

7.4. Suggestions for Future Research

In widening and deepening the current investigation, this section lists a number of suggestions for future research. It is suggested that future Spirituality related research should include samples from various Malaysian universities to eliminate the possibility of regional differences in religiosity related variables. Also, in order to increase the generalizability of this study's results, future studies will be needed to replicate this study, hopefully with more heterogenous samples as respondents and other cultures.

Second, in regard to expanding on the cross-sectional design, there may be some value for future studies in replicating this study with experimental or longitudinal designs, to confirm the direction of causal relationships. Future experimental or longitudinal studies may get to answer questions I did not get to answer in this study. For example, “are spirituality dispositions also some sort of genetically driven factors which cannot be influenced by external forces?”

Another recommendation for future research concerns augmenting the quantitative design with qualitative components, forming a mixed study approach, as is developing increasingly thorough psychological research. Although the use of the quantitative approach is sufficient for meeting the objectives of this validating research, the addition of qualitative components to the methodology will allow further research in this area to gain new insights and understandings as well as potentially new constructs in the Personality-Cognitive Beliefs-Spirituality modelling and relationships.

Progressing on the results of this study, which showed that some of the mediator variables partially mediated the Personality-Spirituality relationship, future studies can benefit by investigating other factors such as age, gender, and religious affiliation as a moderator of the relationship between Personality and Spirituality. As previously discussed in Chapter 6, partial mediation may indicate the influence of other factors on the Personality-Spirituality relationship. For instance, the results of this study indicated that Irrational Beliefs partially mediated the Neuroticism-Paranormal Beliefs relationship. Therefore, there was a possibility that there might be other factors that influence this relationship. Since three of the Spirituality dimensions (EPD, COTS and REL) were significantly impacted by religious affiliation (as reported in section 3.7), it may be useful to investigate religious

affiliation as a moderator variable in the Neuroticism-Paranormal Beliefs relationship. Identifying such moderating effects is valuable for further understanding the Personality-Spirituality linkage. It is also recommendable for future research to control for the influence of religious affiliation to get a more accurate indication of the relationship between Personality and Spirituality.

Next, it is acknowledged that the current study is only quantitative. As such, there was no opportunity afforded to respondents to challenge questions or offer other information. It is possible that the study's constructs are perceived and understood differently by the Malaysian young adults. My total reliance on questionnaires restricts respondents' feedback, feedback that may offer further in-depth insights into the phenomena under study. Eliciting qualitative data in a mixed method design in future studies would complement the quantitative results obtained in this study. As an example, although the structural validity of the MEV-ESI was ascertained via SEM, the qualitative components in future studies may well reveal the manifestation of other Spirituality constructs relevant to Malaysian young adults. However, such was beyond the scope of this study, as this study did not set out to expand on existing models but rather cross-culturally validate the adaptation and generalizability of existing well-defined models and constructs, and cross-culturally explore interrelationships between factors of interest.

7.5. Overall Conclusion

In conclusion, the current study cross-culturally investigated and validated the adapted Spirituality constructs using a comprehensive personality and cognitive framework and by testing cross-sectional, mediated relationships.

This study has extended the hitherto inadequate empirical basis regarding (a) the psychometric properties of the Malay-translated version of the ESI, BFI, IBS, CPSE

and MHLC and (b) cross-cultural validation of the associations between Spirituality, Cognitive Beliefs and Personality factors, resulting in the establishment of a validated and more reliable and economical set of translated instruments.

The current study has therefore cross-culturally validated the translated versions of the instruments measuring the constructs and ascertained the cross-cultural applicability of the integrative model of Spirituality among Malaysian young adults. Hence, the results generated from the adaptation and the validation of the instruments and models in this study can be interpreted with confidence, though the results of my study can be augmented and validated in ways discussed in section 7.4.

This study has shown that Personality predispositions and Cognitive Beliefs are important correlates of the expressions of Spirituality in a Malaysian context. Further, this study provides substantial empirical support for the posited mediated model through which Personality and Cognitive Beliefs operate in concert to shape the Malaysian young adults' expressions of Spirituality.

The outcomes of the findings add additional knowledge about Malaysian young adults' Spirituality that may aid many parties, such as the mental and health practitioners, aiming to increase their client's Spirituality level. The findings provide the basis for the successful modification of Cognitive Beliefs, which in turn, will result in greater life satisfaction and happiness.

This research is relatively new and developing. It paves the way for future research on cross-cultural validation of the adaptation of Spirituality, Personality, and Cognitive Beliefs scales and their interrelationships in a Malaysian context.

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Selected Appendices

APPENDIX K: Translation/Back-Translation Results

No	ENGLISH VERSION	MALAY VERSION			FINAL VERSION	BACK TRANSLATION	ITEM COMPARABILITY				RE-TRANSLATED INTO MALAY	BACK TRANSLATED INTO ENGLISH
							(1)		(2)			
							L	I	L	I		
THE BIG FIVE INVENTORY												
1	Is talkative	Kuat bercakap	Peramah	Ramah	Peramah	Is friendly	2	2	2	2	Banyak bercakap	Talkative
2	Tends to find fault with others	Suka mencari kesalahan orang lain	Sering mencari kesalahan individu lain	Suka mencari kesalahan orang lain	Suka mencari kesalahan orang lain	Likes to find faults in people	6	6	5	6	√	
3	Does a thorough job	Membuat kerja dengan bersungguh-sungguh	Pekerja yang teliti	Kerja sempurna	Membuat kerja dengan teliti dan sempurna	Does work in precision and perfection	6	6	4	5	√	
4	Is depressed, blue	Selalu bersa murung dan sedih	Sering mengalami kemurungan	Tertekan, haru biru	Murung, sedih	Is depressed, sad	7	7	6	7	√	
5	Is original, comes up with new idea	Selalu mengutarakan idea-idea baru	SelaIu mempunyai idea-idea bernas dan baru	original, kemuka idea baru	Asli, mengutarakan idea-idea baru	Is original, comes up with new ideas	7	7	7	7	√	
6	Is reserved	Kuat berahsia	Tidak bersikap terbuka	Menangguh-nangguh	Kurang bersikap terbuka	Is less open	5	4	5	4	√	
7	Is helpful and unselfish with others	Suka membantu dan tidak berkira dalam	Tidak mementingkan diri sendiri dan selalu menolong	Suka menolong dan tidak pentingkan	Suka membantu orang lain dan tidak mementingkan diri sendiri	Likes helping other people and not selfish	7	7	5	6	√	

		menolong orang lain	individu lain	diri								
8	Can be somewhat careless	Agak cuai	Kadang-kadang tidak cermat dan teliti	Kadangkala cuai	Kadangkala cuai	Is sometimes careless	7	7	6	7	√	
9	Is relaxed, handles stress well	Tenang dan mampu mengawal tekanan dengan baik	Selalu tenang dan boleh mengawal tekanan dengan baik	Tenang , boleh tanggani stres dengan baik	Tenang dan mampu mengawal tekanan dengan baik	Is calm and able to control stress efficiently	6	7	5	6	√	
10	Is curious about many different things	Suka mengambil tahu tentang banyak benda	Perasaan ingin tahu yang tinggi untuk pelbagai pengalaman dan situasi	Ingin tahu banyak perkara	Ingin tahu tentang banyak perkara	Is interested to know about many things	7	7	6	5	√	
11	Is full of energy	Aktif dan bertenaga	Penuh tenaga	Bertenaga	Penuh bertenaga	Is full of energy	7	7	7	7	√	
12	Starts quarrel with others	Suka memulakan pergaduhan dengan orang lain	Selalu memulakan pertengkaran dengan individu lain	Memulakan pergaduhan dengan orang lain	Memulakan pergaduhan dengan orang lain	Creates dispute with other people	7	7	6	7	√	
13	Is a reliable student	Pelajar yang baik	Seorang pelajar yang boleh diharap	Pelajar yang boleh dipercayai	Seorang pelajar yang boleh diharap	is a reliable student	7	7	7	7	√	
14	Can be tense	Mudah merasa tegang	Tidak tenang	Kadangkala tegang	Adakalanya tertekan	is sometimes stressed	5	5	4	6	√	
15	Is ingenious, a deep thinker	Suka berfikir	Seorang yang berbakat, ahli fikir	Pandai mereka, dalam pemikiran	Bijak, memikirkan sesuatu dengan mendalam	is intelligent, profound in thinking	6	6	6	7	√	
16	Generates a lot of enthusiasm	Sentiasa bersemangat	Sering menghasilkan sikap sangat berminat	Menghasilkan minat	Menghasilkan minat yang tinggi	creates strong interest	4	3	3	5	Sentiasa bersemangat	Often enthusiastic

