PREVALENCE OF SEXUAL INITIATION AND ASSOCIATED FACTORS IN LATE ADOLESCENCE: A STUDY IN SELECTED TERTIARY LEVEL INSTITUTIONS IN MALAYSIA

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ABSTRACT

The purpose of this study was to determine the psychometric properties of the Susceptibility to Peer Pressure Scale as well as the prevalence of sexual initiation and its risk factors among late adolescents attending tertiary level institutions. The temporal gap which exists between the maturation of the adolescents' prefrontal cortex and their socio-emotional system predisposes them to engage in sexual initiation. The newly discovered independence that is associated with college environment further increases the propensity among late adolescents to initiate sexual intercourse. As this behaviour may result in negative consequences, such as unintended pregnancy, unsafe abortion or sexually transmitted infections, it is important to identify the crux of the matter in enabling the design and the implementation of risk reduction strategies. This study was conducted in two phases. Phase I comprised the establishment of the psychometric properties and the factorial invariance across gender of the Susceptibility to Peer Pressure Scale, one of the instruments used in Phase II. Both exploratory and confirmatory factor analyses were utilized. A cross-sectional study, employing a multistage stratified sampling method was conducted to establish the prevalence of sexual initiation and other related sexual behaviours as well the correlates of engagement in sexual initiation in Phase II. A self-administered questionnaire based on adaptation of the Urie Bronfenbrenner's social-ecological model which comprised several instruments to assess the characteristics of individual's, familial and peer characteristics as well as school engagement was utilized. The correlates of sexual initiation were determined via multivariate logistic regression analyses adjusting for complex samples. A total of 1652 unmarried adolescents aged 18 and 19 years from six public and private institutions of higher learning in the Central region of Malaysia participated in this study. Overall, the Malaysian version of the Susceptibility to Peer Pressure Scale displayed good psychometric properties in terms of its construct validity, internal consistency and test-retest reliability in measuring

susceptibility to peer pressure. Multi-group confirmatory factor analyses established the invariance of this scale across gender. The prevalence of sexual initiation among late adolescents was 9.8% (95% CI [8.3, 11.6]) with males reporting a higher rate of sexual engagement. Higher likelihood of sexual initiation was associated with perception of close friends have had sex, higher susceptibility to peer pressure and living in non-intact families among males and females. However, some gender differences were identified. As for males, Malays, current smokers, lifetime alcohol consumers, lifetime illicit drug use, early puberty, involvement in a relationship, and higher peer attachment were associated with sexual initiation. Sexual engagement among females, on the other hand, was linked to lifetime cigarette use and higher self-esteem. Females who reported higher religiosity and higher peer attachment were less likely to engage in sexual intercourse. The established risk factors originated from the elements of the adolescents' immediate environment and their interactions. Thus, risk reduction strategies should conflate these elements in securing better outcomes. It is imperative to tailor these strategies based on gender differences. Future studies should contemplate qualitative research in exploring these risk factors.

ABSTRAK

Objektif kajian ini adalah untuk mengenalpasti ciri-ciri psikometrik Skala Kecenderungan terhadap Tekanan Rakan Sebaya dan kadar inisiasi aktiviti seksual pranikah serta faktor-faktor berkaitan dengannyadi kalangan remaja berumur 18 dan 19 tahun di institusi-institusi pengajian tinggi. Di kalangan remaja, wujud jurang di antara kematangan korteks prefrontal dan sistem sosio-emosi yang mungkin mempengaruhi penglibatan mereka dalam seks pranikah. Kebebasan daripada kongkongan ibu bapa setelah melanjutkan pelajaran ke institusi pengajian tinggi turut meningkatkan kecenderungan remaja untuk mengadakan hubungan seks. Punca penglibatan remaja dalam aktiviti ini perlu dikenalpasti bagi merangka strategi pencegahan agar kesan-kesan negatif seperti kehamilan, pengguguran yang tidak selamat atau penyakit jangkitan kelamin dapat dihindari. Kajian ini dijalankan dalam dua fasa. Fasa I merangkumi penentuan sifat-sifat psikometrik dan faktor invarians merentasi jantina bagi Skala Kecenderungan terhadap Tekanan Rakan Sebaya, satu instrumen yang digunakan dalam Fasa II dengan penggunaan analisa faktor penerokaan dan pengesahan.Fasa II pula melibatkan kajian rentas yang menggunakan pensampelan rawak berperingkatuntuk menentukan kadar inisiasi seksual pranikah dan tingkah-laku seksual berkaitan, serta faktor-faktor yang berkait dengan penglibatan dalam seks pranikah di kalangan remaja. Data untuk kajian ini telah dikumpul menggunakan borang soal selidik isi sendiri, berpandukan adaptasi daripada model ekologi sosial Urie Bronfenbrenner, yang merangkumi beberapa instrumen untuk menilai ciri-ciri individu, kekeluargaan, dan rakan sebaya serta penglibatan sekolah. Analisis regresi logistik bergandayang disesuaikan untuk sampel kompleks telah digunakan. Sejumlah 1,652 remaja yang belum berkahwin, berumur 18 dan 19 tahun daripada enam institusi pengajian tinggi awam dan swasta di wilayah Tengahdi Malaysia telah menyertai kajian ini. Skala Kecenderungan terhadap Tekanan Rakan Sebayamemaparkan sifat-sifat psikometrik yang baik dari segi

kesahihan, konsistensi, dan kebolehpercayaan dalam mengukur kecenderungan terhadap tekanan rakan sebaya. Selain itu, analisis faktor pelbagai kumpulan mengesahkan kesahihan penggunaan skala ini bagi pelajar lelaki dan perempuan. Kadar inisiasi seksual pranikah di kalangan remaja adalah 9.8% (95% CI [8.3, 11.6]) di manapelajar lelaki melaporkan kadar inisiasi seks yang lebih tinggi. Bagi pelajar lelaki dan perempuan, inisiasi seksual berkait dengan persepsi pengalaman mengadakan hubungan seks di kalangan rakan karib, kecenderungan yang lebih tinggi terhadap tekanan rakan sebaya, dan tinggal bersama keluarga yang tidak lengkap.Terdapat perbezaan dalam faktor-faktor yang mempengaruhi aktiviti ini antara jantina. Bagi lelaki, bangsa Melayu, perokok semasa, remaja yang pernah mengambil minuman beralkohol, penggunaan dadah haram, pencapaianakil baligh yang lebih awal, penglibatan dalam sesuatu hubungan, dan lebih rapat dengan rakan sebaya adalah berkait dengan seks pranikah. Sebaliknya, perhubungan seksual bagi pelajar perempuan, adalah berkait dengan mereka yang pernah menghisap rokok dan mempunyai harga diri yang lebih tinggi. Pelajar perempuan yang melaporkan penglibatan dalam aktiviti keagamaan yang lebih kerap dan lebih rapat dengan rakan sebaya adalah kurang berisiko untuk melibatkan diri dalam hubungan seks. Selain itu, faktor risiko didapati berpunca daripadaelemen-elemen persekitaran dan interaksi di antara faktor-faktor ini dengan remaja. Oleh itu, strategi-strategi pengurangan risiko perlu menggabungkan elemen-elemen ini bagi memperolehi hasil yang lebih baik. Selain itu, adalah penting untuk menyesuaikan strategi-strategi ini dengan perbezaan antara jantina. Kajian pada masa hadapan perlu mempertimbangkan penyelidikan kualitatif untuk menerokai faktor-faktor risiko dengan lebih mendalam.

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LIST OF SYMBOLS AND ABBREVIATIONS

AGFI	Adjusted goodness-of-fit index
AIDS	Acquired Immune Deficiency Syndrome
AVE	Average Variance Extracted
CDC	Centers for Disease Control and Prevention
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
df	Degree of freedom
EFA	Exploratory Factor Analysis
EM	Expectation Maximization
EV	Eigenvalue
GFI	Goodness-of-fit Index
HIV	Human Immunodeficiency Syndrome
ICPD	International Conference on Population and Development
KMO	Keiser-Meyer-Olkin
MCAR	Missing completely at random
MI	Modification Indices
MOH	Ministry of Health
MOHE	Ministry of Higher Education
MSA	Measures of sampling adequacy
NGO	Non-governmental organization
NHMS	National Health Morbidity Survey
NPFDB	National Population and Family Development Board
PAF	Principal Axis Factoring
RMSEA	Root-mean-square error of approximation
SPP	Susceptibility to Peer Pressure
STIs	Sexually Transmitted Infections
TLI	Tucker-Lewis Index
UN	United Nations
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations Children's Fund
WHO	World Health Organization
YRBS	Youth Risk Behaviour Surveillance
α	Alpha coefficient
κ_ω	Weighted Kappa statistics
Δ	Difference
χ^2	Chi-square statistic

CHAPTER 1 : INTRODUCTION

1.1 Overview

Chapter One introduces the issue of interest which is sexual initiation among adolescents aged 17 to 19 years attending institutions of higher learning in the Central region of Malaysia. This chapter focuses on the issues surrounding adolescents' sexual initiation. Research questions, objectives and the corresponding hypotheses are also included in this chapter. Significance of the study is also highlighted. Finally, the layout of the proceeding chapters is described in this chapter.

1.2 Problem Statement

1.2.1 The Adolescent Population

Adolescence is the crucial transitional period in human growth and development which bridges childhood to adulthood, spanning from ages 10 to 19 years and characterized by rapid physical, psychological, emotional and social growth (World Health Organization, 1993). This period is further divided into three stages: early adolescence (10 to 13 years of age); middle adolescence (14 to 16 years of age) and late adolescence (17 to 19 years of age) (United Nations Children's Fund (UNICEF), 2006).

Adolescents account for 17.3% of the world's population (1.2 billion) in 2010 (United Nations, 2013). The majority (88%) of adolescents are living in developing countries, including Malaysia (United Nations Children's Fund (UNICEF), 2009). In Southeast Asia, there are 600 million adolescents which comprises 18.4% of the region's total population (United Nations, 2013).

According to the 2010 census, the total population in Malaysia was 26 million (Malaysian citizens), with an average annual population growth rate of 2.0% for the period of 2000-2010(Department of Statistics, 2011). Adolescents account for 20.2% of

the total population in 2010 and 51% were males (Department of Statistics, 2011) (Figure 1-1). Based on the data provided by the Malaysian Ministry of Higher Education, there were approximately 111,877 students aged 18 and 19 years registered with the country's institutions of higher learning in 2011 and the majority (55.1%) were females (Research Planning and Policy Coordination, 2011).
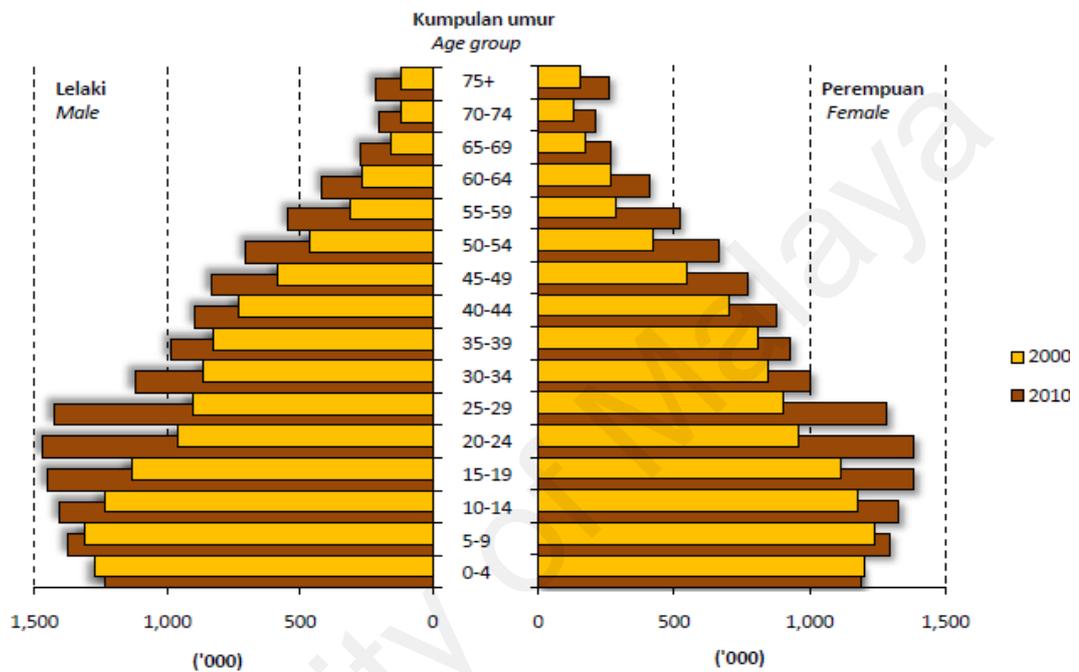
Figure 1.1: Number of population by sex and age group, Malaysia 2000 and 2010

Source: Department of Statistics, Malaysia. (2011). *Population Distribution and Basic Demographic Characteristics 2010*. Putrajaya.

Adolescents are often neglected as they are deemed as healthy compared to the other age groups (Dehne & Riedner, 2005). This group of the population should not be overlooked as they represent one fifth of the total Malaysian population. It is important to realise that this group of people, especially the females, are at risk of medical, psychological and social problems (Farahani, Cleland, & Mehryar, 2011). These issues do not only pose short term effects but there are long term effects as well (WHO, 2009). Adolescents' health-seeking behaviour is of concern especially in regards to their sexual and reproductive health since they are less likely to seek medical attention and are more

likely to opt for self-treatment (Kabir, Saha, Wirtz, & Gazi, 2014). They are at risk of dying prematurely as the result of accidents, injuries, suicide, pregnancy-related complications and from other preventable or curable diseases(WHO, 2009).

Adolescents without any doubt are crucial to the nation's development. They are the key asset and resource who will be of benefit to their families, communities and countries (World Health Organization, 2014b). They will not be able to reach their full potential if they are unhealthy. Therefore, it is imperative to take actions to ensure their rights to health in line with the goals of the 1994 Programme of Action of the International Conference on Population and Development (ICPD) (United Nations Population Fund (UNFPA), 1994). The members of the United Nations had reached a consensus to improve access to health and education and at the same time, to protect human rights, especially women's and adolescents' rights for their sexual and reproductive health (United Nations Population Fund (UNFPA), 1994). Adolescents' sexual and reproductive health needs must be understood in providing relevant and culturally accepted reproductive health services (United Nations Population Fund (UNFPA), 2014b). The commitment to safeguard their sexual and reproductive health would empower adolescents to make responsible and well-informed decisions concerning their sexuality (United Nations Population Fund (UNFPA), 2014a).

The protection of sexual and reproductive health rights is fundamental in meeting the Millennium Development Goals (MDGs) which were adopted by many world leaders in the year 2000 (Bernstein & White, 2005). MDGs have recognized the importance of reaching the targets of the 1994 Programme of Action of the International Conference on Population and Development (ICPD) in assuring the attainment of its own goals (UNFPA, 2003). Through the attainment of the MDGs, the health of adolescents is assured.

1.2.2 The Malaysian Setting and the Malaysian culture

Geographically, there are five regions in Malaysia: Northern region, Central Region, Southern Region, Eastern Region and East Malaysia. There are multi-ethnic groups in Malaysia who practise different cultures and speak different languages (Kahn, 1998). In Malaysia, among adolescents who aged 15 to 19 years, 67.9% are Malays, followed by 24.1% Chinese and 8% Indians (Department of Statistics, 2011). Religion correlates strongly with ethnicity. All Malays are Muslim while Chinese are largely Buddhist or Taoist religion (Rabeendran, 1976) and Indians adhere to Hinduism. There are also Chinese and Indians who practise Christianism in Malaysia. The different ethnic groups are free to practise their religion or beliefs but Islam is the official state religion. There are various language being spoken among these different ethnic groups but the Malay Language or 'Bahasa Melayu' is the national language. English is taught as a second language in every school in Malaysia.

In most of the non-Western countries, Malaysia included, premarital relationships which involve sexual activities still remain unacceptable by the society (Yum, Canary, & Baptist, 2015). This statement correlates strongly with a multi-country survey conducted in March 2013 which reported that the people in predominantly Muslim countries agreed that premarital sexual activities were unacceptable (Pew Research Center, 2013). On the contrary, the Westerners reported that such activities were more morally acceptable. This finding also confirms the report from a cross-sectional study conducted among Asians and non-Asians in Scotland. In this study, the Asians attribute their sexual abstinence to religious reasons in contrast to the non-Asians (Bradby & Williams, 1999).

In the Malay culture, intimate relationships or sexual intercourse prior to a marriage bond is forbidden (Ghani, Abdullah, Akil, & Nordin, 2014) as it is against the teachings of Islam. Adolescents especially the females are expected to remain a virgin

before they marry. In addition, the other inappropriate behaviours such as fondling, kissing or touching inappropriately with the opposite sex are deemed unsuitable and are not allowed (Azlinda Azman, 2007). Females who are found to be engaged in sexual activities out of wedlock are regarded as "loose girl" by the community and are often frowned upon (Azlinda Azman, 2007).

In contrast, male adolescents are granted more freedom unlike the female adolescents. Male adolescents are given heavier responsibility in assuring that their siblings are taken after. They are in charge of the safety of their sisters and they are supposed to do whatever they deem necessary to protect their virtue (Azlinda Azman, 2007). Even though they are granted more freedom to mix around, they too are prohibited from engaging in sexual intercourse unless when they had tied the marriage bond.

On the other hand, in Buddhism, the followers are taught not to do something that they think is bad for them (Walshe, 1986). Therefore, it is up to the interpretation of the individual, if the person can control the outcome, without resulting in sexually transmitted infections or unwanted pregnancies, then, the sexual act is not viewed as something which can cause harm (Walshe, 1986). However, if the sexual act brings about negative consequences, then it becomes harmful and clearly must be avoided. There is no similar strict rules about specific behaviours as the other religions with Buddhism (Adamczyk & Hayes, 2012). In addition, Buddhism does not condemn sexual activities outside of marriage bond but a Buddhist might be influenced by the culture practised in the country where he or she resides.

Hinduism also follows the Islamic teaching which frowns upon sexual intercourse outside marriage (Azlinda Azman, 2007). The girls are expected to preserve their virginity prior to being married. Virginity is therefore considered as a precondition before marriage. Traditional Hindu marriage only recognises virgins as qualified candidates for

the grooms. Both males and females are expected to follow a strict rule of conduct of not engaging in sexual intercourse prior to marriage.

The Malaysian culture has always emphasised on the importance of community rather than individuality (Azlinda Azman, 2007). Therefore, family units are always treasured and each family members strive to ensure that the relationships within the family remain strong. In Malaysia, there are various types of family structures which are defined according to Derman-Sparks and Edwards' book, Anti-bias Education for Children and Ourselves (Derman-Sparks & Edwards, 2010). The nuclear family is the traditional type of family structure, consisting of two parents and their biological children. It is considered by the society as the most ideal family type to provide a nurturing environment for the children. Both parents are able to provide strength and solidity for the children to live a stable and healthy life. Next, single parent family which can either be a father or a mother who is the head of the family and is responsible to raise the children. These single parents may be in this situation as a result of choice or due to life circumstances. It is certainly not easy and is full of challenges. On the other hand, blended families are families that one or both parents have children (two separate families merging into one new family) from a previous relationship had remarried and form a new family. The parents may or may not have children resulting from the new marriage. It is also called as a step family, reconstituted family, or a complex family. There is another form of family structure seen among Malaysians, the extended family in which two or more adults who are related, either by blood or marriage, living in the same home. The family members may include grandparents, aunts or uncles, cousins in addition to the parents and the children. This family structure exists in enabling sharing of responsibilities such as financial and care of the old and the ill.

1.2.3 Sexual risk behaviour among adolescents

Adolescence is a precarious period involving puberty and psychosocial transformations where adolescents start to experiment on new exploits in order to ease their curiosity. They are at the stage where they are neither children nor adults. In this short period of time, they are expected to equip themselves with the abilities to face the challenges in life.

In view of these challenges, adolescents are facing the physical changes (growth spurt and other changes in the body with the effects of sex hormones). During this period, they also experience mental and psychological changes as a result of physical changes as well as the discovery of independence, self-identity and the need to make decisions (Narimah Awin, 2011). Sexual behaviours are vital for adolescents' health and well-being. At this stage, they may begin to engage in sexual intercourse which may lead to negative consequences such as sexually transmitted infections including HIV/AIDS, unintended pregnancy and unsafe abortion (Homma, Saewyc, Wong, & Zumbo, 2013). Prevalence studies conducted worldwide reveal that sexual debut commonly occurs during adolescence (Maddaleno & Silber, 1993; Newcomer & Baldwin, 1992; Seidman, Mosher, & Aral, 1994). Since adolescents have not reached social, emotional and cognitive maturity, they are more likely to engage in risky sexual behaviours (multiple sexual partners, unprotected sexual activity and substance use) (Ciairano, Bonino, Kliewer, Miceli, & Jackson, 2006). In addition, all adolescents are very interested in intensity, thrills, and arousal which further encourage them to engage in sexual activities (Dahl, 2004).

Sexual behaviour among adolescents has long been deemed as a major concern (Kiragu & Zabin, 1993; Miller & Heaton, 1991; Rossi, 1997; Shrier, Emans, Woods, & DuRant, 1997). There are still crucial issues left unaddressed despite the number of

research being conducted worldwide (Kotchick, Shaffer, Miller, & Forehand, 2001). It is particularly crucial to consider cultural influences when contemplating this issue (Homma et al., 2013). Asian cultures may embrace a more conservative attitude towards adolescent sexuality (Homma et al., 2013). In Malaysia, despite rapid urbanization and globalisation, any discourse on sexual behaviours is still viewed as taboo and sensitive. Topics on sexual behaviours are not openly discussed by parents with their children as a result of restrictions in the culture. Thus adolescents are in a constant state of uncertainty as they cannot discuss their sexuality with their parents. This restriction may lead them to search for answers from the wrong sources. In addition, with early onset of puberty and changing sexual attitudes, norms, behaviours and inaccurate information communicated by peers through social media, many adolescents are tempted to initiate sexual relationships at earlier ages. Hence, they become more susceptible to sexually transmitted diseases and infections, HIV/AIDS, unintended pregnancy and unsafe abortions due to the misconception of sexuality issues (Lee, 2006).

Several studies have documented that adolescents are now involved in sexual activities at an early age. The 2011 Youth Health Risk Behaviour Survey (YRBS) in the United States revealed that 47.4% of the students aged 14 to 18 years old already had sexual intercourse (Centers for Disease Control and Prevention (CDC), 2012). In the United Kingdom, a survey conducted in 16 secondary schools in 2008 aged 15 to 18 years of aged reported that 30.5% of the students have had sexual intercourse (Coleman & Testa, 2008). In Asia, 51.5% of the high school students in Thailand already had sexual experience (Liu et al., 2006). In this study, the median age of sexual debut among the Thai males was earlier compared to the females (16 years and 17 years respectively). A study conducted among Korean college students aged 18 to 25 years in 2005 reported that 32.6 % of them already had sex (Cha, 2005). The Student Health Survey conducted by the Health Promotion Board of Singapore in 51 schools revealed that 4% of the 1907

students have had sexual experience (Singapore Health Promotion Board of Singapore, 2006). A nationally representative data from the Indonesian Young Adult Reproductive Survey (IYARHS) 2007 reported that 2.4% of the students in high schools have had sex in which higher rate of sexual engagement was reported by males than females (4% and 0.7% respectively) (Situmorang, 2011).

In Malaysia, the Second National Health Morbidity Survey in 1996 involving 30,000 school students reported that 1.8% of the respondents already had sexual experience (Institute For Public Health (IPH), 1998). Five years later, a cross-sectional study among 4500 students in Negeri Sembilan found that 5.4% of the students already had sexual experience (Lee, 2006). The Third National Health Morbidity Survey which was conducted a decade after the Second National Health Morbidity Survey reported that 4.2% of the respondents (13 to 19 years old) had previous sexual experience(Institute For Public Health (IPH), 2008). A nationwide cross-sectional study utilizing the Adolescent Health Screening in 2008 revealed that 7% of the respondents admitted having sexual intercourse (Norliza et al., 2011). Four years later, the Global School Based Student Health Survey 2012 in secondary schools in Malaysia reported that 8.3% of the surveyed students already had sexual intercourse (Centers for Disease Control and Prevention (CDC), 2013). These findings have provided the evidence of the rising trend in sexual initiation during adolescence in Malaysia which is alarming and warrants for urgent actions to be taken.

1.2.5 Laws concerning sexual activities, abortion and provision of contraception among adolescents in Malaysia

In Malaysia, the age of consent, which is the minimum age an individual is considered acceptable and legal in the eyes of the law to give consent before engaging in a sexual endeavour is 16 years old. Therefore, according to Act 574 of the Malaysian Penal Code Section 376, a man is said to commit "rape" when he has sexual intercourse

with a girl with or without her consent, when she is under sixteen years of age. The man who commits rape shall be punished with imprisonment of not less than five years and not exceeding twenty years and shall also be liable to whipping under Section 376 of the Penal Code. In addition, under Section 376A of the Penal Code, incest is committed if a person is fund to commit sexual intercourse with another person whose relationship is not permitted under the law or religion. Such crime will be punished with imprisonment for a term of at least six years and a maximum period of twenty years and shall be liable to whipping.

The main public health concerns regarding unprotected sexual activities are unwanted pregnancies which may lead to unsafe abortions and sexually transmitted infections. In preventing pregnancies, there are several laws in Malaysia which involve access to contraception. Act 611, Child's Act 2001, a child is defined as a person under the age of 18 years. On the other hand, Act 21, Age of Majority 197 stated that age of majority is defined as 18 years and above. Furthermore, according to the Private Healthcare Facilities and Services (Private Hospitals and other Private Healthcare Facilities) Regulations 2006 [P.U.I (A) 138/2006], consent is required from parents or guardians of patients who are unmarried under the age of 18 years who seek medical services. In addition, according to Act 351, Guardianship of Infants Act 1961 which applies only to Muslim children under the age of 18 years residing in Peninsular Malaysia, the guardian of the children is responsible for his or her health. Therefore, according the Private Healthcare Facilities and Services Regulations 2006, the Guardianship of Infants Act 1961 and the Child's Act 2001, consent from parents, the guardian or the protector is required for adolescents who are less than 18 years of age who seek advice for contraception at the healthcare facilities. Act 342, Prevention and Control of Infectious Diseases Act 1988 Section 10 to 11 allows medical practitioner to prescribe measures to control and prevent the spread of any infectious diseases, sexually transmitted infections

included and to provide treatment to the infected person. In accordance to this act, after the necessary consent is received, the adolescents are counselled on the contraception and the contraception is provided according to the specific rules of the religion.

In regard to abortion, in Malaysia, according to Act 574 of the Penal Code, Section 312, abortion is allowed only if the pregnancy involves a risk to the mother's life or may result in injury to the mother's physical or mental health if it is carried out by a medical practitioner registered under the Medical Act 1971. Section 312 to 318 of the Penal Code concerns miscarriage which involves injuries to the unborn children, exposure of infants and concealment of births. There is another law operating in Malaysia, which is the Syariah law, applicable to Muslims only, that stated abortion is only allowed for foetus under 120 days of gestation, to be performed if the mother's life in danger or the foetus is abnormal (Fatwa Management Division of the Department of Islamic Development Malaysia (Jakim), 2010).

1.2.6 Factors influencing adolescents' sexual risk behaviour

According to Urie Bronfenbrenner's Ecological Systems Theory, adolescents' sexual behaviour is affected by a range of components from individuals, family and friends to cultural, religiosity and the environmental factors (Aras, Semin, Gunay, Orchin, & Ozan, 2007; Biddlecom, Awusabo-Asare, & Bankole, 2009; Lee, 2006; Oliveira-Campos, Giatti, Malta, & Barreto, 2013; Peres et al., 2008; Santelli, J., Lowry, R., Brener, N., & Robin, L., 2000; Siti Norazah Zulkifli & Low, 2000; Wong et al., 2009). According to this model, there are five layers of environments influencing adolescents' behaviours (Figure 2.1). Previous research focused on the individual and socio-demographic characteristics influencing adolescent sexual behaviour. However, during the past several years, the focus has shifted to familial and social context surrounding the adolescents(Kotchick et al., 2001).

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Biological factors, which are part of the individual factors, have been found to be associated with adolescents' sexual initiation. These included older age, early age at puberty and male gender (Bersamin, Walker, Fisher, & Grube, 2006; Ryu, Kim, & Kwon, 2007; Sanchez, Grogan-Kaylor, Castillo, Caballero, & Delva, 2010; Siti Norazah Zulkifli & Low, 2000). Religiosity among adolescents has been proven to be a significant protective factor against sexual initiation and other risky sexual behaviours (Biddlecom et al., 2009; Donahue, 1995; Kiragu & Zabin, 1993; Zaleki & Schiaffino, 2000). However, the diversity of measurement of religiosity may affect this association. Religiosity in this study was measured using a validated scale among Malaysians which had incorporated the three major religions practiced in Malaysia.

Risky behaviours such as smoking, alcohol and substance use have been implicated to be associated with sexual experience (Bersamin et al., 2006; Fatusi & Blum, 2008; Lee, 2006; Liu et al., 2006; Nik Daliana Nik Farid, Sulaiman Che' Rus, Maznah Dahlui, & Nabilla Al-Sadat, 2013; Wong et al., 2009). Living in a college environment further predispose these adolescents the risk of involvement in these negative behaviours (Jahanfar, Sann, & Rampal, 2010).

Moving on to familial factors, previous research has found that adolescents who have been living with single parents and relatives are more likely to have early sexual initiation (Lee, 2006; Lee, Lee, Lu, & Chen, 2002; Liu et al., 2006; Santelli, J. et al., 2000; Siti Norazah Zulkifli & Low, 2000). On the other hand, living in intact families has been shown to be protective against sexual initiation (Biddlecom et al., 2009; Peres et al., 2008). In regards to parental education levels, a large population-based study which involved both parents and their children had reported that lower levels of parental education attainment were associated with ever had sexual intercourse (Santelli, J. S., Lowry, R., Brener, N. D., & Robin, L., 2000). Several parenting processes such as low parental monitoring, poor communication, poor family function and low family

connectedness have been associated with adolescents' sexual debut (Bersamin et al., 2006; Biddlecom et al., 2009; Guilamo-Ramos V., 2008; Huebner & Howell, 2003; Kincaid, Jones, Sterrett, & McKee, 2012). Moderate and severe family dysfunction were found to be associated with sexual experience (Lee, 2001).

Unfortunately, adolescents are often saddled with pressures from their peers who are sexually active. If they succumb to this pressure, they may eventually be involved in sexual initiationual activity. Adolescents are impressionable and they are often tempted to imitate their friends' behaviour. Peer influence has been recognized as a significant risk factor for sexual intercourse (Algaa, 2000; Bersamin et al., 2006; Potard, Courtois, & Rusch, 2008; Wong et al., 2009). In Malaysia, there is limited research that has explored the role of peers in the initiation of sex. Peer pressure does not only predispose the impressionable adolescents to sexual activity but it may also lead to undesirable social consequences such as delinquency, crime involvement and school drop-outs.

School plays a central role in the adolescents' life as most of their time is spent in schools. A successful school experience may hinder involvement in risk behaviours (Aspy et al., 2012). Low perception of school engagement, which refers to the students' level of connectedness to their school, has demonstrated a positive association with sexual experience among adolescents in several studies (Gottfredson, 2007; Govender et al., 2013; Markham et al., 2010; Resnick et al., 1997).

Cultural factors, which are part of the social layer, play a role in influencing adolescents' sexual debut. Sexuality issues are regarded as taboo subject in certain countries, for example in Malaysia. These issues are not explicitly discussed among parents and their children (Al-Owaish, Moussa, Anwar, Al-Shoumer, & Sharma, 1999; Mahat & Scoloveno, 2006; Yoo, Lee, Kwon, Chung, & Kim, 2005). There were concerns of encouraging their children to engage in sexual activities if the children were provided with information on sexuality (Siti Syairah Mohd Mutalip & Ruzianisra Mohamed,

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2012). Furthermore, this sensitivity towards sexual matters has an effect on the sex education implemented for school children (Low, 2006). The resultant lack of knowledge and guidance has increased the adolescents' risk of contracting sexually transmitted infections including HIV, unintended pregnancy and unsafe abortions (Siti Syairah Mohd Mutalip & Ruzianisra Mohamed, 2012).

Adolescents are certainly a unique population and deserve special attention. Their decision to engage in sexual activities is influenced by various components. Individual, familial and extra-familial factors play significant roles in shaping their behaviours.

1.2.7 Consequences of sexual behaviours

Adolescents' sexual behaviours, particularly risky sexual behaviours can result in sexually transmitted infections (STI) including HIV/AIDS, unwanted pregnancy, unsafe abortions and societal costs (Centers for Disease Control and Prevention (CDC), 2006). Risky sexual behaviours refer to sexual intercourse that increases a person's risk of contracting HIV or STIs by exposing the person to semen, blood or vaginal secretions of infected sexual partners (Shelton et al., 2004; Taylor-Seehafer & Rew, 2000). These activities include unprotected sex, sex with high-risk partners, multiple sexual partners and inconsistent condom usage during sexual intercourse.

Early sexual initiation is of great concern because it results in higher risks of unintended pregnancy, contracting STIs including HIV/AIDS, and other negative social and psychological outcomes (Kellogg, Hoffman, & Taylor, 1999; Morris, Warren, & Aral, 1993; Von Ranson, Rosenthal, Biro, Lewis, & Succop, 2000). Approximately, 750,000 adolescents aged 15 to 19 years are pregnant annually in the United States (Guttmacher Institute, 2010). In 2006, the birth rate for adolescents aged 15 to 19 years was 41.9 births per 1,000 women (Patel & Sen, 2012). On the contrary, in Malaysia, adolescent birth rate was low but had increased slightly from 15 per 1000 women in 2009

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compared to 14 per 1000 women a year earlier (Department of Statistics Malaysia, 2012). Even though this rate was low compared to the adolescent birth rate in the United States, the actual conception rate could be much higher with under-reporting and illicit abortions. Studies have shown that adolescent pregnancies are linked to low educational attainment and under-employment which can result in poor socio-economic status among these adolescent girls (Gaudie et al., 2010; Haldre, Rahu, & Karro, 2009; Lee, 2004). A study utilizing the National Longitudinal Survey of Youth in the United States found that the teen mothers suffered poor physical health but effects to their mental health were not significant (Patel & Sen, 2012).

Another factor that is associated with early sexual debut is increase in the number of lifetime sexual partners(O'Donnell, O'Donnell, & Stueve, 2001) . Furthermore, these early initiators are less likely to use condoms which further increases their risks for STIs and HIV/AIDS (Carmine, Castillo, & Fisher, 2014). An early coitus may result in these cascades of events as adolescents' judgement and decision making abilities have not reached full maturity (Casey, Getz, & Galvan, 2008). Female adolescents are more at risk since they are more biologically susceptible to contracting STIs due to the immaturity of their cervical cells, decreased local immunity, a smaller introitus and a lack of lubrication due to immaturity of their reproductive system which can cause injury during sexual intercourse (Peipert, 2003).

The Centres for Disease Control and Prevention (CDC) have reported that approximately 26% of the total new HIV cases were among young people aged 13 to 24 years in the USA (Centres for Disease Control and Prevention (CDC), 2011). In addition, adolescents may have low perception of how HIV/AIDS is contracted and may not seek prompt consultation for early diagnosis and treatment (Cates, 2004). As a result, those diagnosed later in adulthood have already contracted the disease during their teenage years (DiClemente et al., 2008).

Risky sexual behaviours may occur in combination with other risk behaviours such as substance use and delinquent behaviours (Tapert, Aarons, Sedlar, & Brown, 2001; Walcott, Meyers, & Landau, 2008). Substance use can impair a sound decision making ability, reduces perception of risks, may increase sexual arousal and reduce the probability of having protected sexual intercourse (Dausey & Desai, 2003). In addition, substance abuse has been found to result in depressive symptoms in later life (Elkington, Bauermeister, & Zimmerman, 2010).

In a longitudinal study among female adolescents in a suburban county in the United States had found that engagement in romantic sexual relationships were significantly associated with depressive symptoms, anxiety, externalizing symptoms and eating disorders after one year follow up (Starr et al., 2012). This is an extension to previous studies which found a significant link between sexual behaviours and depression(Davila, 2008; Davila et al., 2009).

1.3   Rationale of the study

Adolescents account for one-fifth of the total population in Malaysia. It is a crucial period in one's life. They undergo dramatic development and physical growth, reproductive maturity and changes in psychosocial expectations (Fantasia, Fontenot, Harris, Hurd, & Chui, 2011). This is the period where they attain cognitive, emotional, and social skills in becoming responsible and independent adults. The changes in health and development during adolescence will affect their health in adulthood and subsequently the health of the future generation (World Health Organization, 2014b). It is undeniably a health paradox where this period is accompanied by increasing rates of mortality and morbidity from childhood to adolescence despite the massive increases in physical and mental capabilities (Casey & Caudle, 2013; Dahl, 2004).

Scientists previously thought that the human brain reached maturity by 10 to 12 years of age(Begley, 2000). However, with advances in brain imaging technology such as functional magnetic resonance imaging (MRI) which is able to capture a detailed picture of the brain activity, the neuroscientists have found astounding results. The regulatory centre, responsible for executive functions such as planning, decision making and inhibition of inappropriate behaviours which is the prefrontal cortex is still under construction and only reached maturity until the mid-20s(Ernst, Pine, & Hardin, 2006) . Adolescents' brain undergo several changes which comprised the alteration in the grey to white matter ratio in the prefrontal region, an increase in connectivity between the prefrontal cortex and other areas in the brain and an intensification of the dopaminergic activity in the prefrontal-striatal-limbic conduit (Steinberg, L, 2010).

The stimulation of the dopaminergic activity within the socio-emotional system commencing at puberty has been presumed to result in the augmentation of reward-seeking behaviours (Steinberg, Laurence, 2010). Unfortunately, these behaviours have taken precedence over the maturation of the cognitive function in the brain. This temporal gap encourages adolescents to engage in risk taking behaviours (Casey, B. et al., 2008; Steinberg, 2008). These adolescents are poor decision-makers as they are more likely to act on feelings and social pressures instead of taking into account the possible risks and consequences of their behaviour (Steinberg, 2004). They are less able to understand and accept reasons that are deemed logical to adults. Thrill-seeking, especially in the presence of peers, will further bring on the likelihood of engaging in such behaviours (Casey, Jones, & Somerville, 2011; Steinberg, 2008).
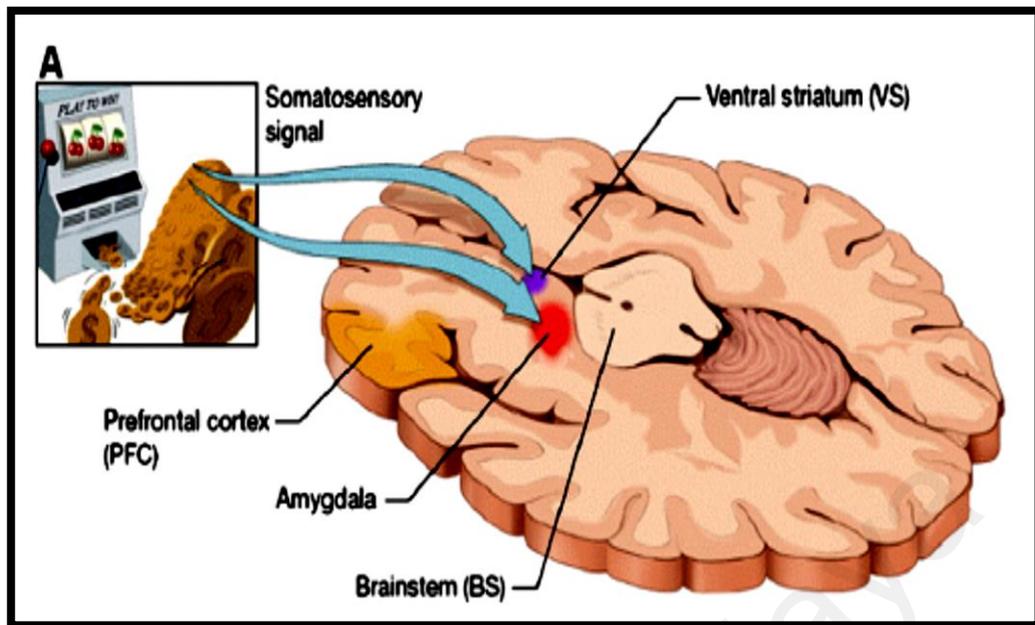
Figure 1.2: Schematic representation of somatosensory signals from thalamo-cortical   and/or thalamic projections reaching the ventral striatum and amygdala

The triadic model of the neurobiology of motivated behaviour in adolescence has been proposed to explain the brain function which brings about the workings of motivated behaviour (Ernst et al., 2006) (Figure 1.3). In adolescents, there are three typical patterns of motivated behaviour: risk-taking; sensation or reward seeking and impulsivity (Ernst et al., 2006). In this model, motivated behaviour is presumed to be brought about by the balanced action of the approach (reward-driven), avoidance (harm-avoidant) and regulatory neural systems. Unfortunately, the regulatory control which is located in the prefrontal cortex has not reached its maturity in the adolescence period (Casey, Giedd, & Thomas, 2000; Luna & Sweeney, 2004). Ernst et al. have proposed that the activity of the reward-driven predominate over the avoidance activity (Ernst et al., 2006). Therefore, adolescents are more prone to engage in reward-seeking behaviour rather than adopting harm-avoidant behaviour.

Furthermore, when adolescents aged 17 to 19 years pursue their studies in higher institutions of higher learning, most will have to leave their family homes. As a result, they are facing this new-found independence in the college environment which provides an opportunity for them to explore behaviours that they were not allowed to previously. These include unsafe sexual practices and other risky behaviours which predispose them to a range of health related conditions (Duncan et al., 2002; Willoughby, Good, Adachi, Hamza, & Tavernier, 2013).

One of the negative consequences of unprotected sexual intercourse, which may be attributed to the immaturity of the adolescents' cognitive function, is teenage pregnancy. According to the statistics available from Department of Statistics, Malaysia, the rate of teenage births has increased slightly from 13 births per 1000 adolescents in 2005 to 15 births per 1000 adolescents in 2009 before remaining at a constant rate with 14 births per 1000 adolescents in 2010 and 2011 (Department of Statistics Malaysia, 2012). However, these adolescents' birth rates only considered the live births to adolescents aged 15 to 19 years. These rates do not include the adolescents' pregnancies which may have ended in abortions, as these data are not easily accessible. Therefore, these rates may be even higher. In a period of six months in 2010, 25% of the mothers who went for antenatal follow-ups at the Malaysian government funded primary care clinics were unmarried (National Population and Family Development Board, 2012). Unfortunately, not all of these pregnancies are intended pregnancies which have resulted in baby dumping and abortions as reported in the local newspapers and the online media. Due to the lack of data and possibility of the iceberg phenomenon, the amount of baby dumping might be higher than the reported figures. It was reported that a total of 407 babies were abandoned in Malaysia from 2005 to 2010 and majority were committed by the late adolescents (PDRM, 2010). Another 65 babies were found abandoned in a period of four months in

2010 (Kumar, 2010). The increasing prevalence of babies found dead, which is highlighted in the media, is an indicator of the need for immediate action.

Studies have shown that the students in intitutions of higher learning were found to have low perception of risk of contracting HIV/AIDS and sexually transmitted infections(Adefuye, Abiona, Balogun, & Lukobo-Durrell, 2009; Syed Imran Ahmed & Mohamed Azmi Hassali, 2009; Tung, Ding, & Farmer, 2008; Wai, 2006). This has resulted in none or inconsistent condom use(Abdullah, Fielding, & Hedley, 2003; Adefuye et al., 2009; Rozina, Rampal, & Lye, 2011; Wong, 2012b; Zhang, Gao, Dong, Tan, & Wu, 2002).College students who are under the influence of alcohol or illicit drugs are at higher risk of engaging in these risky sexual behaviours (Opt & Loffredo, 2004). Their cognitive function which has yet to mature further inhibit them to take the perspective of others and remain misinformed (Enright, Lapsley, & Shukla, 1979).

STIs are one of the major health challenges faced globally (Center for Disease Control and Prevention (CDC), 2010). Coupled with multiple sexual partners and unprotected sex, adolescents are certainly exposing themselves to contract and transmit STIs. Furthermore, the increasing prevalence of sexual experience among adolescents in Malaysia should trigger efforts to identify the risk factors associated with it.

These consequences can be preventedby targeting the precursor of sexual initiation.In Malaysia, the most widely explored factors among school students are substance abuse and socio-economic factors(Lee, 2006; Siti Norazah Zulkifli & Low, 2000). There is a paucity of studies conducted locally that explore the familial, peer and school influences on sexual debut. Furthermore, studies concerning the risk factors of sexual initiation among late adolescents in institutions of higher learning are certainly limited. The findings from studies which are conducted in other countriesmay not be generalizable to the Malaysian population given the difference in ethnicity, culture and religious affiliations. Therefore, this study proposes to determine the factors that are

associated with sexual initionual activities duringlate adolescence in Malaysia. The results of this study are importantin developing effective and targeted preventive programmes. As a result, careful planning of manpower and material resources can be optimally allocated in assuring maximal outcome.

1.4   Rationale for Conducting Validation of Susceptibility to Peer Pressure Scale

Susceptibility to peer pressure is one of the risk factors of sexual initiation among adolescents identified in the literature. However, in Malaysia, there is no validated tool measuring peer pressure among Malaysian population. Therefore, one of the objective of this research was to determine the psychometric properties of the Susceptibility to Peer Pressure Scale which has been validated among high school students in Singapore.

The other scales used in the questionnaire: Students' Parents Actions Questionnaires 1, Parental Attacment, Peer Attachment, Multidimensional School Engagement Scale, Rosenberg Self-Esteem Scale, Resiliency Belief Scale and DUREL-M Religiosity Scale have been validated among Malaysian population.

1.5 Study Objectives

1.5.1 General Objective

To determine the psychometric properties of the Susceptibility to Peer Pressure Scale as well as the prevalence of sexual initiation and its risk factors among late adolescents attending tertiary level institutions.

1.5.2 Specific Objectives

1.   To examine the validity and reliability of the Susceptibility to Peer Pressure Scale in the assessment of peer influence.

2. To investigate the factorial invariance of the Susceptibility to Peer Pressure Scale across gender.

3. To describe the prevalence of sexual initiation, sexual activity, multiple sexual partners and type of contraception use by gender.

4. To describe the socio-demographic characteristics of adolescents who have engaged in sexual initiation.

5. To ascertain the associations between individual, familial and peer components as well as school engagement with sexual initiation among late adolescents by gender.

1.6 Research questions

1. What are the psychometric properties of the Susceptibility to Peer Pressure Scale?

2. Is there a non-invariance in the assessment of peer pressure utilizing the validated susceptibility to peer pressure across gender?

3. What is the prevalence of sexual initiation, sexual activity, multiple sexual partners and type of contraception use among late adolescents in the institutions of higher learning?

4. What are the socio-demographic characteristics of adolescents who have initiated sexual intercourse?

5. Is there any association between sexual initiation and individual characteristics among late adolescents in the institutions of higher learning by gender?

6. Is there any association between sexual initiation and familial characteristics among late adolescents in the institutions of higher learning by gender?

7. Is there any association between sexual initiation and peer characteristics among late adolescents in the institutions of higher learning by gender?

1.7   Research Hypotheses

1. The Susceptibility to Peer Pressure Scale shows a variance when utilized across gender.

2. There is no association between sexual initiation and individual characteristics by gender.

3. There is no association between sexual initiation and familial characteristics by gender.

4. There is no association between sexual initiation and peer characteristics by gender.

5. There is no association between sexual initiation and school engagement by gender.

1.8   Significance of the study

This study involves determination of the prevalence of sexual initiation and identification of risk factors associated with it among late adolescents attending institutions of higher learning. In Malaysia, such studies are limited. These adolescents have been relocated to a new environment. They have moved out from the comfort of their homes into a parent-free environment. The new found freedom, liberation from parental scrutiny, shifts in roles and responsibilities that are associated with college life and detachment from families predisposes these adolescents to engage in negative behaviours such as smoking, alcohol and illicit drug use and unsafe sexual practices (Cooper, 2002; Williams, Holmbeck, & Greenley, 2002).

This current study aims to identify the factors that are associated with higher risk of engagement in sexual activities among the students. The age of sexual debut among the adolescents in the current study may highlight the importance of early intervention. Findings from previous research found that early sexual initiators are at higher risk of

contracting sexually transmitted diseases including HIV/AIDS due to their propensity to accumulate more lifetime sexual partners and a disregard for safe sexual intercourse (Zhang et al., 2002). Furthermore, engagement into sexual intercourse among these adolescents who have not reached cognitive maturity may lead to escalating medical and financial costs resulting from contracting sexually transmitted diseases including HIV/AIDS, unintended pregnancies and unsafe abortions (Vasilenko, Lefkowitz, & Welsh, 2014). These consequences may also affect the adolescents' emotional well-being such as substance use disorders, major depression and antisocial traits disorder (McGue & Iacono, 2005).

The current study will be able to provide the necessary information in designing risk reduction strategies which should be carried out during the preteen years. Attempts to prevent the modifiable risk factors could be taken once the associations among these factors with sexual initiation are established. Analyses of the risk factors are stratified by gender in this current study. The findings could provide useful information in revising the approach of the current Social and Reproductive Health Education module which has been introduced in schools since 2011. A gender-based approach in promoting sexual abstinence could be undertaken in assuring the effectiveness of the sexual education.

The utilization of the validated Susceptibility to Peer Pressure Scale in this study further strengthens the measurement of susceptibility to peer pressure. This scale has undergone both forward and back translations and was tested among students in an institution of higher learning. This scale has been shown to have good psychometric properties. Both positive and negative peer pressures were measured in this study.

This study will be able to highlight the importance of strengthening the sexual and reproductive health services at primary and secondary healthcare facilities nationwide. Prevalence of multiple sexual partners and non-usage of condoms may result in an increase rate of STIs among adolescents. Therefore, the current service should be made

more youth-friendly in order to encourage adolescents to seek advice or treatment related to their sexual and productive health.

The findings from this study will be able to deliver evidence-based information to policy makers in order to explicitly address matters related to adolescents' sexual and reproductive health which is not emphasized in the Malaysian National Adolescent Health Policy 2001. In addition, the results will be able to convince the relevant stakeholders in enhancing a more adolescent friendly sexual reproductive health services specifically tailored to meet the health needs of adolescents.

Programmes involving both parents and adolescents are crucial as evidenced in literatures from other countries which found a link between familial characteristics with adolescent sexual activity. Parents have the potential in influencing the impressionable adolescents. Since parents are involved very early in their children's life, it is most likely that they can influence their children towards abstinence. Therefore, the parents should be trained on the skills to approach this issue without being too harsh or feel embarrassed.

Adolescents are the future generation whom will hold the country's reign of administration. If their health is not cared for, they can succumb to medical consequences as a result of their involvement in high risk behaviours.Therefore, it is imperative to conduct studies concerning adolescents' sexual behaviours as the information will be beneficial in promoting and enhancing future public health practice in terms of youth's sexual health. Actions must be taken urgently to curb the potential risky behaviours before it is too late. Stakeholders should not be too complacent with this issue as sexual initiation among adolescents may have a domino effect leading to myriad of problems.

The present study describes the prevalence of sexual initiation and associated sexual behaviours among late adolescents attending institutions of higher learning in the Central region of Malaysia. This study also reports the correlates of sexual intercourseamong these students. Although previous studies have yielded important knowledge in

understanding the individual, familial and peer correlates of sexual engagement among adolescents, most of these studies were conducted in the Western and African countries where the correlates may differ from the correlates among Malaysian adolescents (Bersamin et al., 2006; Biddlecom et al., 2009; Fatusi & Blum, 2008; Jordahl & Lohman, 2009; Kabiru & Opinas, 2008; Kiragu & Zabin, 1993; Kirby, 2002; Kogan et al., 2010; Rew, Carver, & Li, 2011; Sanchez et al., 2010; Santelli, J. et al., 2000; Santelli, John S. et al., 2004; Tavares, Schor , França , & Diniz, 2009). Some gaps still exist in understanding the familial and peer influence on sexual engagement among these late adolescents as previous studies have been concentrating on early and middle adolescents in secondary schools. This study is one of the few studies conducted among college and universities students in Malaysia. None of the studies conducted among these college and university students in Malaysia utilized a peer pressure scale that has been validated among Malaysian students in tertiary level institutions as in this study. In addition, this study investigated the effects of both positive and negative peer pressures in association with sexual engagement. Furthermore, none of the studies conducted in Malaysia have examined the associations of parenting processes (familial characteristics) with sexual initiation among these students. There are very few studies in Malaysia that have investigated how these factors affects males and females as the previous conducted studies have shown gender differences (Aras et al., 2007; Gipson, Hicks, & Gultiano, 2014; Peres et al., 2008; Sychareun et al., 2013). Therefore, it is necessary to examine how the individual, familial and peer components were associated with sexual initiation for males and females students in institutions of higher learning. The findings from this study will enable preventive strategies to be tailored according to gender in revolutionizing the current approach being practised in Malaysia.

1.9 Outline of the thesis

There are six chapters in this thesis. This chapter (Chapter one) is the introductory chapter which presented the problem statement concerning adolescents' sexual initiation. It also included the general and specific research objectives which serve as the unifying thread of the other chapters in this thesis. The rationale of the study have also been enlightened in this chapter.

The next Chapter, Chapter Two, reported the review on literature concerning adolescents' sexual initiation. It started off with the adolescents' sexual behaviour and sexuality followed by the prevalence of sexual initiation globally, in Asia and in Malaysia specifically and its risk factors based on the adapted Bronfenbrenner's socio-ecological framework.

In Chapter Three, the materials and methods involved in this study were explicitly explained. There were three sections in this chapter: the first section presented the methods of the validation of the Susceptibility to Peer Pressure Scale (Phase I); the second section reported the pilot study and the third section provided the methods of the Phase II in determining the prevalence of sexual initiation as well as the related sexual behaviours and the risk factors associated with sexual initiation.

Chapter Four reported the results obtained from this research in three separate sections, following the divisions in Chapter Three. The first section provided the psychometric properties of the Susceptibility to Peer Pressure Scale. The internal consistencies and test-retest reliabilities of the tools used in the study were provided in the second section. Finally, in the third section, the findings from bivariate and multivariate analyses were reported in determining the risk factors of sexual initiation among the late adolescents in this study.

Chapter Five which is the discussion, comprised the interpretation of the study findings. The findings were compared and contrasted with those of previous studies. The strengths and limitations of this study were also provided in this chapter. The implications of the findings were discussed at the end of this chapter.

Chapter Six which is the conclusion of the thesis commenced with a summation of the results of the study in regards to the stated research objectives. Conclusions were generated from the findings which allowed for recommendations to be made. The findings of this study could be incorporated into the current public health practice which would enable the provision of a better public health service in the future. Suggestions for future research weree also highlighted in this chapter.

1.10 Conclusion of Chapter One

Adolescents go through a crucial period where they are more prone to adopt risk-taking behaviours as the result of immaturity of their regulatory system. At this stage, they encounter multiple challenges during their journey to adulthood. The adolescence phase poses interesting pieces of puzzles to adults. These pieces have to fit together in order to bring an understanding of adolescents' behaviours. Investing in adolescents will be fruitful in ensuring healthier adults for the future generation. In conducting this research, the western literature, is important to consider as there is minimal amount of literature available from the eastern countries which provide evidence for certain issues such as pubertal age, self-esteem, family structure and susceptibility to peer pressure among others.

This chapter has provided the background of the research problem with emphasis on the adolescents' population, sexual behaviour among adolescents, factors related to sexual initiation and the consequences of these behaviours. One of the objectives of this study was to determine the psychometric properties of the Susceptibility to Peer Pressure

scale which was utilized in the Phase II. This scale was used to determine the level of both positive and negative peer pressures experienced by the participants. This study was also undertaken to determine the prevalence of sexual initiation among late adolescents in institutions of higher learning and its risk factors. The significance of conducting this study is also highlighted in this chapter.

CHAPTER 2 : LITERATURE REVIEW

2.1 Introduction

This chapter begins with the theoretical framework employed to guide this study. This is proceeded by a review of the existing literature concerning adolescents' sexual behaviour. Specifically, this chapter focuses on adolescent development and their sexuality, components of sexual behaviours, prevalence of sexual initiation including its correlates, and the consequences of sexual initiation. Measures used in the assessment of sexual initiation in previous research are also discussed in this chapter.

2.2 Theoretical Framework

The present study conceptualises the factors influencing adolescents' sexual initiation based on Urie Bronfenbrenner's Ecological Systems Theory which concentrates on the development of a child and an adolescent. The environment where the child grows and reaches maturity is within a complex system of multi-layers of environments which form dynamic interactions with each other (Bronfenbrenner, 1994). These interactions were proposed to have effects on the child's development. As the child matures, the interactions between the components of these systems become more intricate.

There are five components of these systems as proposed by Bronfenbrenner; "microsystem, mesosystem, exosystem, macrosystem and chronosystem" (**Figure 2-1**).
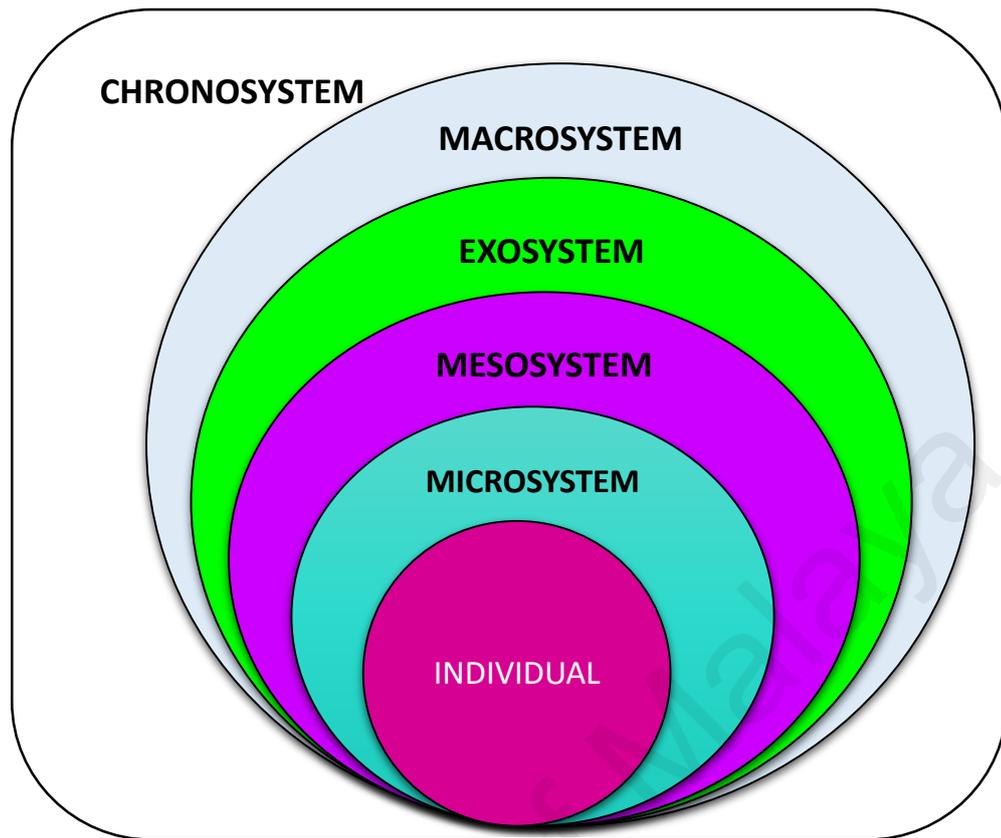
Figure 2.1 The environment surrounding the child as proposed by Bronfenbrenner

The microsystem is the innermost layer, the closest system to the developing adolescents that the individuals are directly in contact with (Krishnan, 2010). This system is comprised of bidirectional interactions between the child and his or her immediate environment. The structures that are proposed in this system are family, school, neighbourhood among others. In this system, the influences on the individual are the greatest which posed the utmost impact (Paquette, 2001). Familial characteristics, peer influence and school connectedness were examined in this study in determining the risk factors for sexual initiation among the late adolescents.

The next system is the mesosystem which links the different components of the microsystem. As an example, interaction between the child's parents and his or her teacher in the school or interaction between the parents and peers could predict the child's behaviour (Caal, 2008). Ary et al. have conducted a longitudinal study examining the

interaction between parental supervision and deviant peer group in the development of problem behaviour among adolescents (Ary, Duncan, Duncan, & Hops, 1999). This is an example of determining the interaction between parental process and peer characteristic on adolescents' behaviour. In this study, it was found that poor parental supervision coupled with deviant peers have resulted in the development of problem behaviour.

The third layer of the ecological systems is the exosystem in which the adolescents do not interact with directly or have an active role with but this system has an impact on the developing individuals (Krishnan, 2010). This effect could be seen by examining long parental working hours which are not directly linked to the adolescents but may result in longer duration of leaving their child at home without supervision. This could lead to less parental involvement in their children's activities (Adamsons, O'Brien, & Pasley, 2007). In this study, this system was examined indirectly by linking parental occupation with adolescents' engagement into sexual intercourse.

The macrosystem which is the outermost layer has a broader influence on the adolescents' development and the other systems in the ecological model. This system includes the overarching institutional policies, culture, economic status and specific law of a country which can separately or collectively shape adolescents' development (Krishnan, 2010). Even though this concept was not investigated in this study, this macrosystem influence is likely to be seen via the different cultures practised in Malaysia.

Finally, the chronosystem which takes into account the time dimension. An event may have an impact on the adolescent's development which varies from one individual to another (Paquette, 2001). Examples of these events are parental divorce, chronic illness in the family or even moving into a difference place (Krishnan, 2010). In his earlier theory in 1979, Urie Bronfenbrenner has neglected the contribution of the individual characteristics to his or her development as he has been focusing on the surrounding contextual elements (Bronfenbrenner & Morris, 2006). He later revised his theory with

this revelation and has come out with a new concept termed as **Process-Person-Context-Time** model (PPCT) (Bronfenbrenner & Morris, 2006; Krishnan, 2010; Tudge, Mokrova, Hatfield, & Karnik, 2009).

The **person** refers to the characteristics of the developing individuals such as gender, ethnicity, beliefs and values among others (Adamsons et al., 2007). Bronfenbrenner has identified three characteristics pertaining to the person in shaping the individual's development (Bronfenbrenner & Morris, 2006). Dispositions or force characteristics such as motivation or drive have the tendency to initiate the proximal processes and ensure that these processes remain persistent. Resources, on the other hand, which are very valuable characteristics in the developing individuals would ensure that the proximal processes function optimally. These include experience, knowledge, skill, intelligence, competence, social and material resources. The final characteristic, is the demand which plays a regulatory role either to encourage or terminate the proximal processes. Examples of this demand include age, gender and physical appearance (Tudge et al., 2009). These three characteristics are also applied to the components of the microsystem. In this study, the individual's characteristics which were investigated were age, gender, ethnicity, age at puberty, academic achievement, household income, religiosity, risky behaviours (smoking, alcohol consumption and substance use), self-esteem and resiliency.

Proximal **processes** refers to the dynamic interaction in the immediate environment surrounding the developing individuals. In order to produce an effective influence on the child's development, these interactions must occur "on a fairly regular basis, over an extended periods of time" (Bronfenbrenner & Morris, 2006). These processes are proposed to be the primary influence of the individual growth. In this study, this component was investigated via assessment of parent-adolescent attachment,

parenting processes, peer attachment, susceptibility to peer pressure and school connectedness.

The third component of the PPCT is the **context** or the environment, comprising of the four subsystems as proposed in Bronfenbrenner earlier theory. These are the microsystem, exosystem and mesosystem. These subsystems are able to modify the proximal processes (Krishnan, 2010).

The final component in this model is the **time** factor. Bronfenbrenner and Morris have further split this time characteristics into three levels: micro-time (events that occur during the proximal processes); meso-time (covers a longer period of time in which the proximal processes continue) and macro-time (changes occurring in the larger society) (Bronfenbrenner & Morris, 2006). The effect of living with single or a step parent on adolescents' sexual initiation was investigated in this study which could pose as a component of the chronosystem or part of the time component.

2.3   Conceptual Model

A conceptual model to guide this research was constructed based on the Urie Bronfenbrenner's PPCT Model which is displayed in **Figure 2-2**. This conceptual model is developed based on the literatures reviewed on this issue. Sexual initiation is the behaviour of interest investigated in this study. The individual and the relationships with the immediate environment represent the risks and protective factors of sexual initiation among late adolescents. The **person** in the model is represented by the individual characteristics or the intrapersonal factors (age, gender, ethnicity, academic achievement, religiosity, self-esteem, resiliency and risky behaviours). On the other hand, the microsystem which is the closest ecological system surrounding the developing adolescents forms the contextual component of the PPCT model. This system is further divided into familial and extrafamilial factors. The extrafamilial systems include peer

factors and school connectedness. The interactions between the components of the microsystem, the proximal **processes** that were included in this study were parental aspirations, parental control and monitoring, parental-child relationship (conflict, closeness and attachment), peer attachment. However, in this study, the time component was not investigated directly. The effect of time can be seen by studying the effect of having divorced parents or parents whom had passed away on sexual initiation among the late adolescents.

In this study, the risks and protective factors of sexual initiation among the late adolescents attending institutions of higher learning are hypothesized to be contributed by the individual, familial and the extrafamilial components. Even though the impact of the macrosystem was not studied, it is believed that the impact of this system is operating through the microsystem of the developing individuals (Bronfenbrenner, 1977). Each system interacts with each other in a bidirectional relationship between each component and adolescents' sexual behaviour. Therefore, each factor could either potentiate or protect the effects of the other factor.
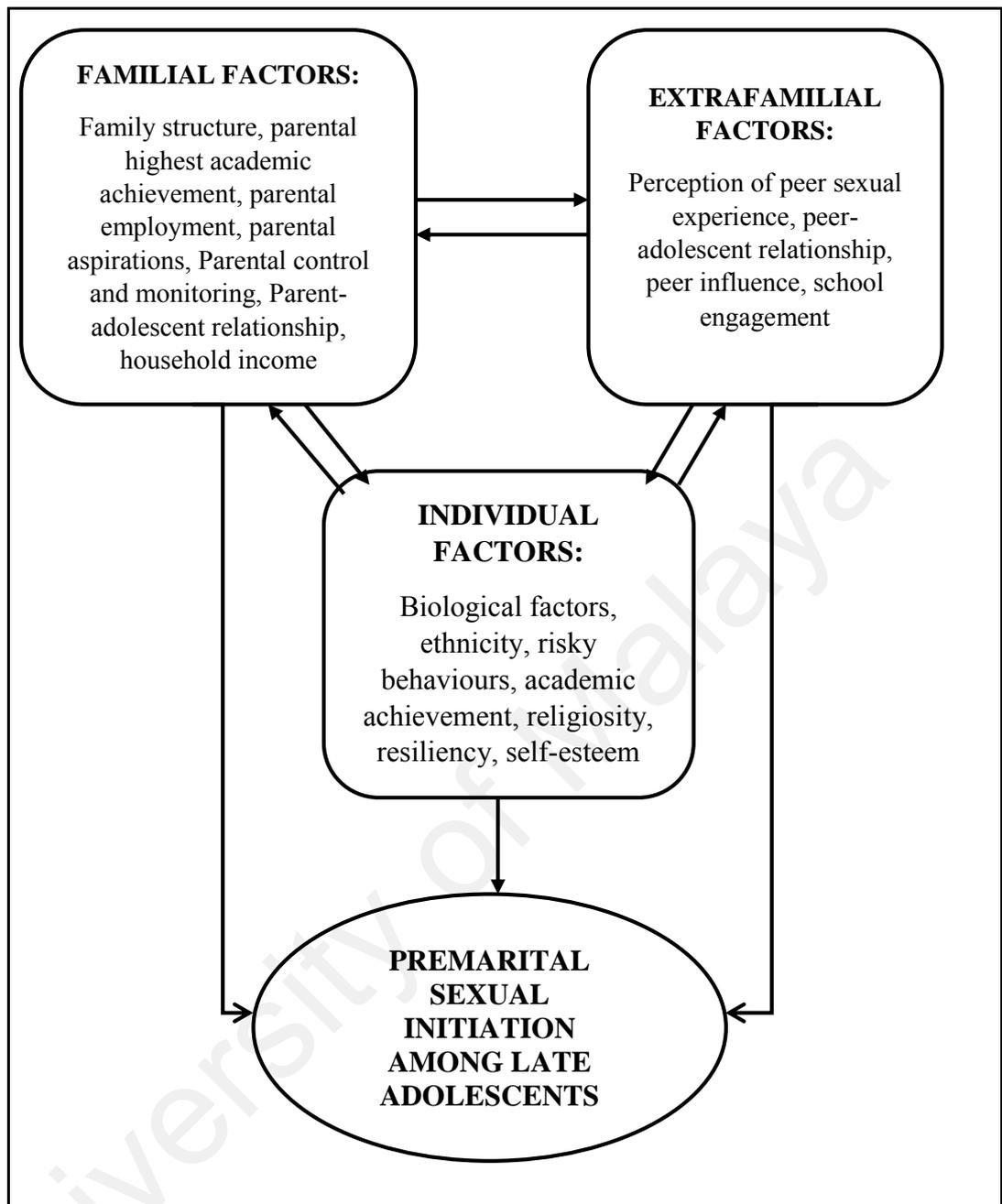
Figure 2.2: Conceptual Model based on Urie Bronfenbrenner's Social Ecological Model

2.4 Adolescent Development

Adolescence is a term used to describe the period between childhood and adulthood (Kaplan, 2004). According to the American Psychological Association (APA), there is no standard definition for adolescence (American Psychological Association (APA), 2002). It has been defined based on the chronological age as well as other aspects of development which comprised physical, social and cognitive aspects (American

Psychological Association (APA), 2002). It is well understood that adolescents undergo physical, social and cognitive developments at different periods (United Nations Children's Fund (UNICEF), 2011). In addition, these developmental processes also occur at different times according to gender, for example, puberty which occurs at a younger age among females compared to males. Furthermore, the definition may vary across the diversities of cultures and time (Degner, 2006). For instance, in the West, this period begins from the onset of puberty to age 18 or 21 but among the non-Westerners, adolescence is defined as a journey beginning with the rites of passage from puberty until the acceptance of the individual into the adult society (Degner, 2006). The age range for adolescence is also influenced by the law which differs from one country to another (United Nations Children's Fund (UNICEF), 2011). The law has dictated the age limit for an individual to be allowed to participate in activities that are deemed for adults, for example, the right to vote or the right for ownership. The transition from adolescence to adulthood has also been defined as when one has entered the marriage bond or has completed his or her schooling and starts to venture into the working environment (Smetana, Campione-Barr, & Metzger, 2006). Adolescence may even be extended to mid-twenties in support of a study which examined psychosocial maturity among individuals aged 12 to 48 years (Cauffman & Steinberg, 2000). In this study, mature decision making is only reached by mid-twenties.