			terhadap sesuatu situasi atau pekerjaan									
17	Has a forgiving nature	Pemaaf	Selalu memaafkan individu lain	Bersifat pemaaf	Bersifat pemaaf	is forgiving in nature	7	7	6	7	√	
18	Tends to be disorganized	Tidak teratur	Tidak teratur / Tidak kemas	Tidak teratur	Agak tidak teratur	is quite unmanageable	2	2	2	1	Cenderung untuk menjadi tidak kemas	Tends to be not organized
19	Worries a lot	Selalu risau	Selalu risau	Sentiasa bimbang	Selalu risau	often worries	7	7	6	7	√	
20	Has an active imagination	Mempunyai daya imaginasi yang tinggi	Mempunyai imaginasi yang aktif	Aktitif imaginasi	Mempunyai daya imaginasi yang tinggi	has strong imagination	6	7	6	7	√	
21	Tends to be quiet	Agak pendiam	Pendiam / Tidak banyak bercakap	Bersifat pendiam	Agak pendiam	is rather quiet	7	7	6	6	√	
22	Is generally trusting	Mudah mempercayai orang lain	Boleh dipercayai	Boleh dipercayai	Amnya, mudah mempercayai orang lain	is generally, easy to trust other people	6	6	4	5	√	
23	Tends to be lazy	Agak malas	Pemalas	Bersifat malas	Agak malas	is quite lazy	7	7	5	5	√	
24	Is emotionally stable, not easily upset	Pandai mengawal emosi dengan baik dan tidak mudah melenting	Mempunyai emosi yang stabil, tidak senang sedih	Emosi stabil, tidak mudah sedih	Mempunyai emosi yang stabil, tidak mudah sedih	is emotionally stable, not easily saddened	6	6	6	5	√	
25	Is inventive	Bersifat inventif	Seorang yang berdaya cipta	Boleh mereka cipta	Bersifat inventif	is inventive in nature	7	7	7	7	√	
26	Has an assertive personality	Bersifat berani	Seorang yang tegas personalitinya	Personaliti tegas	Mempunyai personaliti asertif (tegas)	has an assertive personality (firm)	6	6	7	7	√	
27	Can be cold	Tidak berapa	Boleh menjadi	Kadangkala	Adakalanya tidak berapa	sometimes does not	2	2	2	2	Boleh menjadi	Can be cold

	and aloof	gemar bergaul dengan orang lain	seorang yang tidak peramah	tidak mesra	gemar bergaul dengan orang lain	really mix around with other people					dingin dan menyendiri	and distant
28	Perseveres until the task finished	Tidak mudah putus asa dan akan bersungguh-sungguh sehingga sesuatu perkerjaan berjaya dihabiskan	Akan terus berusaha sehingga sesuatu pekerjaan itu selesai	Tekun sehingga selesai tugas	Akan terus berusaha sehingga sesuatu pekerjaan itu selesai	will work diligently to complete a task	6	6	6	6	√	
29	Can be moody	kadang-kadang akan mengalami kemurungan	Boleh menjadi tidak ceria dan murung	Kadangkala murung	Boleh menjadi murung (moody)	can be moody	7	7	7	7	√	
30	Values artistic, aesthetic experiences	Menghargai pengalaman-pengalaman artistic	Memberi perhatian kepada nilai & pengalaman artistik	Menghargai seni, nilai astetik	Menghargai pengalaman artistik dan estetik	appreciates artistic and aesthetic experience	7	7	7	7	√	
31	Is sometimes shy, inhibited	Agak pemalu	Kadang- kadang seorang yang pemalu dan kurang bersikap terbuka	Pemalu, menahan diri	Kadang-kadang pemalu, memendam perasaan	is sometimes bashful (shy), conceals feelings	7	7	7	7	√	
32	Is considerate and kind to almost everyone	Baik hati dan bertimbangrasa terhadap orang lain	Dianggap seorang yang baik hati dan pemurah kepada hampir semua individu	Bertimbang rasa dan baik pada semua	Bertimbangrasa dan baik hati kepada hampir semua orang	Is considerate and kind hearted to almost everyone	7	7	7	7	√	
33	Does things	Efisyen	Semua	Buat kerja	Membuat sesuatu dengan	does something	6	6	3	2	√	

	efficiently		pekerjaan dijalankan dengan cekap	dengan cekap	efisyen	efficiently						
34	Remains calm in tense situations	Sentiasa tenang ketika menghadapi situasi genting	Sentiasa tenang di dalam keadaan yang tertekan	Tenang dalam situasi tegang	Tetap tenang di dalam keadaan yang tertekan	keeps calm in stressful condition sentiasa tenang di dalam keadaan yang tertekan	7	7	7	7	√	
35	Prefers work that is routine	Sukakan kerja yang mempunyai rutin	Lebih suka kerja yang rutin	Suka kerja secara rutin	Lebih suka kerja yang rutin	prefers routine jobs	7	7	7	7	√	
36	Is outgoing, sociable	Suka bersosial dan tidak pemalu	Seorang yang peramah dan suka ber-sosial	Suka bersosial	Suka bersosial	likes socialising	7	7	5	4	√	
37	Is sometimes rude to others	Kadang-kadang bersikap kurang sopan terhadap orang lain	Kadang-kadang biadap terhadap individu lain	Kadangkala kasar dengan orang	Kadang-kadang bersikap kurang sopan terhadap orang lain	sometimes untactful to other people	6	6	5	5	√	
38	Makes plans and follows through with them	Suka membuat perancangan dan akan mengikuti perancangan tersebut	Sentiasa membuat perancangan masa depan dan akan selalu mengikut perancangan itu	Buat perancangan dan mematuhinya	Membuat rancangan dan mengikuti perancangan tersebut	makes plans and follow the planning	4	5	4	5	√	
39	Gets nervous easily	Senang menggelabah	Senang gugup	Mudah gemuruh	Mudah menggelabah	is easily panicked	7	7	5	5	√	
40	Likes to reflect, play with ideas	Suka menilai dan bermain dengan idea	Suka mencerminkan pengalaman lampau dan bermain dengan idea-idea baru	Suka beri gambaran, beri idea	Suka memberi gambaran dan bermain dengan idea-idea	likes depicting and playing with ideas	6	7	4	3	√	