However, the World Health Organization has defined adolescence as a transitional period commencing at 10 to 19 years (World Health Organization, 1993). The same definition is used by the United Nations for defining adolescence (United Nations Children's Fund (UNICEF), 2011). Adolescence has also been defined as a period of biological, cognitive, psychological and social transformations that occur in the process of becoming an adult (Lerner & Spanier, 1980). This period is often divided into three stages: early adolescence (10 to 13 years of age); middle adolescence (14 to 16 years of

age) and late adolescence (17 to 19 years of age) according to the differences in their stages of development (United Nations Children's Fund (UNICEF), 2006).

During early adolescence, there are radical physical changes which involve increases in height and weight under the influence of gonadal hormones. Puberty which is a part of the developmental process denotes the commencement of adolescence. The timing of puberty varies from one individual to another. The biological process, gonadarche begins between 8 to 14 years in females (mean age 11 years old) and slightly later among males at 9 to 15 years (mean age 12 years old) which results from hormonal stimulation from the hypothalamus on ovaries or testes (Blakemore, Burnett, & Dahl, 2010). This process is ensued by the appearance of secondary sexual characteristics and the maturation of the reproductive organs (Dorn & Biro, 2011).

Cohort studies in the 1980s have established that the mean age of menarche is 10.7 years (SD=1.00) among girls while the mean age of pubertal onset among boys is 12.7 years (SD=1.30) in North America (Tanner & Davies, 1985). The timing of puberty in the developing countries was relatively stable for the past five decades but was disputed by a study among Whites and African Americans in 1997. The girls in this study were found to have developed secondary sexual characteristics at less than 8 years of age (Herman-Giddens et al., 1997). Ethnicity has been found to influence pubertal onset in several studies (Sun et al., 2002; Wu, Mendola, & Buck, 2002).

Pubertal onset does not only demarcate the commencement of adolescence, but it also has an impact on the adolescents' behaviour and psychological well-being (Dorn & Biro, 2011). Development of interests in the opposite sex and sexual desire occur during adolescence (Vetter-O'Hagen & Spear, 2012). Antisocial behaviours such as delinquency, aggressive behaviours and risky sexual behaviours which have been found to be associated with physical and hormonal changes and maturation of the cerebral cortex are

more likely to develop once puberty is reached (Spear, 2000; Steinberg et al., 2008; Susman & Rogol, 2004).

Emotional development is linked with cognitive development in the brain (AlBuhairan, Areemit, Harrison, & Kaufman, 2012). This is one of the important aspects in adolescence as it is responsible to motivate positive attitudes, attaining set goals and assisting in building relationships (Larson & Brown, 2007). In childhood and early adolescence, the parent-child interaction occupies the centre of the child's life (Helsen, Vollebergh, & Meeus, 2000), but parents still remain influential in regards to decision making for significant issues which pose long term effects on the adolescents' life (Short & Rosenthal, 2008; Smetana et al., 2006). However, as the adolescents grow older, they may turn to their peers for friendship and comfort (Helsen et al., 2000). An increasing amount of time is spent with their peers instead of with their family (Collins & Laursen, 2004). They may initially form small groups comprising their closest friends with similar backgrounds and gender known as cliques (Smetana et al., 2006). Adolescents start to develop trust in their peers and begin to value loyalty (Steinberg & Morris, 2001). Peer relationships affect adolescents' lives and provide the support that they need in tackling the pressures of adolescence (Buhrmester, 1990; Buhrmester & Furman, 1987). They will then participate in another level of interaction with their peers where they share certain reputation or specific image known as crowds (Brown, 2004). These crowds provide the milieu for the adolescents to seek their unique personalities. As children enter adolescence, their friendships evolve into romantic relationships which peak in mid-adolescence (Connolly, Furman, & Konarski, 2000; Furman, Low, & Ho, 2009). These relationships have been proposed to be influenced by peers (Connolly et al., 2000). Adolescent romantic relationships play a vital role in adolescent development as it can inspire identity and sexual development (Exner-Cortens, 2014).

The timing of pubertal onset may explain the differences in the psychological aspects experienced by the adolescents (Susman & Rogol, 2004). For males, early onset of puberty has been found to be associated with increased internalizing and externalizing behaviours in stressful situations (Graber, 2013). A longitudinal study, the Oregon Adolescent Depression Project (OADP) among senior high school students in the United States have found that early maturation among the males were found to be associated with risky behaviours such as smoking (Graber, Seeley, Brooks-Gunn, & Lewinsohn, 2004). On the other hand, male adolescents who reached maturity at a later age were found to display disruptive behaviours, possessed lower self-esteem and were more likely to use illicit substances. The same study also reported that female adolescents who had attained maturity at an early age were more likely to suffer from psychological problems. Similar finding was reported in a prospective cohort study by Copeland et al. (Copeland et al., 2010).

Adolescence is associated with a period of heightened vulnerability as a result of discrepancy in the maturation of behavioural and cognitive systems in the cerebral cortex (Steinberg, 2005). Previous understanding of the development in the adolescent brain have originated from animal studies (Casey, Jones, & Hare, 2008). There were doubts raised on the findings from animal studies as it was argued that animals do not undergo similar psychological stress as adolescents do (Bogin, 1994). In contrast, several studies involving animals have disputed this argument. These studies reported that rodents and non-human primates experienced novelty-seeking and risky behaviours during adolescence as humans do (Adriani, Chiarotti, & Laviola, 1998; Spear, 2000).

Following the advances in neuroimaging utilizing structural and functional magnetic resonance imaging (MRI), comprehension on the human brain has stepped up. Using these modalities, significant changes were seen in the brain structure and function continuing into early adulthood (Casey, B. et al., 2008; Steinberg, 2008). Increases in

myelination which results in increased white matter and decreased grey matter due to synaptic pruning are seen in the developing adolescent brain (Gogtay et al., 2004; Paus, 2005). Adolescents have heightened propensity to engage in negative behaviours which have been conjectured on the asynchrony of the maturation of the different brain areas (Casey, B. et al., 2008; Steinberg, 2008).

Somerville et al. have developed a neurobiological model to explain that adolescent behaviours are the result of the underlying brain changes (Somerville, Jones, & Casey, 2010) (Figure 2.3). This model postulates that there is a relative maturity of the subcortical structures (responsible for emotional and reward seeking behaviours) compared to the less matured prefrontal cortex (responsible for cognitive and impulse control). This slower maturing cognitive control has been proposed to affect adolescents' executive functioning which include planning, judgment and inhibition of destructive behaviours (Ernst et al., 2006; Galvan et al., 2006).
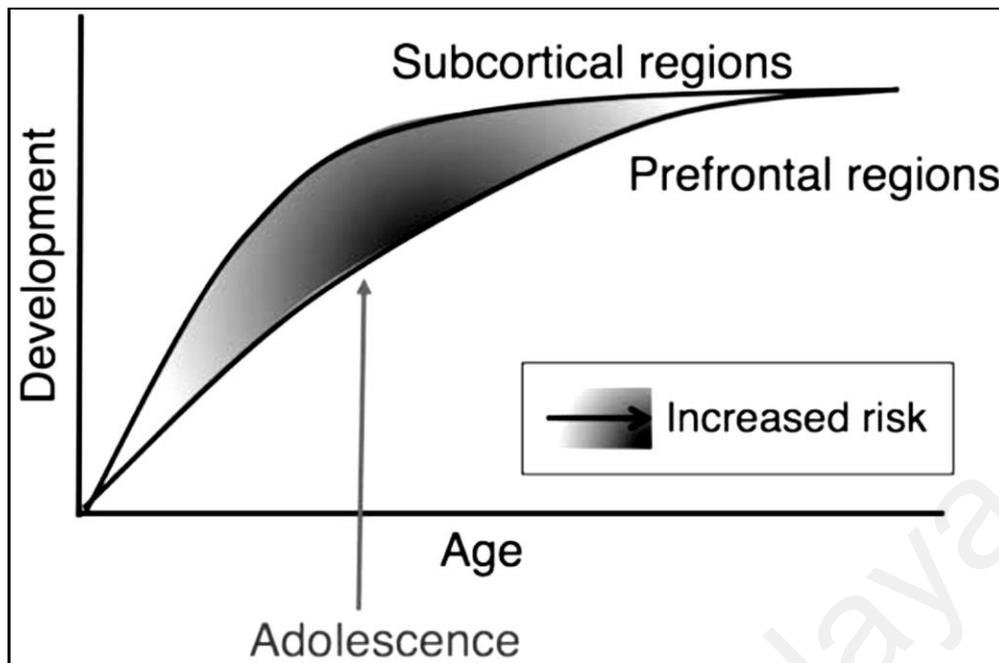
Figure 2.3: Neurobiological model for affective and incentive-based behaviours in adolescence.

*Note.***Early maturation of subcortical regions such as the amygdala and ventral striatum in combination with the later maturation of prefrontal cortical regions result in adolescents' propensity in engaging in risky sexual behaviours**

Source: Somerville, L. H., Jones, R. M., & Casey, B. (2010). A time of change: behavioral and neural correlates of adolescent sensitivity to appetitive and aversive environmental cues. *Brain and Cognition, 72*(1), 124-133.

On the contrary, Ernst (2014) has proposed the triadic systems model which concentrates on the interaction among three neural systems: the prefrontal cortex (regulatory function), ventral striatum (motivation/approach) and amygdala (emotion/avoidance) (Figure 2.4). Motivation focuses on the effort of the individuals who are willing to impart for reaching their goals while emotion refers to the internal subjective conditions that affects the individual actions (Ernst, 2014).
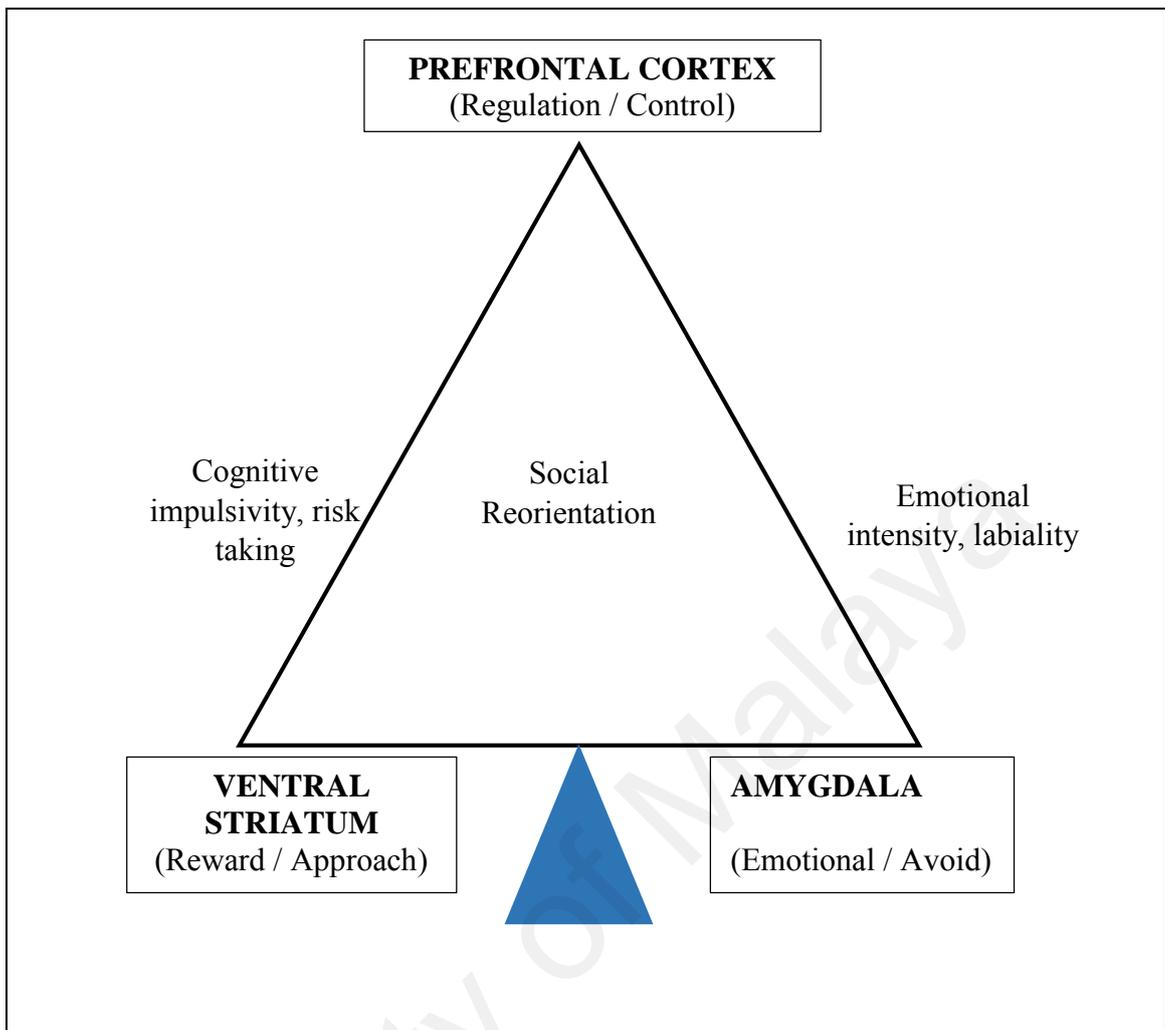
Figure 2.4: The triadic model involving the interactions between three neural systems: prefrontal cortex, ventral striatum and amygdala in adolescents

Source: Ernst, M., Romeo, R. D., & Andersen, S. L. (2009). Neurobiology of the development of motivated behaviors in adolescence: A window into a neural systems model. *Pharmacology Biochemistry and Behavior, 93*(3), 199-211.

There are four distinct qualities of adolescent behaviours which have been postulated to be the product of the dynamic interplay among these systems in producing equilibrium states. These are cognitive impulsivity, risk-seeking, emotional intensity and lability, and social reorientation (switch in social values) (Ernst, 2014). These equilibrium states are regulated by both transient and persistent factors (Ernst, 2014). Transient factors include the mental state of the adolescents (stressed, depressed), physical state (substance use) or context (home, school). The persistent or sustained factors are the individual psychological traits, age, pubertal onset, genetic, gender and previous experiences.

Functional MRI has shown that the maturation of these systems are age dependent; the prefrontal cortex which is the control system shows a linear maturation with age while both the striatum and the amygdala demonstrate quadratic trajectories which peak in middle adolescence (Ernst, 2014). The asynchrony in the maturation of these systems has been linked to adolescents' engagement in risky behaviours.

Following this discovery, a question is raised in regards to the peak age of adolescent risky behaviour. According to this model, the peak of risk-taking behaviours among adolescents is during middle adolescence. However, this hypothesis is not supported by longitudinal studies examining risky behaviours among adolescents (Willoughby, Tavernier, Hamza, Adachi, & Good, 2014). On the contrary, the peak age of these behaviours was found to be in late adolescence and beyond in a longitudinal study involving 4412 school students (Hooshmand, Willoughby, & Good, 2012). Therefore, it has been postulated that the social context surrounding the developing adolescents may influence their engagement into these behaviours rather than depending on the triadic model alone (Willoughby et al., 2014).

Similar challenge is projected towards the dual system model which hypothesized that middle adolescence is the period of heightened vulnerability to risky behaviours (Willoughby et al., 2013). According to this model, the behaviours portrayed by adolescents are regulated by the affective/approach system and the cognitive control system (Steinberg, 2008). The increase in dopaminergic activity within the affective/approach system is posited to result in the increase in reward-seeking behaviours. The delay in the maturation of the cognitive system has resulted in the propensity of engagement into these reward-seeking behaviours in middle adolescence.

2.6   Adolescents' Basis of Engagement into Risky Sexual Behaviours

Adolescents have been associated with cognitive impulsivity and making emotional-laden decisions (Arnett, 1999; Dahl, 2004; Ernst et al., 2006; Somerville et al., 2010). These attributes have been thought to drive the adolescents to engage in risky sexual behaviours such as remaining sexually active, engaging in unprotected sexual intercourse, having multiple sexual partners or substance use during sexual intercourse (Arnett, 1992; Berndt, 1979; Dahl, 2004; Spear, 2000; Steinberg, 2004, 2005). They have a strong inner motivation to bear the risks and to explore novel experiences (Laviola, Macrì, Morley-Fletcher, & Adriani, 2003). The discordance in the maturity of their socio-emotional system and the cognitive function in the brain which is also known as the dual systems model is thought to augment these behaviours (Steinberg, Laurence, 2010). As their prefrontal cortex which is responsible for the planning, decision making and inhibition of negative behaviours has yet to reach its full maturity, adolescents are more likely to react to the more matured socio-emotional system (Casey, B. et al., 2008; Steinberg, 2008). A neurobiological model developed by Somerville et al. (2010) supports this hypothesis. This model postulates that the prefrontal cortex is relatively immature compared to the subcortical structures (responsible for emotional and reward seeking behaviours). As a result of this temporal gap, the decision making among adolescents is more likely to be governed by the more mature subcortical structures. Therefore, adolescents are more prone to engage in risky sexual behaviours which are perceived to be more rewarding than choosing less risky behaviours. This immature judgement may explain the underlying reason for adolescents to resort to unprotected sex or have multiple sexual partners despite their academic achievements. Employing structural and functioning magnetic resonance imaging (MRI) have provided ample evidence of the on-going brain development in adolescents (Casey, B. et al., 2008; Steinberg, 2008).

Recently, Ernst has proposed the triadic systems model of neurobiology of motivated behaviour which focuses on the influences of three neural systems in explaining the basis of motivated behaviour (Ernst, 2014). Unlike the dual systems model which concentrates on the cognitive control (prefrontal cortex) and socio-emotional control (ventral striatum) (Steinberg, Laurence, 2010), this triadic model has incorporated the amygdala that regulates avoidance or emotional behaviours. This model postulates that equilibrium exists among these three separate but overlapping entities in producing motivated behaviours. These equilibrium states, however, are influenced by both external and internal factors that vary across adolescents such as age, gender, personality, emotional states and puberty among others (Ernst, 2014). Neuroimaging studies have enabled further understanding of these neural systems. In adolescents, since their cognitive control in the prefrontal cortex is late in maturing, the interplay among these motivation/approach and emotional/avoidance systems are crucial in influencing adolescents' behaviours which rely on the internal and external factors.

2.7   Adolescent Sexuality

Sexuality is a crucial developmental aspect in adolescence which emerge with puberty. It can be defined as an individual's capability to react to physical experiences leading to genital excitation as the result of physical body function rather than depending on cognitive function (Goettsch, 1989). Previous researchers have constructed a line demarcating adolescent sexuality from adult sexuality as it was thought that many components of sexual experience in adults are unfitting for adolescents (Fortenberry, 2013). As a result, adolescent sexuality is viewed as immoral, precarious and troubling (Schalet, 2004). At the same time, adolescents are curious about their own sexuality which is recognized as a part of their development and considered as a normative process

(DeLamater & Friedrich, 2002; Tolman & McClelland, 2011). Adolescent sexuality has begun from infancy based on Sigmund Freud's psychosexual theory (Sugar, 1996).

As the child enters adolescence, he or she experience physical bodily changes coupled with maturation of the secondary sexual characteristics. Despite it being a part of the biological changes in adolescence, many researchers have voiced out their doubts concerning the capability of adolescents to navigate through the turmoil caused by the lack of understanding of their sexuality (Reyna & Farley, 2006; Steinberg, 2008). One of the important aspects of sexuality is intimacy which can be defined as mutual disclosure of fondness of each other coupled with encouraging behaviours and communication of that fondness (Baumeister, 1999). The interpersonal theory of psychiatry by Sullivan (1953) has proposed that intimacy develops in early adolescence. However, Erik Erikson's theory on psychosocial development has disputed the Sullivan's theory by proposing that identity development precedes the development of intimacy which occurs in late adolescence (Erikson, 1993). Therefore, acquiring a confident sense of identity forms a solid foundation before embarking on intimate relationships. A longitudinal study which was conducted in eight waves has found evidence to support the Erikson's theory (Beyers & Seiffge-Krenke, 2010).

Adolescents also navigate through the development of sexual identity which can be defined as "an individual's perception and acceptance of his or her own body and self in a certain kind of sexuality and how that individual controls his or her own emotions and behaviours according to this acceptance" (Eser & Çeliköz, 2009). It is influenced by sex (physical and biological characteristics that differentiate males from females), gender identity (beliefs and sentiments associated with male or female), culture, family, society and sexual orientation (Auslander, Rosenthal, & Blythe, 2005). This process begins with the discovery of one self and becoming aware of one's sexual orientation (Fassinger & Miller, 1996) before incorporating the identity to one self and be committed to it (Rosario,

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Schrimshaw, Hunter, & Braun, 2006). Unfortunately, since adolescence is a period where they might not possess all the necessary coping skills to confront with the challenges associated with sexual identity, they might experience tremendous stress which may result in catastrophes (Rosario, Schrimshaw, & Hunter, 2011).

In early adolescence, there is a surge of gonad-releasing hormone which causes the release of oestrogen and testosterone. As a result, the adolescents become more inquisitive about their own bodies which may lead to masturbation and experiencing sexual fantasies (Sharpe, 2003). They begin to understand how to navigate through romantic relationships (Connolly & Goldberg, 1999). These relationships however, are frequently brief (Fiering, 1996). When they reach full physical maturity in mid-adolescence, the females start to have their menstrual flow while the males experience spermarche (McDevitt & Ormrod, 2002). In this period, they start dating and may progress to having sexual intercourse (Sharpe, 2003). As they develop into late adolescence, they are more likely to develop intimate relationships with their partners (Sharpe, 2003) and their commitment in these relationships are crucial (Connolly & Goldberg, 1999). As they are more likely to live independently, they might experience challenges associated with their sexuality in their social and cultural context. Immaturity of the adolescents' cognitive system has led to a different perception of sex. Adolescents perceive having sex as substantiated as it is a part of their development which marks maturity and a form of peer conformity (Neinstein, 2008).

Fortenberry (2013) has constructed a framework in describing adolescent sexuality. According to this framework, there are four domains forming the sexual response cycle: sexual desire; sexual arousal; sexual behaviours and sexual function. Sexual desire is often used interchangeably with sexual arousal. It can be viewed as motivational or interpersonal (Regan & Berscheid, 1999). Motivation is what drives an individual to pursue activities that would bring on sexual satisfaction or pleasure (Gonzaga, Turner,

Keltner, Campos, & Atemus, 2006) while interpersonal sexual desire focuses on an externally generated event (Regan & Berscheid, 1999). Sexual arousal on the other hand, involves activations of both physiological and psychological systems in response to a sexual stimuli resulting in physical manifestations (Levin, 2002). Adolescents' reactions toward these sexual desire and arousal are termed as sexual behaviours. These include abstinence, masturbation and coital and non-coital partnered sexual behaviours (Fortenberry, 2013). Sexual function on the other hand, refers to the subjective qualities of coital experience such as experiencing pleasure following orgasm or pain free intercourse. Fortenberry (2013) has incorporated these elements in narrating adolescent sexuality in grasping adolescent sexual development.

Tolman and McClelland (2011) has conducted a review on articles published from the year 2000 to 2009 concerning adolescent sexuality and have come out with a new perspective on adolescent sexuality. They have produced a framework in understanding adolescent sexuality and conceptualizing it as a natural and expected component of development in adolescence. In this review, adolescent sexuality is viewed from three dimensions: sexual behaviour; sexual selfhood and sexual socialization. This is in contrast to Fortenberry's (2013) perspective on sexuality. Tolman and McClelland (2011) have classified sexual behaviours into the behavioural aspects of sexuality comprising penile-vaginal intercourse, oral sex and virginity. Sexual behaviour is also a concept focused by Fortenberry (2013) in discussing adolescent sexuality. These new developments of viewing sexual behaviours from both the psychological and developmental standpoints have taken away the traditional focus on the negative aspects of adolescents' sexual activities. Sexual selfhood is the establishment of sexual identity and psychological drives that may influence adolescents to engage in sexual intercourse. The third concept, sexual socialization examines the influence of the social networks surrounding the developing

adolescents. These include the peer group, the society norms and the media which may shape adolescents' sexual behaviour.

Traditionally, adolescent sexual behaviour has been deemed as "problem behaviour" (Halpern, 2010). On the contrary, current research has broadened the perception of sexuality through the exploration of adolescents' sexual intimacy, desire and other positive drives of engagement into sexual intercourse (Harden, 2014; Savin-Williams & Diamond, 2004). These views of adolescent sexuality have unlocked a new research paradigm instead of the narrowed perspective on the negative influence of adolescent sexual behaviour. Understanding the motivations leading to sexual engagement among adolescents and accepting sexuality as a normative developmental process, would allow adolescents to have a healthier sexual life in the future (Savin-Williams & Diamond, 2004; Vrangalova & Savin-Williams, 2011).

2.8 Operational Definition of Sexual Initiation

Adolescent sexual activity has often been regarded in terms of whether these adolescents are sexually active or not(Fantasia et al., 2011). Unfortunately, no emphasis was given on scrutinising the definition of sexual initiation. Sexual experience and sexual activity are often used interchangeably in research. However, it is essential to clarify that there are differences between these two terms. Sexual experience is defined as having a history of sexual intercourse at least once in the adolescent's life time (Terry & Manlove, 2000). On the other hand, sexual activity denotes sexual intercourse in the past three months (Centers for Disease Control and Prevention (CDC), 2008; Terry & Manlove, 2000). Fantasia et al. on the other hand, views sexual activity in a much wider context which includes a spectrum of behaviours over a period of time.

A researcher needs to develop an open mind with regard to the perception of sexual activity from the view point of adolescents. There is a list of sexual history questions to be asked before gaining an idea about adolescent's sexual activity. The definition is not simple, it comprises diverse elements; they are often intertwined (Fantasia et al., 2011).

Accurate measurement of sexual initiation is a challenge because of the reliance on adolescents' self-report (Singh, Wulf , Samara, & P. Cuca, 2000). Despite the diversified cultural values worldwide, sexuality issues are not openly discussed due to the societal pressure practised in some countries (Langhaug, Sherr, & Cowan, 2010). These pressures to conform to the societal norms may result in under- or over-reporting due to the sensitive nature of sexual activity leading to recall and social desirability biases (Boislard & Poulin, 2011; Ishida, Stupp, & McDonald, 2011; Langhaug et al., 2010; Lee, 2006; Noor Ani Ahmad, S. Maria Awaluddin, Hasimah Ismail, Rahama Samad, & Nik Rubiah Nik Abd Rashid, 2014).

Previous studies have assessed sexual initiation by asking the respondents, "Have you ever had sexual intercourse?' (Centers for Disease Control and Prevention (CDC), 2011; Cha, 2005; Dilorio et al., 2001; Golbasi & Kelleci, 2011; Lee, 2006; Noor Ani Ahmad et al., 2014; Rink, Tricker, & Harvey, 2007; Ryu et al., 2007; Siti Norazah Zulkifli & Low, 2000; Vanoss Marín, Coyle, Gómez, Carvajal, & Kirby, 2000). However, some studies only considered vaginal penetration as having sexual intercourse (Boislard & Poulin, 2011; Dilorio et al., 2001; Ryu et al., 2007) while some researchers considered both vaginal and anal penetration as having sex (Farahani et al., 2011; Noor Ani Ahmad et al., 2014). There were also studies which did not clarify whether vaginal or anal penetration were considered as having sex (Lee, 2006; Mohd Rizal Abdul Manaf et al., 2014; Mudassir Anwar, Syed Azhar S Sulaiman, Keivan Ahmadi, & Tahir M Khan, 2010; Nik Daliana Nik Farid et al., 2013; Yan et al., 2010). There are a few studies which have considered those who have had oral sex together with vaginal or anal sex as having

engaged in sex (Siti Norazah Zulkifli & Low, 2000; van de Bongardt, de Graaf, Reitz, & Deković). Therefore, in research it is important to include the types of activities which are considered as having sex in order to ease the comparison across different studies.

A systematic review by Langhaug et al. on 28 articles comparing the different modes of questionnaire delivery (audio computer-assisted survey instruments (ACASI), computer-assisted personal interview (CAPI), self-administered questionnaire, face-to-face interviews or random response technique), found that questionnaire delivery modes do influence the reporting rates of sexual behaviours (Langhaug et al., 2010). In this paper, ACASI was found to result in decrease items' non-response rates and at the same time improved the sexual behaviours' reporting rate. This view is supported by a randomized control trial which had reported that the sensitivity of reporting sensitive behaviours was heightened through ACASI compared to interviewer-administered questionnaire (Metzger et al., 2000). However, a small number of participants in the ACASI arm reported that they experienced difficulty in understanding the questions and during making and changing their entries. Validation of self-report using biological markers are certainly limited in studies assessing sexual behaviours which further warrants the endorsement of ACASI in these studies (Ghanem, Hutton, Zenilman, Zimba, & Erbelding, 2005; Langhaug et al., 2010).

2.9   Sexual Behaviours among Adolescents

2.9.1 Age at sexual debut

Worldwide, the age of sexual initiation varies from country to country. In the United States, the Youth Risk Behaviour Surveillance in 2007 reported that 7.1% of the students surveyed had their first sexual intercourse when they were younger than 13 years of age, with higher proportion of males reporting early sexual debut (Eaton et al., 2008). The same survey conducted six years later (2013) found that the proportion of students

reported sexual debut before the age of 13 had decreased to 5.6% (Kann et al., 2014). This decreased rate could be the result of preventive programmes implemented in schools. A cross-sectional study in Chile reported that the age of sexual debut was 13.8 (SD=1.6) years (Sanchez et al., 2010).

In Kenya, a cross-sectional study among 3556 students from 32 public schools in 2004 has found that the mean age of sexual debut among the males was 12.5 (SD= 3.6) years while the females reported a slightly later age at sexual debut (M=13.7, SD=3.64 years) (Kabiru & Opinas, 2008). The mean age at sexual debut among male and female students who had participated in a cross-sectional study in 2008 in 30 schools in Ghana was 14.4 years and 15.1 years respectively (Doku, 2012).

In Malaysia, a study conducted among school students in Negeri Sembilan in 2001 found that the mean age of sexual debut was 14.9 years for males and slightly younger among the females at 14.4 years (Lee, 2006). This age at first sex did not differ much from the findings reported a decade later in the Global School-based Student Health Survey in 2012. In this survey, 50.6% (95% CI [44.9, 56.3]) of those who have had sexual experience had initiated sex before they were 14 years old (Noor Ani Ahmad et al., 2014). A case-control study conducted in Singapore reported that the median age of sexual debut was 16 years (Wong et al., 2009). However, the generalizability of this median age of sexual debut is limited since this study recruited patients who had attended a sexually transmitted infection clinic. A cross sectional study in vocational schools in Thailand involving slightly older adolescents (mean age 18.5 years for males and 18.4 years for females) reported that the median age at sexual debut among the males was 16.7 years and the females, slightly later at 17.7 years (Liu et al., 2006). However, since this study was conducted only in vocational schools, the findings had limited generalizability beyond the students in other school types. The above mentioned studies may be subjected to recall bias. As a result, the validity of the mean age at sexual debut reported by the

respondents is questionable. In addition, their responses might be affected by over- or under-reporting given the sensitivity of the issue. The differences in the mean age at sexual debut could be associated with gender, cultural norms practised by the different ethnic groups and the socioeconomic status (Cavazos-Rehg et al., 2009).

Age at first sex especially at an early age is an important indicator of sexual risk as it is linked to an increased risk of sexually transmitted infections (STI) and unwanted pregnancies (Tsitsika et al., 2014). A longitudinal study among adolescents in the United States found that a later age of sexual initiation is associated with a lower risk of contracting STI for both males and females (Kaestle, Halpern, Miller, & Ford, 2005). This study utilized biologic tests in diagnosing STI and did not rely on self-reports which further increase the validity of the results. At early age, these adolescents may not have the ability to anticipate and prepare themselves for the consequences of unprotected sexual intercourse (Spriggs & Halpern, 2008b). Studies have shown that early sexual debut is associated with lower rates of condom use or inconsistent condom use (O'Donnell et al., 2001; Upchurch, Mason, Kusunoki, & Kriechbaum, 2004) and multiple sexual partners (O'Donnell et al., 2001; Santelli, Brener, Lowry, Bhatt, & Zabin, 1998). There is also a biological explanation for this increased risk of contracting STI: the immaturity of the cervical cells in females makes them more susceptible to human papillomavirus (HPV) (Kahn, Rosenthal, Succop, Ho, & Burk, 2002).

2.9.2 Multiple sexual partners

Previous studies have defined multiple sexual partners differently which may cause difficulty in comparing the results. According to CDC, multiple sexual partners are defined as having four or more lifetime sexual partners (Center for Disease Control and Prevention (CDC), 2008). Nevertheless, the risk of HIV/AIDS and other STIs, unwanted pregnancy and complications related to sexual and reproductive health rises with the

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increase in the number of sexual partners (Rich, Anderson, Schwartzapfel, & Stein, 2006).

The Youth Risk Behaviour Surveillance (YRBS) in 2013 reported that 15% of the students have had four or more lifetime sexual partners (Kann et al., 2014). This rate did not show much change compared to the report of the YRBS in 2007 in which 14.9 % of the students reported having had multiple sexual partners (Eaton et al., 2008).

In Turkey, a cross-sectional study involving 861 students from 27 schools reported that 54.5% of the adolescents have had more than two sexual partners (Aras et al., 2007). Another cross-sectional study conducted among female undergraduates in a university in China reported that 29.3% of them had multiple sexual partners (Yan et al., 2009). However, the prevalence of multiple sexual partners among the males is not known as the males were not included in the study. Furthermore, the definition of multiple partners was not explained in this study which complicates the comparison of this finding with other studies. In this study, younger sexual initiators were found to be more likely to have had multiple sexual partners. In Malaysia, students aged 15 to 20 years who had participated in a cross-sectional study in secondary schools in Penang had reported that 38.2% of them have had three and more sexual partners throughout their lifetime (Mudassir Anwar et al., 2010).

A cross-sectional study utilizing a nationally representative sample, the YRBS data from 1999 to 2007 found that the number of sexual partners increased with heavy use of alcohol, cigarette smoking and marijuana use over the years (Cavazos-Rehg et al., 2011). However, as this was a cross-sectional study, determining causal relationship was not possible. Furthermore, this finding could not be extended to the school drop-outs as they were not included in this study.

2.9.3 Contraception use

Adolescents' sexual engagement are often unprecedented (Gebhardt, Kuyper, & Dusseldorp, 2006). Studies have shown that adolescents' reproductive health knowledge is limited (Capuano, Simeone, Scaravilli, Raimondo, & Balbi, 2009; Jahanfar et al., 2010; Mahtab Mohammadi, Lekhraj Rampal, Maha Abdullah, & Hejar Abdul Rahman, 2011; Wong, 2012a). This could be related to the finding that a considerable proportion of adolescents had unprotected first sexual encounter (Aras et al., 2007; Liu et al., 2006; Siti Norazah Zulkifli & Low, 2000).

The Youth Risk Behaviour Surveillance in 2013 reported that among the 34% adolescents who were sexually active (have had sex three months prior to the survey), 59.1% reported that either the respondents or their partner had used condom during their most recent sexual intercourse while another 19% had been on oral contraceptive pills (Kann et al., 2014). This survey also reported that 13.7% of the respondents or their sexual partners did not use any contraception. However, this prevalence was lower compared to the YRBS which was conducted four years earlier. This survey reported that among the 34.2% respondents who were sexually active, 61.1% of them or their partner had used condom at their last sexual intercourse (Eaton et al., 2010).

In Brazil, a study which utilized the National Survey of School Health involving 60,973 students had reported that 21.4% of the respondents with sexual experience had unprotected sex during their most recent sexual engagement (Oliveira-Campos et al., 2013). A cross-sectional study involving 32 public schools in Kenya in 2004 reported that 40.4% of those with sexual experience had used condom at last sex while 37.2% did not use any form of contraception (Kabiru & Opinas, 2008). In Ghana, a cross-sectional study involving 1195 adolescents in 30 high schools reported that among the 25.3% who have had sex, 31.2% of them did not use any form of contraception while half of them had used

condoms during the most recent sexual encounter (Doku, 2012). Ahmadian et al. have conducted a cross-sectional study among 770 females in rural secondary schools in Malaysia and found that 72% of those who have had sex did not have protective sex at their last sexual encounter (Maryam Ahmadian, Hanina H. Hamsan, Haslinda Abdullah, Asnarulkhadi Abu Samah, & Amna Md Noor, 2014). However, the generalizability of the finding of this study was limited to rural school going females. Another study among secondary school students utilizing data from the 2012 Malaysia Global School-based Student Heath Survey found that one quarter (24.1%) of those who had sex did not use any contraception during their last sexual encounter (Noor Ani Ahmad et al., 2014). In this study, 32.2% of the respondents reported that they had used condom at the last sexual intercourse. In a neighbouring country, Cambodia, it has been reported that among the 12.7% sexually active adolescents, 52.6% did not have a protected sex at the most recent sexual encounter (Yi et al., 2010).

Adolescents are at increased risk of sexually transmitted infections including HIV/AIDS and unintended pregnancies following the inconsistent use or non-use of contraception (Verhaeghe, 2012). A nationally representative study in the United States reported that a younger age of sexual initiation was significantly associated with unprotected sexual intercourse (Cavazos-Rehg, Krauss, et al., 2010). Furthermore, socio-economic factors, access to contraception, access to sexual and reproductive health services and cultural beliefs play a role in contraception use (Sterling & Sadler, 2009). Higher risk was seen among college or university students as increased freedom was associated with their transition into adulthood(Cooper, 2002) .

2.10 Prevalence of Sexual initiation

2.10.1 Prevalence Globally

Sexual activities among adolescents globally have been on the increase (Low, 2009; Seme & Wirtu, 2008). Data from fourteen countries (Ghana, Mali, Tanzania, Zimbabwe, Philippines, Thailand, Brazil, Costa Rica, Dominican Republic, Haiti, Jamaica, Peru, Great Britain and United States) reported that approximately one third of adolescent girls have had sexual intercourse(Singh et al., 2000). A periodic survey in the United States, the Youth Risk Behaviour Survey (YRBS), conducted by the Centre for Disease Control (CDC) in 2013which involved 50 states revealed that 46.8% (95% CI [43.7, 49.6]) of students aged 14 to 18 years old in both public and private high schools have had sexual intercourse (Kann et al., 2014). Prevalence among the males was slightly higher compared to the females (47.5% and 46.0% respectively). This 2013 figure showed a slight increase compared to the YRBS 2009finding where 45.7% (95% CI [43.0, 48.5]) of the high school students already had sexual experience(Eaton et al., 2010). However, no gender difference was seen in the prevalence of sexual intercourse in the YRBS 2009.

In United Kingdom, a cross-sectional study by Coleman et al. involving 16 secondary schools in 2008 revealed that 30.5% of the students had reported sexual experience(Coleman & Testa, 2008). Parkes et al. have conducted a study in 2009 utilizing both SHARE (Sexual Health and Relationships: Safe, Happy and Responsible Programme) and RIPPLE (Peer-led sex education on sexual health programme) cohort studies found that 39.3% of the students reported sexual intercourse (Parkes et al., 2011). In contrast to the Coleman's study, females reported a higher prevalence of sexual intercourse compared to males (Coleman & Testa, 2008) where males reported a higher prevalence (37.2%). In Canada, the Canadian Community Health Survey 2009 (CCHS) revealed that 66% of 15-24 year olds have had sexual intercourse (Rotterman, 2012).

Compared to the YRBS in the United States, the age range in CCHS included youth up to 24 years old while YRBS included adolescents up to 18 years old. This might explain the higher prevalence of sexual experience among the Canadian adolescents.

In 2013, a national survey of sexual health among Australian secondary students reported that 33.7% of them have had sexual intercourse (vaginal or anal sex) (Mitchell, Patrick, Heywood, Blackman, & Pitts, 2014). The prevalence among male and female students was similar (33.5% and 33.8% respectively). A cross-sectional study comparing the five-yearly Youth2000 survey concerning health and well-being in 91 schools involving 8500 students aged 12 to 18 years in New Zealand reported that the prevalence of sexual experience in 2012 was lower (24.4%, 95% CI [22.2, 26.2] compared to the prevalence in 2001 and 2007 (31.3% and 36.3% respectively) (Clark et al., 2013). However, the low response rate for the survey in 2012 which was only 49.5% compared to 63.4% in 2001 and 61.5% in 2007 may explain this reduction in prevalence of sexual experience among the school students. In 2009, a cross-sectional study which was a part of the Tertiary Student Health Survey, involving 2922 students aged 17 to 24 years from six universities in New Zealand reported that 69% of the respondents have had sexual intercourse (Psutka, Connor, Cousins, & Kypri, 2012). This rate was twice the rate reported among the secondary schools students who had participated in the Youth2000 survey in 2012. This could be due to a higher age group involved in the Tertiary Student Health Survey. In addition this survey also did not exclude those who had married which could contribute to the higher prevalence of sexual experience.

2.10.2 Prevalence in Asia

In the Asian region, the prevalence of sexual initiation differs from one country to another with several countries portraying similar rates of sexual experience as reported in the United States and United Kingdom. Although surveys at national level tend to

insinuate that sexual initiationual activities are less frequent compared to the other parts of the world, more comprehensive studies regarding sexual and reproductive health conducted in several countries in this region (Asian region) have discovered that sexual activities among adolescents are clearly escalating(Gubhaju, 2002).

Cha (2005) in her dissertation found that 32.6% of the Korean university students had sexual experience. Among the 298 students who had participated in the study, 49.1% males had reported having had sexual experience compared to a lower proportion among the females (12%). The mean age of the participants in the study was 21.8 (SD= 2.17) years (Cha, 2005). Another cross-sectional study conducted two years later among younger age group (15 to 17 year old) Korean students attending both academic and vocational high schools revealed a lower rate of sexual intercourse which was 14.4% (Ryu et al., 2007). However, the findings might be influenced by the sampling method utilized in the study, which was convenience sampling. In Thailand, a cross-sectional study among students in three vocational schools revealed a slightly higher prevalence of sexual experience (45.8%) compared to the prevalence reported by the Korean university students (Liu et al., 2006). However, this study might not be representative of the whole adolescents' population in Thailand as it was conducted in only three schools.

Meanwhile, a nationally representative data from the Indonesian Young Adult Reproductive Health Survey (IYARHS) 2007 were utilized in a study by Situmorang revealed that 2.4% of the in-school adolescents had sexual initiationual experience (Situmorang, 2011). In this dissertation, males (4%) were found to be higher than females (0.7%) in experiencing sexual initiation. There is not much difference in the prevalence of sexual intercourse among 15 to 19 year old in-school or out-of school adolescents who had participated in the Indonesian Demographic and Health Survey (IDHS) 2012 (Body of Statistics Centre, National Population and Family Planning Board (BKKBN), Ministry of Health, & ICF International, 2013). On the other hand, a more recent study conducted

among 2315 students aged 14 to 20 years in 79 public and private secondary schools in four provinces in Indonesia reported a higher prevalence of sexual experience (10.5%) (Leerlooijer et al., 2014). However, a lower prevalence of sexual experience was also reported in Singapore. The Student Health Survey 2006 conducted by the Health Promotion Board of Singapore in 51 schools found that 4% of the 1907 students have had sexual experience (Singapore Health Promotion Board of Singapore, 2006). Another neighbouring country, Brunei had conducted the Global School-based Student Health Survey (GSHS) in 2014 among the secondary school students and found that 11.2% (95% CI [9.8, 12.9] of the students had sex (World Health Organization, 2014a). Similar prevalence (11.9%, 95% CI [10.1, 14.0] was found among the Cambodian secondary school students in the GSHS 2013 (World Health Organization, 2013).

A slightly lower prevalence of sexual intercourse was reported among youths in The Survey Assessment of Vietnamese Youth Round 2 (SAVY 2) in 2010. In this survey, 9.5% of the respondents had sexual intercourse (Ministry of Health, General Statistics Office, World Health Organization, & United Nations Children's Fund, 2010). A study utilizing a cohort data from the Taiwan Youth Project in 2004 over a 2-year period revealed that 16.1% of the Taiwanese college students admitted a history of sexual intercourse (Chiao, Yi, & Ksobiech, 2012). Similar finding was found among 1,403 university students in 2010 in China where 12.6% of the respondents reported history of sexual intercourse (Chi, Yu, & Winter, 2012).

In Asian countries, the prevalence of sexual engagement among adolescent varies from 2.4% in Indonesia to as high as 45.8% in Thailand.

2.10.3 Prevalence in Malaysia

One of the earliest study in Malaysia concerning sexual initiation among adolescents was a study conducted in 1994 among 15 to 21 years old which revealed that 13% of the respondents already had sexual intercourse (18.2% males and 7.1% females with 72% of them without contraception usage(Narimah Awin, 2011). Similar prevalence of sexual activity (13%) was found in a study conducted in year 2000 among 468 adolescents aged 16 to 17 years in Malaysian's secondary schools (Siti Norazah Zulkifli & Low, 2000). In this study, males were more likely to engage in sex compared to females. A year later, Lee et al. had conducted a cross-sectional study in schools in Negeri Sembilan involving 4,500 students which reported that 5.4% of the students already had sexual experience(Lee, 2006). Another study in 2005 involving 1194 students aged 16 to 18 years from six schools in Penang revealed an increased prevalence of sexual experience (12.6%)(Mudassir Anwar et al., 2010). However, this study utilized a convenient sampling in the selection of schools which may affect the validity of the results. The third National Health Morbidity Survey in 2006 reported that 4.2% of the respondents (13 to 19 years old) had previous sexual experience (Institute For Public Health (IPH), 2008).

A nationwide cross-sectional study using data from the Adolescent Health Screening in 2008 revealed 7% of youth reported history of sexual initiation (Norliza et al., 2011). Another cross-sectional study involving 2259 secondary school students in Klang in 2009 revealed an almost similar prevalence as the Adolescent Health Screening data where 6.1% of the students admitted having sexual intercourse (Mahtab Mohammadi et al., 2011). The prevalence of sexual intercourse among trainees in two Youth Training Institutions in Selangor in 2010 was similar to the prevalence reported in the third National Health Morbidity Survey (4.6%). This study involved both in-school and out-of-school adolescents. The Global School-based Student Health Survey (GSHS)

conducted among secondary school students aged 13 to 17 years old reported that 8.3% (95% CI [7.5, 9.2] of the respondents had previous sexual experience (World Health Organization, 2012). A higher proportion of males had previous sexual experience compared to females (9.6% and 7.1% respectively).

Overall, the prevalence of sexual initiationual experience among adolescents in Malaysia ranged from 4.2% to 13% over a ten year period. These rates are much lower if compared to developed countries. However, care must be exercised as sexual activities are considered as taboo subject and are not openly discussed in Malaysia. There could be a possibility of social desirability bias as the respondents might not report their true sexual status(Mohd Rizal Abdul Manaf et al., 2014) .

2.11   Factors associated with Sexual initiation

Studies conducted worldwide have shown that adolescents' sexual experiences are associated with diverse factors. Based on the Bronfenbrenner's Socio-ecological Systems theory, these factors could be further classified into individual, family and extra-familial influences (Chen, Thompson, & Morrison-Beedy, 2010).

2.11.1 Individual Factors

Adolescent's age, age at puberty, gender and ethnicity are the biological characteristics of an individual that have been shown to be associated with adolescents' sexual behaviour (Bersamin et al., 2006; Ryu et al., 2007; Sanchez et al., 2010; Siti Norazah Zulkifli & Low, 2000). Older adolescents are more likely to report sexual experience compared to the younger age group (Bersamin et al., 2006; Biddlecom et al., 2009; Kiragu & Zabin, 1993; Peres et al., 2008; Sanchez et al., 2010; Santelli, Linderberg, Abma, Mcneely, & Resnick, 2000). As age increases, the risk of engaging in sex is higher as adolescents are more independent and have the liberty to make their own decision. A cross-sectional study conducted by Peres et al. in Brazil found that older age was

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significantly associated with sexual engagement but only among females (Peres et al., 2008). Peres et al. used convenience sampling, recruiting all the students present on the day of the survey (Peres et al., 2008). This may result in selection bias as those who were not present might have different characteristics from those who were present on the day of the survey which may affect the validity of the findings. Ishida et al. and Seme et al., on the other hand, have found that younger age acts as a protective factor against initiation of sexual activity (Ishida et al., 2011; Seme & Wirtu, 2008). Another study among secondary school students in Malaysia which is a nationwide study also supports this finding (Noor Ani Ahmad et al., 2014). This might be due to a higher parental supervision over their children's activities as they are still young. Unsupervised older adolescents may have the tendency to engage in sex in order to satisfy their sexual curiosity.

Studies have shown that gender plays an important role in sexual initiation. Males have been found to be associated with higher sexual experience compared to females (Liu et al., 2006; Mudassir Anwar et al., 2010; Ryu et al., 2007; Siti Norazah Zulkifli & Low, 2000; Yaşan, Essizoglu, & Yildirim, 2009). This suggests that the males are under less pressure of conforming to the cultural norm to remain virgins until they are married (Seme & Wirtu, 2008). On the other hand, the males might over-report their sexual endeavour in response to maintaining their macho status. The social norm governing the males have allowed them to freely engage in sex unlike the restrictions posed on females (Upadhyay, Hindin, & Gultiano, 2006). Even though females have been found to commence emotional relationships earlier compared to males, they do not rush into sexual engagement (Upadhyay et al., 2006).

On the contrary, a longitudinal study among 12 to 16 year old adolescents in California found that 8.8% of females had reported of sexual engagement compared to 7.2% males (Bersamin et al., 2006). This could be attributed to the utilization of computer assisted self-interviews (CASIs) which have been found to improve the rate of reporting

of sexual behaviours (Langhaug et al., 2010). In support of this finding, a local, eastern cross-sectional study among 1,082 unmarried adolescents in 22 welfare institutions also found similar finding (Nik Daliana Nik Farid et al., 2013). In this study, the prevalence of ever had sex among the females was 68.1% compared to 55% among the males. This shows that globalization had resulted in the propensity to adopt the western lifestyle combined with more likely to have liberal permissive sexual attitudes (Mohd Rizal Abdul Manaf et al., 2014). Furthermore, as the participants in this welfare institutions are estranged from their parents, the cultural values may not be enforced on them resulting in disregard in remaining virgin until they marry especially among females (Mohd Rizal Abdul Manaf et al., 2014).

Several studies found that early pubertal onset had significant association with the initiation of sexual intercourse (De Genna, Larkby, & Cornelius, 2011; Flannery, Rowe, & Gulley, 1993; Glynn et al., 2010; Goodson, Evans, & Edmundson, 1997; Kiragu & Zabin, 1993; Moore, Harden, & Mendle, 2014). Except for the studies by Flannery et al. (1993), Glynn et al. (2010) and Kiragu et al. (1993) which were cross-sectional in nature, the above studies were longitudinal in nature. A recent published meta-analysis also supported this association (Baams, Dubas, Overbeek, & van Aken, 2015). On the other hand, a study which utilized longitudinal data in the eastern United States found that early puberty was associated with sexual debut among males only (Crockett, Bingham, Chopak, & Vicary, 1996). The assessment of puberty in this study was rather vague. The respondents were asked if they thought that their onset of puberty was earlier or the same or later compared to their peers. Their responses were certainly subjected to bias. In addition, this study was conducted in a rural school which could not be generalized to the adolescents in urban schools.

Age at menarche which is the age when the females start to experience their first menstrual flow is a useful proxy in gauging onset of puberty (Coleman & Coleman,

2002). On the contrary, for male, it is difficult to obtain an accurate pubertal onset. For males, physical changes such as pubic and facial hair growth, change in the nature of the voice and growth of the genitalia are often used but may be inaccurate due to recall bias (Coleman & Coleman, 2002). Therefore, for males, age of first nocturnal emission and first masturbation are used to assess pubertal onset (Edgardh, 2000). However, their responses to these questions would produce a per-pubertal age rather than the exact pubertal age in contrast to females (Gluckman & Hanson, 2006). As a result, it is important to conduct analyses separately by gender in investigating the association between the onset of puberty and sexual initiation (Zimmer-Gembeck & Helfand, 2008). Pubertal onset may lead to sexual initiation in response to the increased individual's desire and societal pressure (Glynn et al., 2010). Pubertal onset is associated with hormonal surges that would predispose the developing adolescents to sensation-seeking behaviours and sexual engagement (Steinberg, 2005, 2008). Furthermore, their relatively matured emotional component has an over-powering effect on their less mature regulatory centre, the prefrontal cortex which may result in sexual engagement (Steinberg, 2005).

Cavanagh (2004) investigated the effects of race on the relationship between puberty and sexual debut utilizing female sample from the National Longitudinal Study Adolescent Health. She had found that Whites and Latina females who reported early puberty were at risk of initiating sex but the similar association was not found among the African Americans. This finding could be related to the differences in the cultural norms among these ethnic groups (Cavanagh, 2004).

Several studies have investigated the association between ethnicity and sexual experience (Bersamin et al., 2006; Biddlecom et al., 2009; Lee, 2006; Nik Daliana Nik Farid et al., 2013; Santelli, J. S., Linderberg, L. D., et al., 2000; Siti Norazah Zulkifli & Low, 2000). Only the study by Santelli et al. showed significant association among the Blacks with sexual initiation after adjusting for family's income and age (Santelli, J. S.,

Lowry, R., et al., 2000). This study suggested that there might be a distinction between cultural influence and economic factors which was not found in other studies. Local studies did not find any significant association between race and sexual debut.

Low educational achievements were found to be associated with higher risk of sexual debut (Boislard & Poulin, 2011; Eggleston, Jackson, & Hardee, 1999; Price & Hyde, 2009; Ryu et al., 2007). Conversely, a longitudinal study conducted among 884 middle school students in the United States found that those who had scored good results in their examinations were more likely to remain sexually abstinent (Laflin, Wang, & Barry, 2008). This group of adolescents tend to possess higher academic aspirations and thus would avoid any behaviours that could jeopardize their goals (Price & Hyde, 2009). There were several studies that investigated the association between educational level and sexual debut. A community based cross-sectional study among youths aged 18 to 24 years in Vientiane, Lao PDR (lower middle income country) found that higher educational attainment among the females was associated with a reduced risk of sexual debut (Sychareun et al., 2013). Among males, educational achievement was not associated with sexual engagement in this study. A longitudinal study in another lower middle income country, the Philippines, has found that higher educational attainment was negatively associated with sexual initiation for both gender (Gipson et al., 2014). On the other hand, studies conducted among adolescents in Malaysia (upper middle income country) have found that the level of education did not act as a protective factor (Nik Daliana Nik Farid et al., 2013; Siti Norazah Zulkifli & Low, 2000) This could be due to the fact that respondents in these studies enjoy a greater freedom as a result of living in a higher income country compared to those in Lao PDR and Philippines (Blum & Mmari, 2005). Despite attaining higher education levels, they may have increased desire to satisfy their curiosity pertaining to sexual intercourse as a result of exposure to the western culture.

In regard to religiosity, Rostosky et al. conducted a review on several longitudinal studies examining the impact of religiosity on sexual behaviour (Rostosky, Wilcox, Wright, & Randall, 2004). Sexual behaviours were found to be highly associated with low religiosity. Females were found to have higher scores on the intrinsic religiosity scales (Francis & Wilcox, 1998), were associated with sexual abstinence. However, females might under-report their sexual experience especially in face-to-face interviews in conforming to the cultural pressure (Fatusi & Blum, 2008). Frequent attendance at religious services was found to be a protective factor against sexual debut among both male and female adolescents in Jamaica utilizing data from a national survey (Ishida et al., 2011). The usage of religious attendance in measuring religiosity could be affected by the religious affiliations of the respondents (Rostosky et al., 2004). The respondents were certainly not in control of their religious affiliation as this were most probably dictated by their parents. Another study in the United States had assessed the frequency of performing prayer and found that a reduced risk was associated with respondents who regularly perform prayers (Laflin et al., 2008). On the contrary, moderate level of religiosity have been associated with higher risk of sexual engagement among both males and females (Kiragu & Zabin, 1993). Several other studies which had investigated the association between religiosity and sexual debut did not find any significant association (Bersamin et al., 2006; Kabiru & Opinas, 2008; Nik Daliana Nik Farid et al., 2013).

However, it is difficult to measure religiosity since it is subjective and based on self-reporting (Rostosky et al., 2004). There might be variations in the measurement of religiosity with different religions. Bersamin et al. (2006) had assessed religiosity via three items: frequency of attendance at religious services; frequency of attendance of religious activities; and importance of religion. These items were able to assess the three dimensions of religiosity: organizational, non-organizational, intrinsic religiosity which has been shown to be valid and reliable measures of religiosity (Koenig & Büssing, 2010).

Risky behaviours such as cigarette smoking, alcohol consumption and substance use have been implicated in several studies in association with sexual initiation (Aras et al., 2007; Lee, 2006; Liu et al., 2006; Nik Daliana Nik Farid et al., 2013; Noor Ani Ahmad et al., 2014; Wong et al., 2009). Studies by Noor Ani Ahmad (2014) and Lee et al. (2006) were conducted among secondary school students who might be slightly younger than the population in this current study. Lee et al. (2006) have conducted one of the most comprehensive study looking at the association between the uses of all the possible substances with sexual initiation among school students in Negeri Sembilan. This study had reported that sexual initiation was significantly associated with alcohol use, heavy drinking, cigarette smoking, marijuana use, ecstasy use, glue sniffing, heroin use and intravenous drug use. Study by Aras et al. was limited by the involvement of a single high school in a single district while the study by Liu et al. involved students from three vocational schools and the study by Nik Daliana Nik Farid involved incarcerated adolescents from welfare homes (Aras et al., 2007; Liu et al., 2006; Nik Daliana Nik Farid et al., 2013). Wong et al. on the other hand, conducted case-control study involving patients attending STI clinic in Singapore who might possess dissimilar characteristics from the population of the current study (Wong et al., 2009). This might limit the generalizability of the study finding. Furthermore, the study conducted by Wong et al. did not fully describe the measures used in assessing these behaviours which could hinder comparison of their findings with other studies (Wong et al., 2009). However, the recruitment of those had dropped out of school allowed its generalizability to this group of population. These studies relied on self-reporting which are liable to under- or over-reporting and therefore can affect the validity of the findings. Self-reporting bias could be reduced by enhancing anonymity as practised in these studies. Alcohol consumption and drug use may impair the adolescents from making a coherent decision and may resort to sexual intercourse (Cooper, 2002).

Self-esteem has shown mixed effects in the association with sexual debut. Higher self-esteem was found to be a significant risk factor for sexual initiation for both males and females in a study utilizing longitudinal data (Marston, Beguy, Kabiru, & Cleland, 2013) in two informal settlements in Nairobi. For males, possessing a higher self-esteem will lead to the belief that their sexual prowess is socially endorsed. As a result, they are more likely to take up this endorsement and engage in sexual intercourse. Engaging in sex was seen as an opportunity to feel better about themselves and at the same time to announce their maturity (Spencer, Zimet, Aalsma, & Orr, 2002). Females with higher self-esteem, on the other hand, may feel that they are attractive which boost their self-confidence. Therefore, they are at higher risk of initiating sex in response to this confidence. This study utilized a measure which comprised five items concerning their perception of themselves and their relationship with peers and school. The internal consistency for this scale was satisfactory (Cronbach's alpha=0.6). Similar finding was found in a longitudinal study by Spencer et al. (Spencer et al., 2002) among school-going adolescents boys but not the girls utilizing the Rosenberg's self-esteem scale. In this study, girls with lower self-esteem were found to be at a higher risk of engaging in sexual intercourse. Kalina et al. conducted a cross-sectional study among adolescents in elementary schools in Slovakia and found that higher positive self-esteem was associated with sexual initiation (Kalina et al., 2011). The authors utilized the Rosenberg self-esteem scale but had split the scale into positive and negative self-esteem. Negative self-esteem was not found to be associated with sexual debut. Another study which had recruited sexually active female adolescents attending general obstetrics and gynaecology clinics in four cities in the United States found that low self-esteem was associated with earlier sexual intercourse (Ethier et al., 2006). This study utilized the Rosenberg's self-esteem scale which measures the global self-esteem focusing on the individual's "general outlook on life" (Rosenberg, 1965). However, the findings of this study could not be generalized

as it recruited patients who attended the selected clinics. Furthermore, recruitment via snowballing interfered with the sampling method as it could introduce bias into the study. This finding is supported by a longitudinal study in the United States which also utilized the Rosenberg's self-esteem scale (Price & Hyde, 2009).

Another study conducted in the United States had reported that self-esteem alone did not have an effect on sexual debut among both males and females (Longmore, Manning, Giordano, & Rudolph, 2004). However, when age was included into the model interacting with the level of self-esteem, this interaction was found to be significant among older males. Older males with higher self-esteem were found to have an increased risk of sexual initiation. The tool used to measure self-esteem in this study comprised six items which were similar to the Rosenberg's self-esteem scale. The internal consistency for this measure was reported as satisfactory (Cronbach's alpha=0.6).

Studies examining resilience in facing psychosocial adversity among adolescents have shown substantial variability (World Health Organization, 1996). Resilience which is a personality trait, refers to the "positive adaptation or the ability to maintain or regain mental health, despite facing adverse events" (Wald, Taylor, Asmundson, Jang, & Stapleton, 2006). Resilience requires the presence of both risks and promotive factors that could result in a positive outcome or lessen or hinder a negative outcome (Hollowell, Kurinczuk, Oakley, Brocklehurst, & Gray, 2009). Two conditions must be present in conceptualising resilience: exposure to significant threat, adversity or trauma and accomplishment of positive adaptation despite the risks (Villar et al., 2001).

Resilience theory is focused on strengths rather than the shortfalls (United States American Academy of Pediatrics, 2002). Adolescents, who were brought up in unfortunate environment, are certainly at risk of negative outcomes. But despite these risks, they managed to manifest positive outcomes (United States American Academy of Pediatrics, 2002). Previous studies have focused primarily on the factors that would

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protect or further enhance negative outcomes arising from facing adversities (Morrison, 2003). Resilience among adolescents is a crucial element required to navigate through a turmoil passage in order to achieve physical, emotional, cognitive and social maturity (Azlina Abu Bakar, Shahrir Jamaluddin, Symaco, & Ghazali Darusalam, 2010).

A cross-sectional study in the United States examined resiliency by equating resilience to sexual abstinence (Blinn-Pike, 1999). This study investigated the factors that promote resiliency rather than using a measure of resiliency. This was similar to a study by Jain et al. who used time taken before sexual debut as a measure of sexual resilience (Jain, Muralidhar, & Talwar, 2014). Another study also studied resiliency in association with adolescents' sexual behaviours which was conducted in the United States involving 332 adolescents (Stoiber & Good, 1998). However, several variables such as academic motivation, academic competence, family structure and relationship, religiosity and self-esteem were used as proxies in determining association between resiliency and sexual behaviours. Both of these studies have found the importance of resiliency in adolescence as a protective factor against sexual initiation.

2.11.2 Familial Factors

Family is a crucial element in adolescents' development in which several processes interact and have an impact on the adolescents (Bronfenbrenner, 1986). Therefore familial factors are often examined in the association with adolescents' sexual and reproductive health (Pilgrim & Blum, 2012). Parents may exert their influence on the developing adolescents via the genetic link, parenting style and their behaviours towards their children (Kincaid et al., 2012).

Parents with lower levels of education has been shown to be associated with sexual initiation among Black adolescents in a study in the United States by Santelli et al. after the other significant variables such as age and race were controlled for (Santelli, J. et al.,

2000). The other ethnic groups did not report similar association. This was a large population-based study where the data were collected from parents as well which had enabled more valid information to be obtained as the parents could verify the information given by the adolescents. Another community based study in Lao PDR has found a rather unsuspected finding (Sychareun et al., 2013). In this study, females with fathers who had higher educational level were significantly associated with sexual experience. This may be the result of over-reporting of their fathers' educational level by the female respondents as their responses were not verified by the parents. However, this finding was not found by Aras et al. (Aras et al., 2007). But this study was solely based on self-reporting without input from the adults.

Family structure which includes staying with both parents, either parents, step parents or other family types was also examined in previous studies. Adolescents who lived with both parents were less likely to engage in sex (Biddlecom et al., 2009; Peres et al., 2008). Both these studies however had restricted the sample to adolescents from low socio-economic families only. Selection bias introduced in these studies could have reduced the studies' internal consistencies. Another study conducted among high school students in Kenya supported the protective effect of living with both parents (Kabiru & Opinas, 2008). But a high proportion of the students in this study was living in boarding schools and only spent their vacation at home. Furthermore, as this study was a cross-sectional study, causal relationship cannot be inferred. There is a possibility that other factors might confound this association. Ryu et al. through a cross-sectional study have also found that living with both parents was protective but this finding was limited by convenience sampling (Ryu et al., 2007). A local study among both in school and out of school adolescents did not find such association which might be influenced by the difference in culture (Siti Norazah Zulkifli & Low, 2000).

A study which utilized longitudinal data from students in 27 schools in England had found that both male and female students who had been living with non-intact families were more likely to be engaged in early sexual intercourse (Boislard & Poulin, 2011; Bonell et al., 2006; Price & Hyde, 2009). Similar finding was also obtained from a study which was based on a longitudinal study evaluating the impact of sex education in Scotland. Both males and females who had been living with only one biological parent were associated with higher risk of sexual experience (Boislard & Poulin, 2011; Wight, Williamson, & Henderson, 2006). These longitudinal data provide a causal relationship between family structure and adolescents' sexual initiation.

Living with neither parents or with father only was shown to be associated with higher prevalence of sexual experience (Santelli, J. S., Linderberg, L. D., et al., 2000). This study utilized both the Youth Risk Behaviour Surveillance Data Adolescents and the National Health Interview Survey which also incorporated the responses from the adults as well as the adolescents. However the association of the finding may be limited by the nature of the study design which was cross-sectional. In another study, adolescents living in these type of families may have a longer non-supervised time as one parent need to juggle his or her time and may end up in spending less time with their children (Boislard & Poulin, 2011). Without a male or female model in their lives, they might be dependent on their peers who could influence them to engage in sexual intercourse. The instability resulted from living with non-intact families may result in these adolescents turning to sex for relief (Jordahl & Lohman, 2009). Zulkifli et al. on the other hand, did not find such associations among the Malaysian adolescents (Siti Norazah Zulkifli & Low, 2000). However, the findings might be influenced by the purposive sampling employed in this study. The same non-association was also found in another cross-sectional study in Turkey (Aras et al., 2007). The finding of this study may be limited by the participation

of only high school students of a school in one district. Furthermore, culture may play a role in influencing the non-association.