41	Has few artistic interests	Agak meminati bidang artistik	Mempunyai minat artistik yang terhad	Minat seni tertentu	Agak meminati bidang artistik	is quite interested in artistic domain	1	1	1	1	Mempunyai minat artistik yang terhad	Possess limited artistic interests
42	Likes to cooperate with others	Suka bekerjasama dengan orang lain	Suka bekerjasama dengan individu lain	Suka berkerjasama dengan orang	Suka bekerjasama dengan orang lain	likes to cooperate with other people	7	7	7	7	√	
43	Is easily distracted	Senang dialih perhatiannya	Mempunyai perhatian yang senang terganggu	Mudah terganggu	Perhatian mudah terganggu	has short attention span	7	7	6	6	√	
44	Is sophisticated in art, music, or literature	Berpengetahuan luas dalam bidang seni, sastera dan muzik	Seorang yang sofistikated di dalam bidang seni, muzik atau sastera	Hebat dalam sastera, muzik atau kesusasteraan	Berpengetahuan luas dalam bidang seni, sastera dan muzik	is knowledgeable in art, literature and music	7	7	7	7	√	
THE EXPRESSIONS OF SPIRITUALITY INVENTORY												
1	Spirituality is an important part of who I am as a person	Kerohanian merupakan bahagian yang penting kepada saya sebagai seorang manusia	Kerohanian adalah satu bahagian penting dari diri saya sebagai seorang manusia	Kerohanian adalah perkara penting berkenaan siapa saya sebenarnya	Kerohanian merupakan perkara penting menentukan siapa saya sebagai manusia.	Spirituality is important in determining who I am as a human being	7	7	7	7	√	
2	I have had an experience in which I seemed to be deeply connected to everything	Saya mempunyai pengalaman di mana saya merasakan yang saya mempunyai	Saya telah mengalami satu pengalaman dimana saya berasa saya dapat memahami	Saya berpengalaman bahawa saya rasa sangat berkaitan	Saya telah merasai satu pengalaman dimana saya berasa saya dapat memahami segala-galanya	I have gone through an experience where I felt I could understand everything	2	2	4	4	Saya telah merasai satu pengalaman di mana saya seolah-olah mempunyai hubungan/perk	I have gone through an experience in which I seem to feel a strong connection or

		perkaitan yang mendalam dengan segalanya	segala-galanya	dengan semua perkara							aitan yang kuat dengan segala-galanya	association with everything
3	It always seems that I am doing things wrong	Saya selalu merasakan yang saya melakukan perkara yang salah	Sering saya rasa apa yang saya buat ini salah	Saya selalu merasakan bahawa saya melakukan perkara-perkara salah	Sering saya rasa saya melakukan perkara-perkara salah	I often feel that I do wrong things	4	4	4	4	√	
4	It is possible to communicate with the dead	Adalah mungkin untuk berkomunikasi dengan orang yang telah mati	Ada kemungkinan kita boleh berkomunikasi dengan orang yang sudah mati	Adalah tidak mustahil berkomunikasi dengan orang mati	Ada kemungkinan untuk berkomunikasi dengan orang yang sudah mati	It is possible to communicate with the dead	7	7	7	7	√	
5	I believe that going to religious services is important	Saya percaya menghadiri acara-acara keagamaan adalah sesuatu yang penting	Saya percaya sembahyang adalah penting	Saya percaya menghadiri majlis keagamaan adalah penting	Saya percaya menghadiri majlis-majlis keagamaan adalah penting	I believe that attending religious ceremonies is important	7	7	7	7	√	
6	Spirituality is an essential part of human existence	Kerohanian merupakan bahagian yang penting dalam	Kerohanian adalah satu bahagian penting kewujudan	Kerohanian adalah perkara penting pada	Kerohanian adalah teras utama kelangsungan hidup manusia	Spirituality is a core in living a life as a human being	6	6	3	4	√	

		kewujudan manusia	manusia	manusia								
7	I have had an experience in which I seemed to transcend space and time	Saya mempunyai pengalaman di mana saya merasakan yang saya merentasi ruang dan masa	Saya telah mengalami satu pengalaman dimana saya berasa saya menjangkaui ruang dan masa	Saya ada pengalaman seolah-olah saya melampaui tempat dan masa	Saya telah mengalami satu pengalaman dimana saya berasa saya menjangkaui ruang dan masa	I have gone through an experience where I felt I transcended space and time	7	7	5	6	√	
8	I am not comfortable with myself	Saya tidak selesa dengan diri saya sendiri	Saya rasa tidak selesa dengan diri saya	Saya tidak selesa dengan diri sendiri	Saya tidak selesa dengan diri saya sendiri	I am not comfortable with myself	7	7	7	7	√	
9	I believe witchcraft is real	Saya percaya ilmu sihir adalah sesuatu yang benar (nyata)	Saya percaya yang sihir itu ada	Saya percaya sihir wujud	Saya percaya ilmu sihir itu wujud	I believe that black magic exists	6	7	6	7	√	
10	I feel a sense of closeness to a higher power	Saya rasa dekat dengan kuasa tertinggi	Saya rasa dekat dengan kuasa yagn paling tinggi	Saya rasa hampir dengan Yang Maha Kuasa	Saya rasa begitu dekat dengan Yang Maha Kuasa	I feel very close to The Almighty	6	6	3	5	√	
11	I am more aware of my lifestyle choices because of my spirituality	Saya lebih sedar dengan pilihan gaya hidup saya kerana kerohanian saya	Saya lebih sedar tentang pilihan-pilihan cara hidup saya kerana kerohanian saya	Saya lebih sedar tentang pilihan kehidupan saya disebabkan kerohanian	Saya lebih sedar tentang pilihan kehidupan saya disebabkan kerohanian saya	I have more realisation about my life choices because of my spirituality	6	6	4	6	√	

				saya								
12	I have had a mystical experience	Saya telah mempunyai pengalaman mistik	Saya pernah mengalami pengalaman mistik	Saya ada pengalaman mistik	Saya pernah mengalami pengalaman mistik	I have been through a mystical experience	7	7	6	7	√	
13	Much of what I do in life seems strained	Kebanyakan perkara yang saya lakukan dalam hidup ini nampak tegang	Banyak benda yang saya buat dalam hidup nampaknya tegang	Banyak perkara yang saya buat dalam hidup seolah-olah tegang	Banyak perkara yang saya buat dalam hidup nampaknya tegang	Many things I have done in my life seem stressful	3	2	3	4	Banyak perkara yang saya lakukan dalam hidup ini penuh dengan tekanan dan memerlukan usaha yang banyak	Most of what I do in my life is stressful and takes a lot of effort
14	It is possible to predict the future	Adalah mungkin untuk meramal masa depan	Ada kemungkinan kita boleh ramal apa akan terjadi di masa depan	Adalah tidak mustahil meramal masa depan	Adalah mungkin untuk meramal masa depan	It is possible to predict future	7	7	7	7	√	
15	I see myself as a religiously oriented person	Saya melihat diri saya sebagai seorang yang berorientasikan agama	Saya melihat diri saya saya sebagai seorang yang berorientasikan agama	Saya mengangga p diri saya sebagai beragama	Saya melihat diri saya sebagai seorang yang berorientasikan agama	I see myself as a person who is religiously oriented	7	7	6	7	√	
16	I try to consider all elements of a problem, including its spiritual aspects,	Saya cuba untuk mengambil kira semua elemen di dalam sesuatu masalah,	Saya cuba pertimbangkan semua elemen dalam satu-satu maaslah, termasuk aspek kerohanian,	Saya akan menimbang semua masalah termasuk aspek kerohanian,	Saya cuba pertimbangkan semua elemen dalam satu-satu masalah, termasuk aspek kerohanian, sebelum saya membuat keputusan.	I try to take into account all elements in a problem, including spiritual aspect, before I make a decision	7	7	7	7	√	

	before I make a decision	termasuklah aspek kerohanian, sebelum saya membuat sesuatu keputusan	sebelum saya membuat keputusan.	sebelum saya membuat keputusan								
17	I have had an experience in which I seemed to merge with a power or force greater than myself	Saya mempunyai pengalaman di mana saya merasakan yang saya bergabung dengan kuasa atau kekuatan yang lebih besar dari diri saya	Saya telah mengalami satu pengalaman dimana saya berasa saya bersatu dengan satu kuasa atau tenaga yang lebih besar dari diri saya	Saya ada pengalaman seolah saya bersatu dengan satu kuasa yang lebih kuat daripada saya	Saya ada pengalaman seolah-olah saya bersatu dengan satu kuasa yang lebih kuat daripada saya	I have had an experience as if I were united with a more powerful force than I am	6	7	6	6	√	
18	My life is often troublesome	Hidup saya sering bermasalah	Hidup saya sering bermasalah	Hidup saya sering bermasalah	Hidup saya sering bermasalah	My life is a mess	4	4	4	5		
19	I do not believe in spirits or ghosts	Saya tidak percaya pada roh atau hantu	Saya tidak percaya dengan semangat atau hantu-hantu	Saya tidak percaya roh atau hantu	Saya tidak percaya dengan semangat ghaib atau hantu-hantu	I do not believe in spirits or ghosts	7	7	7	7	√	
20	I see God or a Higher Power present in all	Saya melihat Tuhan atau Kuasa Yang Lebih Tinggi	Saya melihat Tuhan atau Kuasa Tertinggi hadir	Saya lihat Tuhan atau Kuasa Maha	Saya percaya Tuhan atau Yang Maha Berkuasa hadir dalam semua perkara yang saya lakukan	I believe God or The Almighty presents in everything that I do	6	7	4	5	√	

	the things I do	hadir dalam segala hal yang saya lakukan	dalam apa yang saya lakukan	Tinggi wujud dalam semua perkara yang saya lakukan								
21	My life has benefited from my spirituality	Hidup saya mendapat manfaat dari kerohanian saya	Hidup saya menjadi baik kerana hasil dari kerohanian saya	Hidup saya beruntung disebabkan kerohanian saya	Hidup saya mendapat manfaat dari kerohanian saya	I benefit from my spirituality	6	6	5	6	√	
22	I have had an experience in which all things seemed divine	Saya mempunyai pengalaman di mana semua benda menampakkan kuasa Tuhan	Saya telah mengalami satu pengalaman dimana semua perkara kelihatan bersifat ketuhanan	Saya ada pengalaman bahawa semua benda seolah suci	Saya pernah berpengalaman di mana semua perkara menampakkan ketuhanan	I have been through an experience where everything seems connected to godliness	5	6	4	4	√	
23	I often feel tense	Saya sering merasa tegang	Saya sering berasa tegang	Saya selalu rasa tegang	Saya selalu berasa tegang	I often feel stressed out	6	7	4	4	√	
24	I think psychokinesis, or moving objects with one's mind, is possible	Saya fikir psikokinesis, atau menggerakkan objek dengan fikiran seseorang, adalah sesuatu yang memungkink	Saya rasa psikokinesis, atau menggerakkan objek dengan minda seseorang, boleh berlaku	Saya merasakan psikokinisis, atau memindah objek dengan fikiran seseorang, adalah tidak	Saya fikir psikokinesis, atau menggerakkan objek dengan fikiran seseorang, adalah sesuatu yang mungkin	I think that psychokinesis or moving things with mind power is possible	6	7	6	7	√	

		an		mustahil								
25	I practice some form of prayer	Saya mengamalkan beberapa bentuk sembahyang/ doa	Saya ada sembahyang sikit-sikit	Saya mengamalkan sebahagian sembahyang	Saya mengamalkan sembahyang atau penyembahan	I practise prayers or worshipping	6	7	3	5	√	
26	I believe that attention to one's spiritual growth is important	Saya percaya bahawa perhatian kepada pertumbuhan kerohanian seseorang adalah penting	Saya percaya yang memberi perhatian pada pertumbuhan kerohanian adalah penting	Saya percaya perhatian pada perkembangan kerohanian seseorang adalah penting	Saya percaya yang memberi perhatian pada pertumbuhan kerohanian adalah penting	I believe that paying attention to spiritual growth is important	7	7	5	6	√	
27	I have had an experience in which I seemed to go beyond my normal everyday sense of self	Saya pernah mengalami situasi di mana saya merasakan saya melepasi kebiasaan diri saya sehari-hari	Saya telah mengalami satu pengalaman dimana ia menjangkau rasa kendiri yang normal	Saya berpengalaman bahawa saya telah melepasi diri saya yang sebenarnya	Saya telah mengalami satu pengalaman di mana saya telah melepas diri saya yang sebenarnya	I have had an experience where I transcended my true self	6	6	5	6	√	
28	I am an unhappy person	Saya seorang yang tidak bahagia	Saya seorang yang tidak gembira	Saya seorang yang tidak gembira	Saya seorang yang tidak bahagia	I am an unhappy person	7	7	7	7	√	
29	It is possible to leave your body	Adalah mungkin untuk meninggalkan	Ada kemungkinan yang kita boleh tinggalkan	Tidak mustahil meninggalkan jasad	Ada kemungkinan yang kita boleh tinggalkan tubuh badan kita	There is a possibility that we can leave our body	7	7	6	7	√	

		jasad/tubuh anda	tubuh badan kita	anda								
30	I believe that God or a Higher Power is responsible for my existence	Saya percaya bahawa Tuhan atau Kuasa Tertinggi bertanggungjawab ke atas kewujudan saya	Saya percaya Tuhan atau Kuasa Tertinggi adalah bertanggungjawab ke atas kewujudan	Saya percaya Tuhan atau Kuasa Maha Tinggi bertanggungjawab atas kewujudan saya	Saya percaya Tuhan atau Kuasa Maha Tinggi bertanggungjawab atas kewujudan saya	I believe God or The Almighty is responsible for my existence	7	7	5	6	√	
31	This questionnaire appears to be measuring spirituality	Soal selidik ini nampaknya mengukur kerohanian	Soal selidik ini rasanya mengukur kerohanian	Soalan ini menjawab ukuran kerohanian	Soal selidik ini seolah-olahnya mengukur kerohanian	This questionnaire seems to evaluate spirituality	6	7	4	5	√	
32	I responded to all statements honestly	Saya menjawab semua pernyataan dengan jujur	Saya menjawab semua kenyataan dengan jujur	Saya menjawab semua kenyataan dengan jujur	Saya menjawab semua kenyataan dengan jujur	I answered all statements honestly	7	7	7	7	√	
THE IRRATIONAL BELIEF SCALE												
1	To be a worthwhile person I must be thoroughly	Untuk menjadi orang yang berguna, saya mesti mahir	Untuk dipercayai oleh semua individu, saya mesti menjadi seorang	Untuk menjadi manusia yang berguna	Untuk menjadi orang yang berguna, saya mesti mahir sepenuhnya dalam setiap perkara yang saya lakukan	To make myself useful, I have to be highly skilful in everything I do	5	5	4	4	√	