Kiragu et al. have conducted a cross-sectional study in fourteen secondary schools in Kenya including five vocational schools in 1993 and found that male adolescents living in boarding schools were more likely to engage in sexual intercourse compared to adolescents who live with their parents (Kiragu & Zabin, 1993). Influence from peers which was higher in boarding schools may provide undeterred pressure for these adolescents to engage in sexual initiation. This finding was not found in another study among vocational students in Thailand (Liu et al., 2006).

One of the parental processes which may affect adolescents' sexual debut was parental monitoring (Steinberg, Fletcher, & Darling, 1994). This process comprised communication between biological or non-biological parents with their children and supervision of the children's activities by the parents or guardians (Li, Stanton, & Feigelman, 2000). Low parental monitoring has been shown to be associated with sexual behaviour among adolescents (Biddlecom et al., 2009; Li, Feigelman, & Stanton, 2000; Wight et al., 2006). However, the associations in these three cross-sectional studies might be affected by self-reports and the parents' perception concerning their monitoring level were not obtained. The study by Li et al. (Li, Feigelman, et al., 2000) had limited generalizability to the total adolescents' population at large as the study involved adolescents from low income neighbourhoods. These parents might behave differently compared to parents from middle or higher socio-economic status. Sanchez et al. on the other hand, did not find similar association (Sanchez et al., 2010). This study was based on convenience sampling from low to medium socio-economic families which could introduce bias in the interpretation of the results. Another study in Malaysia, utilizing the 2012 Global School-based Student Health Survey also reported a negative finding (Noor Ani Ahmad et al., 2014). This might be influenced by the tool used in this study.

Parent-child communication concerning the risks resulting from sexual initiation was associated with a later onset of protected sexual initiation among adolescents (DiIorio, Kelley, & Hockenberry-Eaton, 1999; Whitaker & Miller, 2000). On the other hand, a contradictory association was found in the study utilizing longitudinal data in United States by Bersamin et al. (2006) and a cross-sectional study utilizing data from the Dutch Health Behaviour in School-Aged Children (HBSC) Survey (de Looze, Constantine, Jerman, Vermeulen-Smit, & ter Bogt, 2015). In these studies, communication on sexual matters was found to be associated with higher risk of sexual initiation. Similar finding was also found in a longitudinal study in secondary schools in Netherlands (van de Bongardt et al., 2014). It is important to judge this association based on the content of the communication and the method used in communicating the message. A cross-sectional study conducted by Whitaker et al. found that parental communication on sexual matters was able to reduce the peer effects on their children's sexual behaviour (Whitaker & Miller, 2000). However, the causality inference may be impeded by the nature of the study.

Higher parental educational aspirations for their children have been shown to be associated with a reduced risk of sexual debut among adolescents in Philippines (Gipson et al., 2014) and United States (Gilliam, Berlin, Kozloski, Hernandez, & Grundy, 2007). This may result in these adolescents working hard to please their parents and will delay sexual initiation in achieving their parents' aspirations.

Parent-adolescent connectedness which was assessed via several variables such as parental warmth, parent-adolescent closeness and parent-child-attachment (Miller, Benson, & Galbraith, 2001) had been shown to be significantly associated with reduced sexual initiation in several studies (Bersamin et al., 2008; Farahani et al., 2011; Noor Ani Ahmad et al., 2014; Sieverding, Adler, Witt, & Ellen, 2005; Sieving, McNeely, & Blum,

2000). A strong-parent-adolescent relationship could provide support which leads to a trusting relationship (Pearson, Muller, & Frisco, 2006).

On the contrary, a study based on longitudinal data which had recruited both adolescents and their caregivers in the United States found the moderating role of gender in the association between parent-child warmth and sexual debut (Kapungu, Holmbeck, & Paikoff, 2006). This study reported that males who perceived higher parental warmth and lower parental control were more likely to engage in sexual intercourse. Since the participants were living in low income areas, their parents were more likely to spend longer hours working rather than spending more time to be with their children. As a result, these parents would not be able to exert much control over their children. This could lead to disastrous outcomes among males as their parents would try to compensate their absence by trying very hard to satisfy their children's needs. The male adolescents would take this opportunity to betray the parent-child trust. The females on the other hand, were at risk if they perceived a lower parental warmth and higher parental control. This could be due to the rebellious nature among the females leading to the failure to resist their sexual desires (Cauce et al., 1996).

However, a study among adolescents in Lao PDR, Philippines and Vietnam did not report similar association (Gipson et al., 2014; Le & Blum, 2009; Sychareun et al., 2013). This finding might be affected by the interaction with other variables which results in sexual initiation. These insignificant results could be affected by the difference in cultural values in these countries (Sychareun et al., 2013). The study by Gipson et al. only used one item to assess mother's connectedness which could affect the result (Gipson et al., 2014), on the other hand, despite using five items to assess parent-connectedness, Sychareun et al. did not specify whether they respondents should respond based on their relationships with their mother or father (Sychareun et al., 2013). According to the review

by Markham et al. (Markham et al., 2010), using generic "parent" measures may yield less informative responses.

There are very few studies on the role of family conflict in association with sexual debut (Lyerly & Brunner Huber, 2013). However, studies have shown that family conflict was associated with risky behaviours such as substance use and behavioural problems (Asgeirsdottir, Sigfusdottir, Gudjonsson, & Sigurdsson, 2011; Fish, Maier, & Priest; Skeer et al., 2011) but these associations could be related to a less stable home environment resulting from the conflict. In a study utilizing data from the 2008 National Longitudinal Survey of Youth aged 15 to 21 years, a higher family conflict was associated with risky sexual behaviour among the adolescents (Lyerly & Brunner Huber, 2013). Due to the nature of the study, it is difficult to determine which occurs first: whether family conflict results in risky sex or vice versa. However, only two items were used: whether the family members fight and whether any family members criticize the other family member. The information obtained may not provide adequate information in the assessment of family conflict. Another study conducted in urban, low income areas also found that higher family conflict was associated with sexual debut (McBride, Paikoff, & Holmbeck, 2003). This study was more comprehensive as it utilized both self-reports and observations by the interviewers which could further strengthen the findings.

2.11.3 Extra-familial Factors

2.11.3.1 Peer Influence

Adolescence is a period when social relationships started to change: from attachment to parents to attachment to peer group for support and company (Helsen et al., 2000). During this transitional period, increasing amount of time is spent with peers (Larson & Richards, 1991). It is believed that the decision made by the adolescents to engage in sexual intercourse were partly influenced by their peers' norms (Kinsman,

Romer, Furstenberg, & Schwarz, 1998). Peer pressure could be defined as a "subjective experience of feeling pressured, urged or dared by friends of similar age to do things or actually doing certain activities that the friends have pressured, urged or dared the individual to do" (Brown, Clasen, & Eicher, 1986). There were different views to peer pressure as discussed in previous research. Berndt (1979) had hypothesized that there were two directions of peer pressure: antisocial and neutral peer pressure. Antisocial peer pressure is referred to the behaviours that disregard the law or social norms while behaviours that do not disrupt the law or the norms is regarded as neutral peer pressure (Berndt, 1979). On the other hand, Clasen and Brown (1985) had classified peer pressure as multidimensional comprising five domains of susceptibility in which peer influence are witnessed: family involvement (involvement with family); school involvement (involvement in school activities); peer involvement (involvement in peer social activities); misconduct (participation in antisocial activities) and peer norm (conformity to peer norms). Peers can result in both positive and negative influences but studies focus on the negative peer influences (Jaccard, Blanton, & Dodge, 2005). Positive peer influences emphasize on the absence of problem behaviours which deal with positive behaviours (Padilla-Walker & Bean, 2009). In contrast, adolescents who are exposed to negative peer influence, are more likely to exhibit risky and deviant behaviours (Padilla-Walker & Bean, 2009; Yüksel-Şahin, 2015).

Peer influence has been recognised as a significant risk factor for adolescents in their quest into sexual engagement (Algaa, 2000; Bersamin et al., 2006; Laflin et al., 2008; Potard et al., 2008; Sychareun et al., 2013; Wong et al., 2009). Several studies have found that negative peer pressure may play a larger role in influencing adolescents' behaviours than positive peer pressure (Haselager, Hartup, Lieshout, & Riksen-Walraven, 1998; Ma, Shek, Cheung, & Tam, 2002). On the contrary, a longitudinal study conducted among 900 Dutch adolescents did not report peer pressure as a significant risk factor (van

de Bongardt et al., 2014). The effect of peer pressure could be moderated by the frequency of communication between parents and adolescents on sexual issues which had been shown to be significant in this study. Age have also been shown to influence susceptibility to peer pressure in two studies (Sim & Koh, 2003; Steinberg & Silverberg, 1986).

The assessment of peer influence differed from one study to another study (Brown et al., 1986; Chan & Chan, 2011; Dielman, Campanelli, Shope, & Butchart, 1987; Santor, Messervey, & Kusumakar, 2000; Steinberg & Monahan, 2007; Umaña-Taylor & Bámaca-Gómez, 2003; Yan et al., 2010). However, all these measures were subjective based on the perception of adolescents via self-reporting.

A prospective study conducted among sixth graders attending 14 public schools in Philadelphia found that the perception of peers' sexual experience was associated with adolescents' sexual initiation (Kinsman et al., 1998). Furthermore, in this study, male adolescents who perceived that they would gain more respect by engaging in sex were more likely to initiate sex. On the other hand, the there was no such association seen among the females. However, it was also possible that in assessing peer norm, the respondents might be reflecting their own behaviours instead (Kinsman et al., 1998). Other studies had supported this association (Ali & Dwyer, 2011; Bersamin et al., 2006; Potard et al., 2008; Romer et al., 1994; Sieving, Eisenberg, Pettingell, & Skay, 2006; Sychareun et al., 2013; Wong et al., 2009). Ali and Dwyer, Bersamin et al. and Sieving et al utilized longitudinal data from 132 high schools in the United States, 10 counties in California and homes in United States (Ali & Dwyer, 2011; Bersamin et al., 2006; Sieving et al., 2006). Romer et al. on the other hand, conducted a computerized interview method which may enhance the respondents to provide truthful answers compared to face-to face interviews (Romer et al., 1994). The population included in the study by Wong et al. was slightly different, which were the patients attending STI clinics in Singapore who may possess different characteristics from the population in these other studies (Wong et al.,

2009). Care is needed in interpreting the cross-sectional study by Potard et al. as the sample size was rather small (only 100 hundred respondents) conducted in a single school which may affect the generalizability of its finding.

Having peers involved in delinquent behaviours such as alcohol and substance use, social deviance or violence were found to be associated with sexual engagement in several studies (French & Dishion, 2003; Le & Blum, 2009; Le & Kato, 2006; Whitbeck, Yoder, Hoyt, & Rand, 1999; Yi et al., 2010). However, it is difficult to ascertain whether the adolescents' involvements with deviant peer groups were the cause or the consequence of sexual engagement as all these studies were cross-sectional in nature. A longitudinal study in Canada and Italy found that affiliation with deviant peers was a predictor for risky sexual behaviours (Boislard, Poulin, Kiesner, & Dishion, 2009). This finding has certainly confirmed that relationship with deviant peers would lead to engagement in risky sexual activities.

2.11.3.2 Mass Media

Several studies had reported that exposure to sexually explicit media was associated with increased risk of sexual debut among adolescents in several studies (Brown & L'Engle, 2009; Gipson et al., 2014; Mmari & Sabherwal, 2013; Mohd Rizal Abdul Manaf et al., 2014; Nik Daliana Nik Farid et al., 2013; Wong et al., 2009). This association could be explained by the presence of curiosity among adolescents in experiencing sexuality (Sabina, Wolak, & Finkelhor, 2008). This exposure may affect sexual behaviour by stimulating sexual desire and arousal in addition to endorsing sexual intercourse (Brown & L'Engle, 2009). Furthermore, pornography was easily accessible and available through internet access by adolescents at home (Svedin, Åkerman, & Priebe, 2011). Furthermore, the more sexually experienced adolescents are more interested in viewing the sexual content provided in the media. This activity was more commonly seen among males who chose media as the most accessible method of obtaining sexual information as they

entered puberty (Traeen, Nilsen, & Stigum, 2006; Trostle, 1993). Another study utilizing the National HIV/AIDS and Reproductive Health Survey in Nigeria did not find any association between reading or viewing sexually explicit materials and sexual debut (Fatusi & Blum, 2008). This finding could be related to the general questions in assessing exposure to these sexually explicit materials. The respondents were asked on the frequency they listen or watch television in a week in contrast to the more specific questions asked in the study which was conducted by Wong et al. (2009).

2.11.3.3 School Factors

According to Goodenow (1993), school connectedness is "the sense of belonging which refers to the extent that students feel they are accepted, respected, included, and supported by others in the school environment". Fredricks, Blumenfeld, and Paris proposed that school connectedness or school engagement is a multidimensional construct comprising behavioural, emotional and cognitive components (Fredricks, Blumenfeld, & Paris, 2004). Meanwhile, other views of school connectedness included how active the students are in their school activities, the strength of identification with their school and the ability to acknowledge the school values (Connell, Spencer, & Aber, 1994). Several studies have reported a positive association between school connectedness and academic achievement (Connell et al., 1994; Dilorio et al., 2001; Finn & Voelkl, 1993; Marks, 2000). Success in academia has been shown to be a significant protective factor against engagement in health risk behaviours such as aggressive behaviours, suicidal ideation, alcohol use and drug abuse through reinforcement of social norms (Springer, Parcel, Baumler, & Ross, 2006).

In regard to sexual debut, higher level of connectedness to school has been shown to be protective against sexual engagement (Aspy et al., 2012; Bersamin et al., 2006; McNeely & Falci, 2004; Paul, Fitzjohn, Herbison, & Dickson, 2000; Resnick et al., 1997;

Small & Luster, 1994; Springer et al., 2006). Through a higher level of connectedness to school, the adolescents are provided with a safe, supportive and nurturing environment which are needed for them to thrive (Marin, 2008).

2.12 Outcomes of Sexual Initiation

2.12.1 HIV/AIDS

Unprotected sexual intercourse remains a worldwide apprehension as it can lead to multiple health problems such as sexually transmitted infections (syphilis, HIV/AIDS, gonorrhoea), unintended pregnancy, and unsafe abortion. Globally, there were an estimated 2.3 million new HIV cases in 2012 (Joint United Nations Programme on HIV/AIDS (UNAIDS), 2013) and an estimated 35.3 million (95% CI= 32.2–38.8 million) individuals were living with HIV (Joint United Nations Programme on HIV/AIDS (UNAIDS), 2013). It is the fifth leading cause of global disability adjusted life years (DALYs) in 2010 (Ortblad, Lozano, & Murray, 2010). New HIV infections in many regions of the world are mainly concentrated among youth (15 to 24 years of age) whom had accounted for 40% of the global new HIV infections (Joint United Nations Programme on HIV/AIDS (UNAIDS) & World Health Organization (WHO), 2006). In 2012, it was estimated that 2.1 million adolescents (10–19 years) were living with HIV in the low and middle income countries (Joint United Nations Programme on HIV/AIDS (UNAIDS), 2013).

In the United States in 2003, 12.2% of the total reported HIV/AIDS were among young people aged 13 to 24 years (Centers for Disease Control and Prevention, 2004). According to the CDC report, an average of 40,000 to 80,000 new HIV cases are reported yearly with half of these reported cases are among youths. AIDS cases on the other hand, accounted for 0.5% of the notified cases among adolescents aged 13 to 19 years (Illinois Department of Public Health, 2001).

In Malaysia, according to UNICEF, between 1986 and 2010, 91,362 HIV cases have been notified (United Nations Children's Fund (UNICEF), 2010). The total number of HIV cases among 13 to 19 years of age in 2010 was 1,295 compared to year 1986 to 2009 where the total number of cases was 1,252 cases (Malaysia Resource Centre (Malaysian AIDS Council), 2010). The number of new cases among adolescents has increased 3.3% compared to year 1986 to 2009. Statistics from the Ministry of Health Malaysia has shown that one in four new reported cases of HIV in 2010 were among those aged 13 and 29 years old (United Nations Children's Fund (UNICEF), 2010). Therefore, there is a possibility that these individuals who were 30 years old could have been infected in their twenties or even when they were adolescents (United Nations Children's Fund (UNICEF), 2010). In 2013, 34.3% of those with HIV were reported among those aged 13 to 29 year old Malaysians (HIV/STI Section, 2014). Furthermore, according to the statistics from the Disease Control Division, Ministry of Health Malaysia, there is a shift in the source of HIV infection from the year 2000 to 2013. In the year 2000, intravenous drug users were predominant source of HIV among Malaysians (74.7%) compared to sexual transmission (5.3%) (HIV/STI Section, 2014). However, in 2013, the predominant source of HIV among Malaysians was sexual transmission (73.7%) while intravenous drug users caused 21.5% of HIV infection. In addition, Malaysia has attained the fifth place among countries in Asia-Pacific region for the fastest HIV infection rate and the true number of cases was found to be significantly higher than the number of cases being notified to the health authorities (UNAIDS, 2003).

Adolescents have the tendency to be involved in temporary relationships which results in higher probability of engaging sexual intercourse with multiple sexual partners compared to adults (Yan et al., 2009). This could increase their susceptibility to contract HIV/AIDS through the increase in exposure with infected individuals. University students in the west have been found to be at higher risk for HIV infection due to their

tendency for sexual experimentation and unprotected sexual intercourse (Cates, 1991; Seal & Agostinelli, 1996). Similarly in Asia, a cross-sectional study in China among undergraduate students had reported that 24% of the respondents were sexually active and 40% of them had never used condoms which put them further at risk for HIV/AIDS (Huang, Bova, Fennie, Rogers, & Williams, 2005). Another study in a university in Hong Kong has found that 43% of those whom were sexually active constantly use condoms while a fifth (22%) have never used condoms (Abdullah et al., 2003). Studies among university students in Malaysia have found that their knowledge of HIV transmission is alarming low (Jahanfar, Lye, & Rampal, 2009; Wong, 2012a). Furthermore, with the low condom usage reported among university students which was 29.8%, this could lead to a higher risk of contracting HIV/AIDS (Rozina et al., 2011).

2.12.2 Sexually Transmitted Infections

In regard to sexually transmitted infections (STI), majority of the cases were seen in developing countries with South and Southeast Asia being on top of the list, followed by Sub-Saharan Africa, Latin America, and the Caribbean (World Health Organization, 2001). Approximately 25% of the 12 million new STIs were among adolescents in the United States (Illinois Department of Public Health). However, in Malaysia, the real magnitude of STIs among Malaysians was obscured by underreporting, under-diagnosis and asymptomatic manifestation (Ministry of Health (MOH), 2008). This underreporting may result fromadolescents' insecurity in getting treatment at government clinics. They were afraid of criticism when they seek clinical treatment for their STIs' symptoms. These infections may result in various morbidities including male and female infertility, pelvic inflammatory disease, ectopic pregnancy, cervical cancer, congenital syphilis and fetal wastage, low birth weight babies, prematurity and ophthalmia neonatarum (Land & Evers, 2002; Moodley & Sturm, 2000; World Health Organization & Joint United Nations Programme on HIV/AIDS (UNAIDS)). Furthermore, research had found that STIs have

the tendency to increase adolescents' susceptibility of contracting HIV (Cohen et al., 1999; Levine et al., 1998; Newbern et al., 2013; Røttingen, Cameron, & Garnett, 2001). Therefore, interventions to reduce risk of exposure to STIs are required to minimize the subsequent risk of HIV transmission. The treatment of complications resulting from these sexually transmitted infections posed a burden in terms of healthcare costs (World Health Organization, 2007). For example, the United States health care system spent USD 17 million annually in treating STIs (Center for Disease Control and Prevention (CDC), 2010).

2.12.3 Unintended pregnancies

Unprotected sexual intercourse among adolescents may result in pregnancy which is definitely a concern both in the developed and developing countries. Pregnancy in adolescents may ensue in morbidity and mortality of both the mother and the offspring. Adolescent pregnancy accounted for 11% (approximately 16 million adolescent females) of all births worldwide, with more than 90% of the births occuring in developing countries (WHO, 2008).

Pregnancy among adolescent girls are affected by their physiological immaturity, social environment such as poverty, inadequate education and limited family support which predisposes them to contract sexually transmitted infections, unsafe abortions, delivery complications, anaemia, pregnancy induced hypertension and inadequate weight gain (Shawky & Milaat, 2004). These conditions are further aggravated by insufficient prenatal care resulting from poor health seeking behaviours among these adolescents (American Academy of Pediatrics, 2001).

In Malaysia, adolescent birth rate had increased from 15 per 1000 women in 2009 compared to 14 per 1000 women in 2008 (Department of Statistics Malaysia, 2012). In a short period of time (July to December 2010), 25% of pregnant mothers who had

registered at the primary care facilities were unmarried (National Population and Family Development Board, 2012). However, this birth rate denotes only the registered live births delivered by adolescent mothers but has not taken into account abortions, still births and baby abandonment (Tan, Hislinda Tohid, Su, Tan, & Khairani Omar, 2012). Therefore, this estimate may provide a false sense of security in regard to the real burden of adolescent pregnancy. Statistics from the Malaysian Royal Police revealed that throughout a five year period (2005 until 7 April 2010), 407 babies were found abandoned (Malaysian Royal Police (PDRM), 2010). Furthermore, in 2010 alone, up until 16 August 2010, an average of eight abandoned babies were found in a month (Kumar, 2010).

2.12.4 Social Consequences

These sexual activities among adolescents not only pose medical consequences, but they also may be associated with social consequences as well. These risky behaviours are more prevalent in adolescents as their impulse-control mechanism is still not matured and they are prone to opt for behaviours that would result in rewards rather than thinking of their safety (Dodge & Albert, 2012).

In a longitudinal study among school students in Florida, sexual debut was found to be associated with reduced educational aspirations for white females and reduced academic achievement among the white males (Billy, Landale, Grady, & Zimmerle, 1988). Another study found that sexual initiation among adolescents was linked to lower academic accomplishment and decreased educational aspirations among both gender (Schvaneveldt, Miller, Berry, & Lee, 2001). These lower achievers are less likely to be concerned with the possible consequences of sexual engagement such as unintended pregnancy and sexually transmitted infections as the result of having decreased educational aspirations. Thus, they are not deterred from having sex in contrast to adolescents who have higher educational aspirations. In a more recent study utilizing data

from the National Longitudinal Study of Adolescent Health, females who had initiated sex earlier were less likely to continue their education beyond secondary level (Spriggs & Halpern, 2008b).

Early sexual debut commonly defined as sexual initiation at less than 16 years of age (Udell, Sandfort, Reitz, Bos, & Dekovic, 2010) were found to be associated with behavioural problems later in life (Cavazos-Rehg, Spitznagel, et al., 2010; Woodward, Fergusson, & Horwood, 2001). These adolescents were more likely to be involved in drug and alcohol abuse and delinquent behaviours (Paul et al., 2000). It is difficult to relate these psychosocial problems as the effects of early sexual debut as majority of the studies were cross-sectional in nature (Biglan et al., 1990; Small & Luster, 1994). The relationship between early sexual debut and delinquency was found in a longitudinal study in which the participants were drawn from the National Longitudinal Study of Adolescent Health (Harden & Mendle, 2011). In this study, adolescents who were involved in a non-romantic sexual relationship were found to be at risk of delinquent behaviours. On the contrary, those who were in romantic sexual relationships were associated with lower levels of delinquency. However adolescents who were involved in romantic sexual relationships could be affected by other factors as well which results in lower future delinquent behaviours. A longitudinal study conducted among Dutch adolescents had reported a non-significant association between early sexual debut and delinquency (Udell et al., 2010). This could be contributed by the differences in culture practised by the Americans in the earlier study compared to the study among the Dutch adolescents.

Studies have investigated the association between sexual initiation and depression (Spriggs & Halpern, 2008a). In the United States, a study utilizing data from the National Longitudinal Study of Adolescent Health in 1995 has provided evidence of sexual initiation among adolescents and depression (Hallfors, Waller, Bauer, Ford, & Halpern,

2005). On the contrary, another study utilizing the same data but the participants were followed up for seven years has found that the timing of sexual initiation was not associated with depression in adulthood (Spriggs & Halpern, 2008a). However, the age of sexual initiation from self-report may be affected by recall bias which could affect the findings.

In Malaysia, pregnancy out of wedlock is frowned upon as it is viewed as an immoral behaviour (Siti Fatimah Abdul Rahman, 2000) and their children are known as *anak tak sah taraf* or illegitimate children which is also a stigma. As a result of being viewed as immoral, most adolescent mothers may have to stop schooling prematurely (Nor Jana Saim, Dufåker, & Ghazinour, 2014). If the pregnant mother is more than 18 years old, which is an age when marriage is allowed, some parents may arrange their daughters to marry the baby's father to avoid further shame to the family (Azizi Yahaya, 2010). In some cases, the pregnant mother might resort to abortion which is illegal in Malaysia (Nor Jana Saim et al., 2014). There are also cases where the adolescent mothers are sent to shelter homes (Mohd Azri Mohd Suan, Adibah Hanim Ismail, & Haliza Ghazali, 2015) which are run by the government, non-government and semi-government for the duration of the pregnancy in order to hide the pregnancy from becoming public knowledge. It is a temporary shelter which provides protection, supervision, rehabilitation and training for the unwed adolescent mothers (Nor Jana Saim et al., 2014). Unfortunately, there are also cases of illegal infant abandonment as a result of pregnancy out of wedlock. On average, 84 cases of illegal infant were reported abandoned annually in Malaysia from 1999 to 2011 (ranging from 65 cases in 2000 to 102 cases in 2008) (Salmi Razali, Kirkman, Hassan S. Ahmad, & Fisher, 2014). In Malaysia, there are limited literature published on adolescent pregnancy and its social consequences unlike in the western countries (Mohd Azri Mohd Suan et al., 2015).

2.13 Forced Sexual Experience or Sexual Coercion

Sexual experiences among adolescents can either be consensual or non-consensual (Muehlenhard & Peterson, 2005). Forced sexual experience or sexual coercion is defined as unwanted sexual penetration that occurs when the adolescent is under a nonphysical pressure (Black et al., 2011). It has been found to occur quite frequently among adolescents (Jackson, Cram, & Seymour, 2000) especially younger adolescents. In regard to gender, females were found to be more likely to become victims to sexual coercion because of their tendency to engage in relationships rather than assessing the consequences on the unwanted sexual intercourse (Gross, Winslett, Roberts, & Gohm, 2006; Lambert, Kahn, & Apple, 2003). As a result, a female adolescent might be vulnerable to sexual pressure and might not be able to resist it. These females may have to submit to sexual requests and face the possibility of denial in negotiating condom usage (French & Neville, 2013). Alcohol and drug use may play a role in sexual coercion which have the ability to interfere with the adolescents' judgment (Johnson & Knight, 2000).

Risky sexual behaviours such as unprotected sexual intercourse and increased number of sexual partners are the outcomes of forced sexual experience according to several studies (Kahn, Huang, Rosenthal, Tissot, & Burk, 2005; Zweig, Sayer, Crockett, & Vicary, 2002). Therefore, there might be a greater risk of acquiring sexually transmitted infections and HIV/AIDS as a result of these risky behaviours (French & Neville, 2013).

2.14 Conclusion of Chapter Two

This chapter has provided a review of previous research relating to adolescents' sexual behaviour. The theoretical framework guiding this theory was adapted from the Bronfenbrenner's Social-ecological Theory. The focus of this study was on the characteristics of the individual and its immediate environment in influencing sexual

initiation among late adolescents in institutions of higher learning. A conceptual framework was constructed to provide a diagrammatic view of the core of this study.

The concepts of adolescence including its various definitions by different organizations were discussed in this chapter. In order to enhance the understanding of adolescents' behaviours, their passage through these challenging yet fascinating physical, psychological, emotional and social growth and their implications are narrated. The maturity of their cognitive control and its effects on their behaviours are also provided in this chapter.

Adolescent sexuality which provides the rationale of the adolescents' fascination with sexual engagement is deliberated in one of the sections. Interestingly, the current shift in viewing adolescent sexuality from focusing on its negative influence towards it being part of a normative developmental process is also discussed. In addition, the operationalization of sexual initiation is further reviewed.

A research on adolescent sexual initiation is not complete without a review on adolescents' age of sexual debut, sexual engagement with multiple partners and contraception use in further highlighting the significance of this issue. These related sexual behaviours are provided in this chapter. The prevalence of sexual initiation among adolescents globally, in the Asian continent and in Malaysia are also described. Based on previous research, the prevalence of sexual initiationual experience varies from one country to another from as low as 2.4% in Indonesia to as high as 69% in New Zealand. Some of these studies were part of the respective country's national survey among adolescents. Majority of these studies had reported a higher prevalence among males compared to females which could be dictated by the social norms in the different countries. However, the validity of self-report is influenced by under- or over-reporting given the sensitivity of sexual initiationual encounters. Furthermore, some studies did not

provide a complete definition of what constitute sexual initiation which could intricate the comparison of prevalence of sexual experience across studies.

In order to ensure successful intervention programmes toward promoting abstinence, determination of its risks factors are paramount which are discussed in this chapter. Furthermore, the negative consequences of risky sexual intercourse are also included at end of this chapter.

CHAPTER 3 : METHODOLOGY

3.1 Introduction

This chapter describes the materials and methods employed in this study. In order to meet the stated research objectives, this study was divided into two phases; Phase I was a pilot to determine the psychometric properties of the Susceptibility to Peer Pressure Scale and Phase II was the quantitative component to determine the prevalence of sexual initiation and its risk factors. In this chapter, the study population, instruments used, data collection procedures and the statistical analyses employed were also described. Ethical consideration for the participants was also explained. The flow of this study is depicted in Figure 3-1.

PHASE I

Literature Review to develop the Conceptual Framework for the study

Development of the questionnaire for Phase II: Compiling all the relevant scales pertaining to the Conceptual Framework

Susceptibility to Peer Pressure (SPP) Scale was selected for the 1st Pilot test

Forward and back-translations of the SPP scale

1st Pilot test to investigate the face validity of the SPP Scale which involved 30 students from a tertiary level institution

2nd Pilot test to investigate the psychometric properties of the SPP Scale conducted from December 2012 until February 2013: 515 students participated in this study.

Exploratory and Confirmatory Factor Analyses Performed

Test-retest reliability of SPP Scale was conducted which involved 80 respondents

The SPP Scale was revised, finalised and incorporated in the questionnaire for Phase II

Pilot testing of the newly formed questionnaire: Face validity, internal consistency and test-retest reliability

PHASE II: Cross-sectional study

Data collection from April 2013 until September 2013: 1652 students participated in the study

Data analysis: Descriptive analyses adjusted by sampling weights and Logistic Regression analyses adjusting for complex sample stratified by gender were employed

Interpretation of results

Figure 3.1: Flow Chart of Study

3.2 Study design

A cross-sectional study design was chosen to answer the stated research questions. The rationales for the selection of this study design were as follows:

i. One of the objectives of this study was to determine the prevalence of sexual initiation among adolescents attending tertiary level institutions. Hence, a cross-sectional design was the most appropriate study design to reach this objective.

ii. This study design enabled the assessment of the respondents in determining the relevant exposure factors in association with the outcome of interest.

iii. The Phase I of this study was essential in assessing the reliability and psychometric properties of the Susceptibility to peer pressure scale, one of the instruments used in the Phase II of this study. A cross-sectional design was suitable for this purpose.

3.3   Study area

The first phase of this study was conducted in three states of Peninsular Malaysia; Selangor, Federal Territory of Kuala Lumpur and Negeri Sembilan. Selangor with an area of 8,104 square kilometres is located on the west coast of Peninsular Malaysia and is bordered on the north by Perak, Pahang to its east, on the south by Negeri Sembilan and the Straits of Malacca to the West. The Federal Territory of Kuala Lumpur, an area of 243 square kilometres is in the central part of Selangor. Negeri Sembilan with an area of 6,686 square kilometres is to the south of Selangor. These states made up a total area of 4.5% of Malaysia (Department of Statistics, 2011). Adolescents aged 15 to 19 years account for 24.8% of the total Malaysian's adolescents in three states (Department of Statistics, 2011).

The second phase of this study was conducted in the central region of Malaysia. There are three states in this region: the Federal Territory of Kuala Lumpur, Selangor and

the Federal Territory of Putrajaya. These states represent 2.5% of Malaysia and 21.7% of adolescents aged 15 to 19 years reside in these states.

Figure 3.2: Location of Selangor, Federal Territory of Kuala Lumpur and Negeri Sembilan

3.4 Study Population

The target population for both phases was unmarried Malaysian students aged 18 to 19 years old (late adolescents) enrolled in both public and privateinstitutions of higher learning located in the Central Region at the time of study (1 December 2012 – 30 September 2013). These institutions comprised universities, colleges, community colleges and polytechnics. Based on the list of institutions of higher learning registered with the Ministry of Higher Education in 2012 provided by the Department of Higher Education, there were six public universities and twenty seven private universities in the study area. Apart from these universities, there were four polytechnics, eight community colleges and 177 private colleges located in the Central Region. Therefore, late adolescents attending a total of 222 institutions of higher learning were eligible for this

study. According to the statistics provided by the Ministry of Higher Education Malaysia, there were 272,666 adolescents aged 15 to 19 years in tertiary level institutions both public and private in 2012 (Registration and Standards Division, 2014).

3.5   Selection of study population

The inclusion criteria included the following: (i) Malaysian citizens; (ii) adolescents aged 18 to 19 years; (iii) unmarried; (iv) students attending the selected public or private institutions of higher learning during the study period and (v) students with the ability to read and write in Malay or English language. The institutions of higher learning which did not offer programmes for secondary school leavers were excluded from the study (this was to ensure the access to students aged 18 and 19 years as stated in the inclusion criteria). In addition, only the semester I and II classes were included in this study (this was to ensure the access to students aged 18 and 19 years as stated in the inclusion criteria).

These eighteen and nineteen years old students were selected as they were living in a vulnerable environment. This specific age group was targeted because they had left school and were living in a university or college residential accommodation or staying away from their families. This independence from their parents' scrutiny allows them to explore their new world which may result in risk taking behaviours (Duncan et al., 2002). The selection of students from both public and private institutions of higher learning in the three states allowed a better representation of students attending tertiary level institutions in Malaysia.

3.6   Study Period

The data collection for Phase I of this study commenced in December 2012 and was completed by mid-February 2013. The completion of data analysis for Phase I enabled

Phase II of this study to be conducted which started in April 2013. The data collection for Phase II took approximately five months to be completed.

3.7 Ethical considerations

Ethical approval to conduct this study was obtained from University of Malaya Medical Centre Medical Ethics Committee (Reference No. 913.9). The ethical committee also stated that written consent from the participants was not needed to ensure anonymity (Appendix F). This was an added condition from the Ethical Committee. The names of the tertiary level institutions which had participated in this study were also kept confidential. Permission to conduct the research was obtained from the Planning and Research Division, Ministry of Higher Education and the Deans including the Student Affairs Division of the selected institutions of higher learning.

3.8 Phase I – Methodology for Validation Study

3.8.1 Sample Size

Sample size is an essential component for this validation study as it will affect the statistical power and precision of the model's estimates (Brown, 2012). In confirmatory factor analysis, this power relates to the sensitivity of Chi-square test to detect any model misspecifications and the probability of identifying a significant parameter estimate (Brown, 2012). Hair et al. recommended a sample size with a ratio of 1 to 5 for each individual item for factor analysis (Hair, Anderson, & Tatham, 2005). Therefore, based on this recommendation, the minimum sample size was 175. However, Hair et al. also advised to obtain the highest number of participants per item in order to reduce the possibility of over-fitting the data (Hair et al., 2005). This sample size concurred with MacCallum's and Widaman's recommendation; they have suggested that studies involving 100-200 participants are acceptable in the presence of factor loadings of more than 0.80 and communalities within 0.50 (MacCallum, Widaman, Zhang, & Hong, 1999). In line with this recommendation, when exploratory factor analysis revealed low

communalities with a small number of factors and only three or four items representing each items, the study requires at least 300 participants (MacCallum et al., 1999). In this study, there were a total of 515 participants which had exceeded MacCallum's and Widaman's recommendation.

3.8.2 Participants

This study involved unmarried Malaysian students aged 18 and 19 years enrolled in three institutions of higher learning, Federal Territory of Kuala Lumpur, Selangor and Negeri Sembilan. These participants were excluded from the Phase II of this study.

3.8.3 Study instrument

The instrument used in this validation study was the Susceptibility to Peer Pressure Scale which measured the influence of peers. This instrument was adapted by Sim and Koh (Sim & Koh, 2003) from Berndt's peer conformity measure (Berndt, 1979). The Susceptibility to Peer Pressure Scale was originally developed in English and was validated among Singaporean adolescents. Since the Singaporean's culture was similar to the Malaysian's culture, this scale was chosen. The hypothetical scenarios utilized in this scale can be applied to the Malaysian culture with several modifications to the wordings used in the scale and the original authors have granted these modifications. The other scales were not chosen since the scales were utilized among different population with different culture. Berndt's peer conformity measure used 30 different scenarios where peer persuasion could be seen (Berndt, 1979). In this scale, there were three types of behaviours that were assessed; antisocial, neutral and pro-social behaviours. The authors of the Susceptibility to Peer Pressure scale had also incorporated a modified version of the Peer Pressure Inventory (PPI) developed by Clasen and Brown (1985) into their scale.

The Peer Pressure Inventory (53 items) was based on the perceptions of peer pressure. These perceptions were subdivided into five domains of susceptibility which were derived qualitatively by exploring the adolescents' perception on the peer pressures

that they had encountered (Clasen & Brown, 1985). These domains were: involvement with peers, involvement in school activities, involvement with family, conformity to peer norms and misconduct.

The Susceptibility to Peer Pressure scale had utilized scenarios that were relevant among adolescents in the Singaporean context. The original version was 35 items representing the five domains as in the PPI scale. However, after the psychometric analyses, the scale was reduced to 16 items representing four domains of susceptibility to peer influence. The authors had conducted a validation study among 313 students aged 13 to 17 years in two Singapore secondary schools. Table 3.1 displays the five domains and the items representing them. Seven hypothetical scenarios encompassing three stipulations: directive by the peers; the participants' reluctance to carry out their peers' directives; and the participants' response to that directive whether to conform or not were included in this instrument. The responses were measured on a 4-point Likert-type scale: "1=definitely would" to "4= definitely would not". All the items were reversed coded to ensure that higher scores would reflect higher levels of susceptibility to peer pressure.

Table 3.1: Susceptibility to Peer Pressure Scale

No.	Domains	Items: Your friends tell you to …
1	Family Involvement	• Ask your parents for advice on which course to take. • Go home to have dinner with your family. • Try get along with your parents after a quarrel. • Spend your free time with your family. • Call your parents that you will be home late. • Take your family advice seriously. • Go to Sentosa with your family over the weekend.
2	School Involvement	• Be involved in school activities. • Start studying as exams are coming. • Get into university. • Go home and do your homework. • Try to get along with your teacher. • Help your teacher with decorating the class notice board. • Try to get good grades for a test.
3	Peer Involvement	• Join the crowd at your school. • Be more sociable at a party. • Go the beach with your friends over the weekend. • Go to a party with your friends. • Join your friends at a fast-food restaurant. • Go to watch a band performance which one of your friends are participating in during the school holidays. • Go to a holiday chalet with your friends in order to get to know more friends.
4	Misconduct	• Take a puff of cigarette. • Write on the walls with the marker. • Pick a fight. • Drink a little beer. • Bring home an item without paying. • Jaywalk instead of taking the overhead bridge to cross a main road. • Throw tissue papers onto the floor instead of into the bin.
5	Peer Norms	• Try the latest hairstyle. • Listen to the K-pop music. • Buy the same clothes as they do • Stop using straws to drink. • Think that the movie you and them had watched was the best ever. • Talk the same way as them. • Think that a new classmate you have not spoken to were like what they think.

3.8.3.1 Translation of the Study Instrument

Since the Susceptibility to Peer Pressure scale was tested in a different country, a cross-cultural adaptation of this scale for the use in Malaysia was necessary. This was

carried out to ensure that the items were translated linguistically and the instrument's content validity was maintained across cultures (Beaton, Bombardier, Guillemin, & Ferraz, 2000; Guillemin, Bombardier, & Beaton, 1993).

The first stage in translation was forward translation. This was performed by translating the English version into Bahasa Melayu (Malay Language) by two independent bilingual translators. The translation which was performed by two independent persons allowed for unbiased detection of different interpretations of items when compared to the original scale especially in the presence of unclear wordings (Beaton et al., 2000; Guillemin et al., 1993). The first translator, termed as naive translator (Beaton et al., 2000) was a graduate secondary school teacher with English Language as her main subject in teaching and the second person was a postgraduate candidate with a medical background. The naive translator was more likely to discover different interpretation of the items than the translator with a medical background. On the other hand, the involvement of the translator with a medical background enabled a more reliable interpretation in regards to the clinical perspective (Beaton et al., 2000). Both of these translators conducted the translations separately. The researcher then compared the translated versions in order to achieve a consistent translation.

This was followed by the second stage of translation. Back-translation was performed by two different independent translators. A post-graduate candidate with a medical background and a research assistant with a science background proceeded separately with the translation of the Malay version back to the original language which was English. Both were blinded to the English version. This was a measure used to check for the validity of the translations. As a result, the translated version was able to reflect the equivalent content as the original version.

These translated versions were then reviewed by two experts (a psychologist and a public health physician) and the translators. Consensus on any discrepancy was reached

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and the pre-final version was produced. This panel had ensured that the translation was fully comprehensible (face equivalence) with cross-cultural equivalence (conceptual equivalence).

There were several words and phrases that were modified from the original version in order to accommodate the Malaysian culture and the college setting. Words like "school" and "teacher" were replaced by "college" or "lecturer". Place like "Sentosa" was substituted with "Penang", which was similar, in view that both were islands and holiday destinations. In Malaysia, the current music of interest among adolescents is K-pop music, therefore, the "Japanese pop music" in the original instrument was replaced by this "K-pop music". The word "jaywalk" was dropped as this word might cause some confusion among the respondents. This was replaced by "crossing recklessly" instead.

3.8.3.2 Pre-testing of Study Instrument- Face Validity

A pre-test was conducted among 30 students attending an institution of higher learning in Negeri Sembilan in order to evaluate its face validity via a probing technique. Face validity was essential as this process ensured that the questions were acceptable without arousing reluctance or hesitation (Guillemin et al., 1993). The students who were fluent in both English and Malay Language received the bilingual version of the instrument. In addition to the study instrument, each of the students received a feedback form where they could comment on clarity of the questions and make suggestions to improve them. All of the 30 respondents did not have any issues with the clarity of the questions. The instrument was ready to be tested in a pilot study.

3.8.4 Procedures Employed in Pilot Study

A pilot study was conducted to evaluate the psychometric properties of the Susceptibility to Peer Pressure Scale. Ethical approval was granted by the University of Malaya Medical Centre Medical Ethics Committee (Reference No. 913.9). The approval to use this instrument was obtained from Associate Professor Dr Sim Tick Ngee, the

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author of the instrument. The author also gave the permission to modify the scale based on the scenarios in Malaysia. Permission to conduct this pilot study among students enrolled in tertiary level institutions were obtained from the Planning and Research Division, Ministry of Higher Education (MOHE) and the deans including the Heads of the Student Affairs of the three selected institutions.

Meetings were conducted at the institutions, attended by the Heads of the Student Affairs and the Liaison Officers to explain the purpose of the study and data collection procedure. Several questions were raised at these meetings in regard to the distribution of the questionnaires and anonymity of the institutions involved. All the concerns were addressed by the researcher. For each institution, two faculties or departments were selected. Seven hundred and forty eligible students (unmarried Malaysian students aged 18 and 19 years old) in these faculties or departments were approached and invited to participate voluntarily in this study. A total of 636 students participated in this study.

The liaison officer from each institution allocated several time slots where the students were assembled in their classes or the student halls to complete the questionnaires. The researcher was present as an invigilator at each time slots to distribute the questionnaires. Each respondent received a self-sealed envelope containing a participant's information sheet, a summary of what the respondents had agreed to, a set of demographic questions and the 35-item scale. The potential respondents were briefed by the researcher on the purpose of the study and were assured of anonymity of their responses and their identity. No personal identifier of the respondents was required. The students were also informed of their rights to decline from participating and may withdraw at any time without any repercussions. As a measure to reduce the number of missing data, the respondents were reminded to answer all the questions. The questionnaires were self-administered and took approximately 15 minutes to be completed. The return of the questionnaires implied consent from the respondents.

3.8.4.1 Test-retest

The test-retest to assess the reliability of the questionnaires was conducted among 80 students in an institution of higher learning involved in the pilot study. Hertzog (Hertzog, 2008) had performed calculations of test-retest correlations for various number of participants. She recommended that in order to obtain correlations of at least 0.70 with a narrow 95% confidence interval, a sample size of at least 70 to 80 is required.

Respondents completed the questionnaires on two separate occasions, two weeks apart. The respondents were given an ID card which has a unique ID number with a corresponding questionnaire enclosed in an envelope with the same ID number. However to ensure confidentiality, these ID numbers were not linked to the respondents' names or their Matriculation Card numbers. These ID numbers were used as a tagging method to ensure that the questionnaires received at the first round were from the same respondents who answered the questionnaires collected two weeks later. They were instructed to keep the ID card until 2 weeks later. On the second session, they were ask to show the ID cards and will be given the questionnaires with the matched ID numbers. The researcher was present at the allocated time slots to distribute the questionnaires after a two-week interval. All respondents who had participated in the first pilot test were also present during the second pilot test.

3.8.5 Statistical Analysis

3.8.5.1 Test-retest Reliability Analysis

Test-retest reliability was performed to determine the stability of this scale over time by examining the percent of agreement among each item in the scale. The length of time between the tests may influence the reliability results (Marx, Menezes, Horovitz, Jones, & Warren, 2003). There are no specific guidelines but most researchers had used a period between two days to 14 days as this time frame is believed to be reasonable compromise between recall bias and any unwanted change (Marx et al., 2003).

In this study, the reliability was assessed using Cohen Kappa Coefficient. Intraclass correlation coefficient is primarily designed for the use of interval or ratio data (Tinsley & Weiss, 1975). For ordinal scales, unweighted kappa which treats all disagreements equally is unsuitable for ordinal scales (Lantz, 1997). Therefore, weighted Kappa was used to determine the test-retest reliability of the instrument because it considered the magnitude of the discrepancy that was present in ordinal variables (Brusco, Stahl, & Steinley, 2008; Svensson et al., 2011). Weighted kappa coefficients were calculated for each item in the scale using the formula by Fleis et al. (2013).

The arbitrary guidelines provided by Landis and Koch (Landis & Koch, 1977) served as useful "benchmarks" for determining test-retest reliabilities in this study as shown in the following, Table 3.2.

Table 3.2: Scale for the interpretation of Kappa Statistic

Kappa Statistic	Strength of Agreement
Less than 0.00	Poor
0.00 to 0.20	Slight
0.21 to 0.40	Fair
0.41 to 0.60	Moderate
0.61 to 0.80	Substantial
0.81 to 1.00	Almost perfect

3.8.5.2 Internal Consistency

In the assessment of internal consistency, which is a part of the reliability of an instrument, Cronbach's alpha was used to determine the strength of association between each item within the scale (Verra et al., 2012). Alpha coefficient is expressed as a number between zero (0) and one (1). This alpha coefficient reports the inter-item correlations which were able to point toward the inter-relatedness of the items within an instrument (Tavakol & Dennick, 2011; Verra et al., 2012). The coefficient alpha also reveals the measurement error in the instrument (Tavakol & Dennick, 2011). This error is derived by squaring the estimate and subtracting it from 1.00 (one) (Kline, 1994). Therefore, as the Coefficient alpha increases, this error will decrease (Nunnally & Bernstein, 1994). This

alpha should be estimated separately for each underlying concept instead of calculating for the entire instrument (Nunnally & Bernstein, 1994). Norman and Streiner (2008) have recommended that a Cronbach alpha of at least 0.6 is acceptable. In this study, Cronbach alpha coefficients were calculated for each domain.

3.8.5.3 Factor Analysis

The IBM Statistical Package of Social Sciences (IBM SPSS) Version 19.0 (IBM, Released 2010) and SPSS AMOS Version 21.0 (Arbuckle, 2006) were used for the data analysis. Data screening to assess for data accuracy and missing data were carried out using Missing Value Analysis in the IBM SPSS via explore procedure for continuous variables, while the categorical variables were screened via frequency procedure. Any discrepancies were verified by manually inspecting the questionnaires. Any corrections made were documented in a log book.

Missing data may result in deluding conclusions made from a research and limit the findings' generalizability (Byrne, 2010) . Missing data are classified into three groups based on whether the missing data are dependent on the studied variables: missing completely at random (MCAR), missing at random (MAR) and missing not at random (MNAR) (Tabachnick & Fidell, 2001). Based on Tabanick's and Fidell's recommendation, random missing data at 5 per cent or below from a large sample sized study, various procedures employed in handling the missing data will generate similar results (Tabachnick & Fidell, 2001). On the other hand, Hair et al. were more liberal where a level of ten per cent or less would tolerate any methods of handling the missing data without yielding much discrepancy across the different methods (Hair et al., 2005). Tabanick and Fidell suggested that the pattern of missing data should be given more emphasis compared to the extent of missing data as the pattern of missing data has a larger impact on the generalizability of the research findings (Tabachnick & Fidell, 2001). These authors also proposed that the methods chosen in handling missing data would not give

much impact to the study findings if the extent of missing data is as low as 5% (Tabachnick & Fidell, 2001). In this study, as the amount of missing data were sufficiently low except for a few variables, any approaches for resolving the missing data could be applied.

Through Missing Value Analysis, independent t-tests were performed for continuous variables. If the mean between the non-missing data and the data with missing values was found to be insignificant for a variable, therefore, there was a possibility that the data were missing at random (Hair et al., 2005; Tabachnick & Fidell, 2001). The pattern of missing data for categorical variables was identified via calculating the proportions for the non-missing group and data with missing values group for that variable. If the proportion in one group did not differ much from the other group for the same variable, the data might be missing in a random manner (Hair et al., 2005). The continuous variables were further subjected to another test of randomness, the Little's MCAR test. If the p-values from this test were found to be insignificant, the missing data were classified as Missing Completely at Random (MCAR) (Hair et al., 2005). MCAR data refers to the occurrence of missing data which are not related to any other variables in the study (Hair et al., 2005). Data that were classified as MCAR reflect the highest degree of randomness and provided no grounds for the missing data to contribute further bias to the research findings (Tabachnick & Fidell, 2001). In this study, the data were found to be MCAR which enabled several approaches to be taken as these type of data were less likely to present serious bias (Musil, Warner, Yobas, & Jones, 2002).

When missing data are present, there are two available approaches in dealing with this issue: the first option is to delete the data or the second option is to replace the missing data with an imputed value (Musil et al., 2002).. Even though the percentages of missing values were mostly less than 5 per cent, imputation was undertaken as to ensure there was sufficient sample size for multivariate analysis. Listwise deletion would result in a smaller

sample size leading to a lower statistical power and larger standard errors (Cohen & Cohen, 1983). Through EM, the missing data correlation (covariance) matrix was formed through an assumed distribution for the missing data and inferences for the missing values were made on the likelihood under the assumed distribution (Tabachnick & Fidell, 2001). This approach follows an iterative procedure in generating imputed values for the missing data through expectation (E-step) and maximization (M-step) algorithms (Tabachnick & Fidell, 2001). This method is considered superior when compared to other methods such as listwise, pairwise, and mean substitution methods and is assumed to yield unbiased parameter estimates for data that are classified as MCAR (Acock, 2005).

The highest missing value was 11.8% detected for item PP19. The other items were missing less than 1%. In determining the randomness of missing data, the Little's MCAR's test was employed (Hair et al., 2005). As the analyses of the Little's MCAR's test for the items were not significant, the missing data were classified as Missing Completely at Random (MCAR). Therefore, imputation of missing data using Expectation Maximization Approach (EM) was utilized.

Descriptive analysis was performed to examine the socio-demographic characteristics of the respondents and the scores of the susceptibility to peer pressure scale. In this analysis, frequency, proportions, means and standard deviations were derived from IBM SPSS.

Factor analysis was used to define the underlying structure among the variables in a scale (Hair et al., 2005). Before proceeding further, the assumptions for factor analysis were assessed.

i. Sample size –

    According to Comrey and Ley's guidelines (Comrey & Lee, 1992), a good sample
    size for factor analysis is at least 300.

ii.   Normality-

Multivariate normality is the assumption that all variables are normally distributed (Tabachnick & Fidell, 2001). Skewness greater than 2 and kurtosis greater than 7 were utilized to indicate univariate non-normality (West, Finch, & Curran, 1995). Multivariate kurtosis on the other hand, was explored via Madia's coefficient which should not exceed the proposed value of 5.00 (Bentler, 2005). However, Factor Analysis is robust to the violation of the assumption of normality (Curran, West, & Finch, 1996). As an alternative, the bootstrapping method was added to the analysis in order to overcome this violation of the normality assumption (West et al., 1995; Zhu 1997). Through Bollen-Stine corrected probability value, a good model fit is suggested by a non-significant value (Edmondson, Mills, & Park, 2010).

iii.   Linearity –

Since Factor Analysis explores the correlations among items, these items must be linearly related to each other. This was carried out by inspecting the scatter plots for each item.

iv.   Outliers-

Univariate outliers were examined via inspection of boxplots and cross-checking with the questionnaires to rule out error in data entry. The detected univariate outliers were dealt with accordingly. Multivariate outliers were identified by calculating the Mahalanobis distance (D^2) for each item (Hair et al., 2005). Mahalanobis distance is the distance of a case from the centroid of the remaining cases where this centroid is the point formed at the intersection of the means of all the items (Tabachnick & Fidell, 2001). Variables with significant chi-square values ($p<0.001$) were considered as outliers and were removed (Tabachnick & Fidell, 2001).

v.   Multicollinearity-

Multicollinearity is present when the correlations among the items exceed 0.8 (Pett, Lackey, & Sullivan, 2003). This was carried out by inspecting the correlation matrix. No items in this study that were found to have correlations exceeding the recommended 0.8.

Factor analysis was conducted in three stages: confirmatory factor analysis (CFA) was performed at the first stage, followed by exploratory factor analysis (EFA) and finally by CFA. CFA was used to identify the latent factors that could explain for the variation and covariation among a set of indicators (items) (Brown, 2012). In examining the psychometric properties of this Susceptibility to Peer Pressure scale, CFA was conducted at the first stage since the underlying structure was already established earlier by Sim and Koh (2003). After the CFA, some doubts about the structure arose which lead to the second stage of analysis using EFA. After EFA was completed, the new identified structure was tested by CFA.

The fitness of the five-factor was assessed by using CFA through maximum likelihood estimation method (MLE) in SPSS AMOS Version 21. In CFA, it is essential to ensure that adequate information is available to ensure the model identification. There are three types of model identification; an under-identified model which has more parameters to be estimated, a just-identified model is produced when the degrees of freedom to estimate all the free parameters are just enough while an over-identified model has more covariance and variance terms than parameters to be estimated (Hair et al., 2005).

One of the most fundamental assessments of construct validity involves measuring the relationship between the items and the constructs. These are the path estimates which link the constructs to the indicator variables (Hair et al., 2005). The factor loadings or path estimates should at least reach 0.5 or ideally 0.7 in order to confirm that the indicators

are convincingly related to the constructs (Hair et al., 2005). Rather than focussing on these factor loadings, the standardized parameter estimates should be interpreted as they are constrained to a range between -1.0 to +1.0 (Hair et al., 2005). The unstandardized factor loadings have no upper or lower bounds which are more difficult to be deciphered. As the values of standardized loadings are indicative of construct validity, items with low loadings would be considered for deletion. In addition, the statistical significance of these loadings was examined. No items were found to have non-significant values. Factors with higher squared multiple correlations (squared standardized factor loadings) are able to explain higher variation in the items (Hair et al., 2005).

The overall fit of the model was determined by several goodness-of-fit indices. The classic goodness-of-fit index is chi-square (χ^2) statistic. In order to indicate that the data fit the model, χ^2 statistic must not be significant (Brown, 2012). However, in many circumstances, when the underlying distribution is not normal and the sample size is large, this index may provide an inaccurate model fitness (Brown, 2012). To solve this issue, there are many less stringent indices that are available as alternatives. Fit indices can be broadly classified under three categories: absolute fit indices, incremental fit indices and parsimony fit indices. Absolute fit indices used in this study include Chi-square/*df* ratio, Jöreskog's goodness-of-fit-index (GFI) and root-mean-square error of approximation (RMSEA). The incremental fit indices utilize comparative fit index (CFI) and Tucker-Lewis Index (TLI). The third group, the parsimony indices comprised two indices: the Parsimony Goodness-of-Fit Index (PGFI) and the Parsimonious Normed Fit Index (PNFI). The adjusted goodness-of-fit index (AGFI) was also taken into account in this study. According to Hair et al.(Hair et al., 2005), a Chi-square/*df* ratiovalue of less than 3; CFI, GFI, AGFI and TLI values greater than 0.9; and RMSEA ≤ 0.07 indicated acceptable fit.

After inspection of the goodness-of-fit indices, the standardized residuals which are the residuals (individual differences between observed covariance terms and the estimated covariance terms) divided by the standard error of the residual were inspected (Hair et al., 2005). The smaller the residuals, the better are the model fit. Large standardized residuals of more than 4.0 implied a potentially unacceptable error (Hair et al., 2005). However, for the data in this study, there were no items with high standardized residuals.

Large Modification Indices (MI) may indicate the presence of cross-loadings and error covariances (Byrne, 2001). It is roughly equivalent to the difference in the model χ^2 between the two models (one model with fixed parameter or constrained and the other model with freely estimated parameter) (Brown, 2012). In general, a good-fitting model will generate small modification indices (Brown, 2012). Modification indices more than 4.0 suggest that the model fitness could be improved further by freeing the corresponding path needing estimation (Hair et al., 2005). However, model respecifications must be justified on the basis of prior research or theory as well as not to be solely dependent on the modification indices and the standardized residuals (Brown, 2012). The decision was made not to remove any items with modification index of more than 4.0 as the goodness-of-fit indices had fulfilled the recommended values.

Construct validity refers to the degree to which a set of items measures what it is designed to measure accurately consistent with the underlying theory (Hair et al., 2005). One of the components of construct validity is convergent validity where items of a construct share a high proportion of variance as determined by standardized factor loadings of at least 0.5 (Hair et al., 2005). Adequate convergence is given by Average Variance Extracted (AVE) which is the mean variance extracted for items under a construct of 0.5 or higher (Fornell & Larcker, 1981a). The composite reliability of each

domain was calculated where a reliability estimate of 0.7 or higher suggested good reliability and further supported the convergent validity (Hair et al., 2005).

Construct validity was also determined by the discriminant validity which was supported when the average variance extracted for each domain exceeds the squared inter-construct correlations (Fornell & Larcker, 1981a). Discriminant validity refers to the extent to which a domain is distinct from other domains. The presence of cross-loadings among the items across the constructs would jeopardize discriminant validity which would affect the model fitness.

From the original sample of 515 participants (after data screening), the dataset were randomly split into two subsamples. There were 205 participants in the first sample and these data were subjected to EFA. The rest of the data were used as a holdout sample for CFA.

Exploratory factor analysis (EFA) allowed for exploration of the underlying domains of the construct of interest. In EFA, there are two main methods for factor extraction: common factor analysis (Principal Axis Factoring, PAF) and component analysis (principal component analysis) (Hair et al., 2005). Common factor analysis only considers the common or shared variance unlike principal component analysis which takes the total variance into account (Hair et al., 2005). In addition, the principal component analysis does not factor out the specific and error variance of an item (Pett et al., 2003). Widaman (1993) had conducted simulations of several situations in comparing both methods and found that common factor analysis produced more accurate results compared to PCA. In addition, PAF does not require distributional assumption for the data and may be used with non-normally distributed data (Fabrigar, Wegener, MacCallum, & Strahan, 1999; Kaplan, 2009). Therefore, in this study, the common factor analysis, specifically principal axis factoring (PAF) was the most appropriate method of

choice since the constructs would be able to be identified while the specific and error variance were able to be eliminated (Hair et al., 2005).

Suitability of the data for exploratory factor analysis was assessed. This was performed via several methods: sample size, factorability of the correlation matrix, Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity (Williams, Onsman, & Brown, 2010). In regards to the sample size, the opinions vary as evidenced in the literature (Williams et al., 2010). Hair et al. suggested for a sample size of 100 or larger (Hair et al., 2005) while MacCallum et al. recommended that samples in the range of 100 to 200 are adequate (in the presence of loadings more than 0.8 communalities in the range of 0.5) (MacCallum et al., 1999). However, a review by Gaskin and Happell (2014) had strongly encouraged the sample size based on the recommendation by Maccallum et al. (1999).

Factorability of the correlation matrix was determined by the visual inspection of the correlation coefficients in the correlation matrix exceeding 0.3 (Tabachnick & Fidell, 2001). If there were no substantial number of items with correlations greater than 0.3, factor analysis would not be appropriate (Hair et al., 2005).

Suitability of the data for factor analysis was also determined by the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and the Bartlett's Test of Sphericity. KMO is a ratio of the sum of squared correlations to the sum of squared correlations plus the sum of squared partial correlations. A value of 0.6 and above is required before proceeding with factor analysis (Tabachnick & Fidell, 2001). Kaiser (1970) had proposed a guideline in interpreting KMO: 0.90 or above as marvellous; 0.80 or above as meritorious; 0.70 or above as middling; 0.60 or above as mediocre; 0.50 or above as miserable; and less than 0.50 as unacceptable. Several factors influence this index: these include sample size, average correlations, the number of variables and the number of factors (Kaiser & Rice, 1974). Hair et al. however was satisfied with a value of 0.5 and

above (Hair et al., 2005). If this index was less than 0.50, the option of deleting the individual items with the lowest measure of sampling adequacy was recommended in order to ensure that KMO was at least 0.50 (Hair et al., 2005).

Bartlett's Test of Sphericity tests the null hypothesis that the correlation matrix is an identity matrix. An identity matrix hypothesizes that the items are not correlated (Pett et al., 2003). In order to have suitable data for factor analysis, the significance level must be less than 0.5 (Hair et al., 2005).

Unrotated factor solutions may cause difficulty in interpreting meaningful clusters of items (Pett et al., 2003). Therefore, through rotation, the interpretation of the factors can be done at ease as rotation maximizes high item loadings and minimises low loadings among the items (Williams et al., 2010). There are two broad classes of types of rotation, orthogonal and oblique rotations (Pett et al., 2003). In an orthogonal rotation (varimax, quartimax and equamax), the factors are uncorrelated while in oblique rotation (direct oblimin, promax, orthoblique and Procrustes), the factors are correlated (Williams et al., 2010). In social sciences research, oblique rotation is often seen as producing more precise results (Costello & Osborne, 2005). This form of rotation was recommended in a review by Gaskin and Happell (Gaskin & Happell, 2014). For this study, promax rotation was chosen to generate the factor correlation matrix.

In extracting the number of factors to be extracted, there were several guidelines used. One approach was based on the Kaiser-Guttman rule (Comrey & Lee, 1992) in which factors with Eigenvalues of more than 1 (one) were extracted. The usage of these eigenvalues in determining the number of factors to be retained is most reliable when there are between 20 and 50 items in an instrument (Hair et al., 2005). In this study, this criteria was used as the number of items in the scale was 28 items. The inspection of the Cattell's scree plot where the extracted factors were plot against their eigenvalues had also assisted in the decision of extracting the number of factors (Cattell, 1966). The

number of factors that were plotted just before the distinct break in the slope was taken into consideration. The use of the Horn's parallel analysis had been recommended as one of the most accurate approaches in estimating the number of factors that should be extracted (Lance, Butts, & Michels, 2006; Zwick & Velicer, 1986). Using this approach, factors with eigenvalues which exceeded the random generated eigenvalues were retained (Williams et al., 2010).

The final stage in factor analysis is the interpretation of the factor matrix. Items with factor loadings less than 0.40 were removed from the matrix (Coyne et al., 2002; Hair et al., 2005). Cross-loading items which are referred to the items with loadings of 0.32 or higher on two or more factors, require further decision to be made; either to retain or drop the items (Costello & Osborne, 2005). In social sciences research, the items' communalities are usually in the low to moderate range (0.40 to 0.70) (Costello & Osborne, 2005). These communalities represent the amount of variance accounted for by the factors (Hair et al., 2005). Therefore, items with low communalities (0.40) were candidate for deletion unless the items were essential to the construct. The number of items representing a factor should also be taken into consideration. Costello and Osborne (2005) had written a recommendation that factors are more solid and desirable when these factors comprised at least three to five items with significant loadings. The model would need respecification if the above conditions were not met.

Finally, CFA was performed on this new model in order to validate the structures obtained from EFA. The hold-up sample was used for this analysis. The convergent and discriminant validities were examined in order to ensure the construct validity of the scale.

Multi-group invariance in determining whether the instrument had the same psychometric properties across gender was tested in this study (Chen, 2007). Using the difference in Chi-square statistic ($\Delta\chi^2$) which could be large and statistically significant

may pose a problem in invariance models (Sass, Castro-Villarreal, McWhirter, Hawley McWhirter, & Karcher, 2011). This $\Delta\chi^2$ is influenced by multivariate non-normality and large sample sizes. In this study, Cheung' and Rensvold's recommendation were used. There were four models of invariance explored in this study: configural invariance model, weak factorial invariance model, strong factorial invariance model and strict factorial invariance model. These models differ in the equality constraints that were imposed. Cheung and Rensvold had proposed that an instrument is invariant across different groups if the difference in comparative fit index across the different models demonstrate a probability of less than 0.01 (Cheung & Rensvold, 2002).

3.9   Phase II – Methodology of Quantitative Study

3.9.1 Sample Size Calculation

The sample size for this phase was calculated using the formula for prevalence study by Kish (Kish, 1965). This formula was used as the main objective of this study was to estimate the prevalence of sexual activity among students attending institutions of higher learning and the utilization of multi-stage sampling in this study.

The formula is as the following:

$$N = \frac{Z^2_{\alpha 2}\, P\, (1-P)\, D}{E^2} \qquad \text{where:} \qquad \text{(Kish, 1965)}$$

N = Sample size

P = Prevalence or proportion of event of interest for the study

$Z_{\alpha 2}$ = Level of significance (In this study, $Z_{\alpha 2}$=1.96 (5% level of significance)

D = Design effect

E = Precision or margin of error (As the prevalence of sexual experience was less than 10%, E was taken as half of P (Naing, Winn, & Rusli, 2006)

Design effect reflects the sampling design utilized in the study in order to compensate for the deviation from simple random sampling (Suresh & Chandrashekara,

2012). Design effect was given as $D = 1 + \rho (n-1)$ (Bennett, Woods, Liyanage, & Smith, 1991) where $\rho = (MSB - MSW) / [MSB + (n-1) \times MSW]$. When all the values are imputed, $\rho = 0.91$ and $D = 1.91$.

The sample size for this study was calculated based on two studies (Table 3.3):

i. The prevalence of sexual initiation among adolescents reported by the National Health Morbidity Survey 2006 (Institute For Public Health (IPH), 2008).

ii. A cross-sectional study conducted among Youth Trainees in two youth training centres in Selangor in 2010(Mohd Rizal Abdul Manaf et al., 2014) .

Table 3.3: Sample size calculation (based on prevalence from previous research)

Parameters	NHMS III	Cross-sectional study by Mohd Rizal et al.
Prevalence of ever had sex	**4.2%**	**4.6%**
Confidence level, $Z_{\alpha 2}$	95%	95%
Design effect	1.91	1.91
Attrition rate	20%	20%
Precision, E	0.021	0.023

The attrition rate was taken as 20% in view of the sensitivity of the issue being studied. Furthermore, in Malaysia, sexual activity is a taboo subject (Siti Syairah Mohd Mutalip & Ruzianisra Mohamed, 2012) which may result in the students' hesitancy to participate in this study. The calculated sample size using the prevalence of ever had sex in NHMS III and accounting for 20% attrition rate was 803. Based on the prevalence reported in the study by Mohd Rizal et al.(2014) , the calculated sample size was 731. For this study, the higher calculated sample size was selected which was 803. However, since the analyses were stratified according to gender, the sample size was doubled to 1606.

The sample size calculation was also compared using EPI-INFO Version 6.0 software (Dean et al., 1996) utilizing the formula for population survey (Table 3.4) .

Table 3.4: Sample size calculation based on prevalence from previous research

Parameters	NHMS III	Cross-sectional study by Mohd Rizal et al.
Population Size	999,999	999,999
Expected Frequency	**4.2%**	**4.6%**
Confidence limit	2.2%	2.2%
Confidence level	95%	95%
Design effect	1.91	1.91
Attrition rate	20%	20%
Calculated sample size (Ermisch & Pevalin)	**1464**	**1596**

A total of 1652 students had participated in this study, which had exceeded the calculated sample size.