	competent in everything I do	sepenuhnya dalam setiap perkara yang saya lakukan	yang cekap dalam segala pekerjaan yang saya lakukan	saya mesti sentiasa berkeupaya an dalam setiap perkara yang saya lakukan								
2	My negative emotions are the result of external pressures	Perasaan negatif dalam diri saya timbul apabila menerima tekanan daripada luar	Emosi negatif saya adalah disebabkan oleh tekanan persekitaran luaran	Emosi negatif saya disebabkan tekanan luaran	Emosi negatif saya adalah disebabkan oleh tekanan luaran	My negative emotion is caused by external pressure	7	7	6	7	√	
3	To be happy, I must maintain the approval of all the persons I consider significant	Untuk menjadi gembira, saya mesti memuaskan hati orang-orang yang penting bagi saya	Untuk bahagia, saya perlu mendapat persetujuan / penerimaan daripada semua individu penting dalam hidup saya	Untuk bahagia, saya mesti kekalkan kebenaran orang yang saya anggap penting	Untuk menjadi gembira, saya mesti mendapatkan penerimaan daripada semua orang yang saya anggap penting dalam hidup saya	To be happy, I must gain acceptance from everyone whom I consider as important in my life.	6	7	5	6	√	
4	Most people who have been unfair to me are generally bad individuals	Kebanyakan orang yang telah berlaku kurang adil terhadap saya merupakan individu yang jahat	Semua individu yang berlaku tidak adil kepada saya adalah secara amnya seorang individu yang jahat	Orang yang tidak adil pada saya adalah orang yang tidak baik	Kebanyakan orang yang telah berlaku kurang adil terhadap saya merupakan individu yang jahat	Most people who have been unfair to me are cruel individuals	6	6	4	5	√	
5	Some of my ways of acting are so ingrained that I would	Saya tidak akan mengubah beberapa sikap yang	Sesetengah sikap saya sudah sebati dengan diri saya menyebabkan	Sebahagian kelakuan saya adalah kekal dan sukar	Sesetengah sikap saya sudah sebati dengan diri saya menyebabkan saya tidak akan mengubahnya	Some of my habits have been infused in me which makes me refuse to change them	6	6	3	4	√	

	never change them	telah sebati dengan diri saya	saya tidak akan mengubahnya	diubah								
6	When it looks as if something might go wrong, it is reasonable to be quite concerned	Saya merasakan tidak salah untuk saya berasa bimbang apabila sesuatu perkara buruk bakal terjadi	Bila keadaan kelihatan akan menjadi tidak terurus, adalah wajar bagi kita untuk menjadi prihatin	Bila sesuatu perkara salah, sepatutnya munasabah ambil tahu	Saya merasakan tidak salah untuk saya berasa bimbang apabila sesuatu perkara buruk bakal terjadi	I feel that there is nothing wrong for me to be worried when something bad is going to happen	5	5	1	1	Bila nampakn ya sesuatu mungkin menjadi tidak betul, adalah wajar untuk menjadi prihatin	When it seems something may be incorrect, it is appropriate to be concerned
7	Life should be easier than it is	Kehidupan ini seharusnya lebih senang daripada realitinya sekarang	Hidup sepatutnya adalah lebih senang dari yang seadanya	Hidup seharusnya lebih mudah dari yang sepatutnya	Kehidupan ini seharusnya lebih mudah daripada yang sepatutnya	Life is supposed to be easier than it should be	4	4	3	2	Kehidupa n ini sepatutny a lebih mudah dari yang sepatutny a	Life should be easier than it should be
8	It is awful when something I want to happen does not occur	Saya merasa teruk apabila perkara yang saya harapkan terjadi tidak berlaku	Saya akan berasa kecewa jika sesuatu yang dirancang tidak menjadi	Adalah teruk sesuatu yang saya jangkakan berlaku, tidak terjadi	Saya merasa teruk apabila perkara yang saya harapkan terjadi tidak berlaku	I feel bad when something I hope for does not take place	6	7	6	7	√	
9	It makes more sense to wait that to try to improve a	Saya merasakan bahawa ianya lebih relevan untuk	Adalah lebih baik jika kita menunggu / berserah kepada takdir daripada	Lebih baik menunggu daripada cuba membaiki	Lebih baik menunggu daripada cuba membaiki situasi yang buruk	It is better to wait than try to improve a bad situation	6	7	5	6	√	

	bad life situation	menunggu keadaan bertukar menjadi bertambah baik daripada mencuba untuk mengubahnya sendiri	berusaha untuk memperbetulkan keadaan	situasi buruk								
10	I hate it when I cannot eliminate an uncertainty	Saya benci apabila saya berasa kurang pasti akan sesuatu perkara	Saya benci bila saya tidak berupaya untuk menghapuskan sesuatu yang tidak pasti	Saya benci bila saya tidak boleh buang rasa ragu-ragu	Saya benci bila saya tidak boleh menghapuskan sesuatu yang tidak pasti	I hate it when I am not able to do away with something that is uncertain	6	7	6	7	√	
11	Many events from my past so strongly influence me that it is impossible to change	Saya amat dipengaruhi oleh pengalaman-pengalaman saya yang lalu dan ini menyebabkan sukar untuk saya berubah.	Banyak pengalaman silam mempengaruhi saya sehingga sukar untuk saya berubah	Banyak peristiwa lepas mempengaruhi saya dan sukar untuk diubah	Banyak pengalaman silam mempengaruhi saya sehingga sukar untuk saya berubah	A lot of past experiences have influenced me that makes it difficult for me to change	5	5	6	7	√	
12	Individuals who take unfair advantage of me should be punished	Orang-orang yang mempergunakan saya haruslah menerima balasan yang	Individu yang mengambil kesempatan ke atas saya harus di hukum	Individu yang ambil kesempatan terhadap saya mesti dihukum	Individu yang mengambil kesempatan ke atas saya harus di hukum	An individual who takes advantage on me must be punished	6	6	4	5	√	

		setimpal dengan perbuatan buruk mereka.										
13	If there us a risk that something bad will happen, it makes sense to be upset	Apabila sesuatu perkara tidak baik berkemungkinan berlaku, amatlah wajar bagi seseorang untuk berasa sedih atau risau	Jika ada risiko yang sesuatu yang buruk akan berlaku, adalah wajar untuk kita bersedih	Jika ada risiko benda buruk akan berlaku, patut rasa sedih	Jika ada risiko sesuatu yang buruk akan berlaku, adalah wajar untuk kita bersedih	If there is a risk of something bad would occur, it is all right for us to grieve	5	6	3	4	√	
14	It is terrible when things do not go the way I would like	Saya berasa sedih apabila apa yang terjadi tidak seperti apa yang saya rancangkan	Adalah sangat buruk apabila sesuatu keadaan / benda itu tidak menepati jangkaan saya	Teruk jika sesuatu tidak berlaku mengikut perancangan saya	Adalah teruk bila sesuatu tidak berlaku seperti yang saya jangkakan	It is awful when something does not turn out as I expected	6	6	6	7	√	
15	I must keep achieving in order to be satisfied with myself	Saya akan berpuas hati jika saya sering mencapai kejayaan.	Saya mesti sentiasa mencapai kejayaan untuk terus merasa selesa dan puas	Saya mesti terus berusaha bagi mencapai kepuasan diri sendiri	Saya mesti sentiasa mencapai kejayaan untuk merasa puas hati dengan diri sendiri	I must always make achievements to be pleased with myself	6	7	6	7	√	
16	Things should turn out better than they usually do	Setiap perkara dalam kehidupan ini harus menjadi lebih baik daripada yang diharapkan.	Keadaan seharusnya lebih baik dari sedia ada	Setiap perkara seharusnya bertambah baik dari yang sepatutnya	Keadaan seharusnya lebih baik dari yang sedia ada	Things has to be better than it is	4	4	2	1	Perkara seharusnya berubah lebih baik dari kebiasaannya	Things should turn out better than usual