3.9.2 Participants and Sampling Method

A multistage stratified sampling method was employed in this study (Figure 3.3). There are thirteen states and three federal territories in Malaysia. These federal territories are equivalent in status as the states. However, unlike other states, there are no heads of state appointed in these federal territories.

For the purpose of this study, Malaysia is divided into five regions based on their geographical locations. There are four regions in Peninsular Malaysia (West Malaysia) and two regions in East Malaysia. The four regions in Peninsular Malaysia are the northern region (Perlis, Kedah, Perak and Penang), the central region (the Federal Territory of Kuala Lumpur, the Federal Territory of Putrajaya, Selangor and Negeri Sembilan), the southern region (Malacca and Johor) and the eastern region (Pahang, Terengganu and Kelantan). The three states, Sabah, Sarawak and the Federal Territory of Labuan, which are separated by the South China Sea from Peninsular Malaysia, are classified as East Malaysia. Using the Select tool in the SPSS software, the central region was selected as the study area via simple random sampling.

The next stage of selection was the institutions of higher learning (primary sampling units) which comprised public and private institutions. All the institutions registered with

the Ministry of Higher Learning in the central region in 2012 which offered programmes for the Form Five school leavers were included in the sampling frame. There were 33 universities and 189 colleges in this region. Six institutions (three public institutions and three private institutions) were selected via simple random sampling utilizing the same tool in SPSS.

The following stage was the selection of faculties or departments (secondary sampling uninstitution, a list of faculties or departments which offered programmes for the Malaysian certificate of education holders was generated. Simple random sampling using the Select tool in the SPSS software was employed to select two departments or two faculties from each institution.

The third sampling units were the classes. However, only the classes with students in their first and second semesters were included in the sampling frame for each department or faculty which were selected via simple random sampling. This was to avoid violation of the age criteria set for this study (18 to 19 years) order to ensure adequate enrolment of participants, all the students in all the classes in the sampling frames were invited to participate.
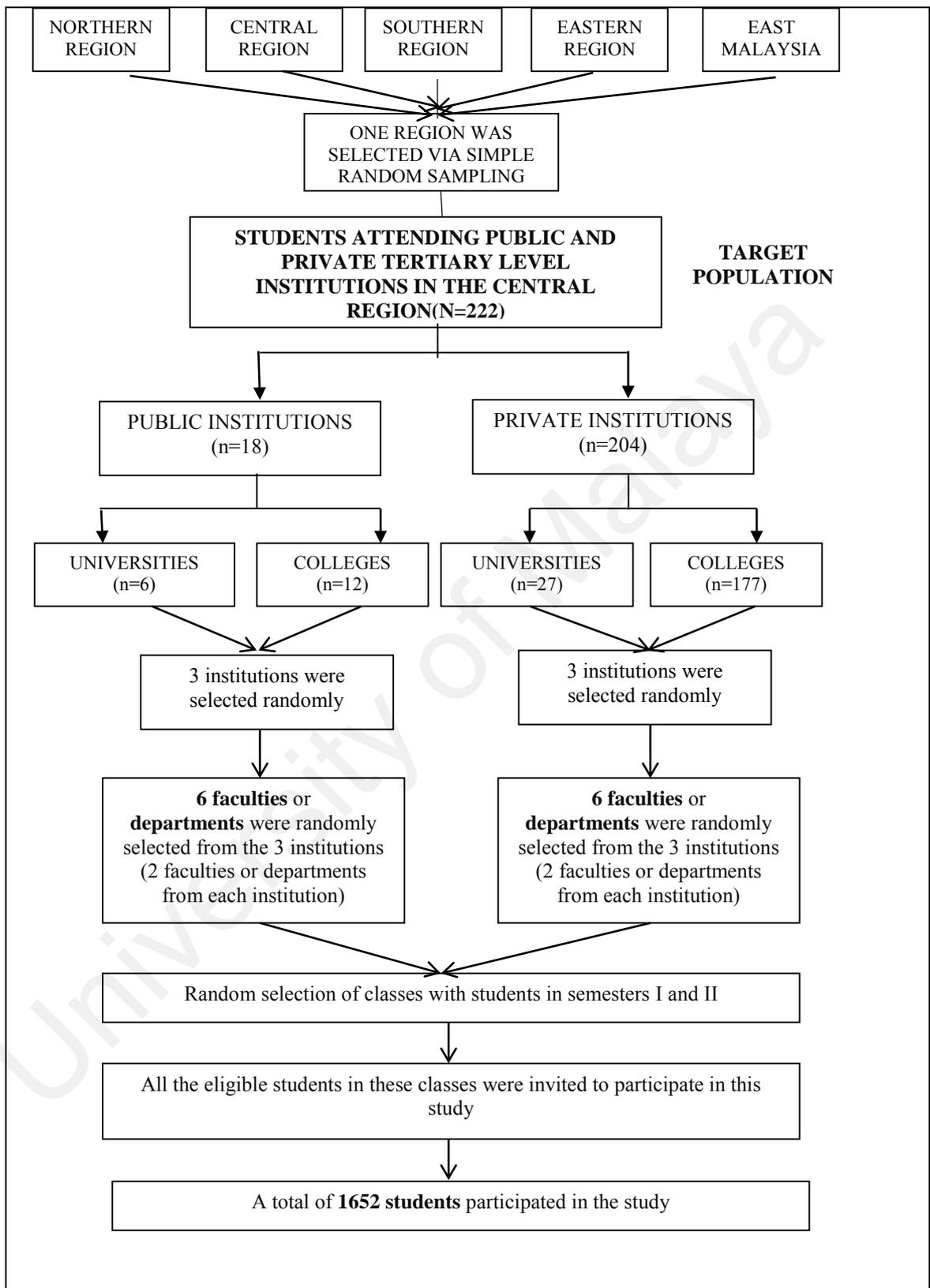
Figure 3.3: Flow chart of the Sampling Procedure

3.9.3 Study instrument

A self-administered questionnaire was developed which was divided into seven sections encompassing socio-demographic items, individual, familial and peer factors, the Multidimensional School Engagement scale, sexual behaviour questions, smoking, alcohol intake and substance use and Resilience Belief Scale. This questionnaire took approximately seven months to be constructed as there were several stages to be completed (Figure 3.4).

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┌─────────────────────────────────────────────────────────┐
│   ╭─────────────────────────────────────────────╮        │
│   │ Comprehensive literature review to identify  │        │
│   │ the risk factors associated with sexual      │        │
│   │ debut. Relevant instruments from previous    │        │
│   │ research were extracted.                      │        │
│   ╰─────────────────────────────────────────────╯        │
│                        ↓                                   │
│   ╭─────────────────────────────────────────────╮        │
│   │ Authors of the instruments were contacted    │        │
│   │ via email to request a copy of the           │        │
│   │ instruments.                                  │        │
│   ╰─────────────────────────────────────────────╯        │
│                        ↓                                   │
│   ╭─────────────────────────────────────────────╮        │
│   │ Approvals to utilize the instruments in the  │        │
│   │ study were obtained from the authors.        │        │
│   ╰─────────────────────────────────────────────╯        │
│                        ↓                                   │
│   ╭─────────────────────────────────────────────╮        │
│   │ The scales and other relevant questions      │        │
│   │ pertinent to the study objectives were       │        │
│   │ compiled.                                     │        │
│   ╰─────────────────────────────────────────────╯        │
│                        ↓                                   │
│   ╭─────────────────────────────────────────────╮        │
│   │ Forward and backward translations of the     │        │
│   │ items                                         │        │
│   ╰─────────────────────────────────────────────╯        │
│                        ↓                                   │
│   ╭─────────────────────────────────────────────╮        │
│   │ Review of the translated versions. A         │        │
│   │ pre-final questionnaire was produced.        │        │
│   ╰─────────────────────────────────────────────╯        │
│                        ↓                                   │
│   ╭─────────────────────────────────────────────╮        │
│   │ Content validity assessment                   │        │
│   ╰─────────────────────────────────────────────╯        │
│                        ↓                                   │
│   ╭─────────────────────────────────────────────╮        │
│   │ Pilot Study I – Face Validity                 │        │
│   ╰─────────────────────────────────────────────╯        │
│                        ↓                                   │
│   ╭─────────────────────────────────────────────╮        │
│   │ Pilot Study II – Reliability                  │        │
│   ╰─────────────────────────────────────────────╯        │
│                        ↓                                   │
│   ╭─────────────────────────────────────────────╮        │
│   │ Pilot Study III – Test-retest Reliability     │        │
│   ╰─────────────────────────────────────────────╯        │
│                        ↓                                   │
│   ╭─────────────────────────────────────────────╮        │
│   │ Review of the findings. The questionnaire    │        │
│   │ was completed (Final version)                 │        │
│   ╰─────────────────────────────────────────────╯        │
│                        ↓                                   │
│   ╭─────────────────────────────────────────────╮        │
│   │ Commencement of the Phase II of the study    │        │
│   ╰─────────────────────────────────────────────╯        │
└─────────────────────────────────────────────────────────┘
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Figure 3.4: The stages of questionnaire development

9.3.1 Questionnaire Compilation

The questionnaire which was utilized in this study was developed based on the Urie Bronfenbrenner's Ecological Theory which concentrated on a child's development. According to this theory, there are five components surrounding the child's life. These five components represent the crucial relationships which help to support and guide a child's development. Based on this theory, the influences of the individual, peer familial and school were explored through the use of several instruments and questions.

The factors investigated in this study were identified according to the different levels of ecosystem as the following (Table 3.5):

Table 3.5: Independent Variables Identified Following Bronfenbrenner's Socio-Ecological Theory

Components	Independent Variables
Individual Factors	Age, age at puberty, gender, ethnicity, religiosity, self-esteem, engagement in other risky behaviours such as smoking, alcohol intake and substance use, academic achievement and resiliency
Immediate Environment	**Family Component:** Parental occupation, parental highest educational achievements, family structure, parental aspirations, parental motivation, parental religiosity practice, parental control and monitoring, parental warmth and conflict in the parents'-and-child's relationship, parent-adolescent attachment and family's monthly income
	Peer Component: Perceived peer sexual engagement, heterosexual relationships, peer attachment and susceptibility to positive and negative peer pressure.
	School Component: School engagement

The questions were arranged in the following manner (Table 3.6):

Table 3.6: Sections in the questionnaire

Sections	Description
Section A	Demographic Information
Section B	Family characteristics: • Family Information • Students' Parents Actions Questionnaire (Parental Aspiration, Parental religious practice, Parental control and monitoring, Parental warmth and Conflict) • Parental attachment inventory
Section C	Peer characteristics: • Peer information • Peers' attachment inventory • Susceptibility to peer pressure
Section D	School involvement – Multidimensional School Engagement Scale
Section E	Individual Characteristics: • Rosenberg's Self-Esteem Scale • Duke University Religion Index (DUREL) • Social behaviour questions on smoking, alcohol and substance use
Section F	Sexual behaviour questions – Onset of puberty, sexual experience, age of sexual initiation, number of sexual partners, contraception use and history of pregnancy
Section G	Resilience – Resiliency Belief System Scale

The original authors who developed the scales were contacted for the purpose of seeking permission to incorporate the instruments into the study. All of them gave permission to use their instruments and consented to any modification of the original document to accommodate the particular needs of the study.

3.9.3.2 Forward and Backward Translations

The first stage of translation was forward translation where two independent translators were hired to conduct the translation from English to the Malay Language or

Bahasa Melayu which is the national language in Malaysia. The same translators who participated in the Phase I were contacted to perform this translation. The two translated versions were then compared by the researcher for any discrepancies. Back-translation to the original language (English) was conducted by two different independent translators (these two translators did the back-translation for the Phase I). These two translators were blinded to the original English version to ensure that there was no contamination between the original English and the backward translation.

The translated versions were discussed in a panel comprising a psychologist with a special interest in the adolescents' behaviours, a public health physician trained in the Family Health speciality, the translators involved in the forward and back-translations and the supervisors involved in the study. Discrepancies which were found in the translation process were discussed and resolved. The final modified bilingual version was utilized in the study.

3.9.3.3 Content Validity Assessment

Content validity refers to the extent to which an instrument measures the subject of interest (Newman, 2006). This was carried out by inviting a panel of experts, a psychologist and a public health specialist to evaluate the questionnaire in terms of its relevancy to the subject being studied. This panel was requested to write written comments and these comments were reviewed by the researcher.

3.9.3.4 Pilot Test I -Face Validity

Face validity examines the clarity of the language used, the aesthetics and the comprehension and the order of items in the questionnaire (Victor R. Preedy & Watson, 2010). This assessment also allowed for the respondents to give their opinion on the acceptability of the questions. This was crucial in view of the sensitivity of the subject being studied. If the questions were too insensitive, the respondents might not voluntarily participate in this study.

The firstpilot test was conducted in March 2013 to assessthe face validity and reliability of the questionnaire (Figure 3.1). This involved 30 students aged 18 and 19 years attending an institution of higher learning which was not included in the Phase II of this study. Each of them received a letter explaining the purpose of the pilot study, the questionnaire and a structured format where they were invited to provide their comments and suggestions for improvement. All the respondents thought the questions were comprehensible.

3.9.3.5 Pilot Test II – Reliability

In order to assess the internal consistency of the instruments used in the study, a second pilot test was conducted among 80 students aged 18 and 19 years in a tertiary institution (Figure 3.1). This institution was not included in the Phase II study. This study was also conducted to estimate the time taken for completion of all the questions. The reliability was reported as internal consistency given by Cronbach's alpha coefficient. A Cronbach alpha equal to 0.6 or above was deemed as acceptable (Norman & Streiner, 2008). Cronbach's alpha coefficient was calculated separately for the scales used in the questionnaire. These were:

    i.   Parental aspiration

    ii.   Parental motivation

    iii.   Parental religiosity practice

    iv.   Parental control and monitoring

    v.   Parental warmth

    vi.   Conflict in parent-child relationship

    vii.   Parental attachment

    viii.   Peer attachment

    ix.   Susceptibility to positive peer pressure

    x.   Susceptibility to negative peer pressure

xi.   Behavioural school engagement

xii.   Cognitive school engagement

xiii.   Psychological school engagement

xiv.   Rosenberg self-esteem

xv.   Religiosity

xvi.   Resiliency Belief System

3.9.3.6 Pilot Test III – Test-retest Reliability

A third pilot test was conducted among the same 80 students who had participated in the second pilot test. This pilot test was crucial in determining the stability of the scale over an interval of two weeks. The methods employed were explained earlier, in section 3.8.4.1 (Figure 3.1).

The respondents were briefed on the items in the questionnaires. They were also instructed not to include any personal identifiers as their participation in the study was anonymous. The researcher reminded the students that the study will be repeated in two weeks' time.

The test-retest reliabilities of the nominal scales were assessed by the unweighted Cohen Kappa (κ) statistics while the weighted Cohen kappa (κ_ω) were used for ordinal variables (Landis & Koch, 1977).

3.9.3.7 Final Review of Questionnaire

The comments from respondents were also evaluated. Overall, the respondents were clear with the questions asked. However, several respondents commented on the length of the scales used. The respondents took between 30 minutes to 45 minutes to complete the questions.

In total, there were 229 items in the questionnaire with thirteen scales. It was decided to maintain the usage of dual languages in the questionnaire. The final version of the questionnaire was utilized in the Phase II of the study.

3.9.4 Data Collection

The students were approached by the primary researcher in their classrooms and were invited to participate in the study voluntarily. They were briefed on the purpose of the study, and were assured of confidentiality and their rights and that they could withdraw from the study at any time. Each respondent received a self-sealed envelope containing a participant's information sheet, a summary of what the respondent has consented to, a set of demographic questions and the questionnaire. The data collection was conducted by the primary researcher who was present throughout the administration of the questionnaires. The lecturers were not allowed to be present during the survey. The students were encouraged to respond honestly to the questions in enhancing the validity of their self-report. In assuring anonymity, no personal identifier which could be linked to the respondents was obtained and they were assured that their personal information would be analysed in an aggregated manner. The questionnaires were self-administered and took approximately 45 minutes to one hour to complete. The completed questionnaires were collected by the primary researcher.

3.9.5 Dependent, Independent Variables and Other Variables related to sexual initiation

3.9.5.1 Dependent Variables

Sexual initiation

This was defined by penile-vaginal intercourse (Ashby, Arcari, & Edmonson, 2006). This was assessed by two questions: 'What is your definition of sexual intercourse (Klein, 2011)?' There were four responses provided: Vaginal penetration, anal penetration, oral sex or others. The second question was: "Have you ever had sexual

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intercourse?" A dichotomous response was used: 'Yes' or 'No'. The question, 'have you ever had sexual intercourse' was also utilized in the Youth Risk Behaviour Survey by the Centre of Disease Control (Centers for Disease Control and Prevention (CDC), 2011). This question was also used in many other studies (Cha, 2005; Dilorio et al., 2001; Golbasi & Kelleci, 2011; Lee, 2006; Rink et al., 2007; Vanoss Marín et al., 2000). Only those who answered 'Vaginal penetration' and 'yes' to the second question were coded as 'yes' for sexual initiation. The other responses were classified as 'No' for sexual initiation. These responses were coded as 0 for 'No' and 1 for 'Yes'. The test-retest reliability for the definition of sexual intercourse was 0.8 (substantial agreement) and have you ever had sexual intercourse was 1.00 (perfect agreement).

.Demographic characteristics

Demographic variables that were included in this study were: age, sex, ethnicity, religion, state of origin, region of origin, hometown of origin, type of previous secondary school, programme of study, academic discipline, parents' occupations, parents' educational levels and family's income.

i.   **Age**

This was assessed by asking: "When is your birthday?" Age is calculated from the difference between the date of the study and the date of birth of the respondent.

ii.   **Sex**

Sex was obtained by asking: "What is your sex?" The respondents were required to choose: "1= Male" or "2=Female".

iii.   **Ethnicity**

This was assessed with the question: "What is your ethnic group?" There were several options provided to the respondents: "1=Malay", "2=Chinese",

"3=Indian" or "4=Others" based on the major ethnic groups in Malaysia (Department of Statistics, 2011).

iv. **Religion**

Religion was ascertained by asking the respondents: "What is your religion?" The respondents were given five choices: "1=Islam", "2=Buddhist", "3=Hindu", "4=Christian" and "5=Others"

v. **State of origin**

This was defined as the state where the respondents were living before continuing his or her study which was assessed by asking: "Which state have you been living in before continuing your studies at this institution?" A list of states were provided: "1=Johor", "2=Melaka", "3=Negeri Sembilan", "4=Selangor", "5=Pahang", "6=Perak", "7=Kelantan", "8=Terengganu", "9=Kedah", "10=Perlis", "11=Pulau Pinang", "12=Sabah", "13=Sarawak", "14=W.P. Kuala Lumpur, "15=W.P. Putrajaya and "16=W.P. Labuan". These states were based on the states provided by the Department of Statistics Malaysia (Department of Statistics, 2012).

vi. **Region of origin**

The states were reclassified into regions based on the geographical locations of these states. These regions are: "1=Northern region (Perlis, Kedah, Perak and Pulau Pinang)", "2=Central region(Federal Territory of Kuala Lumpur, Federal Territory of Putrajaya, Selangor and Negeri Sembilan)", "3=Southern region (Melaka and Johor", "4=Eastern (Pahang, Terengganu and Kelantan)" and "5=East Malaysia (Sabah, Sarawak and the Federal Territory of Labuan)".

vii. Hometown of origin

This was defined as the classification of the respondent's place of residence which was obtained by asking: "Where do you live prior to your enrolment in this institution?" The respondents were asked to name their village or town and the district in which they were living prior to their enrolment into their current institution. Their responses were classified as "1=Urban" or "2=Rural" based on the classification of by the Department of Statistics, Malaysia (Department of Statistics, 2011).

viii. Type of previous secondary school

This was assessed by asking the respondents: "Which category of secondary school were you from?" The respondents were asked to choose one of the responses provided: "1=Day school", "2=Boarding school", "3=MARA Junior Science College", "4=Technical or Vocational school", "5=Religious school", "6=Private school" or "7=Others".

ix. Programme of study

The respondents were to provide the name of the programme which they were enrolled in by asking: "What is the programme that you are currently enrolled in at this institution?"

x. Academic discipline

This was obtained from the response by the students to the question on the programme of study and their response to: "At which faculty or department are you currently enrolled in?" These information were categorized as: "1=Science & Technology", "2=Arts, Graphics and Social Sciences", "3=Computer Science and Information & Technology", "4=Business Management, Accountancy and Economics","5=Languages, Linguistics

&Communications", "6=Architecture", "7=Education", "8=Law","9=Engineering" or "10=Others".

xi. Father's and mother's occupation

These were obtained by asking the respondents: "What are your parents' or guardians' current occupations?" The respondents were asked to provide their parents' or guardians' job titles. These occupations were grouped into several categories based on the abridged version of the International Standard Classification of Occupations by the International Labour Office (ILO)'s (1990) (Appendix G).

xii. Father's and mother's educational levels

These variables were assessed by the question: "What are the highest academic qualifications of your parents or guardians?" The options provided were based on the levels of education utilized in the thesis by Soh (2010) who conducted a cross-sectional study among Malaysian school students on internet use. These levels of education were: "1=No formal education", "2=Did not complete primary school", "3=Completed primary school only", "4=Did not complete secondary school", "5=Completed secondary school", "6=Certificate or diploma holder", "7=Bachelor's degree holder","8=Master's degree holder","9=Doctoral degree or PhD holder" or "10=I do not know". The responses were further categorized into: "1=No formal education", "2=Primary education", "3=Secondary education" and "4=Tertiary education". "Primary education" is defined as education obtained in schools between the ages of 7 to 12 years. "Secondary education" refers to the education received in schools between the ages of 13 to 17 years. Education obtained beyond the secondary level was classified as "tertiary education".

xiii. Family's income

This was the average monthly income obtained by either parents or the guardians which was obtained by asking: "What is your household income per month?" Several responses were given: "1=< RM 400", "2=RM400-RM 699", "3=RM700-RM999", "4=RM1,000-RM1,999","5=RM2,000-RM2,999", "6=RM3,000-RM3,999", "7=RM4,000-RM4,999" or "8=RM5,000 and above".

b. Individual characteristics

i. Age at puberty

Age at puberty was based on self-reporting. There were two separate questions asked to females and males. For males, age at first puberty was asked using the age when they first noticed significant physical changes such as hoarseness of voice ortheir first nocturnal emission. As a result the age obtained were more likely to produce a peri-pubertal age and less likely to be comparable to age of menarche in females (Gluckman & Hanson, 2006). On the other hand, for females, age of puberty was also by self-reporting. The females were asked on the age of their first menstrual flow (Zegeye, Megabiaw, & Mulu, 2009). The weighted kappa for this item was 0.97.

ii. Academic achievement

This was assessed through asking "What was your 'Sijil Pelajaran Malaysia's result? Please state the number of A's, B's and…". This was the respondent's Malaysian Certificate of Education's result. For analysis, each subject was given a score according to the guidelines by MOHE (Department of Higher Education, 2013). The best five subjects obtained by the respondents were scored and summed. The total score was categorized into low and high academic achievement for analysis. The scoring scheme is as: A^+=18 marks;

A =16 marks; A⁻=14 marks; B⁺=12 marks; B =10 marks; C⁺= 8 marks; C = 6 marks; D = 4 marks; E = 2 marks and G = 0 mark (Department of Higher Education, 2013).

iii.   **Religiosity**

Religiosity are behaviours, emotions and thoughts arising from the beliefs associated with religious practices encompassing both public behaviours (for example, attending worship services) and private practices (for instance, prayer or meditation) (Dedert et al., 2004). In this study, religiosity was assessed using the validated Malay version of the Duke University Religion Index (DUREL-M). This instrument consisted of three dimensions of religiosity; organizational religious activity (1 item), non-organizational religious activity (1 item) and intrinsic religiosity (3 items) (Nurasikin, Aini, Aida Syarinaz, & Ng, 2010). Organizational religious activity consisted of the frequency of attending religious endeavours or involving in other religious gathering. On the other hand, non-organizational religious activity was assessed by the frequency of religious activities performed in private. Intrinsic religiosity, the third component of individual religiosity measured the degree of personal religious beliefs. This intrinsic religiosity comprised three items: experiencing the presence of god, religious beliefs influencing the way of life and involvement of religion in every aspects of life. Organizational religiosity and non-organizational religiosity were scored on a six-point Likert-type scale from 1=never to 6= more than once a week or once a day (Nurasikin et al., 2010). The three items for intrinsic religiosity used a five-point Likert-type scale: 1=definitely not true to 5=definitely true (Nurasikin et al., 2010). The total score was not calculated for all the items in order to avoid multicollinearity among the items. Only the intrinsic religiosity

items were summed. The Cronbach's alpha for this scale as reported by Nurasikin et al. (2010) was low at 0.45. This may be due to the small number of items which may result in a smaller value of Cronbach's alpha (Graham, 2006). The author had tested this instrument on a larger sample size and found that the Cronbach alpha was 0.80 (Nurasikin et al., 2013). On the other hand, the parallel form of reliability was high (Spearman's rho=0.70). The instrument's test-retest reliability was moderate (Spearman rho=0.68). The Cronbach's alpha for the scale from this pilot study among students in an institution of higher learning was 0.62. The weighted Kappa coefficients for the items were from 0.48 to 0.78.

iv.   **Smoking** was assessed using the questions used in the Third NHMS 2006 (Institute For Public Health (IPH), 2008). Two questions using dichotomous responses, 'Yes' or 'No' were asked; 'have you ever tried cigarette before in your whole life?' and 'do you have a history of daily smoking for at least 30 days, at least a cigarette daily?' Several other questions were asked using ordinal scale: 'how old were you when you smoked the first time?', 'how many days for the past 30 days, have you smoked cigarettes?' and 'on the days that you have smoked in the past 30 days, how many cigarettes did you smoke for a day?' Based on the respondents' responses, they were categorized as:

- **Lifetime cigarette smoker** was defined as respondents who have ever smoked cigarette (even one puff) in his or her life(Institute For Public Health (IPH), 2008). This was coded as 0= No and 1=Yes (unweighted kappa for this item was 0.77).

- **Current cigarette smoker** was defined as respondents who smoke at least one day in the last 30 days preceding the survey(Institute For Public Health

(IPH), 2008). The responses were given as 1=0 day, 2=1 or 2 days, 3=3 to 5 days, 4=6 to 9 days, 5=10 to 19 days, 6=20 to 29 days and 7=All 30 days. Respondents who answered 0 day wererecoded as 0= No,while the rest were recoded as 1=Yes (test-retest reliability was 0.96).

- **Heavy cigarette smoker** was defined as current smoker who smoked more than 20 sticks of cigarettes per day (Institute For Public Health (IPH), 2008). Responses for this item were: 1=Nil; 2= Less than 1 cigarette; 3=2 to 5 cigarettes; 4=6 to 10 cigarettes, 5=11 to 20 cigarettes and 6=More than 20 cigarettes. Respondents who answered 1 until 6 were recoded as non-heavy smoker (0=No) while those whom answered 6 were recoded as heavy smokers (1=Yes) (test-retest reliability was 0.97).

v. **Alcohol consumption** was assessed using the questions used in the Third NHMS 2006 (Institute For Public Health (IPH), 2008). This was based on a series of questions: 'how many days in your whole life, have you drank at least one drink of alcohol?'; 'how old were you when you experienced a drink of alcohol, which is more than small sips?'; 'for the past 30 days, how many days have you had at least a drink?' and 'for the past 30 days, within few hours, have you ever had 5 or more drinks at one setting and for how many days?'. The responses were coded on an ordinal scale. Based on the respondents' responses, they were categorized as:

- **Lifetime alcohol drinker** was defined as respondents witha history of alcohol consumption(Institute For Public Health (IPH), 2008). The responses provided were: 1=0 day; 2=1 or 2 days; 3=3 to 9 days; 4=10 to 19 days; 5=20 to 39 days; 6=40 to 99 days and 7=100 or more days. The respondents who answered 1 to 100 days or more were categorized as ever drinker (1=Yes) while those who had selected '0 day' were categorized as

non-drinker (0=No). The test-retest reliability for this item reached substantial agreement (κ=0.80).

- **Current alcohol drinker** was defined as respondents who had consumed alcohol in the past 30 days prior to the survey(Institute For Public Health (IPH), 2008). The provided responses were: 1=0 day; 2=1 or 2 days; 3=3 to 5 days; 4=6 to 9 days; 5=10 to 19 days; 6=20 to 29 days and 7=All 30 days. The respondents who had drank alcohol for 1 to 30 days were categorized as current alcohol drinker (1=Yes) while those who had selected '0 day' were categorized as non-drinker (0=No). The test-retest reliability for this item reached an almost perfect agreement (κ=0.93).

- **Binge drinker** was defined as respondents whomhad consumed alcoholic beverages 5 or more drinks at one setting(Institute For Public Health (IPH), 2008). The responses provided were: "1=0 day; 2=1 or 2 days; 3=3 to 5 days; 4=6 to 9 days; 5=10 to 19 days; 6=20 to 29 days and 7=All 30 days". The respondents who had drank alcohol 5 or more times for 1 to 30 days were categorized as binge drinker (1=Yes) while those who had selected '0 day' were categorized as non-binge drinker (0=No). The test-retest reliability for this item reached substantial agreement (κ=0.80).

vi. **Substance abuse** was assessed using the questions used in the Third NHMS 2006 (Institute For Public Health (IPH), 2008). This was obtained by asking three questions; 'how many times have you used illegal drugs in your life?';'how old were you when you attempted illegal drugs for the first time?' and 'how many occasions have you taken illegal drugs during the past 30 days?'Based on the respondents' responses, they were categorized as:

- **Lifetime illicit drug user**was defined as respondents who hada history of using illegal drugs(Institute For Public Health (IPH), 2008). The responses

provided were: 1=0 time; 2=1 or 2 times; 3=3 to 9 times; 4=10 to 19 times; 5=20 to 39 times; 6=40 to 99 times and 7=100 or more times. The respondents who had selected '0 time' were categorized as non-drug user (0=No) while those who had selected the rest were categorized as lifetime drug user (1=Yes). The test-retest reliability for this item reached substantial agreement (κ=0.75).

- **Current illicit drug user** was defined as respondents who were still using illegal drugs during the past 30 days prior to the survey(Institute For Public Health (IPH), 2008). The responses provided were: 1=0 time; 2=1 or 2 times; 3=3 to 9 times; 4=10 to 19 times; 5=20 to 39 times and 6=40 or more times. The respondents who had not taken illegal drugs during past 30 days were categorized as non-current drug user (0=No) while those who had selected the rest were categorized as current drug user (1=Yes). This item reached an almost perfect agreement in test-retest reliability (κ=0.88).

vii.   **Self-esteem**

Self-esteem comprised both appraisal of self-worth based on personal achievements and anticipation of evaluation by others (Taylor et al., 2000). The Rosenberg Self-Esteem Scale (RSES) was used to assess global self-esteem which had been validated among Malaysian adolescents (Mohd Jamil Yaacob, 2006). This scale comprised 10 items using a five-point Likert-type scale ranging from strongly disagree to strongly agree. Examples of these items were: 'On the whole, I am satisfied with myself', 'I feel that I have a number of good qualities' and 'At times, I think I am no good at all'. The negative worded items were reverse coded to ensure a higher score pointed towards a higher self-esteem. All the items were summed up in order to derive

the total self-esteem score. The higher the score, the higher was the self-esteem. The Cronbach's alpha for this scale was 0.73.

viii.   **Resiliency**

Resiliency among adolescents were assessed using the Resiliency Belief Scale which was utilized by Trammel in her dissertation examining resiliency among school students (Trammel, 2003). This instrument was validated among students in Peninsular Malaysia (Azlina Abu Bakar & Shahrir Jamaluddin, 2010). There were three concepts identified related to resiliency; active skills, future orientation, risk taking and independence. The active skills focussed on the skills needed to be resilient in the face of danger, seeking information and cognitive restructuring of painful events. Future orientation, on the other hand, examined the conviction to be loved, optimism, selflessness, positive anticipation and hope. The final concept, which is risk taking and independence focussed on adolescents' risk taking behaviour, confidence, competence and independence. Each concept consisted of 15 items scored on a six-point Likert-type scale (1=Strongly agree to 6=Strongly disagree). Examples of items to assess the three domains were: 'I have a lot of hope' (Future Orientation); 'Sometimes it is worth to take risks that I shouldn't' (Independence and risk taking) and 'I can tell when others are upset' (Active Skills). All the items were reverse coded so that higher scores indicated higher level of resiliency. The scores were calculated by summing up all the 45 items. The total score ranged from 45 to 270. The Cronbach's alpha for the total scale was high (α=0.96). The internal consistencies for each concepts was also high (Future orientation=0.90, Active skills=0.85 and Risk taking and independence=0.87).

c. Familial Characteristics

i. Marital status of parents

This was the marital status of the respondents' parents whether their parents were still married or not at the time of the study (Dimbuene & Defo, 2012). The responses used a nominal scale: still married, divorced, separated, widowed or married but living apart. The test-retest reliability for this item was 0.72.

ii. Family structure

This was measured by the question, 'who do you live with before attending this institution (Bonell et al., 2006)?' The respondents were given a series of responses: with both my parents, with one of my parent, with one of my father or mother with a stepmother or a stepfather, with relatives or others. This item reached substantial agreement in test-retest reliability (κ=0.64).

iii. Head of family

This was obtained by asking, 'head of my family is…'. Head of the family is referred to the head of the household in order to further elaborate on the family structure. Several responses were provided: Father, Mother, Grandfather, Grandmother, Elder brother, Elder sister or others. The test-retest reliability for this item was acceptable (κ=0.69).

iv. Parenting processes

These composite variables were derived from the respondents' self-report pertaining to the parents in the household at the time of study. Assessment was performed via an instrument, Students' Parents Actions Questionnaires 1 (SPAQ1) developed and validated by Koh et al. among secondary school children in Malaysia (Koh & Ong, 2010). In order to adapt this scale to the study population, the term 'school' was modified to 'college'. There were

seven constructs in the scale: Parental Aspirations, Religious Practice, Control and monitoring, Warmth and closeness, Conflict, Conducive and Homework. but only five constructs were utilized in this study. Conducive and Homework domains were dropped from this study because the items were not applicable to the study population. Each domain operates separately.The constructs worked independently using a five-point Likert scale. These constructs were as the following:

- **Parental Aspirations** (Four items)

  These were defined as parents' expectation or hope for their children's academic achievement and success. An example of the question asked was 'My parents told me about their hope that I further my studies to a higher level'. This scale utilized a five-point Likert scale: 1=Never to 5= Almost every day and 1=Strongly disagree to 5= Strongly agree. All the five items were summed and higher scores indicated higher parental aspirations for their children (Cronbach's alpha was 0.84).

- **Religious Practice** (Four items)

  This scale assessed the parents' religious practice and their encouragement for their children to do the same. An example of the items used to assess parents' religious practice was, 'How often do your parents encourage you to use some of your time to pray for your academic success?' These items were scored on a Likert scale: 1=Never to 5=Almost every day. Higher scores indicated higher parental religious practice (Cronbach's alpha was 0.91).

- **Control and monitoring** (Ten items)

  Ten items from the parents' control and monitoring scale were used to assess the respondents' perceptions of parenting control and monitoring.

These items assessed parents' supervision of their children's activities such as who they befriended, their whereabouts after school and setting certain rules that needed to be adhered to. This scale utilized a five-point Likert scale: 1=Never to 5= Almost every day and 1=Strongly disagree to 5= Strongly agree. Higher scores indicated higher parental control (Cronbach's alpha was 0.86).

- **Parental warmth and closeness** (Seven items)

Six items were used toassess the relationship between the parents and their children. Items used included frequent casual communication, togetherness in performing certain activities and motivating their children to be successful. There were two types of responses provided to answer these items: 1=Never to 5= Every time this happens; and 1=Not all enthusiastic to 5=Very enthusiastic. Higher scores indicated a higher degree of warmth and closeness (Cronbach's alpha was 0.81).

- **Conflict** (Five items)

This scale measured the adolescents' disagreement or unhappiness resulted from their parents' actions. An example of item used to measure this conflict was, 'My parents punished me without any valid reason'. This scale utilized a five-point Likert scale: 1=never to 5= every time this happens and 1=strongly disagree to 5= strongly agree. The internal consistency of this scale was acceptable with a Cronbach's alpha of 0.7. The author of this scale reported that the Cronbach's alpha in his study was 0.56. Higher scores indicated higher conflict in the parents-child relationship.

v. Parental attachment

This was assessed using a self-report 14-item Parent Attachment scale which had been validated among students in Malaysia by Soh (Soh, 2010). The Parent Attachment scale assessed respondents' perceptions of their relationships with their parents. This scale was based on the Inventory of Parent and Peer Attachment (IPPA) developed by Armsden and Greenberg among undergraduate students which consisted of 28 items (Armsden & Greenberg, 1987). The original scale measured three domains of parent-children relationship: communication, trust and alienation. Soh had adopted the shortened version of parent attachment scale from Vignoli and Mallet (Vignoli & Mallet, 2004). Examples of items for each subscale were 'My parents trust my judgement (trust), 'I tell my parents about my problems' (communication) and 'I get upset a lot more than my parents know about (alienation). This scale utilized a five-point Likert scale which ranged from 1= Never true to 5= Always true. The Cronbach's alpha for communication domain was 0.80, for trust domain was 0.73 and for alienation was 0.64. The calculated Cronbach's alpha for the total scale was 0.65. The negatively worded items were reverse coded for calculation of the total score. Higher score meant higher parental attachment.

d. Peer Characteristics

i. In a relationship

The respondents were asked if they ever had a boyfriend or girlfriend throughout their lifetime. They were asked, based on WHO's Illustrative Questionnaire for Interview-Surveys with young people (Cleland, 2001): 'Have you ever had a girl/ boyfriend?' (Dichotomous responses: Yes or No, $\kappa=0.81$). Girl or boyfriend was defined as someone to whom the respondents

were sexually or emotionally attracted and whom the respondents dated (going out together unaccompanied by other adults) (Cleland, 2001). The respondents were asked to skip the questions about their boyfriends or girlfriends if they had answered 'No' to this question.

ii. **Duration of relationship**

This variable was assessed by asking, 'how long did it last?' (Cleland, 2001) (dichotomous responses: Less than a year or more than a year, $\kappa=0.92$)'

iii. **Description of relationship**

A question was asked, based on WHO's Illustrative Questionnaire for Interview-Surveys with young people (Cleland, 2001): 'How would you describe the relationship?'(Casual, serious but no intention of marriage or important with intention of marriage, $\kappa=0.74$).

iv. **Number of lifetime boyfriends or girlfriends**

The question that was asked to assess this variable was, 'How many girl/boyfriends have you ever had so far?' The responses provided on an ordinal scale which were: 1= One boyfriend or girlfriend to 4= Four or more boyfriends or girlfriends. This item scored a weighted Kappa of 0.91.

Overall, the test-retest reliabilities of these four items reached substantial to almost perfect agreements.

v. **Perceived peer sexual experience**

This was based on respondents' perceptions of their friends' sexual activity. They were asked on how many of their friends whom they thought had sexual experience utilizing an ordinal scale (1=None, 2=A few, 3=Some or 4=Most). This question was based on the question utilized in two studies namely, by Upadhyay et al. which investigated peer behaviours influencing sexual initiation among adolescents (Upadhyay & Hindin, 2006) and by Rai et al.

who examined perceived peer involvement in adolescent risk behaviours (Rai et al., 2003). This question was frequently used in other studies as well (van de Bongardt et al.). For the purpose of analysis, the responses were recategorized as "No' if the respondents answered '1' and 'Yes' for the other responses. The test-retest reliability for this item reached an almost perfect agreement as evidenced by κ=0.81).

vi.   Peer attachment

This was assessed by the 17-item Peer Attachment scale validated by Soh among students in Malaysia (Soh, 2010). This scale was adapted from the Inventory of Parent and Peer Attachment (Armsden & Greenberg, 1987). This scale was used to assess both the affective and cognitive of current attachment security and trust in the accessibility and responsiveness of attachment figures (Laible, Carlo, & Roesch, 2004). There were three dimensions measured in this scale: Communication which was assessed by seven items (Cronbach's alpha= 0.83), Trust which was assessed by five items (Cronbach's alpha= 0.84) and Alienation which was assessed by five items (Cronbach's alpha= 0.65). The internal consistency for the total score was 0.72. Examples of items for each constructs were as the following: 'My friends sense when I am upset about something' (Communication), 'My friends listen to what I have to say' (Trust) and 'I feel angry with my friends' (Alienation). The respondents were instructed to respond to the items for the group of friends whom they felt had most influence on them. This scale utilized a five-point Likert-type scale which ranged from 1= Never true to 5= Always true. The negative worded items were reverse coded so that higher scores indicated higher peer attachment.

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vii.   **Susceptibility to Peer pressure**

This was measured by using the 18-item Susceptibility to Peer Pressure Scale developed by Sim et al. This scale was used to assess the pressure on the adolescents by their peers to do certain activities (Mortimer, 1991). This scale was validated among students in a tertiary institution in the Phase I of this study using both exploratory and confirmatory factor analyses. From the analyses, there were two domains identified; susceptibility to positive peer pressure and susceptibility to negative peer pressure. A five-point Likert-type scale was used which ranged from 1=I definitely would do it to 5= I definitely would not do it. The Cronbach's alpha for positive pressure and negative pressure domains in this study were high: 0.91 and 0.89 respectively. The weighted Kappa for these items ranged from moderate to substantial agreements.

e. **School Engagement**

School engagement encompasses a multifaceted dimension which can be referred to the students' level of connectedness to their school (Connell et al., 1994). This concept was assessed using the Multidimensional School Engagement Scale developed by Rosna et al. (Rosna Awang Hashim & Azlina Murad Sani, 2008). There were three constructs identified in relation to school engagement; behavioural engagement, cognitive engagement and psychological engagement. Behavioural engagement assessed the student's basic compliance or non-compliance with the requirement of school and classroom using eight items. Psychological engagement, on the other hand, refers to the students' sense of identification with school, sense of membership at school and positive relationships with peers which was assessed by 11 items. Cognitive engagement is defined as self-regulated learning. This construct examined students' thoughts regarding their academic tasks, their processing information and self-directed

learning via ten items. Responses indicating higher school engagement were assigned higher scores. All items were rated on a five-point Likert-type scale ranging from 1=never to 5=always. The negative worded items were reverse coded so that higher scores were indicative of higher school engagement. The internal consistencies for these domains were high (The Cronbach's alphas for behavioural, cognitive and psychological engagement were 0.91, 0.85 and 0.81 respectively). Cronbach's alpha for the total scale was 0.87.

3.9.5.3 Variables related to sexual engagement

a. **Age of sexual initiation** was assessed by two questions: 'How old were you when you had your first sexual intercourse?' and 'When did you have sexual intercourse for the first time?' The responses for the first questions were: 'Never had sex', '11 years old or younger', '12 years old', '13 years old', '14 years old', '15 years old', '16 years old' or '17 years old or older'. For the second question, the respondents were asked to provide the month and year they first had sex which would assist with the accuracy of age of first sexual initiation (Klein, 2011). The age of sexual initiation was derived by calculating the difference between the month and year of the first sexual intercourse and the respondents' date of birth. The test-retest reliability for this item was 0.97.

b. **Number of lifetime sexual partner** was obtained by asking 'Throughout your life, how many sexual partners have you had (Centers for Disease Control and Prevention (CDC), 2011)?' The responses to this question were: 1= Never had sexual intercourse; 2=1 person; 3= 2 people; 4=3 people; 5=4 people; 6=5 people or 7=6 or more people. For analysis, these responses were recoded as 0= Single sexual partner and 1= Multiple sexual partners. According to CDC, multiple sexual partners are defined as having 4 or more lifetime sexual partners (Center for Disease Control and

Prevention (CDC), 2008). The weighted Kappa statistics for this item was almost perfect agreement (κ=0.98).

c. **Sexual activity** was assessed by 'During the past 3 months, have you ever had sexual intercourse(Yi et al., 2010)?' The responses were given as 1=Yes and 2=No. For the purpose of analysis, the responses were recoded as 0=No and 1=Yes. Sexual activity is defined by having engaged in sexual intercourse three months prior to the study (Center for Disease Control and Prevention (CDC), 2008). This item was shown to have almost perfect agreement (κ=0.89).

d. **Sexual activity with multiple sexual partners** which was obtained by asking: 'How many sexual partners have you had in the past 3 months (Centers for Disease Control and Prevention (CDC), 2011)?' The responses to this question were: 1=Never had sexual intercourse, 2=Have had sexual intercourse, but not for the past 3 months, 3=1 person, 4=2 people,   5=3 people, 6=4 people, 7=5 people and 8=6 or more people. These responses were re-categorized into 0=Not sexually active, 1=Sexually active. Weighted Kappa for this item reached an almost perfect agreement (κω=0.94).

e. **Substance use at last sexual intercourse** was assessed by asking 'Did you drink alcohol or use drugs before you had sexual intercourse the last time (Centers for Disease Control and Prevention (CDC), 2011)?' The responses were given by 1=Never had sexual intercourse, 2=Yes and 3=No. These responses were recoded as 0=No and 1=Yes (κω=0.85).

f. **Condom use at last sexual intercourse** was assessed through asking the respondents, 'Did you or your partner use a condom the last time you had sexual intercourse (Centers for Disease Control and Prevention (CDC), 2011)?' The respondents were given several choices for their responses: 1= Never had sexual intercourse, 2= Yes and 3= No. In order to perform analysis, the responses were recoded as 0= No and 1=Yes.

From the pilot test, the test-retest reliability of this item reached an almost perfect agreement (κ=0.95).

g. **Methods of contraception at last sexual intercourse** was obtained by asking the respondents, 'Please choose one method from the listed items which either you or your partner have used to prevent pregnancy the last time you had sexual intercourse (Centers for Disease Control and Prevention (CDC), 2011)'. The responses were given as: 1= Never had sexual intercourse, 2= Did not use any method, 3=Birth control pills, 4=Condoms, 5=Depo-Provera, Implanon, IUD, 6=Withdrawal, 7=Other methods, 8=Not sure. The test-retest reliability for this item was 0.76.

h. **History of pregnancy or made someone pregnant** was assessed by asking 'Have you ever been pregnant or gotten a girl pregnant (Cha, 2005)?' The responses were given as 1=Never, 2=Once, 3=Twice, 4=3 times, 5= 4 times or more. The weighted kappa for this item was 0.79.

i. **History of forced first sexual intercourse** was obtained by asking 'Was the first time you had sexual intercourse forced by another person (i.e. rape or incest) (Klein, 2011)? The respondents were given the choices of 1=Yes, 2=No and 3= Never had sexual intercourse. The responses were recoded for analysis as 0=No and 1=Yes. This item reached an almost perfect agreement in test-retest analysis (κ=0.90).

3.9.6 Data Screening Procedure

Data were entered into the IBM Statistical Package for Social Sciences (SPSS) Version 19.0 software (IBM, Released 2010). Data screening followed the same steps in screening conducted in Part One of the Study. Data screening is an important step prior to data analysis as it assists in evaluating the extent of missing data, identifies both univariate and multivariate outliers and assesses the assumptions for multivariate data analysis, in this case, assumptions for logistic regression (Hair Jr, Anderson, & Tatham, 2005). Violations of the assumptions may result in biases or inability to detect non-

significant results from the true results (Hair Jr et al., 2005). The screening of data was also conducted using Stata 12.0 (StataCorp, 2011), as some functions especially those concerning complex samples were limited in SPSS.

The cases with missing data for the dependent variable (ever had sex) were removed so to avoid any artificial increase in the relationships between this dependent variable and the independent variables (Hair et al., 2005). The highest percentage of missing data was educational achievement at 14.2 per cent. Most of the other variables had low frequency of missing data, less than 5 per cent. Categorical variables with missing data were not imputed as no comparable measures were available for these nonmetric variables (Hair et al., 2005). No values were imputed for the missing data on educational achievement. For statistical analyses, this variable was treated with listwise deletion. The imputation method employed for the missing data in this study was Expectation Maximization (EM) approach. However, no imputations were made on the outcome variables as well as the categorical variables.

Continuous data were explored via exploratory data analysis in examining the accuracy in data entry. On the other hand, categorical data were explored via frequency procedure in order to detect any incorrect data entry or any out of range values. Any out of range values were cross-checked with the original questionnaires and corrections were made accordingly. These corrections were recorded in a log book.

After examining for errors in data entry, the negative worded items in the scales that were utilized in this study were reverse coded. This step was performed to ensure that higher scores denote higher level of the characteristics assessed by the instruments. Then, the scores for each scale were computed using the Compute function in SPSS.

Univariate outliers for quantitative variables were examined using histograms and boxplots. In these boxplots, outliers were observations that were plotted 1.5 times the

interquartile range (Hair et al., 2005). In addition, standardized scores, z scores, were calculated for each continuous variable, which have a mean of 0 and a standard deviation of 1 (Tabachnick & Fidell, 2001). The calculations of these scores were performed via descriptive procedure in IBM SPSS. Based on these standardized scores, comparisons across the variables could be made at ease (Hair et al., 2005). These outliers could lead to both Type I and Type II errors (Tabachnick & Fidell, 2001). As some of these of out range values could occur normally in the studied population, it was imperative to identify the observations that were distinctive and characterize them as outliers. The decision to retain or to remove these outliers were made with thoughtful consideration. According to Hair et al. (Hair et al., 2005), for large sample sized studies, the threshold value of the standardized scores is increased up to 4.0 before designating the values for a particular variable as true outliers. Using this criteria, several values were found to be outliers and were removed from analysis.

Multivariate outliers among the continuous variables were also considered prior to analysis. These outliers were identified through computing Mahalanobis D^2 distance, which was a multivariate assessment of each observation across several variables (Tabachnick & Fidell, 2001). A very conservative probability estimate for appointing multivariate outliers was selected. The significance level of less than 0.001 for the Mahalanobis distance was decided in identifying multivariate outliers (Hair et al., 2005; Tabachnick & Fidell, 2001).

Since independent t-test requires data that are normally distributed and homogeneity of variance throughout the data, both these assumptions were examined. The distribution of the continuous variables were explored via frequency procedure. Skewness and kurtosis were calculated and transformed to z-scores. For large sample size, a value of 2.58 and above for both skewness and kurtosis is denoted as deviation from normality (Field, 2011). However, with large sample, it is more important to observe the

shape of the distribution rather than relying on the values of skewness and kurtosis (Field, 2011). Kolmogorov-Smirnov (KS) test was performed to determine the normality of the tested variables. The use of KS test can cause a problem as this test will reveal significant results in the event of large sample sized study which may imply that the distribution is not normal (Field, 2011). In this study, the Kolmogorov-Smirnov values for all the continuous variables were found to be significant. Therefore, the histograms and the normal probability plots (Normal Q-Q plot) for each continuous variable were also inspected to determine normality. For normal distribution, the observed values will be plotted along a straight line (Field, 2011). Homogeneity of variance was tested using Levene's test through explore procedure in SPSS. A non-significant p-value denotes that the assumption of homogeneity of variance is not violated (Field, 2011).

3.9.7 Statistical Analysis

Data analysis was performed using the IBM SPSS Version 19.0 and the Stata 12.0 softwares utilizing the complex sampling method. A total of 1572 respondents were included in the analysis.

Since a multi-stage stratified sampling was utilized in this study, sampling weights which refers to the number of individuals in the target population that the sampled individual represents were applied (Korn & Graubard, 1991). As the target population in this study were students aged 18 and 19 years in institutions of higher learning in the Central Region, these weights enabled representative estimates of this population. These weights were also adjusted for the non-response rate. Each student from each institution was given a weightage to represent the population the sampled students were actually representing. Without these weights, there will be disproportions in the institutions sampled. It was calculated manually by accounting for the institution's weight, type of the institution's weight, faculty's weight and the student's weight.

The socio-demographic characteristics of the respondents were analysed using the descriptive analyses for complex samples (continuous variables) and the frequency analyses for complex samples (categorical variables). Means and standard deviations were used for the normality distributed data while medians and inter-quartile ranges were used for the non-normally distributed data. These medians and inter-quartile ranges were produced using Survey commands and descriptive statistics to adjust for complex survey design in Stata 12.0. On the other hand, the categorical variables were described using frequencies, weighted percentages and 95% confidence intervals. Since gender has been found to be a significant risk factor and previous research have reported their findings stratified by gender, analysis of the data were performed with gender stratification (Kirby, 2002; Murray, Zabin, Toledo-Dreves, & Luengo-Charath, 1998; Rani, Figueroa, & Ainsle, 2003; Regan, Durvasala, Howell, Ureño, & Rea, 2004; Santelli, John S. et al., 2004).

Prevalence of sexual initiation based on several selected socio-demographic characteristics (gender, ethnicity, type of previous secondary school, faculty that the respondents were from, parents' highest educational achievements and the family's gross monthly income) were produced by utilizing the crosstabs procedure for complex samples. The categorical variables were displayed as frequencies, weighted percentages and 95% confidence intervals. The ages of respondents were described using mean (weighted) and standard deviation. These results were displayed for the overall sample and were also stratified according to gender.

The prevalence of sexual behaviours' components were derived using the crosstabs procedure for complex samples. These sexual behaviours included age of sexual initiation, number of lifetime sexual partners, sexual activity (sexually active in the past three months), type of contraception and substance used at the most recent sexual intercourse and history of pregnancy by the respondents or the sexual partner. Descriptive

analyses were also performed separately for the sexually active adolescents in determining the number of sexual partners and the type of contraception used at the most recent sexual encounter.

Logistic regression adjusting for complex samples was utilized as the outcome for this study was binary in nature (dichotomous variable). Assumptions for logistic regression were tested prior to further analyses. The linearity assumption of the continuous independent variables was tested by using the logit form of the variable. The interactions among the predictors and their log transformations in which if these interactions yielded a significant probability estimate, this assumption had been violated (Hosmer & Lemeshow, 1989). These interactions were tested using binary logistic regression. From these analyses, it was found that five variables had violated this assumption. Therefore, these five variables were transformed into categorical variables for analyses. These transformations were conducted via visual binning procedure where the cut-off points for the variables were identified so that the data could be categorized as low or high (Pallant, 2011). Furthermore, variables with too many categories were also collapsed in order to reduce the number of categories for the bivariate and multivariate analyses.

The next assumption was testing for independence of errors where the residuals should be uncorrelated (Field, 2011). When the residuals were uncorrelated, the size of the residual for a case would not have an impact on the size of residual for the following case. This assumption was examined using the Durbin-Watson statistic. As a rule of thumb, a value which reaches 2 points towards uncorrelated residuals (Field, 2011). The Durbin-Watson statistic for the continuous variables reached the recommended value of 2 as suggested by Field (Field, 2011).

Multicollinearity when present can lead to bias. This assumption was tested by using the collinearity diagnostics (in linear regression). Myers (Myers, 1990)

recommends that when the Variance Inflation Factor (VIF) is ten and above, there is a problem with multicollinearity among the variables. Another indicator which was used to assess this issue was tolerance in which a value of less than 0.1 was indicative of multicollinearity (Menard, 1995). No variables were found to have VIF values of more than ten in this study.

Bivariate regression analyses were performed separately for males and females to explore the potential gender specific influences. Each independent variable was tested against ever had sex. These analyses had provided the unadjusted associations between the independent variables and ever had sex. The results of these associations were reported as crude Odds Ratios and 95% confidence intervals. Following these analyses, the associations between the independent and the dependent variables which produced a p-value of 0.25 or less and other variables which were found to have significant associations with the outcome in previous research were entered into the multivariate analysis (Oljira, Berhane, & Worku, 2012). These variables were entered according to blocks; socio-demographic characteristics, individual characteristics, familial characteristics, peer characteristics and school engagement. As a result, five models were produced. The first model only included the socio-demographic factors. This was followed by the second model where the individual factors were entered. The entrance of the familial factors produced the third model. The fourth model added the peer factors. The analyses were concluded with the fifth model in which the school engagement's components were entered into the analysis. The multivariate results were reported as adjusted odds ratios (AOR) and 95% confidence intervals (CI). These adjusted Odds Ratios provided associations among the independent variables and the outcome variable after controlling for other variables. Significance level for analysis was taken as p-value less than 0.05.

There were several measures in assessing the goodness of fit of the models in this study. Since in Logistic Regression utilizing complex samples did not provide the Omnibus Test of Model Coefficients and the Hosmer-Lemeshow statistics, The Wald statistic was used to assess the contribution of a predictor to the model. However, when data that yield large estimates of the regression coefficient, the standard error tends to be inflated which could result in incorrectly assuming the independent variable as a non-significant contributor in the model (Bewick, Cheek, & Ball, 2005).

Two other important statistics which were used in determining the usefulness of the model and were similar to the coefficient of determination (R^2) were the Cox & Snell and the Nagelkerke R^2. The Nagelkerke R^2 is often preferred because it takes a range from 0 to 1 unlike the Cox and Snell which the maximum value is less than 1 (Bewick et al., 2005).

3.10 Conclusion of Chapter Three

This chapter has described the study methodology explicitly which explained the methods for Phase I and Phase II separately. Phase I of the study was a cross-sectional study examining psychometric properties of the Susceptibility to Peer Pressure scale conducted in three institutions of higher learning. There were 515 students aged 18 and 19 years involved in this study. After the analyses of data from Phase I were completed, the Phase II was commenced. This Phase II was a cross-sectional study examining the prevalence of sexual experience and other sexual behaviours among students in institutions of higher learning. The factors influencing sexual initiation were also examined. There were 1652 respondents from six institutions of higher learning in the Central Region who had participated in this study.

CHAPTER 4 RESULTS

4.1 Introduction

This chapter reports the findings of the study. These findings are divided into two parts: the first part presents the results of the validity and reliability of the Susceptibility to Peer Pressure Scale while the second part focuses on the survey in establishing the prevalence of sexual initiation and its associated risk factors. The results of the exploratory and confirmatory factor analyses, the internal consistencies for the Susceptibility to Peer Pressure domains and the test-retest reliabilities of each item in the instrument are presented in Section 4.2. This Susceptibility to Peer Pressure scale assessing peer influence is then used in the Phase II. Section 4.3 details the pilot study which assessed the internal consistencies and the test-retest reliabilities of all the instruments used in the Phase II of the study. Prevalence of sexual initiation and other associated sexual behaviours are described in Section 4.4. The correlates of sexual initiation stratified by gender via bivariate and multivariate logistic regression analyses are also presented in Section 4-4.

4.2 Phase I- Validation Study in Examining the Psychometric Properties of the Susceptibility to Peer Pressure Scale

4.2.1 Descriptive Analysis

A total of 600 students aged 18 to 19 years were invited to participate in the study. However, 85 students declined, resulting in a response rate of 85.8%. Demographic characteristics of the participants are displayed in Table 4.1. The mean age of respondents was 18.95 (SD= 1.03) years. Majority were females (61%), Malay (74%), followed by Chinese (14%) and Indian (12%). Most of the students lived in the urban area (56.6%). Students enrolled in Information and Technology and Sciencefaculty made up 54% of the

total respondents. Students who had previously attended day schoolsfor their secondary

level education dominated (70.3%) this study.

Table 4.1: Demographic characteristics of students in the institutions of higher learning in the Central region who had participated in the study(N=515)

Characteristics	n (%)
Gender	
Male	201 (39.0)
Female	314 (61.0)
Ethnicity	
Malay	381 (74.0)
Chinese	72 (14.0)
Indian	62 (12.0)
Faculty[a]	
Computer Science &	
Information & Technology	168 (32.6)
Science & Technology	110 (21.4)
Law	92 (17.9)
Art & Social Sciences	69 (13.4)
Business	64 (12.4)
Medicine	9 (1.7)
Languages & Linguistics	3 (0.6)
Previous type of secondary school	
Day school	362 (70.3)
Boarding school	74 (14.4)
Religious school	39 (7.6)
Technical school	31 (6.0)
Private school	9 (1.7)
Family income[b]	
Low income group (<RM 1,500)	236 (45.8)
Middle income group (RM 1,500-RM5,000)	199 (38.5)
High income group (>RM5,001)	80 (15.7)
Hometown	
Urban	292 (56.6)
Rural	223 (43.4)

Note.[*] Faculty refers to the academic division which the students were enrolled in for their courses.
[b] Based on The Eighth Malaysia Plan 2001-2005 (Malaysia Economic Planning Unit (EPU), 2001)

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4.2.2 Statistical Analysis

Since the structure of the scale was already determined by the original author, Confirmatory Factor Analysis utilizing the Maximum Likelihood estimation was selected to test the fitness of the five-factor model. The items in the constructs are displayed in Table 4.2. The initial fit of this model was unsatisfactory as evidenced by Chi-square, χ^2 (550) = 1202.33, p< .001, comparative fit index (CFI) = 0.87, Jöreskog's goodness-of-fit-index (GFI) =0.88, adjusted goodness-of-fit index (AGFI) =0.86 and Tucker-Lewis Index (TLI) =0.86. Only two indices reached the recommended values; root-mean-square error of approximation (RMSEA) = 0.05 and chi-square to degrees of freedom ratio (χ^2/df ratio) =2.19 (Figure 4.1). The fit of the alternative model, the four-factor structure was modest as provided by CFI=0.91, GFI=0.91, TLI=0.90 and χ^2/df ratio=2.07which fit the recommended values but both χ^2 (344)=712.93, p <.001) and AGFI=0.89had not reached the acceptable values (Figure 4.2). In addition, despite fulfilling the criteria for convergent validity, the squarred intercorrelations among the domains for both the four- and five-structure models exceeded 0.5 (Hair et al., 2005) which did not support discriminant validity (Table 4.3 and Table 4.4). Therefore, exploratory factor analysis was conducted to identify the patterns of correlations among the items and determining the underlying structures of the scale(Pett et al., 2003).

Table 4.2:The items in the original Susceptibility to Peer Pressure Scale

Constructs	Items in the Constructs: Your friends tell you to …
Family involvement	• Ask parents for advice on which course to take. • Go home to have dinner with family. • Get along with parents. • Spend time with family. • Call your parents that you will be home late. • Consider family's advice seriously. • Go somewhere with family over the weekend.
School involvement	• Involve in college activities. • Start studying. • Further study. • Complete assignments. • Try to get along with the lecturer. • Assist the lecturer. • Try to get good results.
Misconduct	• Take a puff of cigarette. • Write on the walls with the marker. • Pick a fight. • Drink a little beer. • Bring home an item without paying. • Cross the road without using the overhead bridge. • Throw tissue papers onto the floor instead of into the bin.
Peer involvement	• Join the crowd at your college. • Be more sociable at a party. • Go the beach with friends over the weekend. • Go to a party with friends. • Join your friends at a fast-food restaurant. • Go to watch a band performance which one of your friends are participating in during the break. • Go to a holiday chalet with your friends in order to get to know more friends.
Peer norms	• Try the latest hairstyle. • Listen to the K-pop music. • Buy the same clothes as they do. • Stop using straws to drink. • Think that the movie you and them had watched was the best ever. • Speak the same way as them. • Think that a new classmate you have not spoken to were like what they think.
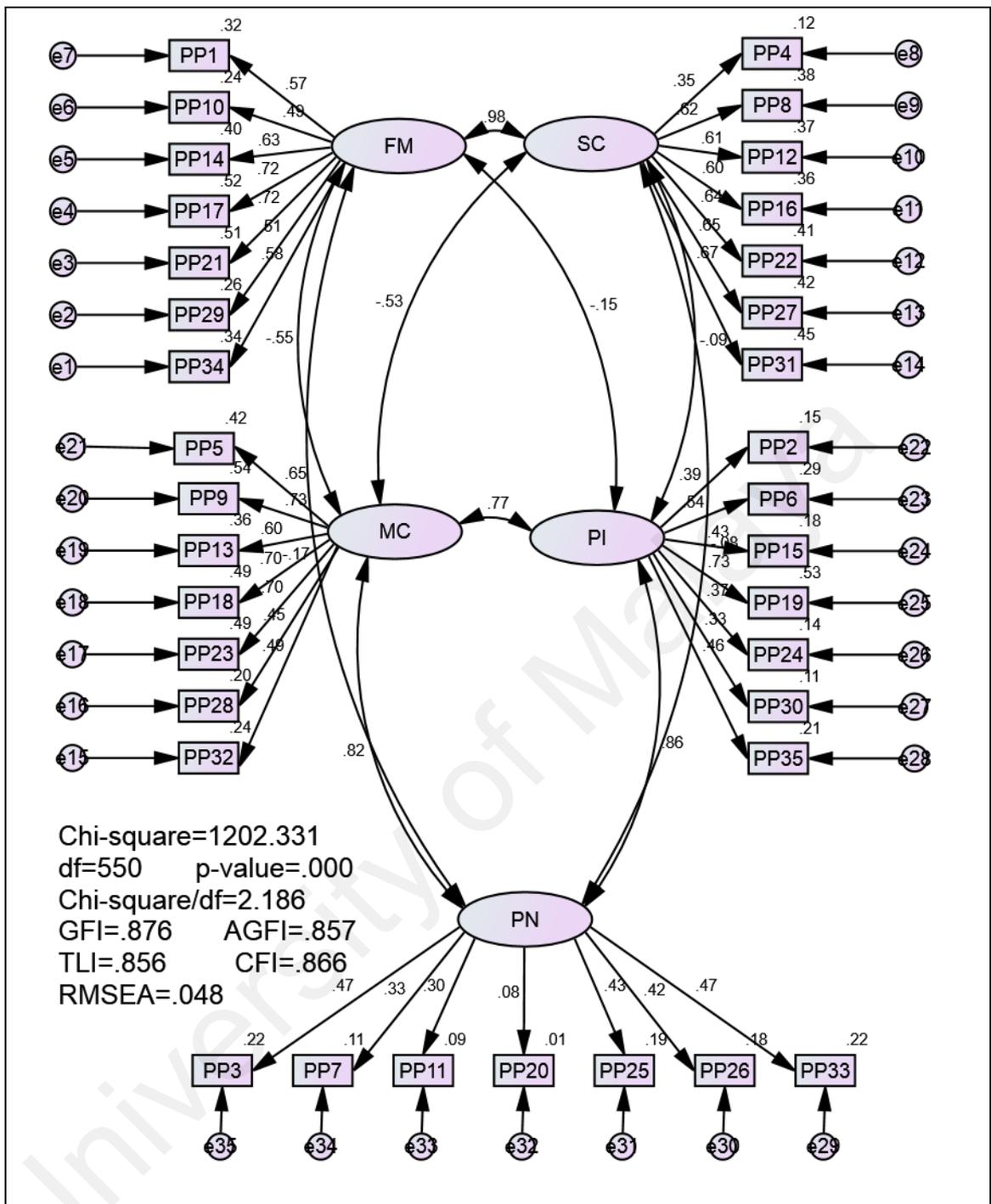
*Note.*FM = Family involvement. SC=School involvement. MC=Misconduct. PI=Peer involvement. PN=Peer Norms. GFI= Jöreskog's goodness-of-fit-index. AGFI= Adjusted goodness of fit index. TLI=Tucker Lewis index. CFI=Comparative fit index. RMSEA=Root-Mean-Square Error of Approximation

Figure 4.1: Confirmatory Factor Analysis on the five-factor model of the susceptibility to peer pressure scale (N=515)
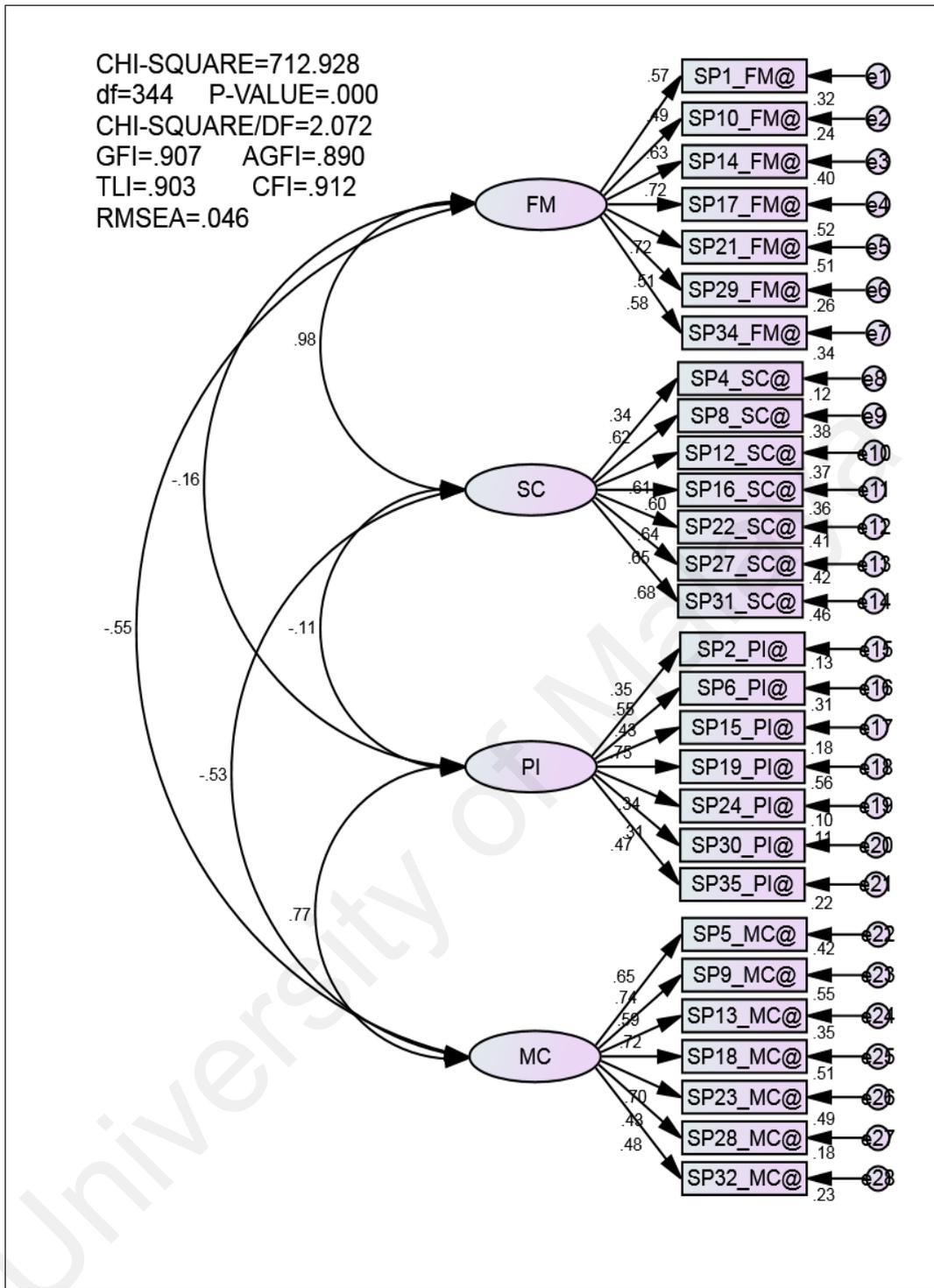
*Note.*FM = Family involvement. SC=School involvement. MC=Misconduct. PI=Peer involvement. PN=Peer Norms. GFI= Jöreskog's goodness-of-fit-index. AGFI= Adjusted goodness of fit index. TLI=Tucker Lewis index. CFI=Comparative fit index. RMSEA=Root-Mean-Square Error of Approximation

Figure 4.2 Confirmatory Factor Analysis on the four-factor model of the susceptibility to peer pressure scale (N=515)

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Table 4.3: Squared Intercorrelations among the Factors in the Susceptibility to Peer Pressure scale for the Five-Factor Model

Factors	Estimate
Family involvement ↔ School involvement[a]	0.99
Family involvement ↔ Misconduct[a]	-0.55
Family involvement ↔ Peer involvement	-0.15
Family involvement ↔ Peer norms	-0.17
School involvement ↔ Misconduct[a]	-0.53
School involvement ↔ Peer involvement	-0.09
School involvement ↔ Peer norms	-0.08
Misconduct ↔ Peer involvement[a]	0.77
Misconduct ↔ Peer norms[a]	0.83
Peer involvement ↔ Peer norms[a]	0.86

Note.[a] Squared intercorrelation which exceeds 0.5

Table 4.4: Squared Intercorrelations among the Factors in the Susceptibility to Peer Pressure scale for the Four-Factor Model

Factors	Estimate
Family involvement ↔ School involvement[a]	0.99
Family involvement ↔ Misconduct[a]	-0.55
Family involvement ↔ Peer involvement	-0.17
School involvement ↔ Misconduct[a]	-0.53
School involvement ↔ Peer involvement	-0.11
Misconduct ↔ Peer involvement[a]	0.77

Note.[a] Squared intercorrelation which exceeds 0.5

4.2.2.1 Exploratory Factor Analysis

Exploratory Factor Analysis (EFA) was performed to identify the patterns of correlations among the items and the underlying structures of the scale (Pett et al., 2003). This analysis was performed on the first 205 sample (the rest of the sample, 310 was used in the final confirmatory factor analysis). A Principal Axis Factoring (PAF) was conducted on the 35 items in the Susceptibility to Peer Pressure scale. The factorability of the matrix was determined by Kaiser-Meyer-Olkin (KMO) statistics and Bartlett's Test of Sphericity. The sample revealed a KMO statistic of 0.90, which was "marvellous" according to Kaiser's criteria (Kaiser & Rice, 1974). The Bartlett's Test of Sphericity was significant (χ^2=2937.29, p<.001). This significant χ^2 test signified that the correlation

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matrix was not an identity matrix as well as existence of sufficiently large correlations between the items for factor analysis. Both these findings supported the suitability for factor analysis (Tabachnick & Fidell, 2001). Measure of sampling adequacy (MSA) for individual item produced from the anti-image correlation matrix (Govender et al.) which exceeded 0.6 also favoured factor analysis (Choo, Walsh, Chinna, & Tey, 2013) (Appendix B).