17	I cannot help how I feel when everything is going wrong	Saya tidak mampu mengawal perasaan apabila sesuatu perkara buruk berlaku	Saya tidak mampu untuk mengawal perasaan saya apabila keadaan tidak terurus	Saya tidak tahu perasaan saya apabila semua tidak betul	Saya tidak mampu mengawal perasaan apabila semua perkara menjadi tidak betul	I am unable to control my feeling when everything does not turn out well	6	7	7	7	√	
18	To be happy I must be lived by the persons who are important to me	Saya hanya akan berasa gembira apabila saya rasa disayangi oleh orang yang tersayang	Untuk bahagia, saya perlu disayangi oleh individu-indiuvidu penting di dalam hidup saya	Untuk gembira saya mesti disayangi oleh orang yang penting bagi diri saya	Untuk menjadi gembira, saya mesti disayangi oleh orang-orang yang penting kepada saya	To be contented, I must be loved by people who are important to me	6	7	6	7	√	
19	It is better to ignore personal problems than to try to solve them	Saya lebih suka mengabaikan masalah peribadi daripada menyelesaikannya.	Adalah lebih baik untuk mengabaikan masalah peribadi daripada cuba untuk menyelesaikannya	Lebih baik jangan peduli masalah peribadi daripada cuba selesaikannya	Adalah lebih baik untuk mengabaikan masalah peribadi daripada cuba untuk menyelesaikannya	It is better to neglect personal problems than try to solve them	6	6	5	6	√	
20	I dislike having uncertainty about my future	Saya tidak suka masa depan yang kurang pasti	Saya tidak suka mempunyai masa depan yang tidak tentu	Saya tidak suka ketidaktentuan masa depan saya	Saya tidak suka mempunyai ketidakpastian mengenai masa depan saya	I do not like to have uncertainty about my future	7	7	5	6	√	

THE CHILDREN PERCEIVED SELF-EFFICACY SCALE												
1	Learn general mathematics ?	Belajar matematik asas?	Belajar matematik yang umum?	Belajar matematik umum?	Belajar matematik umum?	Study general mathematics?	6	7	6	7	√	
2	Learn geography?	Belajar geografi?	Belajar geografi?	Belajar geografi?	Belajar geografi?	Study Geography?	6	7	6	7	√	
3	Learn science?	Belajar sains?	Belajar sains?	Belajar sains?	Belajar sains?	Study Science?	6	7	6	7	√	
4	Learn Malay literature?	Belajar kesusasteraan melayu?	Belajar Kesusasteraan Melayu?	Belajar kesusteraan Melayu?	Belajar kesusteraan Melayu?	Study Malay Literature?	6	7	6	7	√	
5	Learn Malay grammar?	Belajar tatabahasa melayu?	Belajar tatabahasa Melayu?	Belajar tatabahasa Melayu?	Belajar tatabahasa Melayu?	Study Malay Grammar?	6	7	6	7	√	
6	Learn history?	Belajar sejarah?	Belajar sejarah?	Belajar sejarah?	Belajar sejarah?	Study History?	6	7	6	7	√	
7	Learn foreign languages?	Belajar bahasa-bahasa asing?	Belajar bahasa-bahasa asing?	Belajar bahasa asing?	Belajar bahasa asing?	Study foreign language?	6	7	6	7	√	
8	Finish assignments by deadlines?	Menghabiskan tugasan sebelum tarikh akhir?	Selesaikan tugasan pada masa yang ditetapkan?	Siap kertaskerja dalam masa yang ditetapkan?	Selesaikan tugasan pada masa yang ditetapkan?	Complete tasks before deadlines?	6	6	6	7	√	

9	Study when there are other interesting things to do?	Mentelaah bila ada perkara – perkara yang lebih menarik untuk dilakukan?	Belajar apabila ada perkara-perkara menarik lain yang boleh dilakukan	Belajar bila ada perkara-perkara lain yang lebih menarik dilakukan?	Mengulangkaji sekalipun ada perkara lain yang lebih menarik untuk dilakukan?	Revising even though there is a more interesting thing to do?	6	6	5	6	√	
10	Concentrate on university subjects?	Menumpukan perhatian kepada subjek-subjek universiti?	Tumpukan perhatian pada kursus-kursus universiti?	Tumpu pada subjek-subjek universiti?	Menumpukan perhatian kepada subjek-subjek universiti?	Pay attention to university subjects?	7	7	5	6	√	
11	Take class notes of class instruction?	Mengambil nota kuliah?	Mengambil nota kuliah mengikut arahan?	Ambil nota dalam kelas?	Mengambil nota kuliah mengikut arahan?	Take down notes as instructed?	3	3	5	5	√	
12	Use the library to get information for class assignments?	Menggunakan perpustakaan untuk mendapatkan informasi untuk tugasan kelas?	Menggunakan perpustakaan untuk memperolehi maklumat bagi tugasan-tugasan kuliah?	Guna perpustakaan untuk dapatkan maklumat bagi kertas kerja kelas?	Menggunakan perpustakaan untuk memperolehi maklumat bagi tugasan-tugasan kuliah?	Use the library to obtain information for tasks in lectures?	6	6	5	7	√	
13	Organize your college work?	Menguruskan tugasan kolej anda?	Mengurus kerja-kerja/tugasan kolej?	Mengurus kerja kolej anda?	Mengurus kerja-kerja/tugasan kolej?	Manage college work/tasks?	6	7	3	3	√	
14	Plan your college	Merancang tugasan kolej	Merancang kerja-	Rancang kerja kolej	Merancang tugasan kolej anda?	Plan your college task?	6	7	5	6	√	

	work?	anda?	kerja/tugasan kolej?	anda?								
15	Remember information presented in class and text-books?	Mengingati informasi yang disampaikan di dalam kelas dan buku teks?	Mengingati maklumat yang dibentang di dalam kelas dan buku-buku teks?	Ingat maklumat yang dibentangkan dalam kelas dan buku-buku?	Mengingati maklumat yang dibentang di dalam kelas dan buku-buku teks?	Remember information presented in class and text books?	7	7	6	6	√	
16	Arrange a place to study without distractions?	Mengatur tempat untuk menelaah tanpa gangguan?	Mencari satu tempat untuk belajar tanpa gangguan?	Pilih tempat untuk belajar tanpa gangguan?	Mencari satu tempat untuk belajar tanpa gangguan?	Find a place to study without interruption?	7	7	7	7	√	
17	Motivate yourself to do college work?	Memotivasikan diri anda untuk membuat kerja kolej?	Memotivasikan diri untuk melakukan kerja-kerja/tugasan kolej?	Motivasi diri sendiri melakukan kerja kolej?	Memotivasikan diri untuk melakukan kerja-kerja/tugasan kolej?	Self motivate to do college work/tasks?	7	7	4	5	√	
18	Participate to class discussions?	Turut serta dalam diskusi kelas?	Ikut serta dalam perbincangan kelas?	Ambil bahagian dalam diskusi kelas?	Ikut serta dalam perbincangan kelas?	Join in class discussion?	7	7	5	6	√	
19	Learn sport skills?	Belajar kemahiran sukan?	Belajar kemahiran-kemahiran sukan?	Belajar skil sukan?	Belajar kemahiran sukan?	Learn sport skill?	7	7	5	7	√	

20	Learn regular physical education activities?	Belajar aktiviti-aktiviti biasa pendidikan jasmani?	Belajar aktiviti-aktiviti pendidikan jasmani yang biasa?	Belajar aktiviti pendidikan fizikal secara tetap?	Belajar aktiviti-aktiviti pendidikan jasmani yang biasa?	Learn the regular physical activities?	3	3	6	6	√	
21	Learn the skills needed for team sports (for example, basketball, volleyball, swimming, football, soccer)?	Belajar kemahiran – kemahiran yang diperlukan untuk sukan berpasukan (sebagai contoh. Bola keranjang, bola tampar, berenang, bola sepak)?	Belajar kemahiran-kemahiran yang diperlukan bagi sukan-sukan berpasukan (contohnya, bola jaring, bola tampar, berenang, bola sepak, ragbi)?	Belajar skil yang perlu bagi sukan berpasukan (contoh, bola keranjang, bola tampar, berenang, bolasepak)?	Belajar kemahiran-kemahiran yang diperlukan bagi sukan-sukan berpasukan (contohnya, bola keranjang, bola tampar, berenang, bola sepak, ragbi)?	Learn skills required for team games (for example, basketball, volley ball, swimming, football, rugby)?	7	7	5	7	√	
22	Resist peer pressure to do things in college that can get you into trouble?	Menolak pelawaan kawan-kawan kolej untuk membuat perkara-perkara yang tidak baik?	Melawan tekanan rakan sebaya untuk tidak terlibat dalam kegiatan di kolej yang boleh membawa masalah kepada anda?	Tahan paksaan kawan di kolej yang boleh menyebabkan kamu terlibat dengan masalah?	Melawan tekanan rakan sebaya untuk terlibat dalam kegiatan di kolej yang boleh membawa masalah kepada anda?	Resist peer pressure to be involved in college activities which may lead you to problems?	6	7	5	4	√	
23	Stop yourself from skipping classes when you feel bored or upset	Menghalang diri sendiri daripada ponteng kelas apabila anda berasa sedih atau bosan?	Untuk terus ke kelas walaupun anda dalam keadaan bosan atau sedih?	Berhenti tuang kelas bila bosan atau sedih?	Menghalang diri sendiri daripada ponteng kelas apabila anda berasa sedih atau bosan?	Prevent yourself from skipping classes when you feel distressed or bored?	7	7	6	6	√	