Examination of the correlation matrix revealed that 29 items except for items PP2, PP7, PP15, PP26, PP30 and PP35 correlated ≥ 0.30 with at least three other items in the matrix (Appendix C). No inter-item correlations exceeded 0.8 (the highest inter-item correlation was 0.69), thus there was no evidence of multicollinearity (Pett et al., 2003). From the correlation matrix, the six items with inter-item correlation (with at least 3 other items in the scale) of less than 0.3 were removed from the scale. These items were PP2 (Your friends tell you to join the crowd), PP15 (Your friends tell you to go to the beach in the weekend), PP25 (Your friends insist that the movie they have watched with you is the best), PP26 (Your friends tell you to speak the way they do), PP30 (Your friends tell you to join them to watch a friend performing at a concert) and PP35 (Your friends tell you to come to a rented chalet with them).

Initial analysis was performed to obtain the eigenvalues from the extracted factors. Two factors were identified with eigenvalues exceeding 1 (one) and when combined, both explained 44.9% of the total variance (Table 4.5). Inspection of the scree plot (Figure 4.3), based on Cattell criteria, supported a two-factor solution (Cattell, 1966). Furthermore, only these two factors exceeded the values obtained from Parallel Analysis (Horn, 1965). Examination of the data suggested that promax rotation yielded the most interpretable solution which produced a significant moderate intercorrelation (r=0.56) between the two factors.

Table 4.5: Total Variance Explained by the Extracted Factors of the Susceptibility to Peer Pressure Scale via Principal Axis Factoring

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings[a]		
	Total	% of Variance	Cumulative%	Total	% of Variance	Cumulative%
1	8.94	37.26	37.26	8.44	35.16	35.16
2	2.87	11.96	49.22	2.34	9.73	44.89
3	1.16	4.82	54.03			
4	1.04	4.34	58.37			

Note.[a] Only 2 Factors were extracted (Eigenvalues of more than 1)
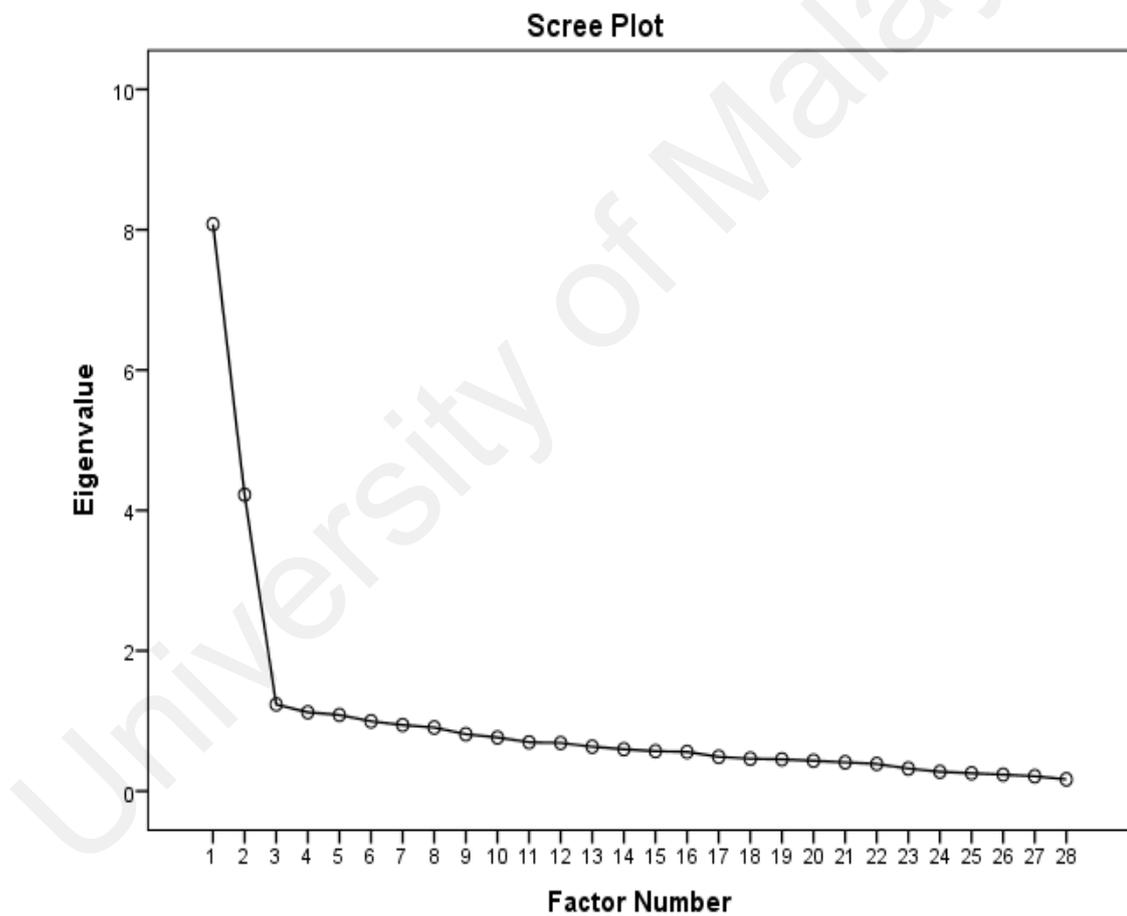
Figure 4.3: Scree Plot produced by Principal Axis Factoring Method

On inspection of the pattern matrix produced, five items with factor loadings of less than 0.4 were dropped: item PP7 "Your friends tell you to listen to K-Pop music"; item

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PP11 "Your friends tell you to buy the same clothes as them"; item PP20 "Your friends tell you to save the environment by stop using straws to drink"; item PP24 "Your friends tell you to join them eating at a fast-food restaurant" and item 28 "Your friends tell you to cross the road by not using the overhead bridge".

The pattern matrix as displayed in Table 4.6revealed a clear two-factor structure with 24 items. No items were found to cross-load on both factors. The item means, standard deviations, communalities and factor loadings are also presented in Table 4.6. Both factors were relabelled as susceptibility to positive peer pressure and susceptibility to negative peer pressure. Based on a four-point Likert-type scale, where "1=I definitely would not do it" to "4=I definitely would do it", the means for the items ranged from 1.40 (Item PP18: Friends urge to drink beer) to 3.51 (Item PP31: Friends urge to try getting good grades). The mean score for the susceptibility to positive peer pressure domain was 44.95 (SD=7.55) while the mean score for susceptibility to negative peer pressure domain was lower at 16.98 (SD= 5.78).

Table 4.6: Means, standard deviations, communalities (h^2) and factor loadings from Principal Axis Factoring with Promax rotation (n=205)

Item	Your friends tell you to …	Factor 1[a]	Factor 2[b]	h^2	Mean	SD
	Susceptibility to positive peer pressure					
PP21	Call your parents that you will be home late	0.77		0.61	3.36	0.76
PP14	Try get along with your parents after a quarrel	0.74		0.56	3.43	0.78
PP1	Ask your parents for advice on which course to take	0.73		0.45	3.47	0.70
PP8	Start studying as exams are coming	0.73		0.54	3.49	0.73
PP22	Try to get along with your lecturer	0.72		0.45	3.06	0.71
PP17	Spend your free time with your family	0.69		0.59	3.25	0.80
PP31	Try to get good grades	0.68		0.52	3.51	0.77
PP34	To go to Penang with your family over the weekend	0.68		0.46	3.18	0.86
PP16	Go home and do your assignment	0.67		0.46	3.07	0.82
PP27	Help your lecturer with the decoration of the class notice board	0.57		0.37	3.00	0.70
PP12	Continue your studies to higher levels	0.56		0.35	3.25	0.80
PP10	Go home for dinner with your family	0.54		0.36	3.11	0.94
PP4	Be involved in college's activities	0.53		0.20	2.81	0.82
PP29	Take your family advice's seriously	0.53		0.27	2.95	0.92
	Susceptibility to negative peer pressure					
PP18	Drink beer		0.81	0.68	1.40	0.79
PP23	Shoplift		0.80	0.62	1.47	0.77
PP9	Write on the college's wall with a marker		0.74	0.66	1.46	0.78
PP19	Go to a party		0.74	0.48	1.79	0.87
PP5	Take a puff of cigarette		0.74	0.61	1.49	0.86
PP13	Pick a fight		0.65	0.40	1.72	0.84
PP3	Try a new hairstyle		0.62	0.37	1.68	0.79
PP6	Be more sociable at a party		0.57	0.27	2.02	0.95
PP32	Throw tissue papers on to the floor instead of into the rubbish bin		0.57	0.34	1.87	0.85
PP33	Think that a new classmate you have not spoken to were like what they think.		0.45	0.17	2.07	0.76
	Factor 1				44.95	7.55
	Factor 2				16.98	5.78

Note. [a] Factor 1- Susceptibility to positive peer pressure. [b] Factor 2- Susceptibility to negative peer pressure

Factor loadings of 0.40 and below are not displayed

Items were reversed-coded (1=I definitely would not do it, 2=I would not do it, 3= I would do it and 4= I definitely would do it)

The overall Cronbach's alpha for the Susceptibility to Peer Pressure Scale was 0.71. Cronbach's alphas for susceptibility to positive peer pressure and susceptibility to negative peer pressure were 0.91 and 0.89 respectively. The Cronbach's alphas were reviewed and it was found that there was no further improvement in the alpha coefficient if any items were removed. This two-factor model of susceptibility to peer pressure scale

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comprising 24 items was then subjected to further analysis using confirmatory factor analysis.

4.2.2.2 Confirmatory Factor Analysis

Confirmatory Factor Analysis (CFA) utilizing Maximum Likelihood Estimation method was conducted on the second 310 sample. All items in the model produced statistically significant factor loadings (p<.001). The initial model yielded a χ^2 value of 405.95, with 251 degrees of freedom and a statistically significant p-value (<.001). This χ^2 value however, is very sensitive to sample size (Hair et al., 2005). This sensitivity had resulted in less dependence on this index in determining the goodness-of-fit of a particular model (Byrne, 2010). All indices except for the adjusted goodness of fit index (AGFI) which was 0.88 indicated a good model fit (χ^2/df ratio=1.62, CFI=0.94, GFI=0.90, TLI=0.93 and RMSEA=0.05) (Figure 4.4).
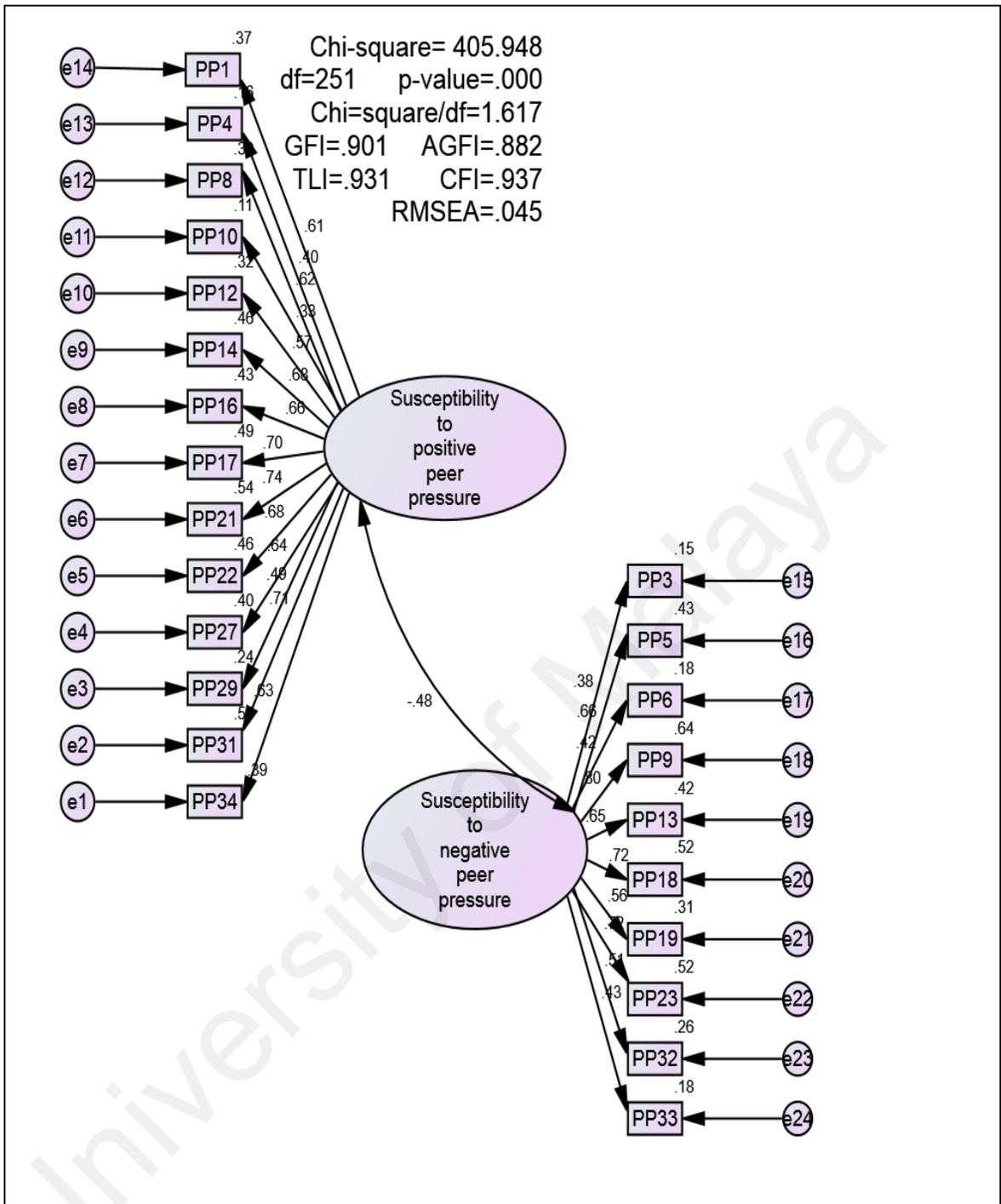
Figure 4.4: The Initial Two-Factor Model for the susceptibility to peer pressure scale obtained from confirmatory factor analysis

In order to improve the model fitness, the factor loadings of each item were reviewed. Six items with factor loadings of less than 0.5 (Hair et al., 2005) were deleted from the model: item PP3 (Your friends tell you to try a new hairstyle); item PP4 (Your friends tell you to be involved in college's activities); item PP6 (Your friends tell you to

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be more sociable at a party); item PP10 (Your friends tell you to go home to your family for dinner); item PP29 (Your friends tell you to take what your parents have said seriously) and item PP33 (Your friends want you to think that a new classmate whom you have spoken to were as what they think).

The standardized residuals and modification indices were reviewed in order to detect any misspecification in the model. These residuals refer to the discrepancy between the hypothesized model and the sample covariance matrix (Byrne, 2010). Inspection of the standardized residual covariances revealed that no standardized residuals exceeded 2.58 which was considered large (range from 0 to 1.88) (Jöreskog & Sörbom, 1993). The second component which was reviewed was the Modification Indices (MI). These MIs were provided for each fixed parameter. They represented the expected decrease in the overall χ^2 value if the parameter was allowed to be free (Byrne, 2010). Table 4.7 displays these MIs and the expected parameter change for the corresponding MIs. Several error terms were allowed to co-vary in order to minimize the Modification Indices. The largest Modification Index was 8.37 but the suggested covariances between the error terms did not make any substantive sense for any actions to be taken.

Table 4.7: AMOS Output for the Hypothesized Two-Factor Model: Modification Indices and Parameter Change Statistics

	Modification Indices	Expected Parameter Change
Covariances		
e11↔ Susceptibility to negative peer pressure	4.97	-0.03
e11↔ e17	8.37	-0.05
e9 ↔ e14	4.18	0.05
e8 ↔ e14	8.24	0.07
e7 ↔ e16	4.61	-0.05
e7 ↔ e15	6.64	0.05
e5 ↔ e9	5.91	-0.04
e1 ↔ e17	4.35	0.04
e1 ↔ e4	6.55	-0.05
Regression weights		
PP18 ← PP22	4.03	-0.08
PP18 ← PP27	4.44	-0.10
PP19 ← PP14	6.75	0.16
PP1 ← PP9	8.26	-0.12
PP16 ← PP18	5.23	0.11
PP17 ← PP19	5.10	-0.09
PP17 ← PP32	4.52	-0.09
PP34 ← PP22	4.46	-0.10

Note. e=error term, PP=Peer pressure item

Table 4.8 shows the standardized regression weights for each item in the model. Following deletion of the six items, the remaining 18 items had factor loadings exceeding 0.5 with significant p-values. The two-factor model indicated a good fit as evidenced by χ^2/df ratio=1.32, CFI=0.98, GFI=0.94, AGFI=0.93, TLI=0.98 and RMSEA=0.03 (Figure 4.5). On the other hand, the χ^2 =173.32 with 131 degrees of freedom and a statistically significant p-value (.01) did not support the model fit. Table 4.9 shows the comparison of model fitness pre- and post- deletions of items.

Table 4.8: Standardized Regression Weights for Items in the Two-Factor Model of Susceptibility to Peer Pressure scale

Item ← Domain	Standardized Regression Weights	p-value
PP1 ← Susceptibility to positive peer pressure	0.62	<.001
PP8 ← Susceptibility to positive peer pressure	0.65	<.001
PP12 ← Susceptibility to positive peer pressure	0.58	<.001
PP14 ← Susceptibility to positive peer pressure	0.66	<.001
PP16 ← Susceptibility to positive peer pressure	0.66	<.001
PP17 ← Susceptibility to positive peer pressure	0.70	<.001
PP21 ← Susceptibility to positive peer pressure	0.74	<.001
PP22 ← Susceptibility to positive peer pressure	0.65	<.001
PP27 ← Susceptibility to positive peer pressure	0.60	<.001
PP31 ← Susceptibility to positive peer pressure	0.69	<.001
PP34 ← Susceptibility to positive peer pressure	0.65	<.001
PP5 ← Susceptibility to negative peer pressure	0.65	<.001
PP9 ← Susceptibility to negative peer pressure	0.81	<.001
PP13 ← Susceptibility to negative peer pressure	0.65	<.001
PP18 ← Susceptibility to negative peer pressure	0.72	<.001
PP19 ← Susceptibility to negative peer pressure	0.55	<.001
PP23 ← Susceptibility to negative peer pressure	0.73	<.001
PP32 ← Susceptibility to negative peer pressure	0.51	<.001
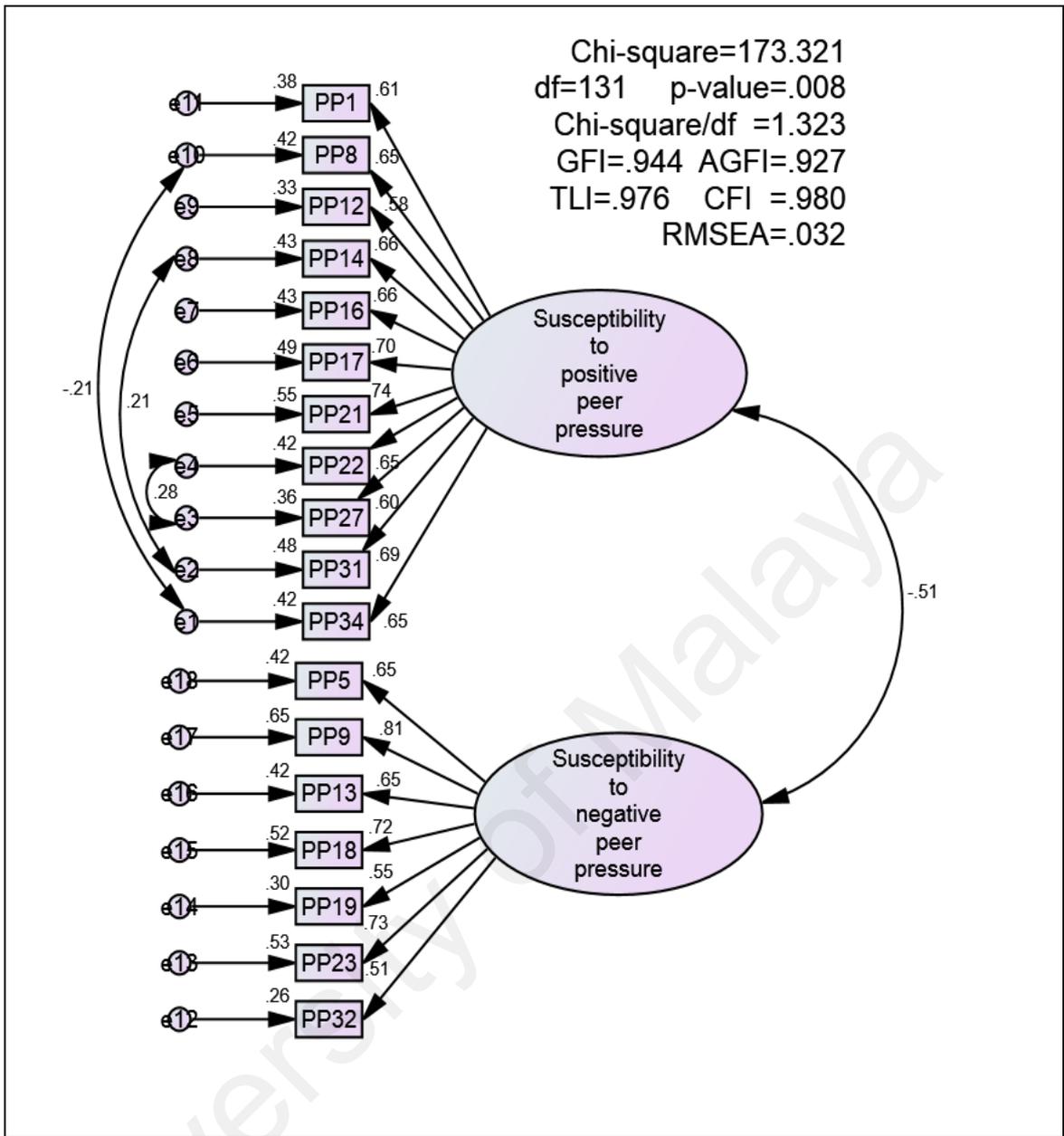
Note. GFI=Jöreskog's goodness-of-fit-index. AGFI= Adjusted goodness of fit index. TLI=Tucker Lewis index. CFI=Comparative fit index. RMSEA=Root-Mean-Square Error of approximation

Figure 4.5:   The Final Two-factor model for susceptibility to peer pressure scale obtained from Confirmatory Factor Analysis (n=310)

Table 4.9: Confirmatory Factor Analysis and Model Fitness

Goodness of Fit Indices	Pre-Deletion of Items	Post-Deletion of Items
Chi-square, χ^2	405.95	173.32
Degree of freedom, df	251	131
p-value	<.001	.01
χ^2/df	1.62	1.32
CFI	0.94	0.98
GFI	0.90	0.94
AGFI	0.88	0.93
TLI	0.93	0.98
RMSEA	0.05	0.03

This model was then cross-validated with 1000 bootstrap resample which had resulted in a Bollen-Stine p-value of .17. This insignificant p-value ensured model correctness for every repeated sample (Zhu 1997). The composite reliability (CR) for the susceptibility to positive peer pressure was 0.89 and 0.85 for the susceptibility to negative peer pressure which were good (Hair et al., 2005). The average variance extracted (AVE) for the susceptibility to positive peer pressure and susceptibility to negative peer pressure were 43% and 52% respectively (Table 4.10). AVE for the susceptibility to negative peer pressure domain which exceeded 0.5 as well as the factor loadings for all the items exceeding 0.5 provided adequate convergent validity. Adequate convergent validity was also evident for the susceptibility to positive peer pressure domain where the items portrayed factor loadings or higher than 0.5 with AVE reaching 0.5. Discriminant validity was evident as the AVEs for both domains were higher than the squared inter-construct correlation which was 0.26.

Table 4.10: Average Variance Extracted (AVE), Squared Inter-construct Correlation and Composite Reliability (CR) of the Two-Factor Model (n=310)

	Positive Behaviour	Negative Behaviour	Composite Reliability
Susceptibility to positive peer pressure	(0.43)		0.89
Susceptibility to negative peer pressure	0.26	(0.52)	0.85

Note. Value in brackets are the average variance extracted (AVEs)

In determining whether the model is equivalent across gender, the Susceptibility to Peer Pressure scale was examined for male and female samples via multi-group confirmatory factor analysis. The initial step in testing for invariance was ensuring that the same number of factors and the same factor loading pattern across gender. In the first step, the baseline model used had no equality constraint. The findings are displayed in Table 4.11. This unconstrained configural model for both male and female participants fitted the data well as evidenced by the goodness of fit indices: χ^2/df ratio=1.305,GFI=0.9, AGFI=0.9, TLI=0.96, CFI=0.96 and RMSEA=0.03. Equality constraints were then assigned to certain parameters in testing for the invariance of factorial measurement and structure across gender (Byrne, 2010). The classical consideration in determining noninvariance is based on the χ^2 difference ($\Delta\chi^2$) where evidence for nonivariance is given by a statistically significant p-value (Byrne, 2010). On the other hand, Cheung and Rensvold(2000) had recommended the difference in CFI (ΔCFI) in deciding for factorial invariance instead of depending on the difference of χ^2across the models. A probability of less than .01 supports the evidencefor invariance. In the current study, the recommendation by Cheung and Rensvold was employed in testing for invariance across gender. Based on this criterion, factorial invariance was established at the level of configural, weak, strong and strict factorial invariance.

Table 4.11: Goodness-of-Fit Statistics for Tests of Multi-group Invariance (Across Gender) (n=310)

Model	χ^2	df	$\Delta \chi^{2\,a}$	Δdf^b	p-value	χ^2/df	TLI	RMSEA	CFI	ΔCFI^c
Configural invariance	341.83	262	-	-	-	1.31	0.96	0.03	0.96	-
Weak Factorial Invariance	354.81	278	12.98	16	.67	1.28	0.96	0.03	0.96	0.002
Strong Factorial Invariance	364.70	281	22.87	19	.24	1.30	0.96	0.03	0.96	0.002
Strict Factorial Invariance	410.76	302	68.93	21	<.001	1.36	0.95	0.03	0.95	0.01

Note. χ^2=Chi-square, χ^2/df= Chi-square/ df ratio, TLI=Tucker Lewis Index, RMSEA= Root mean square error of approximation, CFI= Comparative fit index
[a]$\Delta \chi^2$ represents the difference in χ^2; [b]Δ df represents the difference in df , [b] ΔCFI represents the difference in CFI across the models

4.2.2.3 Reliability Analysis

Test-retest reliability for the items in the Susceptibility to Peer Pressure Scale were determined by weighted kappa coefficients. Previous pilot study in determining the psychometric properties of this scale did not report its test-retest reliability. Therefore, comparison with these study's test-retest reliabilities of each item in the scale could not be performed. Internal consistency of each domain was calculated using Cronbach's alpha coefficient.

Both domains, the susceptibility to positive peer pressure and susceptibility to negative peer pressure portrayed good internal consistencies which had exceeded the recommended value of 0.6 (Norman & Streiner, 2008). Analysis of test-retest reliabilities of the items revealed moderate to substantial agreements, ranging from 0.41 to 0.61 (Landis & Koch, 1977). Only one item, Item 21, "Your friends tell you to call your parents to inform them that you will be home late" produced a fair agreement with Kappa coefficient of 0.37. The scale's internal consistencies and test-retest reliabilities with 95% CI are displayed in Table 4.12.

Table 4.12: Cronbach's alpha and Weighted Kappa coefficients for the items in the Susceptibility to Peer Pressure Scale (n=80)

Domain	Items	Weighted Kappa	95% CI	Cronbach's alpha
Susceptibility to positive peer pressure (n=11)	Item 1: Seeking advice from parents	0.52	0.45, 0.58	0.91
	Item 8: Start studying	0.50	0.44, 0.56	
	Item 12: To further study	0.49	0.40, 0.57	
	Item 14: Get along with parents	0.45	0.38, 0.53	
	Item 16: Go home after lecture	0.53	0.45, 0.61	
	Item 17: Spend the one week holiday with family	0.47	0.39, 0.56	
	Item 21: Inform parents that he or she will come home late	0.37	0.28, 0.46	
	Item 22: Get along with the lecturer	0.43	0.33, 0.53	
	Item 27: Assist the lecturer	0.53	[0.45. 0.60]	
	Item 31: Get good grades	0.40	0.34, 0.47	
	Item 34: Spend the weekend with family	0.42	0.32, 0.52	
Susceptibility to negative peer pressure (n=7)	Item 5: Try out a cigarette	0.53	0.47, 0.59	0.89
	Item 9: Write on the wall with a marker	0.54	0.47, 0.61	
	Item 13: Pick a fight	0.41	0.33, 0.49	
	Item 18: Try some beer	0.50	0.44, 0.57	
	Item 19: Go to a party	0.61	0.51, 0.70	
	Item 23: Take an item without paying	0.56	0.48, 0.63	
	Item 32: Throw rubbish on to the floor instead of into the rubbish bin	0.43	0.35, 0.50	

4.3   Pilot Study

The pilot test was conducted in an institution of higher learning involving 80 students to determine the internal consistencies and the test-retest reliabilities of the instruments used in Phase II. This institution was not involved in the Phase II study.

4.3.1 Socio-demographic characteristics of respondents in the pilot study

The demographic characteristics of the participants are presented in Table 4.13. Majority of the respondents were females (61.2%) with mean age of 19.95 (SD=0.49) years. Malays (45%) made up the majority of the ethnic group, followed closely by the Indians (40 %) and Chinese (15%). Those who had attended day schools were predominant in this study (87.5%). Thirty six per cent (36%) of the respondents' fathers were employed in the semiskilled or unskilled job sectors compared to the other sectors. Overwhelmingly, half (51.4%) of the respondents' mothers were stay-at-home mothers. In regard to the household monthly income, 57.1% of the respondents reported an income or RM 1,000 to RM 3,000 while 7.8% reported that their parents earned RM5,000 or above per month.

Table 4.13: Socio-demographic characteristics of respondents in the pilot study (n=80) [a]

Characteristics	Frequency, n (%)
Sex	
Male	31 (38.8)
Female	49 (61.2)
Ethnic	
Malay	36 (45.0)
Chinese	12 (15.0)
Indian	32 (40.0)
Religion	
Islam	36 (45.0)
Buddhist	12 (15.0)
Hindu	29 (36.2)
Christian	3 (3.8)
Previous type of secondary school	
Day school	70 (87.5)
Technical or vocational school	5 (6.3)
Religious school	3 (3.8)
Private school	2 (2.4)
Father's occupation [b]	
Professional or managerial	8 (10.7)
Clerical	4 (5.3)
Self-employed	16 (21.3)
Skilled	4 (5.3)
Semi-skilled or unskilled	27 (36.0)
Malaysian Royal Police or Army	6 (8.0)
Unemployed	2 (2.7)
Others	8 (10.7)
Mother's occupation [b]	
Professional or managerial	7 (9.4)
Clerical	5 (6.8)
Self-employed	7 (9.4)
Skilled	4 (5.4)
Semi-skilled or unskilled	7 (9.4)
Malaysian Royal Police or Army	1 (1.4)
Housewife	38 (51.4)
Others	5 (6.8)
Monthly household income	
< RM 1,000	16 (20.8)
RM 1,000 – RM 2,999	44 (57.1)
RM 3,000 – RM 4,999	11 (14.3)
RM 5,000 or above	6 (7.8)

Note. [a] The frequency for each variable may not be equal to 80 due to missing data
[b] Classification of the occupation is based on the abridged version of the International Standard Classification of Occupations (International Labour Office (ILO), 1990)

4.3.2 Test-retest reliabilities and Cronbach alpha coefficients of the instruments utilized in the Phase II

In the Phase II of this study, there were five instruments used to assess parenting processes, two instruments utilized to gauge participants' attachment to parents and peers, one instrument measuring susceptibility to peer pressure, three instruments evaluating self-esteem, religiosity and resiliency and one instrument for evaluating school connectedness. In total, there were twelve instruments measured on ordinal scales employed in the Phase II.

The test-retest reliabilities of the instruments utilized in the quantitative study were established by weighted Kappa coefficients (ordinal scale) and unweighted kappa coefficients (nominal scale) while the internal consistencies were determined by Cronbach alpha coefficients as displayed in Tables 4.14 to 4.19.

Table 4.14: Cronbach's alpha and Weighted Kappa coefficients for the scales utilized in the assessment of individual factors

Concept	Measure	Cronbach's alpha	Kappa statistics[a]	Number of items
Self-esteem	Rosenberg Self-Esteem Scale (validated in Malaysia) (Mohd Jamil Yaacob, 2006)	0.73	0.44 – 0.73	10
Religiosity	The Malay version of Duke University Religion Index (DUREL-M)	0.62	0.51 – 0.78	5
Resiliency	Resiliency Belief Scale (Azlina Abu Bakar & Shahrir Jamaluddin, 2010)	0.90	0.60 – 0.80	15
		0.85	0.43 – 0.81	15
	• Future orientation	0.87	0.56 – 0.84	15
	• Active skills			Total = 45
	• Risk taking and independence			

Note.[a] The Kappa statistics represent the lowest Kappa values and the highest Kappa value for the items in the scales

Table 4.15: Cronbach's alpha and Weighted Kappa coefficients for the scales utilized in the assessment of parental factors

Concept	Measure	Cronbach's alpha	Kappa statistics[a]	Number of items
Parental aspirations	Students' Parents Actions Questionnaires 1 (Koh & Ong, 2010) • Aspirations	0.84	0.45 – 0.79	5
Parental religious practice	Students' Parents Actions Questionnaires 1 (Koh & Ong, 2010) • Religious Practice	0.91	0.65 – 0.90	6
Parental control and monitoring	Students' Parents Actions Questionnaires 1 (Koh & Ong, 2010) • Control and monitoring	0.86	0.45 – 0.74	10
Parental closeness	Students' Parents Actions Questionnaires 1 (Koh & Ong, 2010) • Warmth and closeness	0.81	0.57 – 0.68	7
Conflict in parents-children's relationship	Students' Parents Actions Questionnaires 1 (Koh & Ong, 2010) • Conflict	0.70	0.54 – 0.73	5
Parental attachment	Parents Attachment scale (Soh, 2010) • Communication • Trust • Alienation	0.80 0.73 0.64	0.51 – 0.73 0.59 – 0.75 0.35 – 0.61	6 4 4 Total =14

Note.[a] The Kappa statistics represent the lowest Kappa values and the highest Kappa value for the items in the scales

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Table 4.16: Cronbach's alpha and Weighted Kappa coefficients for the scales utilized in the assessment of peer factors

Concept	Measure	Cronbach's alpha	Kappa statistics[a]	Number of items
Peer Attachment	Peer Attachment Scale (Soh, 2010)			
	• Communication	0.83	0.55 – 0.69	7
	• Trust	0.84	0.59 – 0.69	5
	• Alienation	0.65	0.40 – 0.65	5
				Total =17
Susceptibility to peer pressure	Susceptibility to peer pressure scale (Sim & Koh, 2003)			
	• Susceptibility to positive pressure	0.91	0.37 – 0.58	11
	• Susceptibility to negative pressure	0.89	0.42 – 0.66	7
				Total =18

Note.[a] The Kappa statistics represent the lowest Kappa values and the highest Kappa value for the items in the scales

Table 4.17: Cronbach's alpha and Weighted Kappa coefficients for the school connectedness scale

Concept	Measure	Cronbach's alpha	Kappa statistics[a]	Number of items
School connectedness	Multidimensional School Engagement Scale (Rosna Awang Hashim & Azlina Murad Sani, 2008)	0.91	0.59 – 0.84	8
	• Behavioural school engagement	0.85	0.46 – 0.82	10
	• Cognitive school engagement	0.81	0.47 – 0.67	11
				Total = 29
	• Psychological school engagement			

Note.[a] The Kappa statistics represent the lowest Kappa values and the highest Kappa value for the items in the scales

Table 4.18: Cohen Kappa coefficients (κ) for categorical variables (Individual, Familial and Peer Factors)

Variables	κ[a](95%CI)	Level of agreement
Parents' marital status	0.72 (0.51, 0.93)	Substantial agreement
Family structure	0.64 (0.46, 0.82)	Substantial agreement
Head of the family	0.69 (0.50, 0.88)	Substantial agreement
History of having boyfriends or girlfriends	0.81 (0.67, 0.95)	Almost perfect agreement
Duration of relationship	0.92 (0.77, 1.07)	Almost perfect agreement
Number of boyfriends or girlfriends	0.91 (0.80, 1.00)	Almost perfect agreement
Type of relationship	0.74 (0.59, 0.89)	Substantial agreement
Perception of peer having sexual intercourse	0.81 (0.65, 0.97)	Almost perfect agreement
Lifetime cigarette smoker	0.77 (0.61, 0.93)	Substantial agreement
Current cigarette smoker	0.96 (0.88, 1.04)	Almost perfect agreement
Lifetime alcohol drinker	0.80 (0.62, 0.98)	Substantial agreement
Current alcohol drinker	0.93 (0.79, 1.07)	Almost perfect agreement
Lifetime illicit drug user	0.75 (0.48, 1.02)	Substantial agreement
Current illicit drug user	0.88 (0.79, 1.07)	Almost perfect agreement

Note.[a] represents Kappa coefficient.

Table 4.19: Cohen Kappa statistics (κ) for categorical variables (Sexual Behaviour Items)

Variables	κ[a](95%CI)	Level of agreement
Definition of sexual intercourse	0.80 (0.64, 0.96)	Substantial agreement
Ever had sexual intercourse	1.00	Perfect agreement
Age of first sexual intercourse	0.97(0.92, 1.02)	Almost perfect agreement
Number of lifetime sexual partner	0.98 (0.88, 1.02)	Almost perfect agreement
Sexual activity	0.89 (0.75, 1.03)	Almost perfect agreement
Numbers of sexual partners past 3 months	0.94(0.86, 1.02)	Almost perfect agreement
Drank alcohol or used drugs prior to the last sexual intercourse	0.85 (0.69, 1.01)	Almost perfect agreement
Condom use at the last sexual intercourse	0.95 (0.86, 1.04)	Almost perfect agreement
Methods to prevent pregnancy used at the last sexual intercourse	0.76 (0.56, 0.96)	Substantial agreement
History of pregnancy or having impregnated a partner	0.79 (0.52, 1.06)	Substantial agreement
History of forced first sexual intercourse	0.90 (0.77, 1.03)	Almost perfect agreement

Note .[a] represents Kappa coefficient

Overall, the scales and the categorical variables revealed moderate to almost perfect agreements (Landis & Koch, 1977). Except for the alienation domain in the peer attachment scales, the other instruments utilized in the study displayed satisfactory internal consistencies.

4.4   Phase II

4.4.1 Socio-demographic characteristics

This section provides a general description of the socio-demographic profile of the students who participated in this study. A total of 1652 questionnaires were returned, giving an overall response rate of 85.9%. The weighted proportions are displayed in Table 4.20 and Table 4.21 stratified by gender. However, 80 questionnaires were removed from the analyses as the information on sexual initiation (outcome variable) was not provided.

From the 1572 respondents, 56.2% were females. The mean age of the respondents was 18.96 (SD=0.64) years. Based on gender, the mean age for males and females were 18.92 (SD=0.62) years and 19.0 (SD=0.65) years respectively. Majority (88.7%) were Malay, followed by Indian (6.6%), Chinese (2.7%) and others (2.0%). In regards to religion, majority were Islam (89.8%), followed by Hindu (5.6%), Buddhist (2.6%) and Christian (2.0%). In regard to region of origin (the region where the respondents were living before they entered the institutions of higher learning), 45.3% of them had originated from the Central region followed by the Northern region at 22.3%. Only a small proportion had come from East Malaysia (4.0%) (Appendix D)

Majority of the respondents (66.8%) had attended day schools for their secondary level education. Almost one fifth of the respondents had their secondary level education in boarding schools. In regard to the academic discipline in which the respondents were majoring in, 64.4% of them were in science based discipline while the rest were in non-science based discipline.

Among both males and females, a third (30.6%) of them had fathers who were working in the professional field, while a quarter (24.9%) of them had mothers who held professional positions. Almost half (45.2%) of the respondents had stay-at-home mothers. The respondents reported that 49.3% of their fathers had achieved tertiary level education

compared to the 39.2% of their mothers possessing the same level of academic achievements. In regards to the highest level of academic qualifications achieved by the respondents' mothers, 49.2% of males had reported that their mothers had attained secondary level education. Among the females, higher proportion (54.1%) of the females had mothers who had achieved secondary level education compared to primary or secondary levels of education. Only a small percentage of their parents (1.9 % of fathers and 1.6% of mothers) had no formal education. Most (50.1%) of the respondents reported a family income of RM 3,000 or above. Only a small percentage of the respondents' families' income were less than RM 1,000 (12.2% in males and 13.1% in females).

Table 4.20: Socio-demographic characteristics of therespondents attending institutions of higher learning in the Central region overall and by gender (N=1572)

Characteristics	Overall (N=1572)		Male (n_1=689)		Female (n_2=883)	
	N	% (95% CI)[a]	n_1	% (95% CI)[a]	n_2	% (95% CI)[a]
Ethnicity						
Malay	1294	88.7 (87.1, 90.2)	558	89.4 (87.1, 91.4)	736	88.0 (85.7, 90.0)
Chinese	64	2.7 (2.0, 3.6)	30	2.5 (1.6, 3.8)	34	2.8 (1.9, 4.2)
Indian	170	6.6 (5.5, 7.9)	80	6.2 (4.7, 7.9)	90	7.1 (5.6, 8.9)
Others	44	2.0 (1.4, 2.8)	21	1.9 (1.1, 3.2)	23	2.1 (1.3, 3.3)
Religion						
Islam	1323	89.8 (88.2, 91.2)	572	90.7 (88.6, 92.5)	751	89.0 (86.8, 90.9)
Buddhist	52	2.6 (1.9, 3.6)	24	2.3 (1.5, 3.7)	28	2.8 (1.9, 4.2)
Hindu	153	5.6 (4.7, 6.8)	72	5.1 (3.8, 6.5)	81	6.1 (4.7, 7.8)
Christian	44	2.0 (1.4, 2.8)	21	1.9 (1.1, 3.2)	23	2.1 (1.3, 3.3)
State of origin						
Northern region	319	22.3 (19.9, 24.8)	138	21.9 (18.4, 25.9)	181	22.5 (19.5, 25.9)
Central region	776	45.3 (42.5, 48.1)	347	46.1 (41.8, 50.4)	429	44.8 (41.2, 48.5)
Southern region	182	12.4 (10.6, 14.4)	80	12.1 (9.5, 15.2)	102	12.6 (10.3, 15.3)
East Coast	222	16.0 (14.0, 18.3)	98	16.7 (13.6, 20.4)	124	15.5 (12.9, 18.5)
East Malaysia	73	4.0 (3.1, 5.2)	26	3.2 (2.0, 5.1)	47	4.6 (3.3, 6.3)
Hometown of origin						
Urban	928	57.6 (54.7, 60.4)	422	58.7 (54.3, 63.0)	506	56.8 (53.0, 60.4)
Rural	644	42.4 (39.6, 45.3)	267	41.3 (37.0, 45.7)	377	43.2 (39.6, 47.0)
Type of previous secondary school						
Day school	1128	66.8 (64.0, 69.5)	473	64.3 (59.9, 68.5)	655	68.6 (64.9, 72.0)
Boarding school	222	19.4 (17.1, 21.9)	96	18.3 (14.9, 22.1)	126	20.2 (17.2, 23.7)
Technical or vocational school	146	7.8 (6.4, 9.3)	82	10.9 (8.5, 13.9)	64	5.6 (4.2, 7.4)
Religious school	76	6.0 (4.7, 7.6)	38	6.5 (4.6, 9.2)	38	5.6 (4.0, 7.8)
Academic discipline						
Science & Technology	569	47.5 (44.6, 50.3)	238	42.4 (38.0, 46.8)	331	51.0 (47.3, 54.7)
Business	394	22.1 (20.0, 24.4)	134	19.4 (16.4, 22.9)	260	24.0 (21.2, 27.0)
Education	246	13.5 (11.8, 15.5)	70	9.9 (7.7, 12.8)	176	16.0 (13.7, 18.7)
Engineering	363	16.9 (15.9, 19.0)	247	28.3 (24.6, 32.2)	116	9.0 (7.2, 11.2)

Note. [a] Percentages were calculated using survey weights to allow representation of the target population, CI=confidence interval

Table 4.21: Highest parental educational achievement, occupation and income of therespondents attending institutions of higher learning in the Central region overall and by gender (N=1572)

Characteristics	Overall (N=1572)		Male (n₁=689)		Female (n₂=883)	
	N^a	% (95% CI)[b]	n_1^a	% (95% CI)[b]	n_2^a	% (95% CI)[b]
Father's occupation[c]						
Professional or managerial	426	30.6 (28.0, 33.4)	197	31.6 (27.6, 35.9)	229	29.9 (26.5, 33.5)
Self-employed	294	17.5 (15.5, 19.8)	143	19.4 (16.2, 23.0)	151	16.2 (13.7, 19.1)
Skilled	287	17.5 (15.4, 19.7)	122	16.2 (13.4, 19.6)	165	18.3 (15.6, 21.3)
Semi-skilled or unskilled	316	18.0 (16.0, 20.2)	123	17.3 (14.2, 20.7)	193	18.6 (16.0, 21.5)
Unemployed	29	1.8 (1.2, 2.7)	13	1.7 (0.9, 3.3)	16	1.9 (1.1, 3.2)
Others	220	14.6 (12.7, 16.7)	91	13.8 (11.1, 17.1)	129	15.1 (12.6, 18.0)
Mother's occupation[c]						
Professional or managerial	332	24.9 (22.5, 27.5)	146	25.2 (21.5, 29.3)	186	24.7 (21.5, 28.1)
Self-employed	100	6.3 (5.0, 7.8)	41	5.1 (3.5, 7.3)	59	7.1 (5.4, 9.2)
Skilled	77	4.6 (3.5, 5.9)	41	6.0 (4.2, 8.4)	36	3.5 (2.5, 5.2)
Semi-skilled or unskilled	161	10.3 (8.7, 12.1)	64	9.2 (7.0, 11.9)	97	11.1 (9.0, 13.6)
Housewife	764	45.2 (42.4, 48.0)	316	43.2 (39.0, 47.6)	448	46.5 (42.8, 50.2)
Others	138	8.7 (7.3, 10.5)	81	11.3 (8.9, 14.3)	57	7.1 (5.4, 9.3)
Father's highest educational level						
No formal education	27	1.9 (1.3, 2.9)	14	2.6 (1.5, 4.5)	13	1.5 (0.8, 2.8)
Primary level	109	5.9 (4.7, 7.3)	53	7.2 (5.2, 9.7)	56	5.0 (3.7, 6.8)
Secondary level	673	42.9 (40.0, 45.8)	267	39.2 (34.8, 43.6)	406	45.5 (41.7, 49.3)
Tertiary level	650	49.3 (46.3, 52.2)	299	51.0 (46.6, 55.7)	351	48.0 (44.1, 51.8)
Mother's highest educational level						
No formal education	26	1.6 (1.0, 2.5)	12	2.1 (1.1, 3.9)	14	1.3 (0.7, 2.3)
Primary level	119	7.0 (5.7, 8.5)	48	6.6 (4.7, 9.1)	71	7.2 (5.5, 9.3)
Secondary level	782	52.2 (49.3, 55.2)	311	49.4 (44.7, 54.0)	471	54.1 (50.2, 57.9)
Tertiary level	503	39.2 (36.3, 42.2)	231	41.9 (37.4, 46.7)	272	37.4 (33.7, 41.3)
Family's gross monthly income (RM)						
< 1,000	216	12.7 (11.0, 14.6)	86	12.2 (9.7, 15.3)	130	13.1 (10.8, 15.6)
1,000-2,999	617	37.2 (34.5, 40.0)	253	35.0 (31.0, 39.2)	364	38.7 (35.2, 42.4)
≥3,000	739	50.1 (47.3, 52.9)	350	52.8 (48.4, 57.1)	389	48.2 (44.5, 52.0)

Note.[a] The sample size, n may not be equal to the total sample due to missing data.
[b] Percentages were calculated using survey weights to allow representation of the target population, CI=confidence interval
[c] Classification of the occupation is based on the abridged version of the International Standard Classification of Occupations (International Labour Office (ILO), 1990)

4.4.2 Prevalence of sexual initiation and the associated socio-demographic characteristics

Overall, 9.8% of the respondents (95% CI [8.3, 11.6]) had reported history of having had sexual intercourse (vaginal-penile penetration) at least once in their lifetime. The results are displayed in Table 4.22. The mean age of respondents who have had sexual initiation was 19.06 (SD=0.64) years compared to 18.95 (SD=0.64) years for those without sexual initiation.

A higher proportion of males had reported sexual initiation (18.1%, 95% CI [15.1, 21.5]) compared to 4.1% (95% CI [2.9, 5.9]) of females who had engaged in sex. Among those who had reported having had sex, 17.1% were Indian followed by Chinese (14.0%) and Malays (9.1%). In regard to the type of previous secondary school attended by the respondents, 10.7% had attended day schools while 7.3% were from boarding schools. Among those who had reported sexual engagement, 11.7% were from the non-science based discipline compared to 8.8% who were from the science based discipline.

Table 4.22: Weighted Percentages of respondents attending institutions of higher learning in the Central region who reported sexual initiation and those who never had sex by selected social-demographic characteristics (N=1572)

Socio-demographic characteristics	Ever had sex (n_1=176)		Never had sex (n_2=1396)	
	$n_1{}^a$	$\%^b$ (95% CI)	$n_2{}^a$	$\%^b$ (95% CI)
Total	176	9.8 (8.3, 11.6)	1396	90.2 (88.4, 91.7)
Gender				
Male	138	18.1 (15.1, 21.5)	551	81.9 (78.5, 84.9)
Female	38	4.1 (2.9, 5.9)	845	95.9 (94.1, 97.1)
Ethnicity				
Malay	135	9.1 (7.5, 10.9)	1159	90.9 (89.1, 92.5)
Chinese	13	14.0 (7.4, 25.1)	95	86.0 (74.9, 92.6)
Indian	28	17.1 (11.2, 25.1)	142	82.9 (74.9, 88.8)
Religion				
Islam	138	9.2 (7.7, 11.1)	1185	90.8 (88.9, 92.3)
Buddhist	8	16.3 (7.5, 32.0)	44	83.7 (68.0, 92.5)
Hindu	24	16.7 (10.6, 25.3)	129	83.3 (74.7, 89.4)
Christian	6	9.4 (3.6, 22.5)	38	90.6 (77.5, 96.4)
Type of previous secondary school				
Day school	149	10.7 (9.0, 12.8)	1125	89.3 (87.2, 91.0)
Boarding school	27	7.3 (4.8, 10.9)	271	92.7 (89.1, 95.2)
Academic discipline				
Science-based	100	8.8 (7.1, 11.0)	832	91.2 (89.0, 92.9)
Non science-based	76	11.7 (9.2, 14.7)	564	88.3 (85.3, 90.8)
Father's highest educational level				
No formal education or primary level	15	11.5 (6.5, 19.4)	121	88.5 (80.6, 93.5)
Secondary level	67	8.3 (6.3, 10.9)	606	91.7 (89.1, 93.7)
Tertiary level	74	9.6 (7.4, 12.3)	576	90.4 (87.7, 92.6)
Mother's highest educational level				
No formal education or primary level	17	11.1 (6.4, 18.6)	128	88.9 (81.4, 93.6)
Secondary level	79	8.9 (7.0, 11.4)	703	91.1 (88.6, 93.0)
Tertiary level	54	8.8 (6.5, 11.8)	449	91.2 (88.2, 93.5)

Table 4.21, continued

Socio-demographic characteristics	Ever had sex (n_1 =176)		Never had sex (n_2=1396)	
	n_1^a	%^{b} (95% CI)	n_2^a	%^{b} (95% CI)
Father's occupation^c				
Professional or managerial	42	8.5 (6.0, 11.8)	384	91.5 (88.2, 94.0)
Self-employed	38	10.0 (6.9, 14.2)	256	90.0 (85.8, 93.1)
Skilled	39	12.3 (8.7, 17.1)	248	87.7 (82.9, 91.3)
Semiskilled or unskilled	36	11.3 (7.9, 15.9)	280	88.7 (84.1, 92.1)
Unemployed	5	17.6 (6.5, 39.6)	24	82.4 (60.4, 93.5)
Others	16	6.9 (4.0, 11.5)	204	93.1 (88.5, 96.0)
Mother's occupation^c				
Professional or managerial	30	7.9 (5.3, 11.6)	302	92.1 (88.4, 94.7)
Self-employed	10	8.2 (4.0, 16.0)	90	91.8 (84.0, 96.0)
Skilled	11	12.4 (6.2, 23.1)	66	87.6 (76.9, 93.8)
Semiskilled or unskilled	24	14.8 (9.6, 22.1)	137	85.2 (77.9, 90.4)
Housewife	76	8.7 (6.7, 11.2)	688	91.3 (88.8, 93.3)
Others	25	15.2 (10.0, 22.4)	113	84.8 (77.6, 90.0)
Family's gross monthly income (RM)				
< 1,000	18	7.6 (4.4, 12.7)	198	92.4 (87.3, 95.6)
1,000-2,999	73	10.3 (8.0, 13.1)	544	89.7 (86.9, 92.0)
≥3,000	85	10.1 (8.0, 12.7)	654	89.9 (87.3, 92.0)

Note.^{a}The sample size, n may not be equal to the total sample due to missing data. ^{b} Percentages are weighted by sampling weights. CI, confidence interval
^{c}Classification of the occupation is based on the abridged version of the International Standard Classification of Occupations (International Labour Office (ILO), 1990)

4.4.3 Socio-demographic characteristics of late adolescents who have engaged in sexual initiation stratified by gender

Table 4.23 reports the distribution of the socio-demographic characteristics and sexual behaviours of respondents who have had sexual intercourse. The mean age of male respondents with history of sexual initiation was 19.06 (SD=0.63) years while slightly older females (M=19.15, SD=0.67 years) were found to have initiated sex. Among males, in regards to ethnicity, 86.5%, (95% CI [79.7, 91.2]) Malays, 10.2% (95% CI [6.3, 16.2] Indians and 3.3% (95% CI [1.2, 8.5] Chinese reported history of sexual initiation. Among females, 67.9%, (95% CI [49.4, 82.2]) Malays, 16.9% (95% CI [7.1, 35.2] Chinese and 15.2% (95% CI [6.1, 32.8]) Indians reported history of sexual initiation.

Among males who had initiated sexual intercourse, 84.4%, (95% CI [75.7, 90.4]) had attended day schools while 15.6 (95% CI [9.6, 24.30]) were in boarding schools. Among females who had engaged in sex, 71.3% (95% CI [51.5, 85.3] had attended day schools of those while 28.7% (95% CI [14.7, 48.5] females who had attended boarding schools. With regard to the academic discipline, 62.9% (95% CI [53.3, 71.6]) males were in science based discipline while 37.1% (95% CI [28.4, 46.7]) were in the non-science based discipline. Among females who had engaged in sex, 42.3% (95% CI [25.8, 60.8]) were in science based discipline while 57.7% (95% CI [39.2, 74.2]) were in non-science based discipline.

Among males who had engaged in sex, 52.8%, (95% CI [42.4, 62.9]) had fathers who were college or university graduates and 46.1% (95% CI [35.8, 56.7] had mothers with secondary level education. On the other hand, among females, who had engaged in sex, 47.2%, (95% CI [29.4, 65.7]) had fathers who were college or university graduates and 67.2% (95% CI [47.0, 82.6] had mothers with secondary level education. With regard

to the level of household income, males who engaged in sexual activities, 57.3% (95% [47.6, 66.4]) reported a household monthly income of more than RM 3,000. Among females who had engaged in sexual activities, 55.3% (95% CI [37.5, 72.0]) reported a household monthly income of RM 1,000 to less than RM 3,000.

Table 4.24 displays the distribution of the related sexual behaviours reported by the respondents in this study. Most of the students (62.9%) reported that their first sexual encounter was when they were 16 years old or above. Among those who have had sexual experience, 14.3% of them reported that their first sexual encounter was when they were 12 years old or younger. Among males, 15.2% of them and 11.8% of females claimed that they were no longer virgins at 12 years of age or younger.

Among the males, 41.0% of them reported that they have had more than 4 sexual partners during their lifetime compared to 16.5% of the female respondents who had multiple sexual partners in their life. For both gender, approximately one fifth of them had engaged in unprotected sex during the most recent sexual encounter (21.1% of males versus 20.7% of females). Among the males, only 29.5% of them had used condoms to prevent themselves or their partners from contracting sexually transmitted disease and unwanted pregnancies. On the other hand, the female students were found to opt for withdrawal method rather than condoms (49% versus 7.2%).

Only a quarter (25.9%) of the students claimed that they had drunk alcohol or used illegal substances prior to their most recent sexual intercourse. In regard to history of conception as a result of their sexual encounter, 16.7% of the female respondents reported that they had been pregnant. Among male respondents, 23.6% of them reported that they had impregnated their partners.