24	Resist peer pressure to smoke cigarettes	Menolak pelawaan rakan-rakan untuk merokok?	Melawan tekanan rakan sebaya untuk tidak merokok?	Tolak paksaan kawan hisap rokok?	Melawan tekanan rakan sebaya untuk merokok?	Resist peer pressure to smoke?	6	7	5	6	√	
25	Resist peer pressure to drink beer, wine or liquor?	Menolak ajakan kawan-kawan untuk meminum arak?	Melawan tekanan rakan sebaya untuk tidak meminum beer, wine atau minuman alkohol lain?	Tolak paksaan kawan minum bir, wain atau arak?	Melawan tekanan rakan sebaya untuk minum arak, wain atau minuman beralkohol yang lain?	Resist peer pressure to drink beer, wine or other alcoholic drinks?	6	7	7	7	√	
26	Stand firm to someone who is asking to do something unreasonable or inconvenient	Mengatakan 'tidak' kepada permintaan yang menyusahkan atau kurang relevan?	Bersikap tegas ke atas seseorang individu yang ingin mempengaruhi anda untuk melakukan sesuatu perkara yang kurang munasabah atau menyusahkan?	Berdiri teguh kepada seseorang yang minta melakukan sesuatu tidak masuk akal atau menyusahkan?	Bersikap tegas kepada sesiapa yang meminta anda melakukan sesuatu yang tidak munasabah atau menyusahkan?	Being assertive to those who ask you to do something which is unreasonable or troublesome?	6	6	5	6	√	
27	Live up to what your parents expect of you?	Memenuhi apa yang diharapkan oleh kedua ibu bapa anda?	Hidup seperti yang diharap oleh ibu bapa anda?	Berpegang pada harapan ibubapa terhadap anda?	Menjalani kehidupan seperti yang diharapkan oleh ibubapa anda?	Lead life as expected by your parents?	6	6	5	7	√	
28	Live up to what your lecturers expect of	Memenuhi apa yang pensyarah anda	Hidup seperti yang diharap oleh pensyarah anda?	Berpegang pada harapan pensyarah	Memenuhi apa yang pensyarah anda harapkan dari anda?	Fulfil what your lecturer expects from you?	6	7	5	7	√	

	you?	harapkan dari anda?		terhadap anda?								
29	Live up to what you peers expect of you?	Memenuhi apa yang rakan-rakan anda harapkan dari anda?	Hidup seperti yang diharap oleh rakan sebaya anda?	Berpegang pada harapan kawan terhadap anda?	Memenuhi apa yang rakan-rakan anda harapkan dari anda?	Fulfil what your friends expect from you?	6	6	5	7	√	
30	Live up to what you expect of yourself?	Memenuhi apa yang anda harapkan dari diri anda sendiri?	Hidup seperti yang diharap oleh diri anda sendiri?	Bepegang pada harapan sendiri?	Hidup bagi memenuhi apa yang diharapkan oleh diri anda sendiri?	Live to fulfil what is expected by yourself?	5	5	4	4	√	
31	Make and keep female friends?	Bersahabat dan menjaga persahabatan dengan kawan perempuan?	Boleh dapat dan mengekalkan kawan-kawan perempuan?	Berkawan dengan kawan perempuan ?	Menjalin dan menjaga hubungan dengan kawan wanita?	Establish and maintain relationship with girlfriends?	5	5	5	7	√	
32	Make and keep male friends?	Bersahabat dan menjaga persahabatan dengan kawan lelaki?	Boleh dapat dan mengekalkan kawan-kawan laki-laki?	Berkawan dengan kawan lelaki?	Menjalin dan menjaga hubungan degang kawan lelaki?	Establish and maintain relationship with boyfriends?	5	5	5	7	√	
33	Carry on conservation s with others?	Meneruskan perbualan dengan orang lain?	Boleh bercakap/berbua l dengan orang?	Teruskan pemulihara an dengan yang lain?	Meneruskan perbualan dengan orang lain?	Stay in conversation with other people?	5	5	5	5	√	
34	Work in a group?	Bekerja dalam	Bekerja dalam satu pasukan?	Kerja dalam satu	Bekerja dalam kumpulan?	Work in group?	7	7	7	7	√	

		kumpulan?		kumpulan?								
35	Express your opinions when other classmates disagree with you?	Menyatakan pendapat anda bila rakan-rakan sekelas yang lain tidak bersetuju dengan anda?	Memberi pendapat sendiri bila kawan sekelas yang lain tidak bersetuju dengan anda?	Mengemukakan pendapat anda bila rakan-rakan sekelas tidak bersetuju dengan anda?	Memberi pendapat sendiri bila kawan sekelas yang lain tidak bersetuju dengan anda?	Give your own opinion when your other classmates disagree with you?	7	7	6	7	√	
36	Stand up for yourself when you feel you are being treated unfairly?	Mempertahankan diri anda sendiri bila anda merasakan yang anda tidak dilayan secara adil?	Memperjuangkan diri apabila anda rasa anda dilayan dengan tidak adil?	Mempertahankan diri anda bila anda dilayan tidak adil?	Mempertahankan diri anda bila anda dilayan tidak adil?	Defend yourself when you are not fairly treated	7	7	6	7	√	
37	Deal with situations where others are annoying you or hurting your feelings?	Menangani situasi-situasi di mana orang lain menjengkelkan anda atau menyakitkan hati anda?	Menangani situasi-situasi di mana orang lain mengganggu anda atau menyinggung perasaan anda?	Berhadapan dengan situasi dimana orang lain menyakiti perasaan anda?	Menangani situasi-situasi di mana orang lain mengganggu anda atau menyinggung perasaan anda?	Handle situations where other people bother or offend you?	6	7	5	7	√	

THE MULTIDIMENSIONAL HEALTH LOCUS OF CONTROL												
1	If I become sick, I have the power to make myself well again	Sekiranya saya sakit, saya mempunyai kekuatan dalaman untuk menyembuhkan diri saya sendiri	Jika saya jatuh sakit, saya berupaya untuk membuat diri saya sihat kembali	Jika saya sakit, saya ada kekuatan untuk menyembuhkan diri saya	Jika saya jatuh sakit, saya mempunyai kekuatan untuk membuat diri saya sihat kembali	If I fall sick, I have strength to make myself well again	5	5	5	6	√	
2	Often I feel that no matter what I do, if I am going to get sick, I will get sick	Sekiranya saya merasakan yang saya akan sakit, saya tetap akan sakit walau apa pun yang saya lakukan.	Selalunya, apabila saya berasa yang saya akan sakit, tidak kira apa yang berlaku, saya pasti akan sakit	Seringkali saya rasa tidak kira apa yang saya buat, jika saya rasa akan sakit, saya akan jatuh sakit	Seringkali saya rasa tidak kira apa yang saya buat, jika saya rasa akan sakit, saya akan jatuh sakit	I often feel that no matter what I do, if I feel that I will fall sick, I will fall sick	6	6	6	7	√	
3	If I see an excellent doctor regularly, I am less likely to have health problems	Jika saya berjumpa dengan doktor yang pakar secara berterusan, kebarangkalian saya untuk mendapat penyakit akan berkurangan	Jika saya kerap berjumpa dengan doktor pakar, saya akan kurang risiko untuk mendapat masalah kesihatan	Jika saya jumpa doktor selalu, saya akan kurang masalah kesihatan	Jika saya berjumpa dengan doktor yang pakar secara berterusan, kebarangkalian saya untuk mendapat penyakit akan berkurangan	If I see a medical specialist consistently, the possibility of catching a disease will be reduced	6	6	5	7	√	
4	It seems that my health is greatly influenced by	Kesihatan saya amat dipengaruhi oleh keadaan-	Keadaan kesihatan saya sangat bergantung	Rasanya kesihatan saya banyak	Rasanya kesihatan saya banyak dipengaruhi oleh keadaan-keadaan yang tidak dijangkakan	I think my health is much influenced by unexpected conditions	5	5	5	6	√	

	accidental happenings	keadaan yang tidak dijangka	kepada nasib	dipengaruhi oleh kebetulan yang berlaku								
5	I can only maintain my health by consulting health professionals	Kesihatan saya akan terjaga apabila saya selalu berjumpa dengan pakar kesihatan	Saya hanya boleh mengekalkan kesihatan saya dengan berjumpa dengan pakar kesihatan	Saya hanya boleh kekal kesihatan saya dengan berjumpa pakar kesihatan	Saya hanya boleh mengekalkan kesihatan saya dengan berjumpa pakar kesihatan	I can only maintain my health by seeing a health specialist	7	7	7	7	√	
6	I am directly responsible for my health	Saya bertanggungjawab terhadap kesihatan diri saya	Saya adalah bertanggung jawab untuk kesihatan saya	Saya sepenuhnya bertanggungjawab terhadap kesihatan sendiri	Saya bertanggungjawab terhadap kesihatan diri saya	I am responsible of my own health	6	6	6	7	√	
7	Other people play a big part in whether I stay healthy or become sick	Kesihatan saya amat dipengaruhi oleh orang di sekeliling saya	Individu lain memainkan peranan penting dalam menentukan sama ada saya sihat atau sakit	Orang lain main peranan besar samada saya terus sihat atau jatuh sakit	Orang lain memainkan peranan besar samada saya terus sihat atau jatuh sakit	Other people play a major role to determine whether stay healthy or fall sick	7	7	7	7	√	
8	Whatever goes wrong with my health is my own fault	Sekiranya saya jatuh sakit, ianya berpunca daripada kesilapan saya	Apabila kesihatan saya tidak bagus, ia adalah salah saya sendiri	Apa jua tidak kena pada kesihatan saya adalah salah saya	Apa jua yang tidak kena pada kesihatan saya adalah salah saya sendiri	What ever is wrong with my health is my own fault	7	7	7	7	√	

		sendiri.		sendiri								
9	When I am sick, I just have to let nature run its course	Saya akan membiarkan diri saya sembuh dengan sendirinya	Apabila saya sakit, saya akan berserah kepada takdir	Masa saya sakit, saya hanya biarkan keadaaan menentukannya	Apabila saya sakit, saya hanya biarkan keadaaan menentukannya	When I am sick, I just let nature takes its own course	7	7	7	7	√	
10	Health professionals keep me healthy	Pakar perubatan membantu saya untuk kekal sihat	Pakar kesihatan menjamin kesihatan saya	Kesihatan profesional menjadikan saya sihat	Pakar perubatan membantu saya untuk kekal sihat	Medical experts help me to stay healthy	7	7	6	7	√	
11	When I stay healthy, I'm just plain lucky	Jika saya kekal sihat, ia hanyalah merupakan nasib yang baik.	Apabila saya sihat, ini adalah kerana nasib baik saya	Masa saya sihat, saya cukup bertuah	Jika saya kekal sihat, ia hanyalah merupakan nasib yang baik.	If I stay healthy, it is just my good luck	7	7	6	7	√	
12	My physical well-being depends on how well I take care of myself	Kesihatan fizikal saya bergantung kepada sebaik mana saya menjaga diri saya	Keadaan kesihatan fisikal saya bergantung kepada betapa rapinya tahap penjagaan diri saya sendiri	Kesejahteraan fizikal saya bergantung pada bagaimana saya menjaga diri sendiri	Kesihatan fizikal saya bergantung kepada sebaik mana saya menjaga diri saya	My physical health depends on how well I take care of myself	7	7	7	7	√	
13	When I feel ill, I know it is because I	Saya akan jatuh sakit apabila saya	Apabila saya sakit, saya sedar yang saya tidak	Masa saya sakit, saya tahu saya	Apabila saya sakit, saya tahu yang saya tidak menjaga diri saya dengan	When I am sick, I know that I do not take a good care of myself	5	5	3	4	√	

	have not been taking care of myself properly	tidak menjaga diri dengan baik	menjaga diri saya dengan baik	tidak menjaga diri saya dengan baik	baik							
14	The type of care I receive from other people is what is responsible for how well I recover from an illness	Saya akan kembali sihat apabila saya dijaga dengan baik oleh orang lain	The type of care I receive from other people is what is responsible for how well I recover from an illness	Jenis penjagaan yang saya terima daripada orang lain adalah tanggungjawa bagaimana saya sembuh dari sakit	Jenis penjagaan yang saya terima daripada orang lain adalah merupakan penyebab sebaik mana saya sembuh daripada penyakit	The type of care I receive from other people is the reason for how well I recover from a sickness	6	7	5	6	√	
15	Even when I take care of myself, it's easy to get sick	Saya akan jatuh sakit walaupun saya menjaga diri dengan baik.	Saya senang jatuh sakit walau bagaimana baiknya saya menguruskan kesihatan diri saya	Walau saya jaga diri sendiri, mudah jatuh sakit	Walaupun saya menjaga diri saya, masih mudah untuk saya jatuh sakit	Although I take care of myself, it is still easy for me to fall sick	6	6	6	7	√	
16	When I become ill, it's a matter of fate	Apabila saya jatuh sakit, ianya merupakan takdir.	Apabila saya sakit, ia adalah takdir	Masa saya sakit, ia adalah takdir	Apabila saya jatuh sakit, ianya merupakan takdir.	When I fall sick, it is my destiny	6	6	6	7	√	
17	I can pretty	Saya akan	Saya akan terus	Saya boleh	Saya akan terus sihat	I will stay healthy when	6	7	6	7	√	

	much stay healthy by taking good care of myself	kekal sihat apabila saya menjaga diri dengan baik.	sihat apabila saya menjaga diri saya dengan baik	terus sihat asalkan menjaga diri sendiri	apabila saya menjaga diri saya dengan baik	I take a good care of myself						
18	Following doctors' orders to the letter is the best way for me to stay healthy	Saya akan kekal sihat apabila saya mendengar nasihat doktor	Mengikut arahan doctor adalah cara terbaik untuk saya terus kekal sihat	Ikut arahan doktor sehingga ke surat adalah jalan paling baik untuk saya kekal sihat	Mengikut arahan doktor adalah cara terbaik untuk saya terus kekal sihat	Following the doctor's advice as closely as possible is the best way for me to stay healthy	7	7	6	7	√	

Note: (1) = 1st English native speaker; (2) – 2nd English native speaker; L = Comparability of Langiuage; I = Comparability of Interpretation