Table 4.23a: Distribution of socio-demographic characteristics overall and those who have had sexual initiation among respondents attending institutions of higher learning in the Central region (N=1572)

Sexual behaviours	Overall (N=1572)		Ever have sex (n=176)	
	Nᵃ	% (95% CI)ᵇ	nᵃ	% (95% CI)ᵇ
Ethnicity				
Malay	1294	88.7 (87.1, 90.2)	135	81.9 (74.7, 87.3)
Chinese	108	4.7 (3.7, 5.8)	13	6.7 (3.4, 12.6)
Indian	170	6.6 (5.5, 7.9)	28	11.4 (7.4, 17.4)
Religion				
Islam	1323	89.8 (88.2, 91.2)	138	84.3 (77.8, 89.2)
Buddhist	52	2.6 (1.9, 3.5)	8	4.3 (1.9, 9.5)
Hindu	153	5.6 (4.6, 6.7)	24	9.5 (5.8, 15.0)
Christian	44	2.0 (1.4, 2.8)	6	1.9 (0.7, 4.9)
Type of previous secondary school				
Day school	1274	74.5 (71.8, 77.1)	149	81.1 (73.0, 87.3)
Boarding school	298	25.5 (2.9, 28.2)	27	18.9 (12.7, 27.00)
Academic discipline				
Science based	932	64.4 (61.8, 67.0)	100	57.8 (49.3, 65.9)
Non-science based	640	35.6 (33.0, 38.2)	76	42.2 (34.1, 50.7)
Father's highest educational level				
No formal education or primary level	136	7.8 (6.5, 9.5)	15	9.8 (5.5, 16.7)
Secondary level	673	42.9 (40.1, 45.8)	67	38.9 (30.5, 47.9)
Tertiary level	650	49.3 (46.3, 52.2)	74	51.3 (42.3, 60.3)
Mother's highest educational level				
No formal education or primarylevel	145	8.6 (7.1, 10.3)	17	10.5 (6.0, 17.6)
Secondary level	782	52.2 (49.2, 55.2)	79	51.4 (42.2, 60.6)
Tertiary level	503	39.2 (36.3, 42.2)	54	38.1 (29.5, 47.5)
Family's gross monthly income (RM)				
< 1,000	216	12.7 (11.0, 14.7)	18	9.8 (5.7, 16.2)
1,000-2,999	617	37.2 (34.5, 40.0)	73	38.8 (31.0, 47.2)
≥3,000	739	50.1 (47.2, 52.9)	85	51.4 (43.0, 59.8)

*Note.*ᵃThe sample size, n may not be equal to the total sample due to missing data. ᵇ Percentages are weighted by sampling weights. CI, confidence interval

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Table 4.23b: Distribution of socio-demographic characteristics overall and those who have had sexual initiation among male respondents attending institutions of higher learning in the Central region (N=1572)

Sexual behaviours	Overall (N=1572)		Ever have sex (n=176)		Male Overall (N_1=689)		Male Have Had Sex (n_1=138)	
	N^a	% (95% CI)[b]	n^a	% (95% CI)[b]	$N_1{}^a$	% (95% CI)[b]	$n_1{}^a$	% (95% CI) [b]
Ethnicity								
Malay	1294	88.7 (87.1, 90.2)	135	81.9 (74.7, 87.3)	558	89.6 (87.3, 91.5)	108	86.5 (79.7, 91.2)
Chinese	108	4.7 (3.7, 5.8)	13	6.7 (3.4, 12.6)	51	4.4 (3.1, 6.1)	7	3.3 (1.2, 8.5)
Indian	170	6.6 (5.5, 7.9)	28	11.4 (7.4, 17.4)	80	6.0 (4.7, 7.8)	23	10.2 (6.3, 16.2)
Religion								
Islam	1323	89.8 (88.2, 91.2)	138	84.3 (77.8, 89.2)	572	90.8 (88.7, 92.6)	110	88.2 (82.1, 92.4)
Buddhist	52	2.6 (1.9, 3.5)	8	4.3 (1.9, 9.5)	24	2.4 (1.5, 3.7)	5	3.0 (1.1, 8.1)
Hindu	153	5.6 (4.6, 6.7)	24	9.5 (5.8, 15.0)	72	4.9 (3.8, 6.4)	19	7.6 (4.5, 12.6)
Christian	44	2.0 (1.4, 2.8)	6	1.9 (0.7, 4.9)	21	1.9 (1.1, 3.2)	4	1.2 (0.4, 3.2)
Type of previous secondary school								
Day school	1274	74.5 (71.8, 77.1)	149	81.1 (73.0, 87.3)	555	75.2 (71.0, 79.0)	118	84.4 (75.7, 90.4)
Boarding school	298	25.5 (2.9, 28.2)	27	18.9 (12.7, 27.00	134	24.8 (21.0, 29.0)	20	15.6 (9.6, 24.30
Academic discipline								
Science based	932	64.4 (61.8, 67.0)	100	57.8 (49.3, 65.9)	485	70.7 (66.7, 74.4)	88	62.9 (53.3, 71.6)
Non-science based	640	35.6 (33.0, 38.2)	76	42.2 (34.1, 50.7)	204	29.3 (25.6, 33.3)	50	37.1 (28.4, 46.7)
Father's highest educational level								
No formal education or primary level	136	7.8 (6.5, 9.5)	15	9.8 (5.5, 16.7)	67	9.7 (7.4, 12.7)	13	11.0 (6.1, 19.3)
Secondary level	673	42.9 (40.1, 45.8)	67	38.9 (30.5, 47.9)	267	39.1 (34.8, 43.6)	49	36.2 (27.0, 46.5)
Tertiary level	650	49.3 (46.3, 52.2)	74	51.3 (42.3, 60.3)	299	51.2 (46.6, 55.7)	60	52.8 (42.4, 62.9)
Mother's highest educational level								
No formal education or primarylevel	145	8.6 (7.1, 10.3)	17	10.5 (6.0, 17.6)	60	8.7 (6.5, 11.6)	14	10.6 (5.7, 18.9)
Secondary level	782	52.2 (49.2, 55.2)	79	51.4 (42.2, 60.6)	311	49.3 (44.7, 54.0)	55	46.1 (35.8, 56.7)
Tertiary level	503	39.2 (36.3, 42.2)	54	38.1 (29.5, 47.5)	231	42.0 (37.4, 46.7)	48	43.3 (33.2, 54.0)
Family's gross monthly income (RM)								
< 1,000	216	12.7 (11.0, 14.7)	18	9.8 (5.7, 16.2)	86	12.2 (9.7, 15.3)	14	9.4 (5.1, 16.7)
1,000-2,999	617	37.2 (34.5, 40.0)	73	38.8 (31.0, 47.2)	253	35.1 (31.0, 39.2)	51	33.3 (25.1, 42.8)
≥3,000	739	50.1 (47.2, 52.9)	85	51.4 (43.0, 59.8)	350	52.7 (48.4, 57.1)	73	57.3 (47.6, 66.4)

Note.[a]The sample size, n may not be equal to the total sample due to missing data. [b] Percentages are weighted by sampling weights. CI, confidence interval

Table 4.23c: Distribution of socio-demographic characteristics overall and those who have had sexual initiation among female respondents attending institutions of higher learning in the Central region (N=1572)

Sexual behaviours	Overall (N=1572)		Ever have sex (n=176)		Female Overall (N₁=883)		Female Have Had Sex (n₁=38)	
	N^a	% (95% CI)^b	n^a	% (95% CI)^b	N_1^a	% (95% CI)^b	n_1^a	% (95% CI)^b
Ethnicity								
Malay	1294	88.7 (87.1, 90.2)	135	81.9 (74.7, 87.3)	736	88.1 (85.8, 90.1)	27	67.9 (49.4, 82.2)
Chinese	108	4.7 (3.7, 5.8)	13	6.7 (3.4, 12.6)	57	4.9 (3.6, 6.5)	6	16.9 (7.1, 35.2)
Indian	170	6.6 (5.5, 7.9)	28	11.4 (7.4, 17.4)	90	7.0 (5.5, 8.9)	5	15.2 (6.1, 32.8)
Religion								
Islam	1323	89.8 (88.2, 91.2)	138	84.3 (77.8, 89.2)	751	89.1 (86.8, 91.0)	28	72.4 (53.7, 85.6)
Buddhist	52	2.6 (1.9, 3.5)	8	4.3 (1.9, 9.5)	28	2.8 (1.9, 4.2)	3	8.3 (2.3, 26.2)
Hindu	153	5.6 (4.6, 6.7)	24	9.5 (5.8, 15.0)	81	6.0 (4.7, 7.8)	5	15.2 (6.0, 33.3)
Christian	44	2.0 (1.4, 2.8)	6	1.9 (0.7, 4.9)	23	2.1 (1.3, 3.3)	2	4.1 (0.8, 18.2)
Type of previous secondary school								
Day school	1274	74.5 (71.8, 77.1)	149	81.1 (73.0, 87.3)	719	74.1 (70.5, 77.4)	31	71.3 (51.5, 85.3)
Boarding school	298	25.5 (2.9, 28.2)	27	18.9 (12.7, 27.00	164	25.9 (22.6, 29.5)	7	28.7 (14.7, 48.5)
Academic discipline								
Science based	932	64.4 (61.8, 67.0)	100	57.8 (49.3, 65.9)	447	60.1 (56.5, 63.5)	12	42.3 (25.8, 60.8)
Non-science based	640	35.6 (33.0, 38.2)	76	42.2 (34.1, 50.7)	436	39.9 (36.5, 43.5)	26	57.7 (39.2, 74.2)
Father's highest educational level								
No formal education or primary level	136	7.8 (6.5, 9.5)	15	9.8 (5.5, 16.7)	69	6.5 (5.0, 8.6)	2	6.1 (1.2, 26.4)
Secondary level	673	42.9 (40.1, 45.8)	67	38.9 (30.5, 47.9)	406	45.5 (41.7, 49.3)	18	46.7 (29.2, 65.1)
Tertiary level	650	49.3 (46.3, 52.2)	74	51.3 (42.3, 60.3)	351	48.0 (44.1, 51.8)	14	47.2 (29.4, 65.7)
Mother's highest educational level								
No formal education or primarylevel	145	8.6 (7.1, 10.3)	17	10.5 (6.0, 17.6)	85	8.5 (6.7, 10.7)	3	10.0 (2.8, 29.7)
Secondary level	782	52.2 (49.2, 55.2)	79	51.4 (42.2, 60.6)	471	54.1 (50.2, 57.9)	24	67.2 (47.0, 82.6)
Tertiary level	503	39.2 (36.3, 42.2)	54	38.1 (29.5, 47.5)	272	37.4 (33.7, 41.3)	6	22.8 (10.2, 43.2)
Family's gross monthly income (RM)								
< 1,000	216	12.7 (11.0, 14.7)	18	9.8 (5.7, 16.2)	130	13.0 (10.8, 15.6)	4	10.8 (3.4, 29.4)
1,000-2,999	617	37.2 (34.5, 40.0)	73	38.8 (31.0, 47.2)	364	38.8 (35.2, 42.4)	22	55.3 (37.5, 72.0)
≥3,000	739	50.1 (47.2, 52.9)	85	51.4 (43.0, 59.8)	389	48.2 (44.5, 52.0)	12	33.9 (19.1, 52.7)

Note.[a]The sample size, n may not be equal to the total sample due to missing data. [b] Percentages are weighted by sampling weights. CI, confidence interval

Table 4.24: Distribution of the related sexual behaviours among respondents attending institutions of higher learning in the Central region by gender (n=176)

Sexual behaviours	Overall (n=176)		Male (n[1]=138)		Female (n[2]=38)	
	n^a	% (95% CI)^b	n_1^a	% (95% CI)^b	n_2^a	% (95% CI)^b
Age of sexual initiation						
≤12 years	18	14.3 (8.9, 22.3)	14	15.2 (8.9, 24.9)	4	11.8 (4.1, 29.9)
13 to 15 years	38	22.8 (16.3, 30.8)	31	25.2 (17.4, 35.1)	7	15.7 (6.8, 32.0)
≥16 years	106	62.9 (54.0, 71.1)	80	59.6 (49.1, 69.2)	26	72.5 (54.2, 85.4)
Number of lifetime sexual partners						
1 person	57	31.7 (24.2, 40.3)	41	28.4 (20.4, 38.2)	16	42.0 (25.3, 60.7)
2 persons	27	18.1 (12.1, 26.0)	19	14.3 (8.6, 23.0)	8	29.9 (15.6, 49.6)
3 persons	22	15.1 (9.7, 22.8)	19	16.3 (10.0, 25.4)	3	11.6 (3.7, 31.0)
4 persons	10	2.8 (1.5, 5.5)	7	2.9 (1.3, 6.2)	3	2.9 (0.9, 9.1)
5 persons	12	6.7 (3.4, 12.6)	10	7.3 (3.5, 14.8)	2	4.4 (0.9, 28.0)
≥6 persons	40	25.6 (18.7, 33.9)	37	30.8 (22.3, 40.7)	3	9.2 (2.6, 28.0)
Multiple sexual partners ^{c}						
Yes	62	35.0 (27.2, 43.8)	54	41.0 (31.6, 51.0)	8	16.5 (7.1, 33.9)
No	106	65.0 (56.2, 72.8)	79	59.0 (49.0, 68.4)	27	83.5 (66.1, 92.9)
Forced first sexual encounter						
Yes	30	19.3 (13.1, 27.5)	17	16.5 (9.9, 26.2)	13	26.8 (14.5, 44.2)
No	122	80.7 (72.5, 86.9)	99	83.5 (73.8, 90.1)	23	73.2 (55.8, 85.5)
Substance use prior to last sex						
Yes	42	25.9 (19.0, 34.2)	37	29.0 (21.0, 38.7)	5	16.3 (6.6, 35.2)
No	133	74.1 (65.8, 81.0)	101	71.0 (61.3, 79.0)	32	83.7 (64.8, 93.4)
Type of contraception used by respondent or partner at last sex						
None	35	21.0 (14.7, 29.2)	28	21.1 (14.1, 30.4)	7	20.7 (9.1, 40.4)
Condom	39	24.0 (17.2, 32.4)	37	29.5 (21.1, 39.6)	2	7.2 (1.8, 24.6)
OCP	9	6.1 (3.0, 12.0)	7	6.5 (3.0, 13.8)	2	4.9 (1.1, 20.0)
Depo-provera, implanon or IUD	5	4.1 (1.5, 10.3)	4	3.7 (1.2, 10.8)	1	5.0 (0.7, 28.2)
Withdrawal	50	33.7 (25.7, 42.9)	35	28.8 (20.4, 38.9)	15	49.0 (30.9, 67.4)
Others	18	11.1 (6.5, 18.2)	12	10.4 (5.4, 18.9)	6	13.2 (5.0, 30.4)
History of pregnancy by respondent or partner						
Yes	30	21.9 (15.4, 30.1)	25	23.6 (16.0, 33.2)	5	16.7 (6.7, 35.8)
No	141	78.1 (69.9, 84.6)	109	76.4 (66.8, 84.0)	32	83.3 (64.2, 93.3)

Note.[a]The sample size, n may not be equal to the total sample due to missing data. [b] Percentages are weighted by sampling weights. CI, confidence interval
[c]Multiple sexual partners are defined as having four or more sexual partners during one's lifetime (Center for Disease Control and Prevention (CDC), 2008)

Table 4.25 displays the weighted percentage of multiple sexual partners and types of contraception use by respondents who have had sexual intercourse during the three months prior to the survey (sexually active). More than half (52.6%; 95% CI= 44.1, 61.0) of the students were sexually active. Based on gender, 56.6% (95% CI= 46.9, 65.9) males and 40.4% (95% CI= 24.7, 58.5) females had reported that they were sexually active. Overwhelmingly, a fifth of them (20.9%) had reported of having four or more sexual partners.

Among the female students, 23.8% of them had unprotected sexual intercourse during their most recent sexual encounter. Unlike the females, 13.2% of the male students reported recent unprotected sexual intercourse. Half of the female students (50.8%) were found to be dependent on withdrawal method in preventing pregnancies. Only a small proportion of them (8.5%) had partners who had used condoms during their last sexual intercourse. Among the males, 35.6% of them had used condoms at their most recent sexual encounter.

Table 4.25: Weighted percentages of multiple sexual partners and type of contraception use by sexually active[*] respondents attending institutions of higher learning in the Central region (n=91)

Sexual behaviours	Overall (n=91)		Male (n=75)		Female (n=16)	
	n[a]	% [b] (95% CI)	n[a]	% [b](95% CI)	n[a]	% [b](95% CI)
Sexually active[c]						
Yes	91	52.6 (44.1, 61.0)	75	56.6 (46.9, 65.9)	16	40.4 (24.7, 58.5)
No	85	47.4 (39.0, 55.9)	63	43.4 (34.1, 53.1)	22	59.6 (41.5, 75.3)
Sexually active with multiple sexual partners[d]						
Yes	14	20.9 (12.3, 33.3)	13	23.3 (13.5, 37.2)	1	20.9 (12.3, 33.3)
No	72	79.1 (66.7, 87.7)	59	76.7 (62.8, 86.5)	13	79.1 (66.7, 87.7)
Type of contraception used by sexually active respondent or partner at last sex	15	15.2 (8.6, 25.6)	12	13.2 (7.0, 23.6)	3	23.8 (6.9, 56.9)
None	24	30.4 (20.2, 43.0)	23	35.6 (23.7, 49.6)	1	8.5 (1.1, 43.0)
Condom	4	6.5 (2.4, 16.3)	4	8.0 (3.0, 19.8)	0	-
OCP						
Depo-provera, implanon	3	3.6 (0.9, 13.2)	3	4.4 (1.1, 16.0)	0	-
or IUD	29	34.6 (23.8, 47.4)	21	30.8 (19.6, 44.8)	8	50.8 (23.6, 77.6)
Withdrawal	9	9.7 (4.4, 20.1)	6	8.0 (3.1, 19.1)	3	16.9 (3.9, 50.7)
Others						

Note.[a] The sample size, n may not be equal to the total sample due to missing data. [b] Percentages are weighted by sampling weights. CI, confidence interval
[c] Sexually active is defined as adolescents who have had sexual intercourse in the past three months prior to the study (Center for Disease Control and Prevention (CDC), 2008)
[d] Multiple sexual partners are defined as having four or more sexual partners during one's lifetime (Center for Disease Control and Prevention (CDC), 2008)

Table 4.26: Distributions of socio-demographic characteristics among respondents attending institutions of higher learning in the Central region stratified by gender who admitted forced sexual initiation at their first sexual encounter (n=30)

Socio-demographic Characteristics	Overall (n=30)		Male (n₁=17)		Female (n₂=13)	
	n^a	% (95% CI)	n_1^a	% (95% CI)^b	n_2^a	% (95% CI)^b
Ethnicity						
Malay	25	86.4 (67.4, 95.1)	16	97.8 (83.2, 99.7)	9	67.6 (32.4, 90.1)
Chinese	2	2.7 (0.6, 11.1)	-	-	2	7.2 (1.4, 29.3)
Indian	3	10.9 (3.1, 32.2)	1	2.2 (0.3, 16.8)	2	25.2 (5.9, 64.5)
Religion						
Islam	25	86.4 (67.4, 95.1)	16	97.8 (83.2, 99.7)	9	67.6 (32.4, 90.1)
Buddhist	1	1.4 (0.2, 10.4)	-	-	1	3.6 (0.4, 26.1)
Hindu	3	10.8 (3.1, 32.2)	1	2.2 (0.3, 16.8)	2	25.2 (5.9, 64.5)
Christian	1	1.4 (0.2, 10.4)	-	-	1	3.6 (0.4, 26.1)
Type of previous secondary school						
Day school	28	88.5 (61.1, 97.4)	16	89.1 (47.7, 98.7)	12	87.4 (42.3, 98.5)
Boarding school	2	11.5 (2.6, 38.9)	1	10.9 (1.3, 52.3)	1	12.6 (1.5, 57.7)
Academic discipline						
Non-scienced based	18	58.3 (39.1, 75.3)	6	35.1 (14.1, 64.0)	12	96.4 (73.9. 99.6)
Science based	12	41.7 (24.7, 60.9)	11	64.9 (36.0, 85.9)	1	3.6 (0.4, 26.1)
Father's highest educational level						
No formal education or primary level	3	13.4 (3.8, 37.5)	3	21.6 (5.9, 54.8)	-	-
Secondary level	11	34.4 (18.5, 54.7)	4	11.2 (3.4, 31.1)	7	72.3 (35.3, 92.6)
Tertiary level	12	52.2 (30.5, 73.1)	8	67.2 (37.3, 87.6)	4	27.7 (7.4, 64.7)
Mother's highest educational level						
No formal education or primary level	3	14.9 (4.1, 41.7)	2	17.2 (3.2, 56.2)	1	12.6 (1.5, 57.7)
Secondary level	14	50.0 (27.5, 72.6)	4	37.2 (11.4, 73.3)	10	63.0 (28.1, 88.1)
Tertiary level	7	35.1 (16.1, 60.3)	5	45.6 (16.6, 78.0)	2	24.4 (5.6, 63.6)
Family's gross monthly income (RM)						
< 1,000	7	16.8 (6.6, 36.5)	5	22.7 (7.5, 51.3)	2	7.2 (1.4, 29.3)
1,000 – 2,999	13	44.7 (27.8, 62.8)	4	19.7 (5.9, 49.3)	9	85.6 (61.3, 95.7)
≥ 3,000	10	38.5 (21.2, 59.3)	8	57.6 (30.2, 81.0)	2	7.2 (1.4, 29.3)

Note. [a] The sample size, n may not be equal to the total sample due to missing data. [b] Percentages are weighted by sampling weights. CI, confidence interval

Table 4.26 displays the socio-demographic characteristics of the students who admitted forced sexual initiation at their first sexual encounter. Overall, 86.4% Malays reported that their first sexual encounter was forced followed by 10.9% Indians and 2.7% Chinese. Based on religion, 86.4% were Muslim, followed by Hindu (10.8%), Buddhist (1.4%) and Christian (1.4%). Among males who had admitted forced sexual initiation, 89.1% had attended day schools for their secondary level education. Among females who had admitted forced sexual initiation, 87.4% had attended day schools for their secondary level education. Males who had forced sexual initiation, 64.9% were in science-based programmes while 96.4% females were in non-science based programmes. Among males, 67.2% had fathers with tertiary level education and 45.6% mothers with tertiary level education. Among females, 72.3% had fathers with secondary level education and 63% mothers with tertiary level education. Among males, 57.6% had a family income of more than RM 3,000 per month while among females, 85.6% of them reported a family income of between RM 1,000 to less than RM 3,000 a month.

Table 4.27: Distributions of socio-demographic characteristics among respondents attending institutions of higher learning in the Central region stratified by gender who admitted early sexual initiation (sexual intercourse at less than 16 years of age) (n=56)

Socio-demographic Characteristics	Overall (n=56)		Male (n_1=45)		Female (n_2=11)	
	n^a	% (95% CI)	n_1^a	% (95% CI)[b]	n_2^a	% (95% CI)[b]
Ethnicity						
Malay	44	79.9 (67.7, 88.2)	40	91.9 (78.6, 97.2)	4	29.8 (8.8, 65.1)
Chinese	4	6.7 (2.3, 18.5)	-	-	4	34.7 (10.4, 70.9)
Indian	8	13.4 (6.3, 26.4)	5	8.1 (2.8, 21.4)	3	35.5 (11.0, 71.1)
Religion						
Islam	44	79.8 (67.7, 88.2)	40	91.9 (78.6, 97.2)	4	29.8 (8.8, 65.1)
Buddhist	5	9.0 (3.4, 22.1)	2	3.7 (0.7, 16.9)	3	31.3 (8.4, 69.3)
Hindu	6	10.5 (4.5, 22.6)	3	4.4 (1.1, 16.4)	3	35.5 (11.0, 71.1)
Christian	1	0.7 (0.1, 4.9)	-	-	1	3.4 (0.4, 24.5)
Type of previous secondary school						
Day school	48	83.3 (68.9, 91.8)	40	89.0 (74.2, 95.8)	8	59.5 (24.8, 86.8)
Boarding school	8	16.7 (8.2, 31.1)	5	11.0 (4.2, 25.8)	3	40.5 (13.2, 75.2)
Academic discipline						
Non-scienced based	26	50.3 (35.6, 65.0)	18	46.1 (30.1, 62.9)	8	68.0 (30.1, 91.3)
Science based	30	49.7 (35.0, 64.4)	27	53.9 (37.1, 69.9)	3	32.0 (8.7, 69.9)
Father's highest educational level						
No formal education or primary level	5	13.3 (5.3, 29.8)	5	16.1 (6.4, 35.2)	-	-
Secondary level	15	29.3 (16.6, 46.2)	11	26.7 (13.7, 45.6)	4	41.4 (11.8, 78.8)
Tertiary level	27	57.4 (40.6, 72.7)	23	57.2 (38.8, 73.8)	4	58.6 (21.2, 88.2)
Mother's highest educational level						
No formal education or primary level	5	12.9 (4.8, 30.1)	4	12.7 (4.2, 32.9)	1	13.4 (1.6, 59.6)
Secondary level	21	48.5 (31.8, 65.5)	14	45.1 (26.8, 64.8)	7	60.5 (24.6, 87.8)
Tertiary level	18	38.6 (23.7, 56.0)	16	42.2 (24.8, 61.8)	2	26.1 (5.9, 66.4)
Family's gross monthly income (RM)						
< 1,000	5	6.6 (2.1, 18.7)	3	6.5 (1.7, 22.4)	2	6.8 (1.4, 27.8)
1,000 – 2,999	22	42.6 (29.6, 56.6)	14	31.2 (17.9, 48.6)	8	89.8 (67.6, 97.4)
≥ 3,000	29	50.8 (37.2, 64.4)	28	62.3 (44.9, 76.9)	1	3.4 (0.4, 24.5)

Note.[a] The sample size, n may not be equal to the total sample due to missing data. [b] Percentages are weighted by sampling weights. CI, confidence interval

The socio-demographic characteristics of the students who had early sexual initiation (sexual intercourse at less than 16 years of age) (Ramrakha, Caspi, Dickson, Moffitt, & Paul, 2000) are displayed in Table 4.27. Overall, 79.9% Malays reported early sexual initiation followed by 13.4% Indians and 6.7% Chinese. Based on religion, 79.8% were Muslim, followed by Hindu (10.5%), Buddhist (9.0%) and Christian (0.7%). Majority (83.3%) of the students who initiated sex early had attended day schools in attaining their secondary level education. More than a fifth (16.7%) had their secondary level education in boarding schools. In regard to academic discipline, 50.3% of them were in non-science based discipline while the rest were in science based discipline. Among both gender, 57.4% of the students had fathers with tertiary level education while 48.5% % of them have mothers with secondary level education. Slightly more than a half of the students reported a family income of more than RM 3,000.

Stratified by gender, among males, 91.9% Malays reported early sexual initiation followed by 8.1% Indians. Among females, 35.5% Indians followed by 34.7% Chinese and 29.8% Malays had reported early sexual initiation. Based on religion, among males, 91.9% were Muslims, 4.4% were Hindu and 3.7% were Buddhist. Among females, 35.5% were Hindu, 31.3 % were Buddhist, 29.8% were Malays and 3.4% were Christian. Male students who initiated sex at an early age reported that 89.0% of them had attended day schools while the rest attended boarding schools. Among females, more than a half of the students had attended day schools. In regard to academic discipline, slightly more than half (53.9%) of the male students were in science based discipline in contrast to female students in which, 68.0% of female students who were in non-science based discipline. The male students reported that 57.2% of their fathers had achieved tertiary level education compared to 45.6% of their mothers possessing the same level of academic achievement. Among female students, more than a half (58.6%) of their fathers had achieved tertiary level education compared to a quarter (26.1%) of their mothers

possessing the same level of academic achievement. Majority (60.5%) of the female students' mothers had attained secondary level education. In regard to family's gross monthly income, 62.3% male students reported that their family earned more than RM 3,000 a month while 89.8% of female students reported that their family earned between RM 1,000 to RM 2,999 a month.

4.4.4 Association between social demographic factors and sexual initiation

Table 4.28 and Table 4.29 display the crude associations between socio-demographic characteristics and sexual initiation for males. Males were found to have higher odds of engaging in sexual intercourse compared to females (OR=5.12, 95% CI [3.34, 7.83]). Among males who had engaged in sex, 86.5% were Malays, 10.2% were Indians and 3.3% were Chinese. Students who had originated from the Southern region as well as those whom had attended day schools had higher odds of having had sex (OR=2.66, 95% CI [1.24, 5.70] and OR=1.98, 95% CI [1.09, 3.62] respectively). The academic discipline did not affect the odds for having sexual experience. Family's monthly income, parental occupation and highest educational levels achieved as well as the age of the respondents did not show any significant effect.

Table 4.28: Crude Associations between socio-demographic characteristics and sexual initiation for males attending institutions of higher learning in the Central region (n=689)

Characteristics	Male				OR(95%CI)
	Ever had sex (n[1]=138)		Never had sex (n[2]=551)		
	n[1][a]	%[b](95% CI)	n[2][a]	% [b](95% CI)	
Ethnicity					
Malay	108	86.5 (79.7, 91.2)	450	90.3 (87.8, 92.3)	0.48 (0.26, 0.88)
Chinese	7	3.3 (1.2, 8.5)	44	4.6 (3.2, 6.6)	0.35 (0.11, 1.16)
Indian[c]	23	10.2 (6.3, 16.2)	57	5.1 (3.8, 6.9)	1.00
State of origin					
Central region	70	50.0 (40.4, 59.6)	277	45.1 (40.4, 50.0)	1.60 (0.86, 2.99)
Southern region	26	19.3 (12.8, 28.0)	54	10.5 (7.8, 14.0)	2.66 (1.24, 5.70)
East Coast	15	11.1 (6.2, 19.0)	83	18.0 (14.4, 22.2)	0.89 (0.38, 2.07)
East Malaysia	5	3.5 (1.2, 9.7)	21	3.2 (1.9, 5.2)	1.62 (0.44, 5.96)
Northern region[c]	22	16.1 (10.0, 24.8)	116	23.2 (19.2, 27.8)	1.00
Hometown of origin					
Urban	96	70.4 (60.9, 78.5)	326	56.1 (51.2, 60.9)	1.86 (1.16, 2.98)
Rural[c]	42	29.6 (21.5, 39.1)	225	43.9 (39.1, 48.8)	1.00
Type of previous secondary school					
Day school	118	84.4 (75.7, 90.4)	437	73.2 (68.4, 77.5)	1.98 (1.09, 3.62)
Boarding school[c]	20	15.6 (9.6, 24.3)	114	26.8 (22.5, 31.6)	1.00
Academic discipline					
Non-science based	50	37.1 (28.3, 46.7)	154	27.6 (23.6, 32.0)	1.54 (0.98, 2.42)
Science based[c]	88	62.9 (53.3, 71.7)	397	72.4 (68.0, 76.4)	1.00
Father's occupation					
Semi-skilled or unskilled	71	48.6 (39.1, 58.3)	286	50.9 (46.0, 55.7)	0.94 (0.60, 1.46)
Unemployed	4	2.8 (0.9, 8.7)	9	1.4 (0.6, 3.2)	1.91 (0.44, 8.22)
Professional or skilled[c]	63	48.6 (39.0, 58.2)	256	47.7 (42.8, 52.6)	1.00
Mother's occupation					
Semi-skilled or unskilled	45	32.7 (24.4, 42.2)	141	24.0 (20.1, 28.3)	1.49 (0.84, 2.64)
Housewife	58	38.3 (29.5, 48.0)	258	44.3 (39.6, 49.2)	0.95 (0.55, 1.63)
Professional or skilled[c]	35	29.0 (20.8, 38.9)	152	31.7 (27.2, 36.6)	1.00

Table 4.28, continued

Characteristics	Male				OR(95%CI)
	Ever had sex (n[1]=138)		Never had sex (n[2]=551)		
	n[1][a]	%[b](95% CI)	n[2][a]	%[b](95% CI)	
Father's highest educational level					
No formal education or Primary level	13	11.0 (6.0, 19.3)	54	9.4 (7.0, 12.7)	1.12 (0.52, 2.41)
Secondary level	49	36.2 (27.0, 46.5)	218	39.8 (34.9, 44.8)	0.88 (0.53, 1.44)
Tertiary level[c]	60	52.8 (42.4, 62.9)	239	50.8 (45.7, 55.8)	1.00
Mother's highest educational level					
No formal education or Primary level	14	10.6 (5.7, 18.9)	46	8.3 (95.9, 11.5)	1.24 (0.55, 2.77)
Secondary level	55	46.1 (35.8, 56.7)	256	50.0 (44.8, 55.2)	0.89 (0.54, 1.47)
Tertiary level[c]	48	43.3 (33.1, 54.0)	183	41.7 (36.6, 47.0)	1.00
Family's gross monthly income (RM)					
< 1,000	14	9.4 (5.1, 16.7)	72	30.0 (25.7, 34.6)	0.66 (0.32, 1.39)
1,000-2,999	51	33.3 (25.0, 42.8)	202	43.1 (38.4, 48.0)	0.85 (0.53, 1.34)
≥3,000[c]	73	57.3 (47.6, 66.4)	277	26.9 (22.7, 31.6)	1.00

Note.[a]The sample size, n may not be equal to the total sample due to missing data. [b] Percentages are weighted by sampling weights. CI, confidence interval
[c]Reference category.

Table 4.29: Crude Associations between mean age and sexual initiation for males attending institutions of higher learning in the Central region (n=689)

Characteristics	Male				OR(95%CI)
	Ever had sex (n=138)		Never had sex (n=551)		
	Mean[a]	SD	Mean[a]	SD	
Age (years)	19.03	0.63	18.90	0.74	1.40 (0.98, 1.99)

Note. [a] Means were based on complex sample.

The crude associations between the socio-demographic characteristics and sexual initiation among females are displayed in Table 4.30 and Table 4.31. The age of respondents was not significantly associated with sexual initiation among the females. The odds of Malays engaging in sex was 2.94 (95% CI [1.04, 8.54]). The type of secondary schools attended and the current faculty which the female students were in were not associated with sexual intercourse.

Both the parents' employment and level of education were not associated with sexual intercourse among the female respondents. The level of income posed an insignificant risk factor for sexual initiation.

Table 4.30: Crude Associations between socio-demographic characteristics and sexual initiation for females attending institutions of higher learning in the Central region (n=883)

Characteristics	Female				OR(95%CI)
	Ever had sex (n_1=38)		Never had sex (n_2=845)		
	n_1[a]	%[b](95% CI)	n_2[a]	%[b](95% CI)	
Ethnicity					
Malay	27	67.9 (49.3, 82.2)	709	89.0 (86.7, 90.9)	2.97 (1.04, 8.54)
Chinese	6	16.9 (7.1, 35.3)	51	4.3 (3.2, 5.9)	0.58 (0.15, 2.27)
Indian[c]	5	15.2 (6.1, 32.8)	85	6.7 (5.2, 8.5)	1.00
State of origin					
Central region	19	45.7 (29.2, 63.1)	410	44.7 (41.0, 48.5)	1.99 (0.61, 6.49)
Southern region	7	23.2 (10.9, 42.8)	95	12.1 (9.8, 14.9)	3.73 (0.96, 14.54)
East Coast	2	2.4 (0.6, 9.4)	122	16.1 (13.4, 19.2)	0.29 (0.05, 1.70)
East Malaysia	6	16.9 (7.1, 35.3)	41	4.1 (2.9, 5.7)	8.08 (1.91, 34.17)
Northern region[c]	4	11.8 (4.2, 29.2)	177	23.0 (19.8, 26.5)	1.00
Hometown of origin					
Urban	21	58.1 (40.2, 74.1)	485	56.7 (52.9, 60.5)	1.06 (0.51, 2.22)
Rural[c]	17	41.9 (25.9, 59.8)	360	43.3 (39.5, 47.1)	1.00
Type of previous secondary school					
Day school	31	71.3 (51.5, 85.3)	688	74.2 (70.5, 77.6)	1.16 (0.49, 2.77)
Boarding school[c]	7	28.7 (14.7, 48.5)	157	25.8 (22.4, 29.5)	1.00
Academic discipline					
Non science-based	26	57.7 (39.2, 74.2)	410	39.2 (35.6, 42.8)	2.12 (0.99, 4.53)
Science-based[c]	12	42.3 (25.8, 60.8)	435	60.8 (57.2, 64.4)	1.00
Father's occupation					
Semi-skilled or unskilled	19	48.4 (31.5, 65.7)	454	50.0 (46.2, 53.8)	0.99 (0.47, 2.08)
Unemployed	1	4.5 (0.6, 25.7)	15	1.8 (1.0, 3.0)	2.60 (0.32, 21.38)
Professional or skilled[c]	18	47.1 (30.3, 64.6)	376	48.2 (44.4, 52.1)	1.00

Table 4.29, continued

Characteristics	Female				OR(95%CI)
	Ever had sex (n₁=38)		Never had sex (n₂=845)		
	n_1[a]	%[b](95% CI)	n_1[a]	%[b](95% CI)	
Mother's occupation					
Semi-skilled or unskilled	14	39.0 (23.4, 57.2)	199	24.6 (21.5, 28.1)	2.82 (0.97, 8.19)
Housewife	18	44.8 (28.4, 62.5)	430	46.6 (42.8, 50.4)	1.71 (0.61, 4.84)
Professional or skilled[c]	6	16.2 (6.9, 33.5)	216	28.8 (25.4, 32.4)	1.00
Father's highest educational level					
No formal education or					
Primary level	2	6.1 (1.2, 26.4)	67	6.6 (5.0, 8.6)	0.94 (0.16, 5.63)
Secondary level	18	46.7 (29.2, 65.1)	388	45.4 (41.5, 49.4)	1.05 (0.47, 2.31)
Tertiary level[c]	14	47.2 (29.4, 65.7)	337	48.0 (44.0, 52.0)	1.00
Mother's highest educational level					
No formal education or					
Primary level	3	10.0 (2.8, 29.8)	82	8.4 (6.6, 10.7)	1.98 (0.42, 9.38)
Secondary level	24	67.2 (47.0, 82.6)	447	53.6 (49.6, 57.5)	2.10 (0.79, 5.56)
Tertiary level[c]	6	22.8 (10.2, 43.2)	266	38.0 (34.2, 41.9)	1.00
Family's gross monthly income (RM)					
< 1,000	4	10.8 (3.4, 29.4)	126	13.1 (10.8, 15.8)	1.19 (0.30, 4.64)
1,000-2,999	22	55.4 (37.4, 72.0)	342	38.0 (34.4, 41.8)	2.1 (0.93, 4.72)
≥3,000[c]	12	33.8 (19.0, 52.7)	377	48.9 (45.0, 52.7)	1.00

Note.[a]The sample size, n may not be equal to the total sample due to missing data. [b] Percentages are weighted by sampling weights. CI, confidence interval
[c]Reference category

Table 4.31: Crude Associations between mean age and sexual initiation for females attending institutions of higher learning in the Central region (n=883)

Characteristics	Female				OR(95%CI)
	Ever had sex (n₁=38)		Never had sex (n₂=845)		
	Mean[a]	SD	Mean[a]	SD	
Age (years)	19.15	0.67	18.99	0.65	1.86 (0.83, 2.56)

Note. [a] Means were based on complex sample

4.4.5 Association between individual factors and sexual initiation

Table 4.32 and Table 4.33 show the crude associations between individual factors and sexual initiation among males. Later age at puberty was significantly associated with 27% reduced risk of initiating sexual intercourse among males. Furthermore, those who achieved higher scores in the Malaysian Certificate of Examination (scores were calculated for the best five subjects in the examination) were less likely to engage in sex (OR=0.99, 95% CI [0.97, 0.99]). Resiliency did not play a significant role in sexual engagement among the males.

Risky behaviours such as lifetime cigarette use, current cigarette use, lifetime alcohol use, current alcohol use, lifetime illicit drug use and current illicit drug use were significantly associated with higher odds of engaging in sexual initiation.

The mean scores for religious attendance and religious activity among males with sexual experience were lower compared to those who remained abstinent. Males with lower median scores for intrinsic religiosity were found to have engaged in sexual activity. Higher scores for religious attendance, religious activities and intrinsic religiosity were associated with 20% to 37% reduced risk of sexual experience among the males.

Table 4.32: Crude Associations between individual factors (categorical variables) and sexual initiation among males attending institutions of higher learning in the Central region (n=689)

Characteristics	Male				OR(95%CI)
	Ever had sex (n_1=138)		Never had sex (n_2=551)		
	n_1[a]	%[b] (95% CI)	n_2[a]	%[b] (95% CI)	
Lifetime cigarette smoker					
Yes	108	80.0 (70.7, 86.8)	288	54.3 (49.3, 59.2)	3.36 (1.96, 5.77)
No[c]	25	20.0 (13.2, 29.3)	249	45.7 (40.8, 50.7)	1.00
Current cigarette smoker					
Yes	85	65.0 (55.1, 73.8)	179	31.8 (27.4, 36.5)	3.98 (2.50, 6.35)
No[c]	48	35.0 (26.2, 44.9)	358	68.2 (63.5, 72.6)	1.00
Lifetime alcohol drinker					
Yes	65	46.7 (37.2, 56.4)	86	10.8 (8.4, 13.8)	7.23 (4.47, 11.69)
No[c]	73	53.3 (43.6, 62.8)	465	89.2 (86.2, 91.6)	1.00
Current alcohol drinker					
Yes	39	29.0 (21.0, 38.5)	38	4.1 (2.8, 6.0)	9.56 (5.32, 17.17)
No[c]	97	71.0 (61.5, 79.0)	507	95.9 (94.0, 97.2)	1.00
Lifetime illicit drug user					
Yes	34	26.4 (18.6, 36.0)	19	3.0 (1.8, 5.1)	11.62 (5.75, 23.50)
No[c]	102	73.6 (64.0, 81.4)	518	97.0 (94.9, 98.2)	1.00
Current illicit drug user					
Yes	18	13.0 (7.7, 21.2)	7	1.4 (0.6, 3.0)	10.95 (4.01, 29.93)
No[c]	116	87.0 (78.8, 92.3)	530	98.6 (97.0, 99.4)	1.00
Resiliency					
Low	76	62.8 (52.9, 71.7)	295	56.5 (51.6, 61.3)	1.3 (0.83, 2.04)
High[c]	55	37.2 (28.3, 47.1)	245	43.5 (38.7, 48.4)	1.00

Note.[a]The sample size, n may not be equal to the total sample due to missing data. [b] Percentages are weighted by sampling weights. CI, confidence interval
[c]Reference category. Lifetime user is defined as a history of use of the substance (cigarette, alcohol or illicit drugs). Current user is defined as the use of the substance (cigarette, alcohol or illicit drugs) on at least one day in the last 30 days.

Table 4.33: Crude Associations between individual factors (continuous variables) and sexual initiation among males attending institutions of higher learning in the Central region (n=689)

Characteristics	Male				OR (95%CI)
	Ever had sex (n_1=138)		Never had sex (n_2=551)		
	Mean[a]	SD	Mean[a]	SD	
Age at puberty (years)	13.10	1.28	13.67	1.37	0.73 (0.61, 0.86)
Religiosity					
Religious attendance	3.79	1.31	4.51	1.18	0.63 (0.53, 0.76)
Religious activity	3.47	1.48	4.10	1.44	0.75 (0.64, 0.87)
Intrinsic religiosity	13.0 (Median)	11,14 (interquartile range)	14.0 (Median)	12, 15 (interquartile range)	0.80 (0.72, 0.88)
Educational achievement	58 (Median)	42, 74 (interquartile range)	68 (Median)	52, 80 (interquartile range)	0.99 (0.97, 0.99)
Self-esteem	32.63	4.78	33.65	5.50	0.97 (0.93, 1.00)

Note.[a]Means and Medians were based on complex samples

Table 4.34 and Table 4.35 display the crude associations between individual factors and sexual initiation among females. Unlike males, age at puberty was not significantly associated with sexual intercourse. Females who had attained higher scores in the Malaysian Certificate of Examination (scores were calculated for the best five subjects in the examination) were not found to be at higher odds of initiating sexual intercourse compared to those whom had gotten lower scores. Level of self-esteem and low resiliency were not associated with higher odds of sexual initiation.

Risky behaviours such as lifetime cigarette use, current cigarette use, lifetime alcohol use, current alcohol use, lifetime drug use and current drug use were significantly associated with higher risk of engaging in sexual initiation.

Females who scored high scores in the religious activities scale, were associated with 40% reduced risk of engaging in sexual intercourse. The other components of religiosity, religious attendance and intrinsic religiosity were not significant in the bivariate regression analyses.

Table 4.34: Crude Associations between individual factors (categorical variables) and sexual initiation among females attending institutions of higher learning in the Central region (n=883)

Characteristics	Female				
	Ever had sex (n_1=38)		Never had sex (n_2=845)		OR(95%CI)
	n_1[a]	%[b](95% CI)	n_2[a]	%[b](95% CI)	
Lifetime cigarette smoker					
Yes	21	54.7 (37.0, 71.3)	106	12.2 (9.9, 14.9)	8.73 (4.09, 18.61)
No[c]	17	45.3 (28.7, 63.0)	715	87.8 (85.1, 90.1)	1.00
Current cigarette smoker					
Yes	11	33.2 (18.8, 51.6)	13	1.4 (0.8, 2.7)	34.42 (12.76, 92.86)
No[c]	27	66.8 (48.4, 81.2)	808	98.6 (97.3, 99.2)	1.00
Lifetimealcohol drinker					
Yes	11	32.5 (18.3, 50.9)	70	7.7 (5.9, 10.0)	5.78 (2.55, 13.06)
No[c]	27	67.5 (49.1, 81.7)	775	92.3 (90.0, 94.1)	1.00
Current alcohol drinker					
Yes	6	19.3 (8.6, 38.1)	15	1.1 (0.6, 2.0)	21.59 (6.99, 66.66)
No[c]	32	80.7 (61.9, 91.4)	815	98.9 (98.0, 99.4)	1.00
Lifetime illicit drug user					
Yes	7	22.5 (10.7, 41.2)	5	0.5 (0.2, 1.4)	60.30 (15.16, 239.82)
No[c]	31	77.5 (58.8, 89.3)	810	99.5 (98.6,99.8)	1.00
Current illicit drug user					
Yes	4	12.3 (4.3, 30.4)	3	0.4 (0.1, 1.4)	36.20 (6.53, 200.57)
No[c]	33	87.7 (69.6, 95.7)	812	99.6 (98.6, 99.9)	1.00
Resiliency					
Low	14	45.8 (28.8, 63.8)	409	47.9 (44.0, 51.7)	0.92 (0.44, 1.95)
High[c]	23	54.2 (36.2, 71.2)	422	52.1 (48.3, 56.0)	1.00

Note.[a]The sample size, n may not be equal to the total sample due to missing data. [b] Percentages are weighted by sampling weights. CI, confidence interval

[c]Reference category. Lifetime user is defined as a history of use of the substance (cigarette, alcohol or illicit drugs). Current user is defined as the use of the substance (cigarette, alcohol or illicit drugs) on at least one day in the last 30 days.

Table 4.35: Crude Associations between individual factors (continuous variables) and sexual initiation among females attending institutions of higher learning in the Central region (n=883)

Characteristics	Female				OR(95%CI)
	Ever had sex (n_1=38)		Never had sex (n_2=845)		
	Mean[a]	SD	Mean[a]	SD	
Age at puberty (years)	12.11	1.31	12.39	1.28	0.84 (0.62, 1.13)
Religiosity					
Religious attendance	3.38	1.26	3.76	1.13	0.74 (0.52, 1.06)
Religious activity	3.22	1.80	4.36	1.38	0.60 (0.45, 0.80)
Intrinsic religiosity	14 (Median)	13, 15 (interquartile range)	15 (Median)	13.5, 15 (interquartile range)	0.89 (0.72, 1.09)
Educational achievement	68 (Median)	56, 78 (interquartile range)	74 (Median)	58, 82 (interquartile range)	0.99 (0.97, 1.01)
Self-esteem	34.54	5.57	35.31	5.15	0.97 (0.90, 1.05)

Note [a] Means and medians were based on complex sample

4.4.6 Association between familial factors and sexual initiation

The crude associations between familial factors and sexual initiation for males are displayed in Table 4.36 and Table 4.37. Staying with step parent or relatives were significantly associated with sexual engagement among the males (OR= 4.73, 95% CI [1.96, 11.41]). Living with single parent however, was not significantly associated with sexual initiation among the males.

In regard to parenting processes, a close relationship with the parents was associated with lower odds of sexual engagement (OR= 0.92, 95% CI [0.88, 0.97]). Having parents who had higher degree of control and monitoring over their children's activities was associated with 9% reduced odds of initiating sex among the males (OR= 0.91, 95% CI [0.86, 0.96]). Males who were more attached to their parents were found to be sexually abstinent compared to those who were less attached (OR=0.96, 95% CI [0.94, 0.98]).

Table 4.36: Crude Associations between familial factors (categorical variables) and sexual initiation among males attending institutions of higher learning in the Central region (n=689)

Characteristics	Male				OR(95%CI)
	Ever had sex (n_1=138)		Never had sex (n_2=551)		
	n_1[a]	%[b] (95% CI)	n_2[a]	%[b](95% CI)	
Parental marital status					
Divorced or Widowed	19	15.6 (9.7, 24.1)	56	9.0 (6.7, 12.0)	1.86 (1.00, 3.48)
Married[c]	119	84.4 (75.9, 90.3)	495	91.0 (88.0, 93.3)	1.00
Family structure					
Single parent	12	10.4 (5.7, 18.3)	43	7.1 (5.1, 9.8)	1.68 (0.79, 3.55)
Step parent or relatives	12	10.4 (5.6, 18.6)	17	2.5 (1.4, 4.3)	4.73 (1.96, 11.41)
Both parents[c]	114	79.2 (69.8, 86.2)	491	90.4 (87.3, 92.8)	1.00
Head of the family					
Mother	6	6.4 (2.8, 14.1)	31	5.5 (3.7, 8.1)	2.16 (0.67, 6.96)
Other than father or mother	6	3.3 (1.4, 7.7)	9	1.5 (0.7, 3.3)	1.20 (0.46, 3.18)
Father[c]	126	90.3 (82.7, 94.8)	511	93.0 (90.1, 95.0)	1.00
Parental religious practice					
Low	81	65.1 (55.3, 73.8)	311	56.3 (51.3, 61.1)	1.45 (0.92, 2.30)
High[c]	51	34.9 (26.2, 44.7)	227	43.7 (38.9, 48.7)	1.00

Note. [a]The sample size, n may not be equal to the total sample due to missing data. [b] Percentages are weighted by sampling weights. CI, confidence interval
[c]Reference category.

Table 4.37: Crude Associations between familial factors (continuous variables) and sexual initiation among males attending institutions of higher learning in the Central region (n=689)

Characteristics	Male				OR(95%CI)
	Ever had sex (n_1=138)		Never had sex (n_2=551)		
	Mean[a]	SD	Mean[a]	SD	
Parental aspiration	13.94	3.85	13.96	3.59	0.99 (0.94, 1.06)
Parental control	15.20	4.59	16.88	3.99	0.91 (0.86, 0.96)
Conflict in parents'-child's relationship	14.34	4.04	13.86	3.77	1.03 (0.97, 1.10)
Parental closeness	26 (Median)	22, 30 (interquartile range)	28 (Median)	25, 30 (interquartile range)	0.92 (0.88, 0.97)
Parental attachment	48 (Median)	43, 55 (interquartile range)	52 (Median)	46, 57 (interquartile range)	0.96 (0.94, 0.98)

Note. [a] Means and medians were based on complex sample

The crude associations between familial factors and sexual initiation among female respondents are displayed in Table 4.38 and Table 4.39. Female respondents who were staying with step parent or relatives were significantly associated with higher odds of engaging in sexual intercourse (OR= 5.23, 95% CI [1.66, 16.44]) as opposed to living with single parents.

In regards to parenting processes, a close relationship with the parents, having higher parental aspirations for success, and higher level of parental religiosity were not associated with sexual initiation among the females. Unlike the male respondents, females with higher degree of parental control and monitoring were not associated with reduced risk of initiating sex. Females who were more attached to their parents were not found to be associated with reduced sexual engagement.

Table 4.38: Crude associations between familial factors (categorical variables) and sexual initiation among females attending institutions of higher learning in the Central region (n=883)

Characteristics	Female				OR (95%CI)
	Ever had sex (n_1=38)		Never had sex (n_2=845)		
	n_1[a]	%[b] (95% CI)	n_2[a]	%[b] (95% CI)	
Parental marital status					
Divorced or Widowed	8	21.3 (10.1, 39.5)	96	10.6 (8.5, 13.2)	2.27 (0.91, 5.65)
Married[c]	30	78.7 (60.5, 89.9)	749	89.4 (86.8, 91.5)	1.00
Family structure					
Single parent	5	12.0 (4.2, 29.9)	73	8.3 (6.5, 10.6)	1.70 (0.52, 5.55)
Step parent or relatives	4	12.4 (4.7, 29.0)	30	2.8 (1.8, 4.2)	5.23 (1.66, 16.44)
Both parents[c]	29	75.6 (57.3, 87.7)	742	88.9 (86.4, 91.0)	1.00
Head of the family					
Mother	6	13.6 (5.4, 30.2)	66	8.0 (6.2, 10.4)	2.10 (0.73, 6.08)
Other than father or mother	4	14.0 (5.3, 32.0)	26	2.4 (1.6, 3.7)	7.05 (2.20, 22.60)
Father[c]	28	72.4 (54.1, 85.4)	753	89.6 (87.0, 91.6)	1.00
Parental religious practice					
Low	20	51.0 (33.7, 68.0)	436	51.8 (48.0, 55.6)	0.97 (0.47, 2.01)
High[c]	18	49.0 (32.0, 66.3)	395	48.2 (44.4, 52.0)	1.00

Note[a]The sample size, n may not be equal to the total sample due to missing data. [b] Percentages are weighted by sampling weights. CI, confidence interval
[c]Reference category.

Table 4.39: Crude associations between familial factors (continuous variables) and sexual initiation among females attending institutions of higher learning in the Central region (n=883)

Characteristics	Female				OR(95%CI)
	Ever had sex (n_1=38)		Never had sex (n_2=845)		
	Mean[a]	SD	Mean[a]	SD	
Parental aspiration	13.63	4.16	13.95	3.66	0.98 (0.88, 1.09)
Parental control	16.93	4.98	17.17	4.07	0.99 (0.89, 1.09)
Conflict in parents'-child's relationship	12.71	4.27	12.03	3.92	1.04 (0.95, 1.15)
Parental closeness	27 (Median)	21.20, 32 (interquartile range)	30 (Median)	26, 32 (interquartile range)	0.93 (0.85, 1.01)
Parental attachment	51.48 (Median)	39, 61 (interquartile range)	55 (Median)	47, 61 (interquartile range)	0.97 (0.93, 1.001)

Note. [a] Means and medians were based on complex sample

4.4.7 Association between peer factors and sexual initiation

Table 4.40 and Table 4.41 display the crude associations between peer factors and sexual initiation among males. Males who had been in a relationship with girls that they were sexually or emotionally attracted to and whom they had dated were found to have higher odds of engaging in sex (OR=3.12, 95% CI [1.97, 4.95]). Furthermore, having two or more girlfriends were also significantly associated with sexual initiation (OR=2.49, 95% CI [1.37, 4.52]). However, the duration and classification of the relationship were not associated with higher likelihood of having sex.

Perception that their peer group were having sex was associated with sexual engagement among the males (OR=7.28, 95% CI [3.94, 13.47]). Respondents who were found to be susceptible to negative peer pressure were at higher odds of engaging in sexual intercourse (OR=6.59, 95% CI [3.45, 12.59]). On the contrary, being susceptible to positive peer pressure was found to be associated with 40% reduced risk of initiating sex (OR=0.60; 95% CI [0.38, 0.96]). Higher attachment to peers was not found to be associated with increased odds of having sexual experience.

Table 4.40: Crude associations between peer factors and sexual initiation among males attending institutions of higher learning in the Central region (n=689)

Characteristics	Male				OR(95%CI)
	Ever had sex (n_1=138)		Never had sex (n_2=551)		
	n_1[a]	%[b](95% CI)	n_2[a]	%[b](95% CI)	
In a relationship					
Yes	90	66.6 (56.8, 75.2)	213	39.0 (34.3, 43.9)	3.12 (1.97, 4.95)
No[c]	47	33.4 (24.8, 43.2)	334	61.0 (56.1, 65.7)	1.00
Duration of relationship					
More than a year	60	70.2 (58.5, 79.8)	116	59.9 (51.9, 67.4)	1.58 (0.86, 2.91)
Less than a year[c]	29	29.8 (20.2, 41.5)	90	40.1 (32.6, 48.1)	1.00
Description of relationship					
With intention of marriage	51	57.2 (45.0, 68.5)	122	58.0 (50.1, 65.6)	0.97 (0.54, 1.73)
Without intention of marriage[c]	37	42.8 (31.5, 55.0)	88	42.0 (34.4, 49.9)	1.00
Number of lifetime boyfriends or girlfriends					
Two and above	43	47.9 (36.2, 59.9)	60	27.0 (20.7, 34.5)	2.49 (1.37, 4.52)
One [c]	45	52.1 (40.1, 63.8)	150	73.0 (65.5, 79.3)	1.00
Perceived peer have had sex					
Yes	110	86.7 (78.4, 92.1)	247	47.2 (42.1, 52.3)	7.28 (3.94, 13.47)
No [c]	18	13.3 (7.9, 21,6)	254	52.8 (47.7, 57.9)	1.00
Susceptibility to positive peer pressure					
High	44	28.5 (20.8, 37.8)	225	39.9 (35.2, 44.8)	0.60 (0.38, 0.96)
Low [c]	94	71.5 (62.2, 79.2)	323	60.1 (55.2, 64.8)	1.00
Susceptibility to negative peer pressure					
High	122	89.7 (82.5, 94.2)	326	57.1 (52.1, 61.9)	6.59 (3.45, 12.59)
Low [c]	16	10.3 (5.8, 17.5)	220	42.9 (38.1, 47.9)	1.00

Note[a]The sample size, n may not be equal to the total sample due to missing data. [b] Percentages are weighted by sampling weights. CI, confidence interval
[c]Reference category.

Table 4.41: Crude association between peer attachment and sexual initiation among males attending institutions of higher learning in the Central region (n=689)

Characteristics	Male				OR(95%CI)
	Ever had sex (n₁=138)		Never had sex (n₂=551)		
	Mean[a]	SD	Mean[a]	SD	
Peer attachment	58.01	9.98	56.14	9.25	1.53 (0.98, 2.37)

Note.[a] Means were based on complex sample

Table 4.42 and Table 4.43 display the crude associations between peer factors and sexual initiation among female students. Females who had been in a relationship with boys that they were sexually or emotionally attracted to and whom they had dated were found to have higher odds of engaging in sex (OR=4.37, 95% CI [1.84, 10.37]). Respondents with two or more boyfriends were also significantly associated with sexual initiation (OR=2.71, 95% CI [1.15, 6.43]). Similar to male respondents, the duration and classification of the relationship were not associated with higher likelihood of sexual engagement.

Perception that their peer group were having sex was significantly associated with sexual initiation among the females (OR=14.28, 95% CI [5.56, 36.68]). Female students who had scored higher scores on the susceptibility to negative peer pressure scale were at higher odds of engaging in sexual intercourse (OR=3.27, 95% CI [1.55, 6.88]). On the contrary, unlike the male students, females who were found to susceptible to positive peer pressure was not associated with reduced risk of initiating sex. Those who were more attached to their peers were found to have a 5% reduced risk of engaging in sexual activities (OR=0.95; 95% CI [0.91, 0.99]).

Table 4.42: Crude associations between peer factors and sexual initiation among females attending institutions of higher learning in the Central region (n=883)

Characteristics	Female				OR (95%CI)
	Ever had sex (n_1=38)		Never had sex (n_2=845)		
	n_1[a]	%[b] (95% CI)	n_2[a]	%[b] (95% CI)	
In a relationship					
Yes	29	76.0 (57.4, 88.1)	360	42.0 (38.3, 45.8)	4.37 (1.84, 10.37)
No*	8	24.0 (11.9, 42.6)	480	58.0 (54.2, 61.7)	1.00
Duration of relationship					
More than a year	16	61.1 (40.8, 78.2)	209	62.3 (56.4, 67.8)	0.95 (0.40, 2.25)
Less than a year*	13	38.9 (21.8, 59.2)	141	37.7 (32.2, 43.6)	1.00
Description of relationship					
With intention of marriage	22	73.3 (51.6, 87.7)	229	66.3 (60.6, 71.5)	1.40 (0.53, 3.74)
Without intention of marriage*	7	26.7 (12.3, 48.4)	130	33.7 (28.5, 39.4)	1.00
Number of lifetime boyfriends or girlfriends					
Two and above	15	55.2 (35.1, 73.7)	110	31.2 (26.0, 37.0)	2.71 (1.15, 6.43)
One*	14	44.8 (26.3, 64.9)	245	68.8 (63.0, 74.0)	1.00
Perceived peer have had sex					
Yes	30	82.4 (65.0, 92.2)	218	24.7 (21.6, 28.2)	14.28 (5.56, 36.68)
No*	8	17.6 (7.8, 35.0)	579	75.3 (71.8, 78.4)	1.00
Susceptibility to positive peer pressure					
High	17	44.4 (27.9, 62.3)	482	57.2 (53.4, 60.9)	0.60 (0.29, 1.26)
Low *	20	55.6 (37.7, 72.1)	361	42.8 (39.1, 46.6)	1.00
Susceptibility to negative peer pressure					
High	23	59.4 (41.4, 75.2)	264	30.9 (27.5, 34.6)	3.27 (1.55, 6.88)
Low *	15	40.6 (24.8, 58.6)	579	69.1 (65.4, 72.5)	1.00

Note[a]The sample size, n may not be equal to the total sample due to missing data. [b] Percentages are weighted by sampling weights. CI, confidence interval
[c]Reference category.

Table 4.43: Crude association between peer attachment and sexual initiation among females attending institutions of higher learning in the Central region (n=883)

Characteristics	Female				
	Ever had sex (n₁=38)		Never had sex (n₂=845)		OR (95%CI)
	Mean[a]	SD	Mean[a]	SD	
Peer attachment	56.95	10.83	61.10	9.23	0.95 (0.91, 0.99)

Note.[a] Means were based on complex sample

4.4.8 Association between school engagement and sexual initiation

The crude associations between components of school engagement and sexual initiation for males and females are displayed in Table 4.44, Table 4.45, Table 4.46 and Table 4.47 respectively. Higher scores for the behavioural and cognitive school engagement components were significantly associated with lower odds for sexual initiation among the males (OR=0.91, 95% CI [0.87, 0.94] and OR=0.94; 95% CI [0.91, 0.94] respectively). Low psychological school engagement was significantly associated with 89% risk of sexual initiation among males. On the contrary, for the females, none of the school engagement components were associated with engagement into sexual activities.

Table 4.44: Crude associations between behavioural and cognitive school engagement and sexual initiation among males attending institutions of higher learning in the Central region (n=689)

Characteristics	Male				OR(95%CI)
	Ever had sex (n_1=138)		Never had sex (n_2=551)		
	Median[a]	Interquartile range	Median[a]	Interquartile range	
Behavioural school engagement	27	24, 30	31	26, 35	0.91 (0.87, 0.94)
Cognitive school engagement	30	28, 35	34	30, 38	0.94 (0.91, 0.97)

Note.[a] Medians were based on complex sample

Table 4.45: Crude associations between psychological and total school engagement and sexual initiation among males attending institutions of higher learning in the Central region (n=689)

Characteristics	Male				OR(95%CI)
	Ever had sex (n_1=138)		Never had sex (n_2=551)		
	n_1[a]	%[b](95% CI)	n_2[a]	%[b](95% CI)	
Psychological school engagement					
Low	98	76.0 (67.3, 83.0)	345	62.6 (57.8, 67.2)	1.89 (1.17, 3.04)
High*	40	24.0 (17.0, 32.7)	206	37.4 (32.8, 42.2)	1.00
Total school engagement					
Low	103	78.4 (69.9, 85.1)	324	61.0 (56.2, 65.6)	2.33 (1.42, 3.81)
High*	35	21.6 (14.9, 30.1)	226	39.0 (34.4, 43.8)	1.00

Note[a]The sample size, n may not be equal to the total sample due to missing data. [b] Percentages are weighted by   sampling weights. CI, confidence interval
[c]Reference category.

Table 4.46: Crude associations between behavioural and cognitive school engagement and sexual initiation among females attending institutions of higher learning in the Central region (n=883)

Characteristics	Female				OR(95%CI)
	Ever had sex (n_1=38)		Never had sex (n_2=845)		
	Median[a]	Interquartile range	Median[a]	Interquartile range	
Behavioural school engagement	31	26, 34	32	29, 36	0.95 (0.89, 1.02)
Cognitive school engagement	37	32, 40	35	31.71, 40	1.01 (0.95, 1.08)

Note [a] Medians were based on complex sample

Table 4.47: Crude associations between psychological and total school engagement and sexual initiation among females (n=883)

Characteristics	Female				OR(95%CI)
	Ever had sex (n₁=38)		Never had sex (n₂=845)		
	n₁ [a]	% [b] (95% CI)	n₂ [a]	% [b] (95% CI)	
Psychological school engagement					
Low	20	50.8 (33.6, 67.9)	408	47.1 (43.3, 50.9)	1.16 (0.56, 2.42)
High*	18	49.2 (32.1, 66.4)	437	52.9 (49.1, 56.7)	1.00
Total school engagement					
Low	22	56.2 (38.5, 72.5)	342	41.0 (37.3, 44.8)	1.85 (0.89, 3.86)
High*	16	43.8 (27.5, 61.5)	503	59.0 (55.2, 62.7)	1.00

Note[a]The sample size, n may not be equal to the total sample due to missing data. [b] Percentages are weighted by sampling weights. CI, confidence interval
[c]Reference category.

4.4.9 Correlates of sexual initiation among the participants in the study

A sequential logistic regression analysis was performed utilizing complex design to assess the correlates of sexual initiation stratified by gender. Through this analysis, the effects of socio-demographic, individual, familial and peer characteristics including school engagement components on sexual initiation were identified. Before proceeding with the analyses, the assumptions for logistic regression were tested. These assumptions were tested for the quantitative independent variables. None of the quantitative independent variables had violated the linearity and multicollinearity assumptions. The residuals were found to be independent. The missing data for categorical variables were dealt with listwise deletion while the missing data for continuous variables were imputed using Expected Maximization approach as the pattern of missing data was determined to be missing completely at random (MCAR). No imputation was performed on the outcome variable.

For males, the socio-demographic factors which were included in Model 1 were age, ethnicity (Malay, Chinese or Indian), state of origin (Northern region, Central region, Southern region, East coast and East Malaysia), previous secondary school (day school

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and boarding school), academic discipline (science based or non-science based) and gross family's income (<RM 1,000, RM 1,000 to RM 2,999 and $\geq$ RM 3,000). In Model 2, the individual factors added were age at puberty, religiosity (religious attendance, religious activity and intrinsic religiosity), self-esteem, lifetime cigarette use, current cigarette use, lifetime alcohol use, current alcohol use and lifetime illicit drug use. In the third block, the familial factors were added into the analysis. These factors include parental control and monitoring, parental closeness, family structure (single parent, step parent or relatives or both parents), parental marital status (married, and divorced or widowed), head of the family (father, mother or others) and parental religious practice). In Model 4, peer characteristics were included comprising peer attachment, relationship with boyfriend or girlfriend, perception that peers had had sex and susceptibility to positive and negative peer pressure. Finally, in Model 5, the school engagement components were added (behavioural, cognitive and psychological school engagement).

On the other hand, for females, the socio-demographic factors which were included in Model 1 were age, ethnicity (Malay, Chinese or Indian), state of origin (Northern region, Central region, Southern region, East coast and East Malaysia), previous secondary school (day school and boarding school), academic discipline (science based or non-science based) and gross family's income (<RM 1,000, RM 1,000 to RM 2,999 and $\geq$ RM 3,000). In Model 2, the individual factors were added, comprising of age at puberty, religiosity (religious attendance and religious activity), self-esteem, lifetime cigarette use and lifetime alcohol use. In the third block, the familial factors were added into the analysis. These factors included parental control and monitoring, parental attachment, family structure (single parent, step parent or relatives or both parents), parental marital status (married, and divorced or widowed) and parental religious practice). Peer characteristics were included into Model 4 which comprised peer attachment, relationship with boyfriend or girlfriend, perception that peers have had sex

and susceptibility to positive and negative peer pressure. The analysis was concluded with addition of Model 5 where the behavioural school engagement was entered.

Table 4.47 and Table 4.48 present the multivariate logistic regression models for the male and female students respectively. Among the males, when the socio-demographic characteristics were entered into the model, age was significantly associated with 64% of increased risk of initiating sex (aOR=1.64; 95% CI [1.10, 2.45]). Higher age was also associated with sexual initiation among females (aOR=1.86; 95% CI [1.01, 3.44]). Based on ethnicity, both Malays and Chinese were found to be at lower risk of sexual engagement among the males (aOR=0.48; 95% CI [0.25, 0.94] and aOR=0.25; 95% CI [0.07, 0.82] respectively) but ethnicity had no effect on females. Female students who were from the non-science based discipline such as Business and Education disciplines were significantly associated with sexual initiation (aOR=2.32; 95% CI [1.04, 5.18]).

In Model 2, when the individual characteristics were added into the analysis, the age of the male students were no longer significantly associated with sexual initiation. Chinese male students remained at a lower odds of engaging in sexual activities (aOR= 0.32; 95% CI [0.11, 0.94]). Among females however, age, ethnicity and state of origin did not play a significant role in sexual initiation. Males who had attained puberty at an older age had a 30% reduced risk and maintained sexual abstinence (aOR=0.70; 95% CI [0.57, 0.86]). Adolescents' current cigarette use and lifetime alcohol use were significantly associated with sexual initiation for males only (aOR=2.37; 95% CI [1.14, 4.96] and aOR=8.23; 95% CI [2.78, 24.35] respectively). Unlike males, females who had smoked one puff of cigarette in their lifetime were at higher odds of sexual initiation (aOR=5.93; 95% CI [2.71, 13.01]). Higher levels of religiosity among the males were not significant protective factors against sexual initiation. On the contrary, females who had scored high scores on the religious activity scale had a 36% reduced risk of engaging into

sexual activity (aOR=0.64; 95% CI [0.45, 0.92]). For both gender, level of self-esteem did not play any significant role in sexual engagement in Model 2.

When the familial characteristics were added into Model 3, male students from Southern region remained to be at higher odds of sexual engagement (aOR=3.31; 95% CI [1.22, 8.96]). It was also found that males who had previously attended day schools were significantly associated with having sexual experience (aOR=2.47; 95% CI [1.04, 5.87]) compared to those who had attended boarding schools. Males who had attained puberty at a later age were still at lower odds of engaging in sex (aOR=0.69; 95% CI [0.55, 0.87]). Among the males, current cigarette use was not associated with sexual initiation when the familial characteristics were added into the model. However, males who had history of previous alcohol use in their lifetime remained at higher odds of having sexual experience (aOR=8.87; 95% CI [2.93, 26.87]). Females who had smoked cigarettes even once in their lifetime were still at higher odds of engaging in sex (aOR=8.63; 95% CI [3.49, 21.33]). Higher scores of religious activity among the females were still a protective factor against sexual engagement (aOR=0.61, 95% CI [0.43, 0.88]). Religiosity still did not play any significant role against sexual initiation among the males when the familial characteristics were added into the model. For both gender, family structure and parenting processes such as parental religious practice, parental control and monitoring were not significantly associated with sexual initiation. Parental attachments among the female students and closeness with parents among the males were also found not to be significant correlates of sexual engagement for females and males respectively.

Model 4 progressively added peer characteristics into the analysis. Among the males, Chinese were no longer at lower risk of engaging in sex. Malays, on the other hand, were at higher odds of having sexual initiation (aOR=4.19; 95% CI [1.07, 16.49]). The type of previous secondary schools among the males was no longer associated with sexual initiation. Males who had reached puberty later were still found to be at lower odds

of having sexual experience (aOR=0.69; 95% CI [0.54, 0.89]). In regard to substance use, males whom had previously drank a glass of alcohol anytime during their life were still at risk of engaging in sex (aOR=7.49; 95% CI [1.90, 29.48]). Similar in Model 3, when the peer characteristics were controlled, females with history of cigarette smoking even once in their whole lifetime remained at higher odds of sexual engagement (aOR=5.52; 95% CI [1.94, 15.76]). Higher frequency of performing religious activities by females were still associated with lower odds against sexual initiation (aOR=0.71; 95% CI [0.50, 0.99]). Unlike in Model 2 and 3, higher self-esteem among the females was associated with a 10% increase odds of having sexual experience (aOR=1.10; 95% CI [1.02, 1.19]). Females whose parents were divorced or widowed were at higher odds of having initiated sex compared to those whose parents were still married (aOR=6.63; 95% CI [1.69, 25.92]). On the other hand, males who were living with their step parents or relatives were at higher odds of engaging into sexual activities (aOR=7.28; 95% CI [1.47, 36.04]).

In Model 4 which allowed the effects of peer characteristics to be seen on the individual and familial components, males who reported that they had previously been attached emotionally or sexually to girls and had dated them were at higher odds of initiating sex (aOR=2.97; 95% CI [1.49, 5.90]). Unlike their counterparts, the females had similar attraction to boys were not found to be significantly associated with sexual engagement. Both males and females who had perceived their close friends having had sexual experience were found to be at higher odds of having sexual initiation (aOR=4.60; 95% CI [1.91, 11.13] and aOR=13.86; 95% CI [3.43, 55.9] respectively). In contrast to susceptibility to positive peer pressure which served no effect on sexual initiation among both gender, susceptibility to negative peer pressure was found to be associated with sexual initiation. Males and females who had scored higher scores on the susceptibility to negative pressure scale were at higher odds of engaging in sexual activities (aOR=3.28; 95% CI [1.34, 8.03] and aOR=3.62; 95% CI [1.13, 11.62] respectively). Higher peer

attachment had posed opposite effects on sexual engagement for males and females. For females, higher peer attachment was associated with 5% reduced odds of sexual experience (aOR=0.95; 95% CI [0.91, 0.99]) while males whom scored higher on the peer attachment scale was found more likely to engage in sex (aOR=1.05; 95% CI [1.01, 1.10]).

In Model 5, the school engagement components (behavioural, cognitive and psychological school engagement) were added into the analysis. However, none were associated with sexual engagement among the males and females. When the other factors were controlled, factors that were significantly associated with higher likelihood of sexual experience among the males were: being Malays (aOR=4.87; 95% CI [1.14, 20.87]); current cigarette use (aOR=2.50; 95% CI [1.01, 6.16]); lifetime alcohol use (aOR=5.87; 95% CI [1.62, 21.25]); lifetime illicit drug use (aOR=3.82; 95% CI [1.04, 14.04]); living with step parent or relatives (aOR=6.78; 95% CI [1.57, 29.36]), being in a relationship (aOR=3.08; 95% CI [1.50, 6.34]), perception of close friends had had sex (aOR=4.42; 95% CI [1.84, 10.66]), susceptibility to negative peer pressure (aOR=3.04; 95% CI [1.28, 7.19]) and higher peer attachment (aOR=1.06; 95% CI [1.01, 1.10]). Males who had attained puberty at later age were more likely to abstain from sex (aOR=0.67; 95% CI [0.50, 0.89]).

Among the females, when the other factors were adjusted for, factors that were significantly associated with higher odds of sexual initiation were: lifetime cigarette use (aOR=5.12; 95% CI [1.72; 15.30]); higher self-esteem (aOR=1.10; 95% CI [1.01, 1.19]); having parents whom were divorced or widowed (aOR=8.32; 95% CI [2.21, 31.38]), perceiving peers had had sex (aOR=13.51; 95% CI [3.44, 53.08]) and higher susceptibility to negative peer pressure (aOR=3.42; 95% CI [1.10, 10.63]). Higher frequency of performing religious activities (aOR=0.68; 95% CI [0.48, 0.97]) and

possessing higher attachment to peers (aOR=0.95; 95% CI [0.91, 0.99]) were associated with lower odds of sexual initiation.

Table 4.48: Adjusted Odds Ratio from Multivariate Logistic Regression Analyses for Sexual initiation among the Males attending institutions of higher learning in the Central region (n=689)

Factors	Male									
	Model 1		Model 2		Model 3		Model 4		Model 5	
	Adjusted OR	95% CI	Adjusted OR	95% CI	Adjusted OR	95% CI	Adjusted OR	95% CI	Adjusted OR	95% CI
Socio-demographic characteristics										
Age (years old)	1.64[*]	1.10, 2.45	1.26	0.78, 2.06	1.31	0.78, 2.20	1.02	0.54, 1.92	0.91	0.47, 1.74
Ethnicity										
Malay	0.48[*]	0.25, 0.94	2.18	0.79, 6.01	2.62	0.88, 7.79	4.19[*]	1.07, 16.49	4.87[*]	1.14, 20.87
Chinese	0.25[*]	0.07, 0.82	0.32[*]	0.11, 0.94	0.37	0.12, 1.17	0.67	0.18, 2.53	0.95	0.23, 3.94
Indian [a]	1.00		1.00		1.00		1.00		1.00	
State of origin										
Central region	1.48	0.79, 2.80	1.42	0.66, 3.04	1.24	0.54, 2.80	1.19	0.49, 2.93	1.27	0.49, 3.23
Southern region	2.59[*]	1.19, 5.67	3.39[*]	1.26, 9.12	3.31[*]	1.22, 8.96	2.13	0.66, 6.87	2.47	0.75, 8.14
East Coast	1.07	0.46, 2.50	1.34	0.52, 3.44	1.17	0.43, 3.18	1.23	0.35, 4.28	1.10	0.32, 3.77
East Malaysia	1.88	0.50, 7.09	2.57	0.76, 8.72	2.30	0.63, 8.36	2.32	0.35, 15.25	2.36	0.41, 13.67
Northern region[a]	1.00		1.00		1.00		1.00		1.00	
Type of previous secondary school										
Day school	1.83	0.93, 3.60	2.01	0.84, 4.80	2.47[*]	1.04, 5.87	2.30	0.83, 6.34	2.50	0.95, 6.57
Boarding school[a]	1.00		1.00		1.00		1.00		1.00	
Academic discipline										
Non-science based	1.49	0.91, 2.45	1.43	0.79, 2.59	1.56	0.81, 3.03	1.56	0.76, 3.22	1.69	0.80, 3.59
Science-based[a]	1.00		1.00		1.00		1.00		1.00	
Family's gross monthly income (RM)										
<1,000	0.51	0.23, 1.13	0.53	0.16, 1.74	0.49	0.13, 1.76	0.62	0.19, 2.03	0.68	0.21. 2.19
1,000-2,999	0.72	0.44, 1.19	0.63	0.36, 1.13	0.62	0.35, 1.13	0.65	0.34, 1.27	0.61	0.30, 1.23
≥3,000[a]	1.00		1.00		1.00		1.00		1.00	
Individual Factors										
Age at puberty			0.70[**]	0.57, 0.86	0.69[**]	0.55, 0.87	0.69[**]	0.54, 0.89	0.67[**]	0.50, 0.89
Lifetime cigarette smoker										
Yes			1.11	0.47, 2.59	1.24	0.47, 3.24	0.59	0.20, 1.69	0.47	0.17, 1.29
No [a]			1.00		1.00		1.00		1.00	
Current cigarette smoker										
Yes			2.37[*]	1.14, 4.96	2.24	0.99, 5.07	2.10	0.80, 5.53	2.50[*]	1.01, 6.16
No[a]			1.00		1.00		1.00		1.00	

Table 4.48, continued

Factors	Male									
	Model 1		Model 2		Model 3		Model 4		Model 5	
	Adjusted OR	95% CI	Adjusted OR	95% CI	Adjusted OR	95% CI	Adjusted OR	95% CI	Adjusted OR	95% CI
Lifetime alcohol drinker										
Yes			8.23***	2.78,	8.87***	2.93, 26.87	7.49**	1.90, 29.48	5.87**	1.62, 21.25
No[a]			1.00	24.35	1.00		1.00		1.00	
Current alcohol drinker										
Yes			0.77	0.25, 2.35	0.80	0.25, 2.62	0.97	0.24, 3.86	1.40	0.39, 5.06
No [a]			1.00		1.00				1.00	
Lifetime illicit drug user										
Yes			2.23	0.82, 6.08	2.32	0.82, 6.55)	2.62	0.71, 9.71	3.82*	1.04, 14.04
No [a]			1.00		1.00		1.00		1.00	
Religious attendance			0.80	0.62, 1.04	0.89	0.68, 1.16	0.91	0.65, 1.27	0.89	0.63, 1.28
Religious activity			0.96	0.77, 1.19	1.00	0.78, 1.29	0.98	0.72, 1.33	1.03	0.75, 1.41
Intrinsic religiosity			0.90	0.78, 1.05	0.87	0.73, 1.04	0.87	0.70, 1.07	0.84	0.66, 1.06
Self-esteem			0.99	0.96, 1.04	1.01	0.96, 1.06	0.99	0.93, 1.04	1.00	0.94, 1.07
Familial Factors										
Parental marital status										
Divorced or widowed					1.00	0.22, 4.56	0.70	0.07, 7.21	0.77	0.06, 10.96
Married[a]					1.00		1.00		1.00	
Family structure										
Single parent					1.05	0.17, 6.65	0.97	0.04, 21.31	0.99	0.02, 41.39
Step parent or relatives					4.24	0.98, 18.34	7.28*	1.47, 36.04	6.78*	1.57, 29.36
Both parents[a]					1.00		1.00		1.00	
Head of the family										
Mother					0.71	0.11, 4.68	0.63	0.04, 9.17	0.37	0.02, 8.95
Other than father or mother					0.35	0.05, 2.41	0.23	0.02, 3.18	0.14	0.01, 2.23
Father[a]					1.00		1.00		1.00	
Parental religious practice										
Low					.63	0.32, 1.23	0.68	0.32, 1.44	0.66	0.29, 1.49
High[a]					1.00		1.00		1.00	

Table 4.48, continued

Factors	Male									
	Model 1		Model 2		Model 3		Model 4		Model 5	
	Adjusted OR	95% CI	Adjusted OR	95% CI	Adjusted OR	95% CI	Adjusted OR	95% CI	Adjusted OR	95% CI
Parental control					0.93	0.86, 1.01	0.96	0.87, 1.06	0.95	0.86, 1.05
Parental closeness					0.99	0.91, 1.07	0.97	0.89, 1.06	1.00	0.92, 1.09
Peer factors										
In a relationship										
Yes							2.97**	1.49, 5.90	3.08**	1.50, 6.34
No							1.00		1.00	
Perceived peer have had sex										
Yes							4.60**	1.91, 11.13	4.42**	1.84, 10.66
No[a]							1.00		1.00	
Susceptibility to positive peer pressure										
High							1.29	0.61, 2.71	1.39	0.64, 3.04
Low[a]							1.00		1.00	
Susceptibility to negative peer pressure										
High							3.28*	1.34, 8.03	3.04*	1.28, 7.19
Low[a]							1.00		1.00	
Peer attachment							1.05*	1.01, 1.10	1.06*	1.01, 1.10
School Factor										
Behavioural school engagement									0.94	0.87, 1.01
Cognitive school engagement									0.98	0.92, 1.04
Psychological school engagement										
Low									1.47	0.65, 3.32
High[a]									1.00	

Note: Independent variables with p-value < 0.25 or important were included in the Multivariate Logistic Regression.

All logistic regression models are adjusted with the sampling weights; CI represents confidence interval * p <0.05, **p <0.01, ***p <0.001

[a] Denotes the reference category

Table 4.49 Multivariate Logistic Regression Models for Sexual initiation among the Females attending institutions of higher learning in the Central region (n=883)

Factors	Female									
	Model 1		Model 2		Model 3		Model 4		Model 5	
	Adjusted OR	95% CI	Adjusted OR	95% CI	Adjusted OR	95% CI	Adjusted OR	95% CI	Adjusted OR	95% CI
Socio-demographic characteristics										
Age (years old)	1.86*	1.01, 3.44	1.48	0.81, 2.69	1.64	0.91, 2.98	1.41	0.65, 3.07	1.44	0.65, 3.15
Ethnicity										
Malay	0.54	0.17, 1.70	1.19	0.43, 3.34	0.68	0.25, 1.85	0.44	0.11, 1.84	0.71	0.13, 3.85
Chinese	1.35	0.35, 5.18	3.05	0.72, 13.04	2.16	0.61, 7.61	1.87	0.36, 9.77	3.49	0.57, 21.27
Indian[a]	1.00		1.00		1.00		1.00		1.00	
State of origin										
Central region	1.76	0.49, 6.33	1.73	0.50, 5.96	2.22	0.49, 10.05	2.16	0.46, 10.08	2.16	0.44, 10.49
Southern region	4.22	0.99, 17.97	3.98	0.95, 16.69	4.79	0.87, 26.41	3.93	0.64, 24.01	3.98	0.64, 24.55
East Coast	0.38	0.06, 2.22	0.41	0.07, 2.36	0.20	0.02, 2.07	0.54	0.05, 5.77	0.50	0.05, 5.59
East Malaysia	5.62*	1.35, 23.43	3.81	0.80, 18.10	4.09	0.75, 22.45	4.53	0.83, 24.66	3.58	0.64, 20.03
Northern region[a]	1.00		1.00		1.00		1.00		1.00	
Type of previous secondary school										
Day school	0.52	0.21, 1.27	0.49	0.16, 1.52	0.43	0.14, 1.29	0.76	0.22, 2.58	0.99	0.25, 3.26
Boarding school[a]	1.00		1.00		1.00		1.00		1.00	
Academic discipline										
Non-science based	2.32*	1.04, 5.18	2.17	0.89, 5.26	1.54	0.64, 3.71	1.37	0.48, 3.89	1.34	0.49, 3.70
Science-based [a]	1.00		1.00		1.00		1.00		1.00	
Family's gross monthly income (RM)										
<1,000	1.28	0.28, 5.80	2.29	0.42, 12.46	2.26	0.42, 12.06	0.87	0.21, 3.61	0.86	0.20, 3.75
1,000-2,999	1.91	0.77, 4.71	2.47	0.96, 6.39	2.61	1.01, 6.72	1.38	0.52, 3.64	1.38	0.51, 3.74
≥3,000[a]	1.00		1.00		1.00		1.00		1.00	

Table 4.49, continued

Factors	Female									
	Model 1		Model 2		Model 3		Model 4		Model 5	
	Adjusted OR	95% CI	Adjusted OR	95% CI	Adjusted OR	95% CI	Adjusted OR	95% CI	Adjusted OR	95% CI
Individual Factors										
Age at puberty			0.81	0.61, 1.09	0.82	0.60, 1.10	0.88	0.62, 1.26	0.91	0.64, 1.29
Lifetime cigarette smoker			5.93***	2.71, 13.01	8.63***	3.49, 21.33	5.52**	1.94, 15.76	5.12**	1.72, 15.30
Yes			1.00		1.00		1.00		1.00	
No[a]										
Lifetime alcohol drinker										
Yes			1.94	0.79, 4.78	1.77	0.70, 4.48	1.59	0.45, 5.64	1.70	0.42, 6.91
No [a]			1.00		1.00		1.00		1.00	
Religious attendance			0.96	0.66, 1.38	0.92	0.62, 1.34	0.94	0.59, 1.49	0.91	0.56, 1.49
Religious activity			0.64*	0.45, 0.92	0.61**	0.43, 0.88	0.71*	0.50, 0.99	0.68*	0.48, 0.97
Self-esteem			1.03	0.95, 1.11	1.01	0.94, 1.09	1.10*	1.02, 1.19	1.10*	1.01, 1.19
Familial Factors										
Parental marital status										
Divorced or widowed					1.42	0.40, 5.04	6.63**	1.69, 25.92	8.32*	2.21, 31.38
Married [a]					1.00		1.00		1.00	
Family structure										
Single parent					1.08	0.20, 5.85	0.37	0.07, 2.01	0.29	0.05, 1.60
Step parent or relatives					1.95	0.45, 8.38	1.97	0.44, 8.82	1.18	0.22, 6.17
Both parents [a]					1.00		1.00		1.00	
Parental religious practice					0.53	0.22, 1.25	0.70	0.22, 2.23	0.62	0.19, 2.02
Low					1.00		1.00		1.00	
High[a]										

Table 4.49, continued

Factors	Females									
	Model 1		Model 2		Model 3		Model 4		Model 5	
	Adjusted OR	95% CI	Adjusted OR	95% CI	Adjusted OR	95% CI	Adjusted OR	95% CI	Adjusted OR	95% CI
Parental control					1.09	0.97, 1.22	1.11	0.99, 1.24	1.10	0.98, 1.24
Parental attachment					1.00	0.95, 1.05	1.02	0.96, 1.08	1.01	0.95, 1.07
Peer factors										
In a relationship										
Yes							1.80	0.54, 6.02	1.70	0.52, 5.55
No[a]							1.00		1.00	
Perceived peer have had sex										
Yes							13.86***	3.43, 55.99	13.51***	3.44, 53.08
No [a]							1.00		1.00	
Susceptibility to positive peer pressure										
High							0.92	0.36, 2.35	1.04	0.43, 2.50
Low [a]							1.00		1.00	
Susceptibility to negative peer pressure										
High							3.62*	1.13, 11.62	3.42*	1.10, 10.63
Low [a]							1.00		1.00	
Peer attachment							0.95*	0.91, 0.99	0.95*	0.91, 0.99
School Factor										
Behavioural school engagement									0.99 1.00	0.90, 1.09

Note: Independent variables with p-value < 0.25 or important were included in the Multivariate Logistic Regression.
All logistic regression models are adjusted with the sampling weights; CI represents confidence interval * p <0.05, **p <0.01, ***p <0.001
[a] Denotes the reference category

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4.4.10 Predictors of Sexual initiation from Multivariate Logistic Regression Analyses

4.4.10.1 Predictors for Males

Table 4.50 portrays the best and final model for the correlates of sexual initiation among males which was Model 5 (socio-demographic characteristics, individual factors, familial factors, peer factors and school engagement). Family structure was the strongest predictor of sexual initiation among males. Males who were living with step parents or relatives had greater odds of engaging in sex by 6.8 times than those who were living with intact families. Malay males were at higher odds of engaging in sex compared to Indian males. Males who attained puberty at later age had decreased odds of sexual initiation by 33% than those who reached puberty earlier. Risky behaviours such as current smoker, lifetime alcohol drinker and lifetime illicit drug user were associated with higher odds of engaging in sexual initiation. Males who were in a relationship had increase odds of engaging in sex by 3.1 times than those who were not in a relationship. Perception of peers have had sex was associated with higher odds (adjusted OR=4.42, 95% CI [1.84, 10.66]) of engaging in sexual intercourse compared to those who did not. Males who were more attached to their peers were at increased odds (adjusted OR=1.06, 95% CI [1.01, 1.10]) of initiating sexual intercourse compared to those who were less attached to their peers. Higher susceptibility to negative peer pressure among males was associated with higher odds of initiating sexual initiation (adjusted OR=3.04, 95% CI [1.28, 7.19]).

The assumptions for this model were met (no evidence of interaction or multicollinearity issues among the variables). The test of the full model against the baseline model (which contained a constant only) was statistically significant, indicating that the predictors were able to distinguish between males who had engaged in sexual initiation and those who had not (F(37) =4.72, p <.001). The pseudo-R^2 squared measures provided satisfactory improvement in reporting of the relationship between the predictors

and the prediction from Model 1 to Model 5 (Model 1: Cox & Snell R-square=0.05, Nagelkerke's R-square=0.08 and McFadden's ρ^2= 0.05 and Model 5: Cox & Snell R-square=0.33, Nagelkerke's R-square=0 .54 and McFadden's ρ^2= 0.43). Range of 0.2 to 0.4 for McFadden's ρ^2 is considered highly satisfactory (Hensher, 1981). The overall correct classification was 87.9% (prediction for respondents who had sex was 52.3% and 95.2% for respondents who were abstinent).

Table 4.50: Factors associated with Sexual initiation among Males

Factors	Crude OR[a] (95% CI)	Adjusted OR[b] (95% CI)	Wald Statistics[b] (df)	p-value[b]
Ethnicity				
Malay	0.48 (0.26, 0.88)	4.87 [1.14, 20.87]	3.45	0.03
Chinese	0.35 (0.11, 1.16)	0.95 (0.23, 3.94)		0.94
Indian[c]	1.00	1.00		
Age at puberty	0.73 (0.61, 0.86)	0.67 (0.50, 0.89)	7.75 (1)	0.01
Current smoker				
Yes	3.98 (2.50, 6.35)	2.50 (1.01, 6.16)	3.95 (1)	0.04
No[c]	1.00	1.00		
Lifetime alcohol drinker				
Yes	7.23 (4.47, 11.69)	5.87 (1.62, 21.25)	7.30 (1)	0.01
No[c]	1.00	1.00		
Lifetime illicit drug user				
Yes	11.62 (5.75, 17.17)	3.82 (1.04, 14.04)	4.08 (1)	0.04
No[c]	1.00	1.00		
Family structure				
Single parent	1.68 (0.79, 3.55)	0.99 (0.02, 41.39)		0.99
Step parent or relatives	4.73 (1.96, 11.41)	6.78 (1.57, 29.36)	3.45	0.01
Both parents[c]	1.00	1.00		
In a relationship				
Yes	3.12 (1.95, 4.95)	3.08 (1.50, 6.34)	9.37 (1)	0.002
No[c]	1.00	1.00		
Perceived peer have had sex				
Yes	7.28 (3.94, 13.47)	4.42 (1.84, 10.66)	11.00 (1)	0.001
No[c]	1.00	1.00		
Susceptibility to negative peer pressure				0.01
High	6.59 (3.45, 12.59)	3.04 (1.28, 7.19)	6.38 (1)	
Low[c]	1.00	1.00		
Peer attachment	1.53 (0.98, 2.37)	1.06 (1.01, 1.10)	6.00 (1)	0.01

Note:[a] Simple logistic regression, [b]Multiple logistic regression [c]Denotes the reference category
R^2= 0.33 (Cox & Snell), 0.54 (Nagelkerke), 0.43 (McFadden). Model F (37)= 4.72, p <0.001
Model assumptions are met. There are no interaction and multicollinearity problems
Comprised only the significant factors

4.4.10.2 Predictors for Females

Table 4.51 portrays the best and final model for the correlates of sexual initiation among females which was Model 4 (socio-demographic characteristics, individual factors, familial factors and peer factors). Perception of peers have had sex was the strongest predictor of sexual initiation among females which was associated with higher odds (aOR=13.86, 95% CI [3.43, 55.99]) of engaging in sexual intercourse compared to those who did not. Females who reported that their parents were divorced or widowed

had greater odds of engaging in sex by 6.6 times than those who reported that their parents were still married. Those who admitted history of smoking even one puff in their lifetime had higher odds of engaging in sexual initiation by 5.5 times compared to those who never smoke. Higher self-esteem among females was associated with greater odds of engaging in sex by 1.1 times compared to those with lower self-esteem. Higher susceptibility to negative peer pressure among females was associated with higher odds of initiating sexual initiation (adjusted OR=3.61, 95% CI [1.13, 11.62]). On the contrary, females who were more attached to their peers had decreased odds of sexual initiation by 5% compared to those who were less attached to their peers. Females who frequently performed religious activities were at lower odds of engaging in sexual intercourse (adjusted OR=0.71, 95% CI [0.50, 0.98]).

The assumptions for this model were met (no evidence of interaction or multicollinearity issues among the variables). The test of the full model against the baseline model (which contained a constant only) was statistically significant, indicating that the predictors were able to distinguish between females who had engaged in sexual initiation and those who had not (F(28) =3.75, p <.001). The pseudo-R^2 squared measures provided satisfactory improvement in reporting of the relationship between the predictors and the prediction from Model 1 to Model 4 (Model 1: Cox & Snell R-square=0.04, Nagelkerke's R-square=0.14 and McFadden's ρ^2= 0.12 and Model 4: Cox & Snell R-square=0.15, Nagelkerke's R-square=0.50 and McFadden's ρ^2= 0.46). The overall correct classification was 96.9% (prediction for respondents who had sex was 35.6% and 99.5% for respondents who were abstinent).

Table 4.51: Factors associated with Sexual initiation among Females

Factors	Crude OR[a] [95% CI]	Adjusted OR[b] [95% CI]	Wald Statistics[b] (df)	p-value[b]
Lifetime smoker				
Yes	8.73 (4.09, 18.61)	5.52 (1.94, 15.76)	10.22 (1)	0.001
No[c]	1.00	1.00		
Parental marital status				
Divorced or widowed	2.27 (0.91, 5.65)	6.63 (1.69, 25.92)	7.40 (1)	0.007
Married[c]	1.00	1.00		
Perceived peer have had sex				
Yes	14.28 (5.56, 36.68)	13.86 (3.43, 55.99)	13.65 (1)	<0.001
No[c]	1.00	1.00		
Susceptibility to negative peer pressure				
High	3.27 (1.55, 6.88)	3.61 (1.13, 11.62)	4.67 (1)	0.03
Low[c]	1.00	1.00		
Self-esteem	0.97 (0.90, 1.05)	1.10 (1.02, 1.19)	5.51 (1)	0.02
Peer attachment	0.95 (0.91, 0.99)	0.95 (0.91, 0.99)	4.26 (1)	0.04
Religious activity	0.60 (0.45, 0.80)	0.71 (0.50, 0.98)	4.11 (1)	0.04

Note:[a] Simple logistic regression, [b]Multiple logistic regression [c]Denotes the reference category
R^2= 0.15 (Cox & Snell), 0.50 (Nagelkerke), 0.46 (McFadden). Model F (28)= 3.75, p <0.001
Model assumptions are met. There are no interaction and multicollinearity problems
Comprised only the significant factors

4.5   Conclusion of Chapter Four

The Phase I of this study had examined the reliability and validity of the Susceptibility to Peer Pressure scale. Exploratory factor analysis via Principal Axis Factoring had extracted two factors which explained 44.9% of the total variance. A clear pattern matrix with 24 items was produced via promax rotation. The two factors were labelled as susceptibility to positive peer pressure and susceptibility to negative peer pressure. Except for one item, all the items had factor loadings of 0.5 and above. In confirmatory factor analysis, this item with low factor loading (less than 0.5) was removed. The final 18 items had produced indices that reached the recommended values.

The construct reliability for the susceptibility to positive peer pressure was 0.89 while susceptibility to negative peer pressure revealed a construct reliability of 0.85. The scale supported adequate convergent and discriminant validity. Analysis of the scale's

test-retest reliabilities as reported by weighted Kappa coefficients reached moderate to substantial agreements.

The model was tested for factorial invariance across gender. The unconstrained model for male and female fulfilled the recommended values for the goodness of fit indices. The differences of the comparative fit index (CFI) across the models had supported the Cheung and Rensvold's criteria (Cheung & Rensvold, 2000). The scale was proven to be invariant across gender.

Overall, the Malay version of the Susceptibility to Peer Pressure Scale displayed good psychometric properties in terms of its construct validity, internal consistency and test-retest reliability in measuring susceptibility to peer pressure among late adolescents in tertiary level institutions.

The prevalence of sexual initiation among the late adolescents in tertiary level institution was 9.8% (95% CI [8.3, 11.6]). Stratified by gender, 18.1% (95% CI [15.1, 21.5]) of males already had sexual experience compared to 4.1% (95% CI [2.9, 5.9]) females. In regard to sexual initiation, more than half of the respondents had initiated sex when they were 16 years or older. Among those with sexual experience, 52.6% of them had sexual intercourse during the recent three months. One fifth of the students with sexual experience had engaged in unprotected sex in their most recent sexual encounter. Among males, condom was the preferred method of contraception while the females had favoured withdrawal method at their last sexual intercourse.

There were some gender similarities and dissimilarities of the risk factors of sexual engagement found in the study. For both males and females, higher likelihood of sexual initiation was associated with perception of close friends had had sex, higher susceptibility to peer pressure and living in non-intact families for females and living in blended families for males. For males, being Malays, current smokers, lifetime alcohol

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consumers, lifetime illicit drug use, younger age at puberty, involvement in a relationship with the opposite sex, and higher peer attachment were significantly associated with higher likelihood of sexual initiation. On the other hand, among females sexual experience were significantly associated with lifetime cigarette smokers and higher self-esteem. Higher frequency of performing religious activities and being more attached to peers were associated with sexual abstinence among females. These findings suggested that sexual initiation among late adolescents in tertiary level institutions were influenced by individual, familial and peer components.

CHAPTER 5 : DISCUSSION

5.1   Introduction

The central aim of this research was to determine the prevalence and the risk factors associated with sexual initiation among late adolescents in tertiary level institutions based on the Bronfenbrenner's Social-ecological Theory. These factors were categorized into individual, familial and extra-familial factors.

The findings of this research are discussed based on the research objectives. The results of the psychometric properties of the Susceptibility to Peer Pressure Scale which was conducted in the Phase I of this study are discussed in Section 5.2. This instrument was used in the Phase II as part of the tools employed to identify the correlates of sexual initiation. The Phase II of this study continues with the examination of the prevalence of sexual initiationual experience and its related sexual behaviours which are discussed in Section 5.3. The risk factors which are significantly associated with sexual initiation in this study are then discussed in the subsequent section (Section 5.5). These risk factors are compared with previous research findings.

The strengths and limitations of this study are also discussed. This chapter concludes with the discussion of the implications of the study findings to the public heath practice and the theory.

5.2   Susceptibility to Peer Pressure Scale in the assessment of peer influence

5.2.1 Validity and reliability of the Susceptibility to Peer Pressure Scale

The objective of the Phase I of this research was to determine the psychometric properties of the Susceptibility to Peer Pressure Scale among late adolescents in the institutions of higher learning. The scale by Sim and Koh (2003) had been validated among early to middle adolescents in two high schools in Singapore. One of the domains,

the susceptibility to peer norms was removed from the final scale by the original authors as it was found that this domain reached an unsatisfactory level of internal consistency. Conversely, Chan & Chan (2011) examined the psychometric properties of all the five domains among the school students in Hong Kong and found that the five-structure model of the Susceptibility to Peer Pressure Scale demonstrated good psychometric properties. Therefore, in the Phase I of the current study, these five domains were tested.

Construct validity which is "the extent to which a set of items truly reflects the theoretical latent construct that the selected items are intended to measure" (Hair et al., 2005) was tested via three components: content validity; convergent validity and discriminant validity. All these components were investigated in the Phase I of the study.

Content validity which is the extent to which the contents of the items are compatible with the scope of the construct was determined prior to the investigation of its construct validity (Hair et al., 2005). This validity was ascertained by two experts: a clinical psychologist and a public health specialist. Both of them had agreed that the items in the scale were able to conceptualize susceptibility to peer pressure.

In regard to the scale's construct validity, confirmatory factor analysis (CFA) which was conducted on the five domains of peer susceptibility had yielded a weak model fit. Furthermore, despite the evidence of convergent validity, the discriminant validity among the domains was poor. Thus, the findings of the current study did not support the five-structure model (peer pressure towards family involvement, peer pressure towards school involvement, peer pressure towards peer involvement, peer pressure towards misconduct and peer pressure towards peer norms) as reported by the study in Hong Kong (Chan & Chan, 2011).

In contrast to the studies by Sim and Koh (Sim & Koh, 2003) and Chan and Chan (Chan & Chan, 2011) in which the underlying factor structure was not explored,

exploratory factor analysis (EFA) was conducted in the current study to identify the patterns of correlations among the items and to determine the underlying structures of the instrument in the second stage of analysis (Pett et al., 2003). The factors were extracted via principal axis factoring which did not require the assumption of normality (Floyd & Widaman, 1995). In addition, the initial estimates of the item communalities used by principal axis factoring could produce more precise actual communalities (Floyd & Widaman, 1995) in contrast to the principal component analysis which tends to inflate item loadings (Costello & Osborne, 2005).

Through EFA, a two-factor structure was generated using promax rotation, explaining 45% of the total variance. This percentage, however, did not reach 50%, which is the recommended percentage for explained variance in studies examining psychometric properties of instruments used in research (Pett et al., 2003; Streiner, 1994). Principal axis factoring (PAF) is associated with a lower variance as this approach addresses common variance while principal component analysis (PCA), a method which is also favoured in EFA, focuses on the total variance (Pett et al., 2003).

Confirmatory factor analysis (CFA) was then performed on the remaining items. Based on the data from the second sample (n=310), the Susceptibility to Peer Pressure Scale showed a good fit to the two-factor structure using a range of goodness of fit indices (χ^2/df ratio, CFI, GFI, AGFI, TLI and RMSEA). As found in the previous studies which examined the factorial validity of the Susceptibility to Peer Pressure Scale (Chan & Chan, 2011; Sim & Koh, 2003), the traditional chi-square (χ^2)test revealed a poor fit. This measure of goodness of fit assessed the unaccounted covariances in the model (Floyd & Widaman, 1995). It is well known that this measure is sensitive to sample size and it has a tendency to reject a false model (Bagozzi & Yi, 1988; Chen & Tsai, 2007; Hair et al., 2005). In response to this weakness, the normed χ^2 (χ^2/df ratio) has been recommended as a better measure of goodness-of-fit instead of the traditional χ^2 value (Hair et al., 2005).

The normed χ^2 was found to be within the recommended threshold for the data in the current study. Another criteria for a good model which is the requirement that each factor should have at least three items representing them was also fulfilled (Hair et al., 2005).

Based on these findings, both exploratory and confirmatory factor analyses supported the bidimensionality of the Susceptibility to Peer Pressure. However, the dissimilarities in the model structures found in the current study compared to the previous two studies (Chan & Chan, 2011; Sim & Koh, 2003) may be attributed to the racial composition and the differences in the cultures among the adolescents in these countries (Malaysia, Singapore and Hong Kong). Sim and Koh (2003) have recruited a higher proportion of Chinese in their study (77% were Chinese and only 14% were Malays) compared to this current study (77% were Malays and 14% were Chinese). The Hong Kong study, however, did not disclose its racial distribution. The usage of hypothetical scenarios within each construct may be influenced by the law and norms that might dictate how the adolescents in these countries respond to the scenarios. Several studies have found that ethnicity may influence adolescents' perception of peer pressure (Giordano, Cernkovich, & DeMaris, 1993; Padilla-Walker & Bean, 2009; Tolson & Urberg, 1993). The pressure to abide by the cultural norms and expectations of the various ethnic groups may influence the extent of the adolescents' susceptibility to peer influence (Contrada et al., 2001). The need to conform to the cultural identity has been shown to be protective against negative peer influence (Gazis, Connor, & Ho, 2010). This finding may be attributed to the fear of suffering from the negative after-effects if the adolescents do not conform to their cultural norms (Padilla-Walker & Bean, 2009). Cultural factors have also been shown to affect the family-adolescent relationship in which these adolescents may regard their relationship with their families as more important than their relationship with their peers (Tolson & Urberg, 1993). Thus, their susceptibility to the pressure imposed by their peers may be altered.

Furthermore, the respondents in this study were late adolescents while the previous two studies were early and middle adolescents. Studies have shown that the susceptibility to peer influence differ according to age (Sim & Koh, 2003; Steinberg & Silverberg, 1986). The different age group in this study could be another significant contributing factor to the dimensions of the susceptibility to peer pressure.

In addition, the participants in this current study were from a different environment, far from their parents' scrutiny unlike those students in the two previous studies. Increased independence and responsibilities were proposed to influence these college students (Hirsch & Barton, 2011). Therefore, they were more likely to be attached to their peers for support and companionship (Yeh & Wang, 2000). As a result, these students are at risk of succumbing to the peer influence unlike those who are still living with their parents.

The new extracted factors were relabelled as susceptibility to positive and negative peer pressure based on the eleven items representing susceptibility to positive peer pressure and seven items for the susceptibility to negative peer pressure. Susceptibility to positive peer pressure domain contained items that were related to peer influences toward positive behaviours (examples: item 1 "ask your parents on which course to take" and item 21 "call your parents to inform them that you will be home late"). On the other hand, the susceptibility to negative peer pressure domain comprised items that influenced the respondents to engage in negative behaviours (examples: item 5 "take a puff of cigarette" and item 18 "to have a glass of beer").

This is the first study assessing the convergent and discriminant validity of the Susceptibility to Peer Pressure Scale. The results indicated that the factor loadings of the 18 items in this scale met the minimum requirement of 0.5 (Hair et al., 2005) which has demonstrated the presence of convergent validity at the item level. Further support for convergent validity was provided by the composite reliability (CR) of each construct

which exceeded the threshold of 0.7 as suggested by Fornell and Larcker (1981b). These CRs are interpreted similarly to that of Cronbach's alpha, except that they also consider the actual factor loadings rather than assuming that each item is given an equal weightage (Wang, Wu, & Wang, 2009). In addition, the average variance extracted (AVE) for the susceptibility to negative peer pressure construct was 0.52, which exceeded the recommended value of 0.5 (Bagozzi & Yi, 1988; Hair et al., 2005). This means that 52% of the variation in the items in this construct could be explained by the items in the construct. On the contrary, the estimated AVE for the susceptibility to positive peer pressure construct was slightly lower that the set threshold. The lower AVE for this construct was surprising as each item in this construct had reached the recommended factor loading of 0.5 (Hair et al., 2005). However, this susceptibility to positive pressure construct has met the other two criteria supporting sufficient convergent validity. In social science research, it is unlikely for all the assumptions to be strictly fulfilled (Bagozzi & Yi, 1988). Evidence for satisfactory discriminant validity for this instrument was provided by the AVEs for both constructs exceeding the shared variances between the two factors. Therefore, each construct is clearly distinct from each other.

Furthermore, since maximum likelihood estimation (MLE) was utilized to conduct the confirmatory factor analysis, assumptions for this method should be complied with. However, violations of these assumptions were observed as the data in this study were categorical in nature and not normally distributed. Therefore, in order to overcome these violations, another procedure, the "bootstrapping method" was performed via the Bollen-Stine test of overall model fit (West et al., 1995). In a simulation study by Fouladi (1998) this test has been shown to provide a satisfactory evidence of model fitness compared to the other methods such as the O-factor Bartlett modified, Swain modified and Satorra-Bentler scaled and adjusted test statistics in conditions of non-normality. The finding of

the non-significant Bollen-Stine test in this study further confirmed that the data fits the two-factor structure.

An instrument must be able to increase the power of the study to detect any significant correlations or any discrepancies in the study (DeVellis, 2003). Therefore, the internal consistency of this instrument was determined by the Cronbach's alpha coefficient. As Cronbach alpha coefficient is a measure of unidimensionality of a group of items (Cortina, 1993), the internal consistency of this Susceptibility to Peer Pressure Scale is reported separately for each domain. Based on the Cronbach's alpha coefficients, the internal consistency for each construct was found to be good.

In comparison to the reliability of the original scale, the Cronbach's alpha coefficients for this study were much higher (0.91 and 0.89). The Singaporean study (Sim & Koh, 2003) reported sufficient internal consistencies ranging from 0.64 to 0.78 for all the four domains. Lower reliabilities for the domains were also reported by the study among the high school students in Hong Kong in which the Cronbach's alphas ranged from 0.51 to 0.60 (Chan & Chan, 2011). These findings may be due to the differences in the number of items representing each construct as Cronbach's alpha coefficient is affected by the number of items in each construct (Tavakol & Dennick, 2011).

This study is also the first to investigate the test-retest reliability for each item in the constructs. Based on the weighted Cohen Kappa statistics, the items in the scale have produced moderate to substantial agreements which indicated the scale's temporal stability.

The present study provides sufficient evidence for the validity and reliability of the Malaysian version of the Susceptibility to Peer Pressure Scale in measuring susceptibility to peer pressure among adolescents in the institutions of higher learning. The factor analyses have identified two directions of susceptibility to peer pressure: positive pressure

and negative pressure in contrast to the directions of peer pressure found in the original study by Sim and Koh (2003).

5.2.2 Factorial invariance of the Susceptibility to Peer Pressure Scale

Measurement invariance is essential in comparing the results between the different groups (Cheung & Rensvold, 2002). Inference drawn from a study utilizing an instrument which measures responses from different groups may result in biased or invalid findings if the instrument was not tested for its invariance across those different groups (Chen, 2007). Therefore, in order to enhance the use of this instrument in the population, it is important to establish whether the items in this instrument operate equivalently across gender. In the current study, the Susceptibility to Peer Pressure Scale was tested for its factorial stability across gender via multi-group confirmatory factor analyses.

In ascertaining measurement invariance, four levels of nested models varying in the constraints applied on the parameters were tested. These four models in increasing level of hierarchy were: configural invariance, weak factorial invariance model, strong factorial invariance model and strict factorial invariance model (Meredith, 1993). A baseline model, configural model where no restrictions was imposed on the parameters for both male and female was established. Confirmatory factor analysis revealed that this unconstrained configural model fit the data well across males and females as supported by Comparative Fit Index (CFI) and Root Mean Square Error of Approximation (RMSEA) reached the recommended thresholds as proposed by Cheung and Rensvold (2002). Therefore, the establishment of configural invariance indicated that the data produced the same number of items in each factor for males and females. Then, subsequent analyses involved applying additional constraints on different sets of parameters across gender were performed.

For evaluating invariance across the different consecutive models, the changes in comparative fit index (ΔCFI) were used since the traditional Likelihood Ratio Test (based on the difference in chi-square) is considered to be sensitive to the sample size as well as non-normally distributed data (Tsaousis & Kazi, 2013). The decision to use ΔCFI in the current study was also made based on the findings reported by Chen (2007) who found that the difference in CFI across the models was not affected by the sample size. In the current study, factorial invariance was established at the level of configural, weak, strong and strict factorial invariance. These findings supported the recommendation posed by DeShon (2004), Lubke and Dolan (2003) and Wu et al. (2007) in determining factorial invariance. These researchers demonstrated the importance of testing the strict factorial invariance model before establishing the factor structure is truly invariant across the different groups.

The findings of the invariance across gender suggest that males and females possess similar structure of the Susceptibility to Peer Pressure Scale (the same number of factors and the same items are associated with each factor). These results also support the ability of this scale to measure the susceptibility to peer pressure similarly among males and females in the institutions of higher learning. This study is the first to test and support the equivalence of Susceptibility to Peer Pressure Scale across males and females.

5.3. Sexual initiation among Late Adolescents

5.3.1 Prevalence of sexual initiation

Adolescence is a period of vulnerability and dramatic transformations. This study revealed that 9.8% of the late adolescents in the selected institutions of higher learning had experienced premarital vaginal-penile intercourse at least once in their lifetime. There are limited published studies on sexual initiation among adolescents attending institutions of higher learning in Malaysia. The prevalence of sexual initiation in this study is found

to be higher compared to the prevalence reported among the 530 students in a private university in one of the states in Malaysia in 2010. In this cross-sectional study, 2.3% of the students aged 16 to 27 years (M= 19.96 years, SD=1.70) have had sexual intercourse (Jahanfar et al., 2010). However, since this study was conducted in a single private university, the results may not be generalizable to the students in the public universities who might exhibit dissimilar characteristics from the students in the private universities. Another local study conducted in a public university in 2011 involving female undergraduates aged 17 to 26 years reported that 0.7% of them have had sex (Wong, 2012a). However, the sampling method used in this study was convenience sampling which reduced the external validity of the study. These differences may be affected by the respondents' age which has been found to be associated with sexual engagement (Bersamin et al., 2006; Ryu et al., 2007; Sanchez et al., 2010; Siti Norazah Zulkifli & Low, 2000). Nevertheless, the prevalence of sexual experience among the late adolescents in this study was higher compared to the 4.6% of youth trainees in two Youth training centres in Malaysia who reported history of previous sexual experience (Mohd Rizal Abdul Manaf et al., 2014). This study has included both in-school and out-of-school late adolescents.

The initiation of sexual intercourse has been extensively studied globally. The figures differ from one country to another. In United States, the prevalence of sexual experience among the adolescents in the institutions of higher learning was higher, ranging from 59.5% to 86.7% (Adefuye et al., 2009; Opt & Loffredo, 2004; Ratleff-crain, Donald, & Dalton, 1999). In support with these findings, previous research examining the different ethnic groups have reported that the prevalence of sexual engagement among Asians are lower compared to Caucasians and African Americans (Browning, Leventhal, & Brooks-Gunn, 2004; Grunbaum, Lowry, Kann, & Pateman, 2000; Kuo & St. Lawrence, 2006; Miller, Forehand, & Kotchick, 1999; Schuster, Bell, Nakajima, & Kanouse, 1998;

Spence & Brewster, 2010). This might result from the traditional cultures and values practiced by the Asians (Kuo & St. Lawrence, 2006; Meston, Trapnell, & Gorzalka, 1998). Asians are more likely to exhibit conservative sexual behaviours as they are required to conform to the expected norms of remaining virgin until marriage (Kuo & St. Lawrence, 2006; Okazaki, 2002). Sexual initiation is frowned upon as many Asian traditions value decency and strict moral demeanour (Abraham, 1999). The practice of sexual conservatism or the traditional sexual attitudes which prohibits sexual intercourse(Aalsma et al., 2013) among Asian adolescents may influence them to remain sexually abstinent (Abraham, 1999; Lefkowitz, Gillen, Shearer, & Boone, 2004; Meston et al., 1998; Okazaki, 2002).

The prevalence of sexual experience found in this study is also lower compared to the studies conducted among late adolescents in colleges in the other Asian countries. A cross-sectional study among 2003 college students in six universities in Beijing in 2010 reported that 18.5% of the students have had sexual intercourse (Zhou et al., 2012). This finding did not differ much compared to the prevalence among the 475 students in two universities in the West and Central regions in China. In this cross-sectional study, 17.9% of the respondents admitted having sexual intercourse (Tung, Hu, Efird, Yu, & Su, 2012). However, the age of the respondents were slightly older (M=21.02 years, SD= 2.39) compared to the age of the respondents in this current study (M=18.96 years, SD=0.64). A large scale cross-sectional study among 4,769 female students in 16 colleges and universities in Wuhan, China reported that 18.1% of the surveyed students have had sexual intercourse (Yan et al., 2010). However, generalization of this finding cannot be extended to the male population as it involved only female students. Females are less likely to report sexual experience compared to males as virginity is regarded as an important asset for females and engagement in sexual initiation by females is not socially accepted (Golbasi & Kelleci, 2011). A more recent study in an university in China found

that 21.3% of the 3425 students had engaged in sexual intercourse(Dangui et al., 2013a) . This elevated prevalence of sexual intercourse could be contributed by the older age of the respondents (Median=22 years), as studies have shown that older age group is associated with increased risk of having sexual intercourse (Ishida et al., 2011; Noor Ani Ahmad et al., 2014; Seme & Wirtu, 2008). Furthermore, the utilization of the online survey in a sensitive issue may improve the rate of reporting of adolescent sexual behaviour (Turner et al., 1998). However, the use of convenience sampling limits the external validity of the study finding.

In India, a cross-sectional study among 1137 college students in Kathmandu revealed that 39% of the students have had sex (Adhikari, 2010). Another study conducted in another college in 2012 reported a slightly lower prevalence of sexual experience (Mutha et al., 2014). Among the respondents, 34.2% of them had admitted to having sexual intercourse at least once in their lifetime. This finding was similar to the prevalence of sexual initiation among the Korean university students in which 32.6% of them had engaged in sexual intercourse (Cha, 2005).

In Turkey, in a cross-sectional study among 638 university students found that 26.3% of the students had engaged in sexual intercourse in 2007 (Yaşan et al., 2009). A year later, another study conducted among the one thousand second year university students revealed that half of the respondents have had sex (50.3%) (Yilmaz, Kavlak, & Atan, 2010). This could be attributed to the perception that sexual intercourse was considered as normal behaviour as found in this study. However, the utilization of convenience sampling in recruiting the participants for this study introduced selection bias which compromised the internal validity of this result.

Descriptive analyses in this current study revealed that a higher proportion of males were found to report sexual engagement compared to females (18.1% and 4.1%). This finding supports the results from several studies conducted among college students

worldwide (Adhikari, 2010; Chi et al., 2012; Dangui et al., 2013b; Golbasi & Kelleci, 2011; Jahanfar et al., 2010; Ma et al., 2009; Mutha et al., 2014; Reis, Ramiro, Gaspar Matos, & Alves Diniz, 2013; Tung, Hu, et al., 2012; Yaşan et al., 2009; Yilmaz et al., 2010; Zhou et al., 2012). These studies provided ample evidence of the magnitude of gender norms in influencing adolescents' sexual debut These gender norms are dictated by the community which regard sexual initiation among females as inappropriate (Golbasi & Kelleci, 2011). According to Kaljee et al. (Kaljee et al., 2007) , society might have the tendency to denounce females who have engaged in sexual intercourse. In several studies, males are less likely required to conform to the cultural norms of remaining virgins prior to marriage unlike females (Seme & Wirtu, 2008; Yilmaz et al., 2010). Males who engage in sexual activities are often regarded as socially acceptable as they are navigating through the rite of passage to adulthood (Kalmuss, Davidson, Cohall, Laraque, & Cassell, 2003; Smith, Guthrie, & Oakley, 2005). Thus, they have the tendency to engage in sexual initiation as a measure to validate their masculinity (Moore, 2006; Varga, 2003). In contrast, the negative consequences of unprotected sexual intercourse such as unintended pregnancy affect females more than males (Golbasi & Kelleci, 2011). Therefore, females are less likely to engage in sexual intercourse to evade these undesired consequences.

In the Philippines, a study utilizing secondary data from the Cebu Longitudinal Health and Nutrition Survey reported that females possessed conservative sexual attitudes which resulted in lower sexual debut among them (Gipson et al., 2014). Another study among the university students in Turkey found that a higher proportion of male students reported more liberal sexual attitudes compared to females (Yilmaz et al., 2010). In supporting this finding, a cross-sectional study based on the Lao Adolescent Reproductive Health Survey which involved 1200 late adolescents reported that liberal sexual attitudes

among males were associated with increased risk of sexual initiation (Sychareun et al., 2013).

This sex disparities could also be attributed to the over-reporting among males in contrast to females who have the tendency to under-report their sexual experience (Hindin & Hindin, 2009). The over-reporting among the males might be related to the intention to announce their virility (Yilmaz et al., 2010) while females might resort to hiding their sexual experience to avoid the negative judgement by the community (Golbasi & Kelleci, 2011).

5.3.2 Prevalence of other sexual behaviours

In this study, more than half (62.9%) of those with sexual experience had their first sexual encounter when they were 16 years old or later while the rest had initiated sex at less than 16 years of age. Among the female students, three quarters of them (72.5%) had admitted that they lost their virginity when they were 16 years old or later. A lower proportion of males (59.6%) reported that their first sexual encounter was when they were 16 years old or later. This higher proportion of females reporting sexual debut at 16 years old or later could be contributed by the gender norms which the female students adhered to. The stigma imposed by the community towards females who engage in sexual initiation discourage them from early engagement in sexual intercourse (Kaljee et al., 2007). In addition, females may experience more unfavourable outcomes than males, such as unintended pregnancy, unsafe abortion, complications of sexually transmitted diseases and depression (Singh et al., 2000; Upchurch, Lillard, Aneshensel, & Li, 2002).

In contrast to these findings among males and females, a study based on the data from the 2012 Malaysian Global School-based Student Health Survey (GSHS) reported that half (50.6%) of the students aged 12 to 17 years had first engaged in sex when they were 14 years old or younger (Noor Ani Ahmad et al., 2014). This study however, did

not provide analysis by gender. This earlier age of sexual debut was also found in a cross-sectional study conducted in 2012 among 770 female adolescents in 41 rural schools located in ten states in Malaysia. In this study, half of the respondents (52%) had lost their virginity when they were 14 years old or younger (Maryam Ahmadian et al., 2014). Only a small proportion of sexually experienced females had initiated sex at 17 years old or older. However, the generalizability of these results is limited to the rural females. Another study by Lee et al. (2006) involving 14 secondary schools in a state in Malaysia reported that the mean age of sexual debut among the males and females were 14.9 years and 14.5 years respectively.

A study utilizing the Lao Adolescent Reproductive Health Survey data in 2000, reported that half of the 1200 sexually experienced adolescents (51.9%) had their first sexual encounter when they were 19 years old and the proportion of the reported age of sexual debut among both genders were similar (Sychareun et al., 2013). This later age of sexual debut could be affected by the use of face-to-face interviews which are more likely to be subjected to social desirability bias in contrast to the self-administered questionnaires that were employed in this current study.

Early sexual debut is associated with increased risk of contracting sexually transmitted infections and unintended pregnancies (Davis & Friel, 2001; Miller et al., 1999; Tsitsika et al., 2014). Previous studies reported that lower rates of condom use or inconsistent condom use have been found to be associated with early age of sexual debut (O'Donnell et al., 2001; Upchurch et al., 2004). Early initiators have also been found to have multiple sexual partners (O'Donnell et al., 2001; Santelli et al., 1998). Female adolescents are more susceptible to contract STIs due to their immature cervix (Kahn et al., 2002; Peipert, 2003), narrower introitus and lack of lubrication which increase their risk to injury during sexual intercourse (Peipert, 2003).

In the current study, among the sexually experienced female students, 42.0% admitted that they had sexual intercourse with one partner throughout their entire life. Among males, only a third (28.4) of them with previous sexual experience claimed that they only had one sexual partner throughout their life. With regard to having multiple sexual partners, 35.0% of the students with previous sexual experience admitted that they had four or more sexual partners (based on the definition by the Center for Disease Control and Prevention) (Center for Disease Control and Prevention (CDC), 2008). Stratified by gender, 41.0% of males and 16.5% of females reported that they had multiple sexual partners. The prevalence of multiple sexual partners found in the current study was lower compared to a cross-sectional study among 647 undergraduates in Istanbul which reported that 43.9% of the students admitted history of multiple sexual partners throughout their life (Rathfisch, Aydin, Dereli Pehlivan, Sivik Bozkurt, & Kaplica, 2012). However, this study did not provide the proportion of multiple sexual partners by gender. A nationally representative survey among adolescents aged 14 to 18 years, the Youth Risk Behaviour Survey (YRBS) reported that 16.8% of the male students had multiple sexual partners compared to 13.2% female students (Kann et al., 2014). The higher prevalence of multiple sexual partners among the male students in the current study compared to the YRBS study is worrying. These male students are at higher risk of contracting sexually transmitted infections and may initiate a chain of transmission of STIs to their sexual partners. Studies among college students in the United States and India have also shown that more males than females reported having more than one sexual partner which support the finding of this current study (Adefuye et al., 2009; Mutha et al., 2014). The more liberal sexual norms portrayed by males may result in greater freedom for choosing their sexual partners. Therefore, they are less likely to be content with having only one sexual partner (Liu, Lin, & Xu, 2004; Yilmaz et al., 2010).

Comparison with other studies among college undergraduates is limited by the different definitions of multiple sexual partners. For example, a study among Turkish and Chinese university students has defined multiple sexual partners as having two or more sexual partners (Golbasi & Kelleci, 2011; Tung, Hu, et al., 2012). Furthermore, comparison with other countries is limited by the difference in culture norms practised in those countries.

Half (52.6%) of the students in this current study admitted that they had engaged in sexual intercourse three months prior to the survey (sexually active). A relatively higher proportion of male students (56.6%) were sexually active compared to the female students (40.4%). However, comparing sexual activity among adolescents in this study and other counties is a bit tricky. Several studies have used different terminologies in determining sexually active. For example, a cross-sectional study among Turkish university students used the term "sexually active" for adolescents with previous sexual experience (Yilmaz et al., 2010). This term was also used to determine sexual activity among university students in China (Tung, Hu, et al., 2012). On the other hand, a study among American undergraduates defined this term as those who had engaged in sexual intercourse in the past six months prior to the study (Opt & Loffredo, 2004). Despite the various definitions used, in this study, sexually active was defined as adolescents with previous sexual experience who had sexual intercourse in the past three months prior to the study in line with the CDC definition (Center for Disease Control and Prevention (CDC), 2008).

In the current study, the prevalence of sexually active students was slightly lower compared to the prevalence reported in in the National Health Interview Survey in the United States among adolescents aged 14 to 17 years (Santelli, J. et al., 2000). Among those with previous sexual experience, 69% of males and 77% of females were sexually active. On the contrary, a nationally representative survey (Guangzhou Youth Risk Behaviour Survey) which involved students in the public middle school in Guangzhou

reported that among the 3.5% students who admitted history of previous sexual experience, only 2% were sexually active (Wang, Deng, Wang, Wang, & Xu, 2009). This might be contributed to the traditional sexual values which do not sanction sexual initiation (Yu, 2012). The rate of sexually active adolescents in the current study has also exceeded the findings in a cross-sectional study conducted in eleven high schools in Cambodia where 12.7% of the students were sexually active (Yi et al., 2010) and in a university in Turkey that reported 17.1% of the students were sexually active (Golbasi & Kelleci, 2011). Yi et al. (2010) reported that 18.4% of the male students admitted having sex in the past three months prior to the survey compared to 5.5% female students This finding supported the higher prevalence of sexual activity among males as found in the present study.

In the current study, approximately one fifth of the students (21.0%) reported that they did not use any form of contraception during their last sexual encounter. Both gender reported rather similar rates of unprotected sexual intercourse. The rates were much lower compared to the rate that was reported in a nationwide study in Malaysia among both in-school and out-of-school late adolescents conducted 15 years earlier in which 72% of them had unprotected sex (Siti Norazah Zulkifli & Low, 2000). This rate of non-contraception use was lower compared to the 48.1% of Malaysians who did not employ any method of contraception reported in the 2004 Malaysian Population and Family Survey (National Population and Family Development Board (NPFDB), 2006).The prevalence of unprotected sex in the current study was also found to be slightly lower compared to The Malaysia Global School-based Student Health Survey (GSHS) 2012 which had reported that one quarter (24.1%) of the secondary school students had unprotected sex (Noor Ani Ahmad et al., 2014). However, this study involved a younger population who might have limited sexual and reproductive health knowledge as found in several other studies (Azriani Ab Rahman et al., 2011; Capuano et al., 2009). The

limited knowledge and access to contraception may contribute to the higher non-use of contraception as reported in the GSHS 2012. As adolescents' sexual intercourse are found to be spontaneous, without prior planning, there is a tendency for them to disregard protection (Lear, 1995). The prevalence of unprotected sexual intercourse found in the current study was also lower compared to the prevalence reported in the studies among university students in Istanbul (30.9%) and West and Central regions in China (24.7%) (Rathfisch et al., 2012; Tung, Hu, et al., 2012).

Unprotected sexual intercourse predisposes the students to an increased risk of contracting sexually transmitted infections including HIV/AIDS and unintended pregnancy (Verhaeghe, 2012). In this current study, among those who admitted history of sexual intercourse, 21.9% of them had been pregnant or had impregnated their sexual partners. In Malaysia, sexual intercourseis considered as taboo and is not discussed openly (Mohd Rizal Abdul Manaf et al., 2014; Wong, 2012b). As a result of the controversy concerning the implementation of sexuality education in Malaysia, where a majority of the population are Muslims, a formal sexuality education, the Social and Reproductive Health Education module was only introduced in 2011 (Halimah Awang, Wong, Rohana Jani, & Low, 2013; Wong, 2012b). In the earlier years, the school students were exposed to very limited sex education especially concerning safer sexual practice (Halimah Awang et al., 2013). A cross-sectional study among secondary school students in the east coast in Malaysia, reported that 64.4% of the students received information on sexual and reproductive health from their peers (Azriani Ab Rahman et al., 2011). This is worrying as these adolescents could be given incorrect information especially with regard to contraception. This lack of sexual and reproductive health knowledge can contribute to engagement into unprotected sexual intercourse.

Despite the Malaysian government's signatory to the 1994 International Conference for Population and Development Programme of Action which safeguards the sexual and

reproductive health rights, the reproductive health rights for unmarried women are not protected (Rashidah & Wong, 2010). In 2011, the Malaysian government has revised the policy of providing contraceptive services for unmarried women (Tong, Low, Wong, Choong, & Jegasothy, 2014). Unfortunately, implementation of this policy at the ground level is not standardized and has not been made well known to the public (Tong et al., 2014). Therefore, the adolescents may resort to buying their own condoms and oral contraceptive pills from the private health care sectors which can pose a burden to adolescents who have no financial means (Low, Tong, Wong, Jegasothy, & Choong, 2015).

Withdrawal method or coitus interruptus was found to be the preferred method of contraception among the students (33.7%). However when stratified by gender, almost half of the female students (49.0%) reported that their sexual partners were more likely to opt for withdrawal method to prevent pregnancy rather than using condoms compared to 28.8% male students who chose withdrawal method. In contrast to the previous research, condoms were the most frequent method of contraception across different countries (Cavazos-Rehg, Krauss, et al., 2010; Golbasi & Kelleci, 2011; Ma et al., 2009; Sanchez et al., 2010; Santelli, J. et al., 2000; Somba, Mbonile, Obure, & Mahande, 2014). Withdrawal method has been found to be associated with a higher failure rate in preventing pregnancies compared to the injectable and oral contraceptives (Kost, Singh, Vaughan, Trussell, & Bankole, 2008; Santelli, John S et al., 2004). In order to ensure its success in preventing pregnancies, the couples must have a strong desire to avoid pregnancy. Furthermore, as the adolescents' cognitive function which is responsible for decision making and planning has not yet reached its full maturity, it is less likely that they will ponder over their decision carefully on the methods of contraception. Females may be worried of the possible outcomes to their relationships with their partners if they were to suggest condom use as a measure of protection (Gebhardt et al., 2006). A cross-

sectional study among females in the United States has highlighted the females' inferiority in their sexual relationships which inhibit discussions on the methods of contraception (Raiford, Wingood, & DiClemente, 2007; Tung, Cook, & Lu, 2012). As these relationships become more established, the females may feel more confident with the relationship and do not feel the need of protecting themselves against sexually transmitted infections (Gebhardt, Kuyper, & Greunsven, 2003). This unfathomable trust in their partners and the perception that their partners are of low risk of having STI may attribute to the lower condom use and preference for coitus interruptus as a method to prevent pregnancy (Brown et al., 2011).

Condoms were the third common method of contraception reported among the students (24.0%) in the current study. Among males, almost a third (29.5%) used condoms during their most recent sexual engagement compared to only 7.2% females who claimed that their sexual partners used condoms. The low condom use reported by females is worrying as they are more susceptible to contracting sexually transmitted infections including HIV during sexual intercourse (Adefuye et al., 2009). The rates of condom use reported by males and females in this current study were lower compared to the study in a local university which reported that 58.3% of those who had engaged in sex used condoms (Jahanfar et al., 2010). However, the rate found in this study should be interpreted with care as only 12 students (2.3%) reported history of sexual intercourse. Another local study among female undergraduates in a public university reported that a third (33.3%) of their sexual partners used condoms (Wong, 2012a). However, the generalizability of this finding to the other university students in Malaysia is limited as this study was conducted in one university only. The rate of condom use among the late adolescents in the current study was also found to be lower compared to similar populations in the India, China, Turkey and Tanzania which ranged from 48% to 86.8%

(Adefuye et al., 2009; Adhikari, 2010; Long et al., 2012; Somba et al., 2014; Yilmaz et al., 2010).

The low condom usage in this study could be attributed to the complicated nature of its usage (Bryan, Fisher, & Fisher, 2002). It requires planning, preparation and commitment in ensuring its success. Three behaviours which are necessary in using condoms which are termed as preparatory behaviours are purchasing, ensuring its availability whenever the time comes and deliberating its use with the sexual partner (Bryan et al., 2002). Furthermore, condoms have been found to be inconvenient and may decrease the pleasure during sexual intercourse (Jones, Fennell, Higgins, & Blanchard, 2009; Whittaker, Merkh, Henry-Moss, & Hock-Long, 2010). Female adolescents have to depend on their sexual partners as condom use requires the males' cooperation and willingness (Tong et al., 2014). They may also lack the skills to convince their partners to use condoms (Abraham & Sheeran, 1994). In addition, adolescents are more likely to be ignorant of the health risks related to the physical intimacy and they often lack information on how to prevent such risks (Buysse, 1996; Minichiello et al., 1996).

In the current study, oral contraceptives were used by 4.9% of female students who have engaged in sexual intercourse. This rate of oral contraceptive use was lower compared to the rate reported in the Malaysian households' survey which reported that 18% of those who have engaged in sex opted for oral contraceptives (Siti Norazah Zulkifli, Low, & Yusof, 1995). A more recent survey, the Fourth Malaysian Population and Family Survey in 2004 among 13 to 49 year old women reported that oral contraceptive pill was the most common method used by Malaysian women (14.0%) and this rate was higher compared to the rate of the oral contraceptive use in this current study (National Population and Family Development Board (NPFDB), 2006). The low rate of oral contraceptives may be attributed to the use of personal discretion in prescribing oral contraceptives to unmarried adolescents by primary health care practitioners (Tong et al.,

2014). Therefore, the females have to resort to purchasing the oral contraceptives from the retail pharmacies. However, with the less liberal cultural norm concerning sexual initiation, the females may decide against purchasing the pills so to avoid stigmatization by their society. Previous studies indicate that the use of oral contraceptives in Turkey, Istanbul, the United States, Sub-Saharan Africa, Tanzania, Portugal ranged from 2.3%% in Turkey to 70.4% in Portugal (Cavazos-Rehg, Krauss, et al., 2010; McCurdy, Schnatz, Weinbaum, & Zhu, 2014; Reis et al., 2013; Somba et al., 2014).

The concurrent use of alcohol or illegal drugs (substance use) prior to sexual intercourse was reported by 25.9% of the students with prior sexual experience, in which males were found to report higher rates of alcohol or illegal drugs use. Alcohol consumption prior to sex has been shown to affect the adolescents' judgement and interfere their inhibitory mechanisms despite having adequate knowledge on measures toward safe sex (Dogan, Stockdale, Widaman, & Conger, 2010). Cooper (2002) conducted a review of studies that examined the association between alcohol consumption and sexual intercourse among college students. She highlighted that alcohol consumption was linked to the decision to engage in sex and risky sexual behaviours such as having multiple sexual partners or casual sex partners. Increased impulsivity and sensation seeking which are prevalent among adolescents have been found to be associated with increased likelihood of illicit drug use (Andrucci, Archer, Pancoast, & Gordon, 1989). In addition, the propensity of adolescents to satisfy their curiosity has also been linked to drug use (Laviola et al., 2003).

5.4 Correlates of sexual initiation

This study expands the knowledge on the correlates of sexual initiation among late adolescents in tertiary level institutions. The multiplicity of layers surrounding the developing adolescents as proposed by the adapted Bronfenbrenner's Social-ecological

model in relation to the adolescents' engagement in sex were examined in this study. These layers or domains are the individual, familial, peers and school components. The findings are discussed according to the domains that the factors are representing based on the established multivariate models for males and females.

5.4.1 Individual correlates of sexual initiation

Multivariate logistic regression analyses revealed that Malays, early puberty, current smoker, lifetime alcohol drinker and lifetime illicit drug user were the individual correlates of sexual initiation among the males found in this study. Among females, lifetime cigarette smoker and higher self-esteem were significant risk factors for sexual engagement. In contrast to males, females who reported higher frequency of performing religious activities were found to be less likely to engage in sexual initiation.

Among males, Malays were found to be at higher risk of initiating sexual initiation. On a separate analysis, it was found that when current drinker was added to the socio-demographic Model (Model 1) for males, the adjusted Odds Ratio became 1.28 from the original adjusted OR of 0.48. This might result from risky behaviour having an effect on the association between ethnicity and sexual initiation among males. Thus, this finding is in contrast with the finding of the Global School-based Student Health Survey involving Malaysian adolescents (Noor Ani Ahmad et al., 2014). In this nationally representative survey of secondary school students, Indians were found to be at higher risk of engaging in sexual initiation. In other studies involving adolescents in Malaysia, ethnicity was not found to be a significant risk factor (Lee, 2006; Nik Daliana Nik Farid et al., 2013; Siti Norazah Zulkifli et al., 1995). However, these studies did not stratify the analyses according to gender in contrast to this study. Ethnicity however, was not a significant risk factor for sexual initiation among females.

Early pubertal onset has been found to increase the males' risk of engaging in sexual intercourse but not the females' risk. Several longitudinal studies examining the relationship between puberty and sexual debut among adolescents found similar finding (Crockett et al., 1996; De Genna et al., 2011; Goodson et al., 1997; Moore et al., 2014). The assessment of pubertal onset in the study conducted by Crockett et al. was rather ambiguous as it was based on the respondents' perception whether they thought that their onset of puberty were earlier, at par or later compared to their friends. The onset of puberty should be interpreted with caution as for males, a peripubertal age rather than the exact pubertal age of onset is obtained in contrast to the age at menarche which produced a more accurate pubertal onset (Gluckman & Hanson, 2006).

Puberty is associated with the increase in gonadal hormones that are accompanied by intense romantic fascination and sexual motivation that may influence the adolescents to engage in sexual behaviours (Neemann, Hubbard, & Masten, 1995; Steinberg, 2005, 2008). Earlier puberty has been found to precede the maturation of the cognitive system which results in increased activities in the subcortical limbic regions (responsible for affective control) (Casey, B. et al., 2008). As a result, elevations in novelty-seeking behaviours which may lead to impulsive decision making and sensitivity to emotional cues are evident with pubertal onset.

Consistent with previous research, sexual initiation among the males was found to be associated with current cigarette smoking, lifetime alcohol consumption and illicit drug use (Lee, 2006; Liu et al., 2006; Manickam, Mohd Hatta Abdul Mutalip, Hamizatul Akmal Abdul Hamid, Rozanim Kamaruddin, & Mohd Yusoff Sabtu, 2014; Nik Daliana Nik Farid et al., 2013; Noor Ani Ahmad et al., 2014; Wong et al., 2009). Substance use may predispose adolescents to risky sexual behaviours by negatively affecting their decision making skills which subsequently may impair their judgement (Romero et al., 2007). Furthermore, in association with pubertal onset, due to the enhanced affective

control system, reward seeking behaviours such as smoking, alcohol consumption and illicit drug use are more prevalent (Spear & Varlinskaya, 2010). Spear and Varlinskaya (2010) have found that adolescents are more sensitive to the gratifying effects of alcohol and drugs and are less responsive to the adverse effects of these substances compared to adults in their study which utilized animal models.

Smoking has been found as the gateway to alcohol use in a large cross-sectional study in California involving 11,200 school students (Chen et al., 2002). Several studies have found that cigarette smoking and alcohol consumption are linked to illicit substance use among adolescents (Johnson, Boles, & Kleber, 2000; Kandel & Yamaguchi, 1993; Manickam et al., 2014; Romero et al., 2007). All these studies except the study by Romero et al. (2007) were cross-sectional in nature which restricted the determination of the temporal relationships between smoking, alcohol use and illicit drug use. On the contrary, in regard to substance use, females who reported history of smoking even once in their life (lifetime cigarette smokers) were found to be at higher risk of engaging in sexual initiation. Lifetime alcohol consumption and illicit drug use were not found to be associated with increased risk of sexual initiation among the female students. These non-associations could be attributed to the more conservative values among females (Tosh & Simmons, 2007). As a result, they are less likely to engage in these risk taking behaviours in protecting themselves from being frowned upon by the community. Conversely, a study conducted in Brazil reported that alcohol consumption and drug use were significant risk factors for engaging in sex among females who were less likely to hold conservative attitudes toward drinking and illicit drug use (Peres et al., 2008).

Among females, higher self-esteem was found to be associated with an increased risk of sexual initiation, but this factor was not a significant risk factor for males. This finding is supported by two longitudinal studies among adolescents in Nairobi and New Zealand (Marston et al., 2013; Paul et al., 2000). The females in these studies who have

higher self-esteem may want to further boost their self-confidence by announcing their maturity which is perceived by engaging in sex. This is in contrast to a cross-sectional study in the United States which found that low self-esteem was associated with earlier sexual intercourse among the females (Ethier et al., 2006). However, the nature of this study limits the interpretation of cause and effect.

Females who reported higher frequencies of performing private religious activities were found to be at lower risk of initiating sexual initiation. However, the other components of religiosity, frequency of performing religious activities in public and intrinsic religiosity were not associated with risk of sexual initiation. Conversely, among males, none of the components of religiosity were significant protective factors against sexual initiation. Higher religiosity has been found to be associated with reduced sexual debut among adolescents in Jamaica and the United States (Ishida et al., 2011; Laflin et al., 2008). In regard to the finding that religiosity is a significant protective factor against sexual engagement, other studies seem to support that females have often been found to report higher involvement in religious activities compared to males (Gallup & Benzilla, 1992; Johnston, Bachman, & O' Malley, 1999).

Religiosity has been hypothesized to affect adolescents' sexual engagement through means of social support and social control which could act at the various levels surrounding the adolescents' development (Rostosky et al., 2004). Through religion, adolescents become more sensitive to the matters concerning their morality and the acceptable behaviour norms. Adolescents who frequently perform religious activities in public or in private are more likely to be devoted to their religion and become more aware of the punishment if they commit sins. They are more likely to exhibit greater motivations to avoid engaging in sexual intercourse. In addition, higher religiosity influences adolescents to affiliate with peers who exhibit positive attitudes which may prevent the

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adolescents from engaging in negative behaviours (Manlove, Logan, Moore, & Ikramullah, 2008).

It is rather an arduous task to measure religiosity as it is subjective (Rostosky et al., 2004). Furthermore, its measurements also vary from one study to another. A single item measure of religiosity is not sensitive to ascertain the association between religiosity and sexual initiation as found in a study in the Philippines (Gipson et al., 2014). However, in the current study, religiosity is assessed via three dimensions of religiosity which are organizational, non-organizational and intrinsic religiosity which have been shown to be valid and reliable measures of religiosity among the four major religions in Malaysia: Islam, Buddhism, Hinduism and Christianity (Nurasikin et al., 2010).

5.4.2 Familial correlates of sexual initiation

Family plays an important role in adolescents' development. Various processes which occur in the parent-adolescent relationships may affect adolescents' behaviours (Bronfenbrenner, 1986). Consistent with previous research (Boislard & Poulin, 2011; Bonell et al., 2006; Farahani et al., 2011; Lee, 2006; Price & Hyde, 2009; Santelli, J. S., Lowry, R., et al., 2000; Wight et al., 2006; Yan et al., 2010), sexual initiation was found to be associated with living in non-intact families (single parent families) among females and blended families among males in the current study. This could be due to the absence of a second adult (the mother or the father) which may affect the degree of control and monitoring over their children's behaviour in contrast to the higher degree of control and monitoring offered by the presence of both parents (Lee, 2006; Salih, Metaferia, Reda, & Biadgilign, 2015). Furthermore, adolescents who are living in non-intact and blended families are more likely to spend less time with their father or mother and may seek for their peer's companionship and support.

In contrast to the other studies (Bersamin et al., 2006; Biddlecom et al., 2009; Farahani et al., 2011; Li, Feigelman, et al., 2000; Miller et al., 2001; Sieverding et al., 2005; Sieving et al., 2000; Steinberg et al., 1994; Wight et al., 2006), none of the parenting processes such as parental monitoring, parental control, parental warmth, parental-adolescent conflict or parental attachment were found to be associated with sexual initiation among males and females in the current study. These non-associations among the parental processes and sexual initiation were also reported in studies conducted among Asian adolescents including in Malaysia (Gipson et al., 2014; Le & Blum, 2009; Maryam Ahmadian et al., 2014; Noor Ani Ahmad et al., 2014; Sychareun et al., 2013). The differences in the culture values in these countries could influence these non-associations (Sychareun et al., 2013).

5.4.3 Extra-familial correlates of sexual initiation

Among males and females, sexual initiation was associated with the perception of peers having sex and higher susceptibility to negative peer pressure. Susceptibility to positive peer pressure on the other hand, was not found to be associated with engagement in sexual intercourse among the students in this study. Higher attachment to peers seemed to produce mixed results for males and females. Among males, those who reported being in a relationship are more likely to have engaged in sex in contrast to the females.

In this current study, higher peer attachment was negatively associated with engagement in sexual intercourse among females which is supported by a cross-sectional study among adolescents in Lima (Bayer, Cabrera, Gilman, Hindin, & Tsui, 2014). However, the generalization of the finding in Bayer et al.'s study (2014) is limited due to the socio-economic status of its respondents. The respondents came from economically deprived families which may influence the association of peer attachment and sexual initiation. The finding among females could be attributed to the social support and

companionship provided by the peers (Cohen, Gottlieb, & Underwood, 2001). As a result, the females are less likely to engage in sex as a measure to relieve their stress when they can confide with their friends. Engaging in sex has been found as a mean to cope with life stressors (Brady, Dolcini, Harper, & Pollack, 2009).

In contrast to the belief that higher peer support is associated with reduced risk of engagement in sex (Carter, McGee, Taylor, & Williams, 2007), in the current study, among males, higher peer attachment was positively associated with sexual initiation. This association is supported by a study conducted among school students in New Zealand (Carter et al., 2007). The males may engage in sexual intercourse in order to experience the pleasure associated with having sex and further reinforce their relationships with the peers by identifying with the peers' behaviours (Gardner & Steinberg, 2005). In this experimental study, adolescents were found to make risky decisions in the presence of their peers.

Males who were in a relationship were found to be at risk of engaging in sexual intercourse which is supported by several studies (Chi et al., 2012; Ryu et al., 2007). Having a boyfriend or girlfriend provides the opportunity for the adolescents to engage in precoital behaviours which may culminate in intimate sexual activities. They are more likely to expand their network of friendships through either the boyfriend or girlfriend. As a result, these adolescents may be exposed to a group of new acquaintances who may exhibit more liberal sexual attitudes and they may be tempted to engage in sex (Chi et al., 2012).

The current study has also found that both males and females who reported that they perceived their peers already had sex were at higher risk of engaging in sexual intercourse. This positive association was also found in other studies among adolescents (Ali & Dwyer, 2011; Bersamin et al., 2006; Blum & Mmari, 2005; Kinsman et al., 1998; Potard et al., 2008; Salazar, Santelli, Crosby, & DiClemente, 2009; Sieving et al., 2006;

Sychareun et al., 2013; Wong et al., 2009). The perception of peers with sexual experience may influence the adolescents' perception that they will be more respected and achieve higher status if they engage in sex. However, care is needed in interpreting the study by Potard et al. (2008) as the sample size was small (100 participants) and was conducted in only one school which may affect the generalizability of the study finding to the total adolescent population in France. It is important to note that in assessing the adolescents' perceptions of their peers' sexual behaviour, these adolescents may reflect their own behaviours (Kinsman et al., 1998).

Peer influence has been identified as a significant predictive factor for sexual experience among adolescents (Algaa, 2000; Bersamin et al., 2006; Potard et al., 2008). In the current study, higher susceptibility to negative peer pressure has been found as a noteworthy factor of sexual initiation for both genders. Studies have shown that negative peer pressure demonstrate a stronger predictive role in adolescents' behaviours than positive peer influence (Haselager et al., 1998; Ma et al., 2002; Wong et al., 2009). The finding in the current study is supported by several other studies among adolescents in the United States, Lao PDR and Singapore (Laflin et al., 2008; Sychareun et al., 2013; Wong et al., 2009). Steinberg has emphasized that adolescents are more likely to make the decision to initiate sexual intercourse based on their emotional states and social influences as the maturation of the adolescents' affective system precedes the maturation of the executive functioning (Steinberg, 2004). In addition, in the presence of their peers, the adolescents will be experiencing positive arousal that need to be satisfied (Steinberg, 2004). Thus, they are more susceptible to peer pressure and less likely to deliberate on the consequences of their behaviour. The quest to fulfil their propensity for reward seeking behaviours further drives them to initiate sex.

In contrast to these studies, a longitudinal study among Dutch adolescents reported that there was no significant association between peer pressure and sexual initiation (van

de Bongardt et al., 2014). In this study, the frequency of parent-adolescent communication concerning sexual issues was found to moderate the effect of peer pressure on sexual engagement. Furthermore, the influence of peer pressure among the adolescents in this study was assessed via a single item which may yield less informative responses in contrast to the more comprehensive tool used in this current study.

Schools provide the adolescents the opportunity to advance themselves academically and socially in producing potentially successful adults in the future through harbouring quality relationships with peers and teachers (Wongtongkam, Ward, Day, & Winefield, 2014). Higher level of school engagement therefore, is able to provide a safe, supportive and nurturing environment for adolescents (Marin, 2008). School engagement, however, was not found to be associated with sexual initiation among males and females in the current study in contrast to the previous studies elsewhere which found that higher level of school connectedness was found to be a significant protective factor (Aspy et al., 2012; Bersamin et al., 2006; McNeely & Falci, 2004; Paul et al., 2000; Resnick et al., 1997; Small & Luster, 1994; Springer et al., 2006). This non-association could be related to the tool that was used to assess the level of school engagement among the students in the current study. Despite having good internal consistency and satisfactory test-retest reliabilities, the students' engagement towards their current institution rather than their former schools were assessed. As many of them had just enrolled in these institutions, there could be a possibility that they had not developed the sense of belonging or connectedness with their current institutions which may explain the non-association between school engagement and adolescents' sexual initiation.

5.5   Public health implications

The late adolescents' engagement in sexual intercourseis not to be taken lightly despite its relatively low prevalence compared to the prevalence of sexual initiation

among late adolescents in the institutions of higher learning in the other countries. Identification of the risks factors associated with sexual initiation is valuable to public health practice. The implications of these study findings are viewed from the three levels of prevention: primary, secondary and tertiary prevention.

5.5.1 Primary prevention

Primary prevention strategies should aim at promoting sexual abstinence. One of the findings in this study was that sexual debut among the adolescents occurred at an early age; more than a quarter had initiated sex at less than 16 years of age. A small proportion of them had engaged in sex at an age as early as twelve years old. Early sexual initiation has been associated with higher susceptibility to STIs including HIV, unintended pregnancies and the complications resulting from the pregnancy. Therefore, realising the importance to curb early sexual initiation, one of the risk reduction strategies, which is to increase the level of knowledge on sexual and reproductive health and strengthening adolescents' critical thinking and decision making skills have commenced early at the primary school level via the Social and Reproductive Health module in Malaysia. Emphasis should be placed on enhancing the adolescents' communication skills and developing sense of responsibility.

In Malaysia, there are a number of government and non-government agencies which have developed educational programmes to address adolescent sexual and reproductive health issues. These programmes comprised various information, education and communication (IEC) materials and training modules which serve to provide information on reproductive health and promote adolescents' accountability for their actions. Furthermore, various other modalities in providing information to adolescents have extended to include the digital media as well. A web-based health information service, the MyHealth portal initiated by the Ministry of Health, provides the adolescents

the access to accurate information on the various issues on sexual and reproductive health. In addition, the adolescents are able to enquire any doubts concerning their health from the specialists from the various fields via emails and text messages. Another website, the Professional Opinion for Youth (POYO) developed by a team of professionals from various disciplines has provided another platform for adolescents to obtain information related to sexual and reproductive health. Adolescents are able to seek consultations from the team involved in this programme via text messages. There are also various video sites accessible online which are provided to placate the adolescents' thirst for information.

These various communication tools have afforded the opportunities for the restriction caused by geographical boundaries. Some of these websites are able to provide age-relevant information to adolescents as they are allowed to enter their personal data. The websites that are provided in the native language are able to enhance the adolescents' understanding.

The National Population and Family Development Board (National Population and Family Development Board (NPFDB)) under the Ministry of Women, Family and Community Development Malaysia has established several youth-friendly centres, kafe@TEEN adolescent centre in providing services related to the various aspects of reproductive health, counselling services, adolescent health screening programmes, education and skill building activities. These centres provide the adolescents the support as they are going through physical, emotional and psychological turmoil and at the same instance allow them to improve their knowledge on sexual and reproductive health.

Adolescents' sexual engagement in this study was affected by the family structure in which non-intact families were found to be associated with increased risk of sexual initiation. A systematic review conducted on 44 programmes which focused on improving parent-child communication was associated with delayed sexual initiation (Wight & Fullerton, 2013). Therefore, parents' should be involved in parent education programmes

as they are the primary sex educators of their children. It is important for parents to establish the foundation for healthy sexual behaviour by setting clear boundaries and their expectations for their children's sexual health. In addition, they should develop the confidence to discuss sexual related issues with their children. It is also important to foster stronger family cohesion in order to provide a supporting environment for the developing adolescents. Non-intact families and blended families should be given the means to continue surviving and foster the relationships so that the children will continue growing under loving environment.

The association between the susceptibility to negative peer pressure and sexual initiation opens a new channel of intervention. In Malaysia, several agencies have recognized the role of peers in promoting a healthier sexual reproductive health among adolescents. Several programmes such as Young Doctors (Doktor Muda) and Young Friends or Partners (Rakan Muda) involving peer educators have been established. A randomized controlled trial among university students in Malaysia was conducted to assess the effectiveness of peer-led intervention programme (Jahanfar et al., 2009). The intervention involved dissemination of knowledge on HIV/AIDS, strengthening of behavioural beliefs in the support of abstinence, enhancing skills in negotiating abstinence or practise safe sex and resist peer pressure against sexual intercourse or illicit drug use. This intervention was conducted by peer-adult facilitators. This study reported that there was significant improvement in knowledge and attitudes toward HIV/AIDS but there was no improvement in risk-taking behaviours. Another randomised controlled trial conducted among school students in the United Kingdom found that peer-led sexual education resulted in some improvement of sexual and reproductive health knowledge compared to the teacher-led sexual education (Stephenson et al., 2004). Therefore, evaluations should be designed to identify the key factors of effective programmes which could be influenced by multiple contextual factors in determining adolescents' sexual

behaviour. Strong partnerships should be established with the relevant agencies to enable the sustainability of these programmes over a longer period of time. In designing risk reduction programmes, pilot testing of these programmes should be conducted in testing their feasibility, acceptability and effectiveness. Through these pilot tests, the programme developers will have the opportunity to modify the programmes according to the adolescents' responses and their needs.

There is a need to advocate the media to disseminate vital information on the current policies, guidelines and health services provided at the primary health clinics. Parents and the community must be empowered with the knowledge of adolescent sexual and reproductive health in order to create public awareness, sensitize them to this issue and further reduce the stigma related to it. In addressing the possible resistance to a comprehensive sex education in schools from parents and the community, the reports of successful sex education programmes should be made to public via the media.

5.5.2 Secondary prevention

This level of prevention is concerned with detecting sexual initiation early before the adolescents are confronted with the negative sequelae of sexual initiation. In accordance to enabling early detection, the Ministry of Health has started the School Health Service which provides health services via the School Health Team. These teams conduct scheduled visitations to the primary and secondary schools in providing preventive health care, health screening, treatment of mild cases and referral to health centres or the hospitals. However, the effectiveness of the School Health Team in detecting students who have engaged in sexual activities is not yet known. Therefore, continuous monitoring of these services should be performed and the results should be evaluated as to ensure further improvement could be taken.

The provision of comprehensive sexual and reproductive health services for adolescents at a single site can promote the utilization of these services. The Ministry of Health, Malaysia has initiated these services at the primary health clinics which are responsible for conducting interventions that address multiple needs. In order to ensure the success of such interventions, the provision of integrated sexual and reproductive health services is vital. These services include sex education, skills building to negotiate safe sexual practices and family planning that are culturally appropriate. Furthermore, dedicated and qualified staffs are essential to ensure better service delivery.

In regard to the law, under the English Family Law Reform Act 1969, children aged 16 and above have reached the legal right to give consent for their treatment (Noor Azira Zainudin, Anita Abdul Rahim, & Mohamad Afiq Taqiudin Roslan, 2013). Under the Child Act 2001, examination and treatment of a child (which is defined as those who are less than 18 years of age), the consent must be provided by the protector or a police officer (Noor Azira Zainudin et al., 2013). In contrast, based on the Gillick principle, children who are less than 16 years old if they are considered matured to make their own decisions, they are allowed to give consent for medical treatment. Therefore, in Malaysia, there is a legal ambiguity with regard to the age of consent for medical treatment. This could lead to possible restrictions in offering healthcare to adolescents who are less than 16 years old. Thus, a specific age which allows a child to give consent must be determined to avoid unauthorized or illegal care given to these adolescents.

Health care providers should provide the equivalent level of care without any discrimination to all adolescents regardless of age, social status or cultural background in allowing the adolescents to gain the respect that they are entitled to. Under the Malaysian Medical Council's and the Nursing Board Code of professional conduct, the healthcare providers are required to maintain the confidentiality of privileged clients' information.

As a result, adolescents will be more forthcoming with their problems and are more likely to attend the proceeding appointments in assuring continuation of care.

5.5.3 Tertiary prevention

Tertiary prevention ensures that the necessary measures are taken to minimize the sequelae of STIs and unwanted pregnancies. Despite the Ministry of Health's commitment to provide an adolescent friendly health service, there remain gaps in its delivery. Most of the health professionals have to use their judgement concerning the adolescents' rights and their religious and personal beliefs in the face of the current policies, regulations and guidelines when dealing with sensitive issues such as practising safe sex. This dilemma has resulted in lack of uniformity in the implementation of health services at the ground level.

In addition, despite sending healthcare staff for training on adolescent care and counselling techniques, the quality of the services rendered to the adolescents have not been evaluated (Huang & Lim, 2012). Thus, the healthcare providers who lack the necessary skills to deal with sexuality issues may fail to provide sufficient care for the adolescents.

Adolescents who are found to be pregnant should be treated with the upmost confidentiality to gain their confidence. They should be counselled on the possible outcomes of the pregnancy and the precautionary measures to prevent future pregnancies. Their health should be optimized in assuring a healthier pregnancy and safe delivery through routine follow-up visits and health education. These adolescents should also be provided the information on the organizations that could offer further assistance.

5.6 Theoretical implications

This study was constructed based on the adaption of Bronfenbrenner's Social-ecological Model which hypothesized that adolescents' behaviours are determined by the multiplicity of layers in the individual's immediate environment. It was found that individual, familial and peer factors influence adolescents' sexual initiation in this study. The findings of this study further strengthen the hypothesis that interactions among the components in the adolescents' immediate environment do exist. For example, living in non-intact families may predispose adolescents to higher susceptibility to peer pressure as they seek companionship and support from their peers. Among females, higher religiosity may result in affiliations with peers with positive behaviours and reduce their risk of engaging in sex. Gender norms are evidenced in these interactions as found in this study. Based on the findings, risk reduction strategies should focus on the gender differences as well as all the components in the adolescents' immediate environment.

5.7 Strengths of study

This study contributes to the knowledge of the predictors of sexual initiation among late adolescents in six institutions of higher learning in the Central region, Malaysia. Studies in Malaysia have examined the factors among adolescents in a younger age group but not many have concentrated on late adolescents. Furthermore, this is one of the few studies that focus on students in the tertiary level institutions in Malaysia. They are predisposed to a range of health related conditions resulting from their entry into a new and rather different environment which provide them with the opportunity to satisfy their sexual curiosity.

This study has stratified its analyses according to gender since previous findings have emphasized the differences of predictors across gender. Therefore, intervention could be tailored specifically for each gender. In addition, the prevalence of sexual

behaviours were described using the 95% confidence intervals which provide further confidence that the true value of the population parameters are within the intervals.

The instruments used in this study have been shown to have good internal consistencies and test-retest reliabilities. Furthermore, the susceptibility to peer pressure was measured using the Susceptibility to Peer Pressure Scale which has been validated among students in three institutions of higher learning. This tool has proven to be a valid and reliable instrument in addition to its invariance across gender.

The large sample size increases the power of the study which enables the detection of meaningful differences in the association among the risk factors and sexual initiation. Large sample size is more likely to increase the representativeness of the target population which will increase the generalizability of the findings of this study to the target population.

Resiliency among late adolescents was also examined in this study which has rarely been investigated in examining adolescents' sexual behaviours, despite of its non-association with sexual initiation. Nevertheless, this could lead to future research in examining the association between resiliency and other risky behaviours.

5.8   Limitations of study

The findings of this study should be interpreted in the light of several limitations which need to be mentioned. This study used a dichotomous measure of sexual experience: ever had sex versus never had sex. A study that takes into account the frequency and the nature of sexual activities would provide a more comprehensive understanding of the adolescents' sexual development.

The design of this study is cross-sectional which prohibits the identification of the causal relationships between the predictors and the outcome variables. For example, risky behaviours such as current smoker and lifetime alcohol use were identified to be

associated with sexual initiation among males but it could not be determined whether engagement in sexual initiation results in the adolescents commencing cigarette smoking or vice versa. The same goes to the females who had reported smoking cigarette at least once in their lifetime, was found to be at higher risk of engaging in sexual initiation but causal relationships could not be determined. A longitudinal study design will be able to overcome this shortcoming.

The next limitation concerns the representativeness of the sample. Chinese were under-represented in this study which may limit the findings to this group. Furthermore, the narrow range of age group in this study limits the identification of predictors of sexual initiation in younger age groups. This study enrolled institutions in the central region only which may limit the generalizability of the study findings. However, based on the descriptive analysis, there were representative samples from all the regions.

As with any self-report measures, the findings of this study may be subjected to the methodological biases such as recall and reporting biases (under-reporting or over-reporting). For instance, the students may have difficulty in recalling their age of sexual debut as it may have occurred several years prior the survey or the number of sexual partners. However, self-reports are considered as reasonable means for obtaining information on issues that could not be assessed objectively.

Another limitation faced in this study was the potential of socially desirability biases as sexual activity is a taboo subject among Malaysian population. There is a possibility that the respondents may provide responses that are untrue. However, these issues may be minimised through the administration of self-administered questionnaire and assurance of anonymity. There were several measures taken by the researcher in assuring anonymity in this study. The respondents were not required to provide any personal identification or any contact information. Since no personal identification was taken, they were not at risk of being judged for any negative behaviour that they had

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volunteered to share. In addition, the questionnaires were distributed to the respondents by the researcher herself and were returned in sealed-envelopes. Before commencing the study, an informational letter providing the potential respondents of the purposes of the research and measures of data collection and storage was included in the envelopes which also contained the questionnaires. The potential respondents were assured of confidentiality throughout the study. During the administration of the questionnaires, the lecturers were not allowed to stay in the class as to avoid any potential influence from the lecturers.

The assessment of pubertal onset among the males may result in a peripubertal age instead of the exact age of puberty and is subjected to recall bias. In order to reduce this recall bias, the assessment of puberty was carried out via asking the males specifically the age of first nocturnal emission and first masturbation instead of focusing on their physical changes such as pubic and facial growth, change in the voice or growth of the genitalia.

Furthermore, in this study, the measure for the type of contraception use only captured the contraception at the last sexual intercourse; thus, the consistency in the contraception use during the adolescents' sexual activity was not assessed. The type of contraception at last sexual engagement was used to reduce recall bias as those who are sexually active may be able to recall the contraception that they have used accurately.

Some inconsistencies were observed when the respondents answered sexual behaviour questions. For example, when questions on the number of lifetime sexual partners and number of sexual partners in the past three months were asked, there were a small number of respondents who had provided inconsistent answers. There were also respondents who had admitted that they had engaged in sexual intercourse but left the questions on their other sexual behaviours blank. One of the method which could be used to overcome this issue was the usage of audio computer-assisted survey instruments

(ACASI) which had been shown to decrease items' non-response rates and improved the sexual behaviours' reporting rate (Langhaug et al., 2010).

Although the logistic regression analyses for both male and female students had determined the significant risk factors, the percentage variance explained by the factors is modest for the two final models. This suggests that there are other predictors in the familial or extra-familial characteristics that were not examined in this study. The small R square for females, which was 15 percent might be explained by the small number of female students who had had sexual initiation which was 38 compared to the number of male students, 138.

Forced sexual experience was not focussed in this chapter since the assessment of forced sexual experience was through a single item: "Were you forced to have sexual intercourse for the first time?" There were no follow up questions and this issue was not one of the specific objectives.

This group of adolescents are less likely to know their families' income accurately. So the families' income obtained from the respondents were only an estimate from the respondents which could be inaccurate. This was not a valid measure of family's income, a more accurate method is obtaining the information from the parents which was certainly less likely in this study.

Although there were several limitations faced in this study, the findings of this study are important in understanding the current trend of sexual behaviours among adolescents in institutions of higher learning. Furthermore, through these findings, interventional programmes could be planned tailored for these students specifically.

5.9   Conclusion of Chapter Five

This study has reinforced the importance of focusing on the late adolescents' sexual and reproductive health as this group of population has been deemed as healthy and not

much attention has been bestowed upon them. More attention should be placed on curbing the rate of unprotected sex and the dependence on ineffective means of contraception in preventing pregnancies and sexually transmitted infections. The risk factors identified in this study have originated from the components in the adolescents' immediate environment and the resulting interactions among these components may have influenced the adolescents' engagement in sexual initiation. It is imperative to understand the brain mechanics in contributing to the adolescents' engagement in sexual initiation in designing and implementing risk reduction strategies. These strategies should be tailored according to the gender differences.

CHAPTER 6 : CONCLUSION

6.1 Research Statement

This cross-sectional study was conducted to determine the prevalence of sexual initiation and other related sexual behaviours among late adolescents and to examine the correlates of sexual initiation among this group of population. The Phase I of this study commenced by establishing the psychometric properties and the factorial invariance across gender of the Susceptibility to Peer Pressure Scale, one of the instruments used in the cross-sectional study. This was proceeded by Phase II which concentrated on the prevalence of sexual initiation and other related sexual behaviours as well as the correlates of engagement in sexual initiation. The self-administered questionnaire which was utilized in this study comprised several instruments to assess the adolescents' sexual behaviours, individual's, familial and peer characteristics and school connectedness.

6.2 Summary

The Phase I of this study provided evidence that the Susceptibility to Peer Pressure Scale possessed good psychometric properties in regard to its construct validity, internal consistencies and test-retest reliabilities. Furthermore, the multi-group analysis has established that the measurement of peer pressure across male and female revealed consistent results.

The Phase II of this study which involved 1572 late adolescents in six public and private institutions of higher learning in the Central region of Malaysia, found that 9.8% of those surveyed had engaged in sexual initiation. Approximately one fifth (18.1%) of the male adolescents had previous sexual experience compared to 4.1% female adolescents. Among the students, 37.1% had engaged in early sexual initiation. More than half of the students were sexually active. A fifth of these sexually active students admitted having sex with multiple sexual partners. Approximately one quarter (23.8%) of the

sexually active females had engaged in unprotected sex compared to 13.2% sexually active males who had unprotected sex. A fifth of the students with previous sexual experience had history of impregnating their sexual partners or had been pregnant as a result of unprotected sexual intercourse.

In regard to type of contraception, approximately one fifth of the students had unprotected sexual intercourse during their last sexual encounter. Wihdrawal was the commonest method reported by the students in preventing pregnancy. Almost half of the female students reported that their sexual partners opted for withdrawal method. Among the students, only a third reported condom use at their last sexual encounter.

The risk factors associated with sexual initiation among the late adolescents in this study were found to be a combination of individual, familial and peer factors in accordance to the Bronfenbrenner's Social ecological model. This study revealed some gender similarities and dissimilarities in terms of the risk factors of sexual initiation. The peer domain has proven to be a dominant risk factor for both male and female students. Perception of peers having sex and higher susceptibility to negative peer pressure were associated with higher risk of sexual initiation. Another domain shared by both gender was the familial characteristic. Living in blended families among males and non-intact families (divorced) among females were found to influence sexual initiation among males and females in this study.

Modifiable individual factors such as current cigarette use and lifetime use of substances such as alcohol and illicit drugs were significantly associated with sexual initiation among males. On the contrary, the non-modifiable risk factors associated with sexual initiation among the males were Malay ethnic group and early pubertal onset. Males who admitted history of engaging in a relationship with the opposite sex and more attached to peers were also found to be at risk of having sexual initiation.

Sexual engagement among females was significantly associated with lifetime cigarette use and higher self-esteem. In contrast to males, females with higher attachment to peers were found to be less likely to engage in sex. Females who reported that they were more religious were less likely to engage in sex.

The risk factors identified in this study supported the influence of the layers surrounding the developing individuals in the social ecological model on their behaviours. Each layer was crucial in determining adolescents' sexual initiation. These layers projected their influence in synergy with each other. Thus, each layer should not be viewed in isolation as Bronfenbrenner had emphasized the inter-relationship between the components of the social ecological model. Interventional measures could be optimized by merging these components in assuring better outcomes.

6.3 Recommendations

6.3.1 Strengthening of the implementation of health programmes and services

Efforts toward providing health care and services to adolescents have intensified following the Malaysian government signatory to the 1994 International Conference on Population Development Programme of Action. The Ministry of Health through the Family Health Development Division has established the Adolescent Health Unit in 1995. This unit is responsible for designing, coordinating and monitoring of adolescents' health programmes via various specific indicators.

At the ground level the limited number of healthcare staff has resulted in the need to multitask. They are heavily burdened with running the various health programmes for the different populations (women, children, adolescents, adults and elderly) and at the same time providing care for the patients. As a result, the implementation of the programmes may be compromised and may not reach the set targets. In addition, these overwhelmed staff are also expected to complete the monthly return records with data

that are recorded from another source and at the same time they have to enter the data into the online system for the various programmes. Thus, there is a possibility that the quality of the data that are sent to the state and national level is affected. The usage of both paper and online records are time consuming which further increase the burden of the healthcare staff. Teleprimary care system is a useful tool in enabling the provision of real time data of patients' care. This system also allows the collection and analyses of data on population health. Therefore, efforts toward upscaling the current teleprimary care system should be taken to improve its utilization and the quality of data. In order to ensure a more efficient monitoring of health services, this system should be extended to the primary health clinics in the smaller districts as well as the private care clinics. The use of paper records can be tapered which in turn may provide the healthcare staff with ample time to provide better care.

The collected data should be analysed regularly to identify the gaps and the constraints as well as the related emerging issues associated with the implementation of the programmes. The Adolescent Health Unit is responsible to address these gaps and the issues related to the implementation of these programmes to ensure their sustainability. Furthermore, both quantitative and qualitative research should be conducted to obtain information which will assist in developing solutions for the identified issues.

The National Adolescent Health Policy which was launched in 2001 aimed primarily to empower adolescents to be responsible for their physical, mental and social health. In assuring this empowerment, the policy focuses on providing appropriate knowledge and building skills to promote the uptake of healthy behaviour. Even though this policy has not stressed explicitly on the importance of focusing on adolescent sexual and reproductive health, the Ministry of Health has developed the National Adolescent Health, Plan of Action, 2006-2020 which addresses five priority areas of adolescent health. These priority areas include adolescent sexual and reproductive health and high

risk behaviours. Furthermore, the Ministry of Health and the Ministry of Women, Family and Community Development have appointed the National Social Council which is chaired by the deputy prime minister as the platform to ensure the strategies set in the plan of action are successfully implemented. In 2004, the responsibility towards these social and health issues was placed at the state and district levels via the State Development Council, the State Development Working Committee and the Division of Development Working Committee.

On the other hand, efforts should also focus on strengthening the sexual and reproductive health services implemented at the primary care clinics in the government sector. The National Institute of Health and Clinical Excellence (NICE) has developed several guidelines with regards to the sexual health interventions based on an online Delphi-method questionnaire survey (Cook, Corbett, Downing, Crossley, & Bellis, 2007).One of the recommendations is to target adolescents who are at high risk of contracting STIs and provide sexual health counselling by trained health professionals at every opportunity.It is also important to encourage the sexual partners to come for testing and treatment. The NICE guidelines also recommend that vulnerable adolescents (those 18 years or younger) to receive one to one sexual health advice concerning prevention of STIs and contraception. Therefore, in Malaysia, a comprehensive range of health care services with emphasis on preventive and promotive services for adolescents in a safe environment and convenient location would assist in improving health outcomes. The availability of these services should be made public via mass media, schools and institutions of higher learning

The waiting room is an ideal place to provide health education as the adolescents are waiting for their turn for consultation. Computers with interactive educational software may also be used as an adjunct to the talks given by the healthcare staffs. A randomized controlled trial conducted among college students in the United States

reported that sexual risk-reduction materials via a brief computer-delivered intervention (CDI) resulted in reduced risky sexual behaviours (Kiene & Barta, 2006). This approach utilized the Information-Motivation-Behavioural Skills Model of Health Behaviour Change and the Motivational Interviewing techniques.

In view of the rapid turnover of staff in the primary health clinics, there is a need to conduct refresher courses for the healthcare staff to update their knowledge on adolescent sexual and reproductive health and reinforce guidelines to operate adolescent friendly health services. It is also important to ensure that stigmatization or discrimination towards the issues related to adolescent sexual and reproductive health is not practised by the healthcare staff as this would discourage the adolescents to seek healthcare. EngenderHealth, a non-profit agency in the United Kingdom which aims to promote gender equity in reproductive health and family planning has developed a participatory curriculum for healthcare workers (EngenderHealth, 2005). This curriculum aims at increasing the awareness of the healthcare staffs about stigma and their own attitudes and behaviours in dealing with sensitive issues such as HIV/AIDS. Similar training module should be adopted in alleviating the stigma towards unintended pregnancy and sexually transmitted diseases among adolescents in the local setting. On the other hand, one of the approaches toward improving the quality of the services is via the introduction of a mentorship programme. This could be established by appointing the experienced staff (mentor) to assist the junior staff (mentee) in enhancing the less experienced staff's skills in implementing the health programmes.

In short, these services should be made more adolescent friendly in terms of its accessibility and the treatment offered. As the adolescents are more likely to come to these health clinics for a single visit, the healthcare staffs should be able to utilize this opportunity to provide healthcare, counselling and risk reduction education to them effectively. However, it is important to ensure that the adolescents continue seeking for

assistance; the adolescents could be contacted via phone or email to ask how they are doing. They should be encouraged to come to the clinics whenever they want to seek follow up information, advice or treatment.

Healthy lifestyle campaigns and youth camps to identify adolescents at risk should be continued in schools, the Youth Training Centres, institutions of Higher Learning and other public areas such as the shopping complexes and sports centres. This is to detect the associated risk behaviours such as cigarette smoking, alcohol consumption or illicit drugs use which have been associated with sexual initiation education. It is also important to identify adolescents who are sexually active and engaging in unprotected sexual activities during these screenings. This will enable appropriate measures to be taken to prevent the negative consequences of unprotected sex. However, such programmes should be periodically monitored to assess the effectiveness and to detect any barriers associated with their implementation.

Furthermore, adolescents should be recognized as important stakeholders in the designing and implementing of the preventive programmes by providing mechanisms for their participation such as including adolescents' representatives in steering committees or youth-led councils. Through such participation and involvement, the adolescents will be able to voice their needs and recommend strategies toward promoting a healthier sexual and reproductive health. These programmes should be tailored to meet their specific needs in order to ensure success. There is a need to provide a platform at the national level where these adolescents could meet with the policymakers and share their views.

Furthermore, periodic national surveys concentrating on adolescent sexual and reproductive health should be conducted to provide information on the prevalence of sexual experience among adolescents and other related sexual behaviours. Data related to the negative consequences of unprotected sexual intercourse such as sexually transmitted

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infections, unintended pregnancy and abortions would be valuable to ensure that future policies, programmes and services are designed and evaluated to meet the needs of the adolescents.

The current school health programme (Young Doctors and Young Friends or Partners) and the sexual and reproductive health programmes and services can be evaluated utilizing the RE-AIM framework (Cook, Mason, & Phillips-Howard, 2011). This framework encompasses five dimensions of assessment: reach, effectiveness, adoption, implementation and maintenance which was originally developed by Glasgow et al. (1999) in the assessment of the public health impact of a health promotion strategy. In accordance to this framework, a group of researchers in the United Kingdom had assessed the impact of sex and relationships education (SRE) on teenage pregnancy(Cook et al., 2011). Similarly, the above mentioned public health intervention programmes can be evaluated via the five domains: the number or the proportion of adolescents whose sexual behaviour can be affected by the programmes (MacCallum, Widaman, Preacher, & Hong), the proportion of adolescents who remain sexually abstinent or practise safe sex (Effectiveness), the involvement of other organizations in these programmes (American Academy of Pediatrics), the extent to which the programmes are delivered as intended (Implementation) and the extent to which the programmes become part of the norm of the participating organizations (Maintenance). These information can be obtained via service data collection and interviews with key informants.

6.3.2 Strengthening of sexual education

Improving access to accurate information on sexual and reproductive health for adolescents is an important aspect that has been made a national priority. This is in accordance to the several international agreements: Convention on the Rights of the Child (CRC) (1989); Committee on the elimination of discrimination against women (CEDAW)

(1982), The 1994 International Conference on Population and Development (ICPD), The Fourth World Conference on Women in 1995 and the World Summit on children in 2002 (World Health Organization (WHO), 2011). Education on sexuality can empower adolescents through the provision of scientifically accurate information, relevant skills, attitudes and values to protect and maintain their own sexual health. Enhancing the adolescents' critical thinking and decision making skills will enable them to make well-informed decisions on sexual health related matters. However, the adoption of this treaty is often not systematic or harmonized (United Nations Educational, 2013).

The Ministry of Education has taken the initial step toward providing the adolescents with sexual and reproductive health knowledge through the Family Health Curriculum since 1989. However, the elements of this curriculum have been combined with other subjects which result in limited information received by the adolescents. Students in primary schools have been exposed to this knowledge via the Physical and Health Education module which has started in 1994. In improving the delivery of the sexual and reproductive health information to the students, the Social and Reproductive Health Education module (PEERS) has been introduced by the Ministry of Education in schools in 2011 following the launching of the National Policy on Reproductive Health and Social Education. The introduction of this policy in 2011 has provided further emphasis on increasing access to reproductive health education and services regardless of age. In accordance to this policy, this reproductive health education has been expanded to cover students in primary school in Year One as well as the youth trainees in the National Service Training Centres.

A research which was conducted in secondary schools in Malaysia has discovered that one of the barriers in the implementation of school-based sexual and reproductive health in schools was the lack of training of the teachers on this subject matter (Kamrani, 2011). In addition, the delivery of sex education in schools was found to be affected by

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the cultural norms practised in the countries as reported by a study conducted by UNAIDS on school-based sex education in Asia and the Pacific including Malaysia (Smith, Kippax, Aggleton, & Tyrer, 2003). As a result of the sensitivities which were related to religion, community and the teachers' awkwardness, the students were found to have received fragmented information concerning sexual and reproductive health. Smith et al. (2003) also reported that in Malaysia, parents, religious leaders and the government officials were against the discussion about condoms use in preventing sexually transmitted infections. Furthermore, sexual education in schools is viewed as inferior to the more 'cognitive' subjects such as physics, chemistry or mathematics as the students are not examined on this subject (United Nations Educational, 2013). Thus, less attention is paid to ensure that the implementation of the sexual and reproductive health module is according to the set objectives. Therefore, in order to ensure commitment by teachers and the students, this module should be considered for inclusion in the students' examinations.

Thus, more evaluation on the effectiveness of the current sexual education implemented in schools especially with the introduction of this module to the very young children beginning at seven years of age should be conducted using epidemiological data, reports or surveys. In addition, a platform for the students, parents and teachers to voice their concerns regarding the delivery of the sexual and reproductive health module should be established in providing vital information to the stakeholders with the aim of improving the mode of delivery of this sex education.

Institutional capacity building activities such as strengthening the capabilities of the teachers to teach this subject could be implemented via the application of research findings on the success of sexuality education conducted locally and in other countries. It is important to tackle the issues related to the cultural sensitivity to facilitate and improve the delivery. These teachers should develop a non-judgemental attitude towards adolescents' sexuality in order to build their confidence and ease their discomfort in

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teaching this module. The training programmes for teachers should be evaluated to identify its effectiveness and weaknesses in order to strengthen the delivery of sexual education in schools. The teachers who are appointed to implement the sexual education module should be encouraged to utilize the diverse and interactive methods in order to promote interactive and participatory learning. For instance, a randomized controlled trial have evaluated the effectiveness of the theory-based intervention programme, 'It's Your Game: Keep it Real (IYG)' among students in the middle schools in the United States (Tortolero et al., 2010). This programme comprised classroom and computer-based HIV/STI and pregnancy intervention programme which have found to successfully delay adolescents' sexual engagement. Focus should also be placed on fostering critical thinking and problem solving skills. One way forward may be to have these teachers committed to teaching the sexual education module without commitments of teaching the other subjects.

Furthermore, the environment of the class also plays an important role in assuring the success of this sexuality education. These classes could be segregated by gender so as to avoid discomfort in addressing gender-related issues of sexual health. Furthermore, the students should be encouraged to express their views in a supportive environment.

A review conducted by UNESCO on sexuality education in 87 countries (developing and developed countries) had revealed that 37% of the programmes had successfully delayed sexual initiation (UNESCO, 2009). This review also reported that sexuality education has resulted in lower frequency of sexual intercourse and the number of sexual partners. Provision of comprehensive sexuality education could be a way forward in promoting sexual well-being of adolescents. Systematic reviews suggest that the abstinence-only education has not produced convincing results in reducing the prevalence of sexual initiation (Kirby, 2001; Trenholm et al., 2007). The National Survey of Family Growth (NSFG) in 2003 among 1719 adolescents in the United States which

examined the effects of no formal sex education, abstinence-only education and comprehensive sex education reported that those who received comprehensive sex education were less likely to engage in sexual intercourse or contract sexually transmitted infections (Kohler, Manhart, & Lafferty, 2008).

The provision of sexuality education and sexual and reproductive health services should be linked in building a supportive environment for adolescents to reach a healthier sexual and reproductive health. This could increase their awareness of the health services that are provided to them and promote the utilization of these services.

6.3.3 Parental roles

Sexuality education recognises the primary role of parents and the family as the source of information, support and care in fostering healthier sexual and reproductive health of the adolescents. Engaging the parents towards promoting a healthier sexual and reproductive health is an important step as the parents are the earliest contact that the adolescents have. Enhancing their parenting and communicating skills would enable the adolescents to have a supportive and open relationship. The adolescents would be more comfortable to share their sexuality problems with their parents rather than obtaining inaccurate information from unknown sources. Thus, steps must be taken to support and enhance the parents' knowledge and skills on sexual and reproductive health. The establishment of the Malaysian Care for Adolescent Project (MyCAP) by the Department of Social and Preventive Medicine, University of Malaya has enabled the parents to enhance their knowledge on the adolescents' sexual and reproductive health. This is a website-based programme that provides access to both parents and adolescents regarding sexual and reproductive health information. Furthermore, strengthening of parent-adolescent relationships could assist in the creation of an enabling environment leading to healthier adolescents.

Support for adolescent sexual and reproductive health is needed from parents especially with regard to consent for medical care. The allies among parents could be created by launching a sensitization campaign which comprised health education and awareness-raising on sexual and reproductive health issues. Parents need to be convinced of the importance of sexual education in schools which could be achieved by disseminating research findings on the effectiveness of sexual education on adolescents' sexual behaviours, the content of the curriculum and the rationale of conducting sexual education. The parents should be provided the communication channel to clarify their doubts.

6.3.4 Peers' roles

The role of peers in influencing adolescents' sexual behaviours should not be taken lightly. Peers have the ability to alter the social norms of a group through influence and role modelling of the other members in the group (Strange, Forrest, Oakley, & Team, 2002). In Malaysia, peer-led programmes which are designed and tailored to the adolescents' needs have been implemented such as Young Doctors (Doktor Muda) and Young Friends or Partners (Rakan Muda) which empower adolescents as a medium to convey sexual and reproductive health knowledge and promote healthy lifestyles. These peer groups provide support to their fellow friends and at the same time are able to change adolescents' behaviours. However, a mixed-methods study assessing the peer educators' perceptions of their training to become peer educators and their roles have stressed on the importance to identify the characteristics of peer educators to ensure the success of the program (Beshers, 2007). Therefore, future studies should examine these characteristics which are linked to the peer educators' ability to persuade his or her peers to reduce sexual risk taking behaviours.

6.3.5 Community roles

The community should also be engaged in the interventional programmes. This can be achieved through the involvement of the political and religious leaders, the non-government organizations and the mass media. They can be educated on adolescent sexual and reproductive health issues especially those concerning the cultural aspects in relation to gender inequality. Through these efforts, it is hoped a more positive social norm can be created to support a healthier adolescent sexual and reproductive health.

6.3.6 Integrated information system

In regard to an integrated information system for data on adolescent sexual and reproductive health, the Department of Social and Preventive Medicine, University of Malaya has created a single point of contact for the compilation of research and reports related to adolescents' health known as the Malaysian Clearinghouse Centre for Adolescent Health (MyCCAdH). This is one of the important strategies set in the National Adolescent Health Policy. These data will provide the necessary information to strengthen the current programmes and services. Therefore, the availability of this database should be made known to the other agencies and the public to maximise the utilization of these data.

6.4   Recommendations for Future Research

Future research should concentrate on longitudinal studies to establish the causal relationship of the predictors of sexual initiation among adolescents. This would address the limitation faced in this study in which the temporal precedence of the identified risk factors could not be determined. The establishment of these risk factors would provide sound evidence for the relevant stakeholders to take actions in combating this issue.

Furthermore, in order to comprehend the basis of adolescents' decision to engage in sexual initiation, it is imperative to conduct qualitative studies. Through in-depth interviews, the adolescents will be able to share their reasons behind their decision to have sex. Their contraceptive practices can be explored further and their perspectives on these contraception methods can be uncovered. This information will certainly assist policymakers in formulating the future preventive programmes.

In order to assess the effectiveness of interventional programmes such as peer-led sexual educators, interventional studies assessing its effectiveness should be carried out. The ability of peer facilitators in conveying valid information on adolescents' sexuality and providing support can be investigated via these studies. In addition, these studies can also be performed on the different teaching methods utilized in the sexuality education module to determine the most effective method that will result in improved sexual and reproductive health knowledge and reduced sexual initiation among the students.

In this study, only the late adolescents in the institutions of higher learning were involved. It would be a worthwhile effort to extend this study to the other adolescent populations such as those in schools, school-drop-outs or adolescents in youth training centres. Identification of the risk factors linked with sexual initiation among these populations would enable more comprehensive and targeted interventions to be designed and implemented.

The other aspects related to sexual behaviours, for example, oral and anal sex were not investigated in this study. These behaviours are not without adverse consequences. In order to tackle the issues related to sexual and reproductive health, these components of sexual behaviours should also be included in future studies. Studies which determine the prevalence of anal and oral sex as well as the associated risk factors would add to the current information on the adolescent sexual and reproductive health. These data would assist in the development of programmes to curtail these behaviours.

The role of culture in influencing the decision to engage in sexual initiation was not investigated in this study. It is one of the components of the Bronfenbrenner's Social ecological model. In Malaysia, multicultural values are practised among the population. A validated instrument should be developed and utilized among the adolescents in determining the effect of culture on adolescents' sexual behaviour. Such studies are warranted in assuring the success of interventional programmes.

There could be a possibility of response bias in dealing with sensitive issues such as sexual initiation. Therefore, other methods of data collection such as computer-assisted self-interviewing (CASI) which has been shown to improve reporting on sexual behaviours could be utilized (Cooley et al., 2001; Langhaug et al., 2010; Romer et al., 1997; Spark et al., 2015). This method could assist in reducing social desirability bias, providing consistent responses and reduce missing data.

Although there is much work to be done in reducing the prevalence of sexual initiation specifically the rate of unprotected sexual intercourse, this study is a launching pad for future efforts toward a healthier sexual and reproductive health among adolescents.

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APPENDICES

Appendix A: Operational Definitions

Terms	Definitions
Early sexual debut	Respondents who had sexual intercourse before the age of 16 years (Ramrakha et al., 2000).
Late adolescents	Refer to individuals aged 17 to 19 years (United Nations Children's Fund (UNICEF), 2006).
Lifetime multiple sexual partners	Respondents who have had reported having four or more sex partners during their lifetime (Center for Disease Control and Prevention (CDC), 2008).
Peer pressure	Occurs when people who are the same age as the respondents encourage or urge the respondents to do something or refraining from doing something despite the respondents' actual opinion about that activity (Mortimer, 1991).
Sexual initiation	Heterosexual intercourse which is the insertion of penis into vagina before marriage (Ashby et al., 2006; Oljira et al., 2012).
Risky sexual behaviours	These include early sexual intercourse, engagement in sexual intercourse in the past three months, history of sexual intercourse with multiple sexual partners or unprotected sexual intercourse (Yi et al., 2010).These practices increase the person's risk of contracting sexually transmitted infections (Paul et al., 2000).
Sexually active	Adolescents who have had sexual intercourse in the past three months prior to the study(Center for Disease Control and Prevention (CDC), 2008).

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Appendix B: List of Publications And Papers Presented

Publications

1. Cross-Cultural Validation and Psychometric Properties of the Susceptibility to Peer Pressure Scale among Late Adolescents in Institutions of Higher Learning in Malaysia (The revised version has been submitted to the Journal of Advanced Nursing.)

2. Role of Individual, Family and Peers in Sexual initiation among Late Adolescents attending Institutions of Higher Learning in Malaysia: (This manuscript has been accepted to be published in the Asia-Pacific Journal of Public Health.)

Papers Presented

1. "The Malaysian Version of Susceptibility to Peer Pressure Scale: Examining Its' Construct Validity among Students in Institutions of Higher Learning". Presented at the 3rd International Public Health Conference & 20th National Public Health Colloquium, Kuching Sarawak, 27th-29th August 2013 (Oral presentation).

2. "Sexual initiation among Late Adolescents Attending Institutions of Higher Learning: The Role of Individual, Family and Peers. Presented at the 5th International Public Health Conference at Seri Pacific Hotel, Kuala Lumpur, 26th-27th August 2015 (Poster presentation).

Award

1. **Best oral speaker** (Epidemiology/ Biostatistics) at 3rd International Public Health Conference & 20th National Public Health Colloquium, Kuching Sarawak,27th-29th August 2013.

Conference Proceeding

1. Shazimah A. Samad, Noran N. Hairi & Maslinor Ismail (2013).The Malaysian Version of Susceptibility to Peer Pressure Scale: Examining Its Construct Validity among Students in Institutions of Higher Learning. *Malaysian Journal of Public Health Medicine*, *13*(Suppl 1), 1.

Appendix C: Author's Contribution

This thesis is the product of the research conducted by the author as the principal investigator under the guidance and support of the primary supervisor, Associate Professor Dr Noran Naqiah Hairi and the co-supervisor, Dr Maslinor Ismail, Department of Social and Preventive Medicine, Faculty of Medicine, University of Malaya.

The author was responsible in the conception and design of the study with contribution of ideas from Associate Professor Dr Noran Naqiah Hairi and Dr Maslinor Ismail. Data collection in each selected institution of higher learning was conducted by the principal investigator herself. Data entry was assisted by Mrs Sarah Binti Junus and Miss Nurul Syafika Binti Amir Hamzah. Data analyses and interpretation of the results were primarily performed by the author under the guidance from Associate Professor Dr Noran Naqiah Hairi.

The entire draft of the thesis was written by the author herself and was reviewed by the supervisors. Various refinements to the draft were proposed and revisions were made by the author.

Kesihatan dan Aktiviti yang Berkaitan Remaja

BORANG SOAL-SELIDIK

JABATAN PERUBATAN PENCEGAHAN DAN KEMASYARAKATAN

UNIVERSITI MALAYA

Untuk diisi oleh penyiasat:

KOD UNIVERSITI :   TARIKH:

ID PESERTA   :   FAKULTI / JABATAN :

Arahan kepada semua peserta

Assalamualaikum dan selamat sejahtera buat pelajar yang dihormati sekalian,

- Kajiselidik ini adalah berkenaan kesihatan reproduktif di kalangan pelajar yang melanjutkan pengajian di institusi pengajian tertiari.
- Hasil kajian ini diharapkan akan menyumbangkan maklumat mengenai faktor risiko dan faktor pelindung terhadap kesihatan reproduktif remaja.
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- Sesetengah soalan mungkin agak sensitif dan mungkin menyebabkan ketidakselesaan.
- Kerjasama anda amat dihargai dan saya dahulukan dengan ucapan terima kasih.

Terima kasih banyak-banyak di atas bantuan anda

Adolescents' Health and Related Activities

QUESTIONNAIRE

DEPARTMENT OF SOCIAL & PREVENTIVE MEDICINE

UNIVERSITY OF MALAYA

To be completed by researcher:

UNIVERSITY CODE: [   ]   DATE: [   ]

ID   : [   ]   FACULTY/
                                  DEPART : [   ]

Instructions to all respondents

Assalamualaikum and a very good day to fellow respected students,

- This study concerns the reproductive health of adolescents attending tertiary level institutions.
- The outcomes of this study are hoped to contribute to the current knowledge of risk and protective factors of adolescents' reproductive health.
- I am looking forward for the pleasure of your cooperation to **ANSWER ALL** questions honestly based on your own experience.
- All the information that you have shared are **STRICTLY CONFIDENTIAL** and will only be used for research purpose only. Your identity is also **CONFIDENTIAL**.
- Some of the questions might be sensitive and cause mild discomfort.
- Your cooperation in completing this questionnaire is appreciated and I would like to thank you.

Thank you very much for your help

Bahagian ini adalah mengenai latarbelakang diri anda yang akan membantu analisis ke atas jawapan anda dalam bahagian lain soal selidik ini. Maklumat yang anda berikan dijamin **SULIT**. Sila **BULATKAN** jawapan anda dan isikan jawapan anda pada ruang yang disediakan.

This section is on your background which will assist in interpreting the answers that you will be giving in the other sections. Your answers will be CONFIDENTIAL. Please CIRCLE your answers and complete the provided spaces.

1. **Apakah jantina anda?**
   What is your sex?

Lelaki / *Male*	1
Perempuan / *Female*	2

2. **Berapakah usia anda?**
   How old are you?

tahun/ years old

3. **Bilakah harijadi anda?**
   When is your birthday?

		Hari/*Day*			Bulan/ *Month*				Tahun/*Year*	

4. **Apakah kumpulan etnik anda?**
   What is your ethnic group?

Melayu / *Malay*	1	India / *Indian*	3
Cina / *Chinese*	2	Lain-lain / *Others* Sila nyatakan / *Please specify*	4

5. **Apakah agama yang anda anuti?**
   What is your religion?

Islam / *Islam*	1	Kristian / *Christian*	4
Buddha / *Buddhist*	2	Lain-lain / *Others* Sila nyatakan / *Please specify*	5
Hindu / *Hindu*	3		

6. **Di negeri manakah anda tinggal sebelum menuntut di institusi ini?**
   Which state have you been living in before continuing your studies at this institution?

Johor	1	Kelantan	7	Sarawak	13
Melaka	2	Terengganu	8	W.P. Kuala Lumpur	14
Negeri Sembilan	3	Kedah	9	W.P. Putrajaya	15
Selangor	4	Perlis	10	W.P. Labuan	16
Pahang	5	Pulau Pinang	11		
Perak	6	Sabah	12		

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7. Di manakah anda tinggal sebelum anda melanjutkan pelajaran di institusi ini?
Where do you live prior to your enrolment in this institution?

Kampung / *Village*	1	Pekan besar atau Bandar / *Big Town / City*	3
Pekan kecil / *Small town*	2	Bandaraya atau Ibu Negeri / *Capital City*	4

Sila nyatakan **Daerah** di mana anda tinggal (cth: Hulu Langat)
Please specify the **District** where you live in (*eg: Hulu Langat*)
(Region of Origin: ☐)

8. Apakah kategori sekolah menengah anda?
Which category of secondary school where you from?

Sekolah Menengah Harian Biasa/ *Normal Day School*	1	Sekolah Menengah Agama / *Religious School*	5
Sekolah Berasrama Penuh / *Boarding school*	2	Sekolah Menengah Swasta / *Private School*	6
MRSM / *MARA Junior Science College*	3	Lain-lain / *Others* Sila nyatakan / *Please specify*:	7
Sekolah Menengah Teknik atau Vokasional / *Technical or Vocational Secondary School*	4		

9. Apakah keputusan Peperiksaan Sijil Pelajaran Malaysia (SPM) anda? Sila nyatakan bilangan A+, A, B dan seterusnya (cth: 2A+, 3A, 4B)
What was your 'Sijil Pelajaran Malaysia' result? Please state the number of A+'s, A's, B's and the rest (eg. 2A+, 3A, 4B).

A+	A	B	C	D	E	F

10. Apakah program pengajian yang anda ikuti sekarang?(cth: Diploma Pengurusan Perniagaan)
What is the programme you are currently enrolled in? (e.g:Diploma in Business Management

11. Anda melanjutkan pelajaran di Fakulti / Jabatan yang mana?
At which Faculty / Department are you currently enrolled in?
Sila bulatkan fakulti / jabatan anda./*Please circle your faculty / department.*

Sains & Teknologi / *Science & Technology*	1	Seni Bina / *Architecture*	6
Sastera, Grafik dan Sains Sosial / *Arts , Graphics & Social Sciences*	2	Pendidikani / *Education*	7
Sains Komputer & Informasi Maklumat / *Computer Science & Information Technology*	3	Undang-Undang / *Law*	8
Pengurusan Perniagaan, Pengurusan, Perakaunan, Ekonomi / *Business, Management, Accountancy, Economics*	4	Kejuruteraan / *Engineering*	9
Bahasa , Linguistik , Komunikasi/ *Languages ,Linguistics & Communications*	5	Lain-lain / Sila nyatakan *Others / Please specify*	10

12. **Di semester berapakah anda berada sekarang?**
At which semester are you currently at?

1	2	3	4	5	6	7
SEM 1	SEM 2	SEM 3	SEM 4	SEM 5	SEM 6	> SEM 6

13. **Apakah Gred Mata Purata (GPA) anda yang terkini?**
What is your current GPA (Grade Point Average)?

	•		

14. **Apakah pekerjaan ibu dan bapa anda terkini? Jika bersara, sila nyatakan pekerjaan terakhir.**
What are your parents' current occupations? If retired, state latest occupation.

Bapa : _____ Ibu : _____ _____

Father: _____ *Mother:* _____

*Anda tidak perlu mengisikan ruang di bawah (Untuk diisi oleh Penyiasat):
You are not required to fill in the following (To be filled up by the Researcher):

Pekerjaan /Occupation	Bapa/ Father	Ibu/ Mother
Profesional atau Pengurusan/ *Professional or Managerial* (doktor/*doctor*, peguam/*lawyer*, jurutera /*engineer*, guru/*teacher*, pengurus/ *manager*)	1	1
Pengkeranian / *Clerical*	2	2
Pentadbir atau PengurusPerniagaan / *Administrative and Commercial Managers*	3	3
Berkemahiran / *Skilled*((Juruteknik/ *Technician*, juru X-Ray/ radiographer, jururawat/ nurse)	4	4
Separa Mahir atau tidak mahir / *Semi-skilled or unskilled*(pekerja industri/ *factory operator*)	5	5
Polis Diraja Malaysia/ *Malaysian Royal Police* atau / or Tentera / Army	6	6
Menganggur/ *Unemployed*	7	7
Pengurus Domestik / Surirumahtangga / *Domestic Administrator / Housewife / Househusband*	8	8
Tiada jawapan / *Missing*	9	9

15. **Apakah kelayakan akademik tertinggi ibu bapa atau penjaga anda?**
What are the highest academic qualifications of your parents or guardians?

Kelayakan akademik / *Academic Qualification*	Bapa/ Father	Ibu/ Mother
Tiada pendidikan formal / *No formal education*	1	1
Tidak menamatkan sekolah rendah / *Did not complete primary school*	2	2
Tamat sekolah rendah sahaja / *Completed primary school only*	3	3
Tidak menamatkan sekolah menengah / *Did not complete secondary school*	4	4
Menamatkan sekolah menengah (Hingga Tingkatan 5)/ *Completed secondary school (Up to Form 5)*	5	5
Pemegang sijil atau diploma/ *Certificate or diploma holder*	6	6
Pemegang ijazah pertama/ *Bachelor's degree holder*	7	7
Pemegang ijazah sarjana / *Master's degree holder*	8	8
Pemegang ijazah doktor falsafah atau PhD / *Doctoral degree or PhD holder*	9	9
Saya tidak tahu / *I do not know*	10	10

16. Berapakah jumlah pendapatan keluarga anda sebulan?
    What is your household income per month?

< RM 400	1
RM 400 – RM 699	2
RM 700 – RM 999	3
RM 1,000 – RM 1,999	4
RM 2,000 – RM 2,999	5
RM 3,000 – RM 3,999	6
RM 4,000 – RM 4,999	7
≥ RM 5,000	8

BAHAGIAN B   : MAKLUMAT KELUARGA
SECTION B:FAMILY INFORMATION

17. Apakah status perkahwinan ibubapa anda?
    What is the marital status of your parents?

Masih berkahwin/*Still married*	1
Bercerai / *Divorced*	2
Berpisah / *Separated*	3
Duda atau Janda / *Widowed*	4
Berkahwin tapi tinggal berasingan disebabkan tugas atau sebab lain / *Married but living apart due to work or other reasons*	5

18. Anda tinggal dengan siapa sebelum menuntut di institusi ini?
    Who do you live with before attending this institution?

Dengan kedua ibubapa/*With both my parents*	1
Dengan salah seorang ibu atau bapa / *With one of my parent*	2
Dengan salah seorang ibu dan bapa tiri atau bapa dan ibu tiri / *With one of my parents and step parent*	3
Dengan saudara-mara / *With relatives*	4
Lain-lain / *Others* Sila nyatakan / *Please specify:*	5

19. Kini anda tinggal dengan siapa semasa anda belajar di sini?
    Currently, who do you live with while you are continuing your studies at this institution?

Seorang diri / *By myself*	1
Bersama keluarga / *With my family*	2
Bersama saudara-mara / *With my relatives*	3
Bersama rakan-rakan (sama jantina) / *With my friends (same sex)*	4
Bersama rakan-rakan (berlainan jantina) / *With my friends (opposite sex)*	5
Lain-lain /*Others* Sila nyatakan / *Please specify:*	6

20. Jenis kediaman saya sekarang:
    The type of accommodation I am living in now:

Rumah keluarga	/ *Family home*	1
Bilik atau rumah sewa	/ *Rented room or house*	2
Asrama	/ *Hostel*	3
Lain-lain	/ *Others*	4
Sila nyatakan / Please specify:		

21. Ketua keluarga saya / *Head of my family* .... :

Bapa / *Father*	1
Ibu / *Mother*	2
Datuk / *Grandfather*	3
Nenek / *Grandmother*	4
Abang / *Elder brother*	5
Sister / *Elder sister*	6
Lain-lain / *Others* *Sila nyatakan / Please specify:*	7

Soal-selidik Mengenai Tindakan Ibu Bapa Pelajar/ Students' Parents Actions Questionnaire

22. Sila **tandakan(X)** pada pilihan yang paling tepat yang mewakili anda untuk setiap pernyataan di bawah. Pernyataan 'ibu bapa' boleh merujuk kepada seorang daripada ibu bapa anda sama ada ibu atau bapa atau kedua-duanya.

    *Please **mark (X)** the box you feel best represent yourself for each following statements. "My parents' may refer to both or one of your parents be it your mother or your father.*

A1. Ibu bapa saya pernah menyatakan harapan mereka untuk melihat saya melanjutkan pelajaran ke peringkat yang lebih tinggi.
    My parents have told me about their hope that I further my studies at a higher level.

Tidak pernah	*Never*	1
Satu atau dua kali setahun	*Once or twice a year*	2
Sekurang-kurangnya sebulan sekali	*At least once a month*	3
Setiap minggu	*Every week*	4
Hampir setiap hari	*Almost everyday*	5

A3. Ibu bapa saya berbincang dengan saya tentang kerjaya yang saya ingini.
    How often do your parents discuss about your future career with you?

Tidak pernah	*Never*	1
Satu atau dua kali setahun	*Once or twice a year*	2
Sekurang-kurangnya sebulan sekali	*At least once a month*	3

| Setiap minggu | *Every week* | 4 |
| Hampir setiap hari | *Almost everyday* | 5 |

A4. Ibu bapa saya menyatakan kepentingan pendidikan untuk mencapai kerjaya yang saya ingini.
How often do your parents talk to you about the importance of education in pursuing your future career?

Tidak pernah	*Never*	1
Satu atau dua kali setahun	*Once or twice a year*	2
Sekurang-kurangnya sebulan sekali	*At least once a month*	3
Setiap minggu	*Every week*	4
Hampir setiap hari	*Almost everyday*	5

A5. Ibu bapa saya menyatakan akan pentingnya saya perlu merancang untuk masa hadapan saya.
How often do your parents talk to you about the importance of planning for your own future?

Tidak pernah	*Never*	1
Satu atau dua kali setahun	*Once or twice a year*	2
Sekurang-kurangnya sebulan sekali	*At least once a month*	3
Setiap minggu	*Every week*	4
Hampir setiap hari	*Almost everyday*	5

R1. Berapa kerapkah ibu bapa anda menggalakkan anda untuk menggunakan sebahagian masa anda untuk berdoa supaya berjaya dalam bidang akademik?
How often do your parents encourage you to use some of your time to pray for your academic success?

Tidak pernah	*Never*	1
Satu atau dua kali setahun	*Once or twice a year*	2
Sekurang-kurangnya sebulan sekali	*At least once a month*	3
Setiap minggu	*Every week*	4
Hampir setiap hari	*Almost everyday*	5

R3. Berapa kerapkan ibu bapa anda menasihatkan anda tentang pentingnya agama dan kaitannya dengan pelajaran?
How often do your parents advise you about the importance of religion and its connection to education?

Tidak pernah	*Never*	1
Satu atau dua kali setahun	*Once or twice a year*	2
Sekurang-kurangnya sebulan sekali	*At least once a month*	3
Setiap minggu	*Every week*	4
Hampir setiap hari	*Almost everyday*	5

R6. Ibu bapa saya mahu saya mengamalkan ibadah agama.
My parents want me to practice my religion.

Tidak pernah	Never	1
Satu atau dua kali setahun	Once or twice a year	2
Sekurang-kurangnya sebulan sekali	At least once a month	3
Setiap minggu	Every week	4
Hampir setiap hari	Almost everyday	5

R7. Berapa kerapkah ibu bapa anda membincangkan isu keagamaan bersama anda?
How often do your parents discuss religious matters with you?

Tidak pernah	Never	1
Satu atau dua kali setahun	Once or twice a year	2
Sekurang-kurangnya sebulan sekali	At least once a month	3
Setiap minggu	Every week	4
Hampir setiap hari	Almost everyday	5

C1. Adakah ibu bapa anda mengambil tahu dengan siapa anda berkawan dan bergaul di kolej atau universiti?
How often do your parents ask you about your friends in college or university?

Tidak pernah	Never	1
Satu atau dua kali setahun	Once or twice a year	2
Sekurang-kurangnya sebulan sekali	At least once a month	3
Setiap minggu	Every week	4
Hampir setiap hari	Almost everyday	5

C9. Ibu bapa saya menetapkan masa tertentu untuk saya menghabiskan tugasan saya.
My parents fixed the time for me to complete my assignments.

Sangat tidak setuju	Strongly disagree	1
Tidak setuju	Disagree	2
Tidak begitu setuju	Somewhat Disagree	3
Setuju	Agree	4
Sangat setuju	Strongly agree	5

C10. Ibu bapa saya tidak membenarkan saya keluar sekiranya saya tidak menyiapkan tugasan saya.
My parents do not allow me to go out until I finish my assignments.

Sangat tidak setuju	Strongly disagree	1
Tidak setuju	Disagree	2
Tidak begitu setuju	Somewhat Disagree	3
Setuju	Agree	4
Sangat setuju	Strongly agree	5

C11. Ibu bapa saya menegaskan tugasan harus disiapkan pada masa yang telah ditetapkan.
My parents insist that assignments must be completed at the designated time.

Sangat tidak setuju	*Strongly disagree*	1
Tidak setuju	*Disagree*	2
Tidak begitu setuju	*Somewhat Disagree*	3
Setuju	*Agree*	4
Sangat setuju	*Strongly agree*	5

C12. Ibu bapa saya tidak membenarkan saya bermain terlalu banyak permainan komputer.
My parents do not allow me to play too many computer games.

Sangat tidak setuju	*Strongly disagree*	1
Tidak setuju	*Disagree*	2
Tidak begitu setuju	*Somewhat Disagree*	3
Setuju	*Agree*	4
Sangat setuju	*Strongly agree*	5

M1. Ibu bapa saya akan menyatakan perasaan gembira apabila saya mencapai keputusan yang baik dalam peperiksaan.
My parents will express their happiness when I achieve good grades.

Tidak pernah	*Never*	1
Jarang-jarang	*Rarely*	2
Kadang-kadang	*Sometimes*	3
Kebanyakan kali	*About half of the time*	4
Setiap kali	*Every time this happens*	5

M2. Ibu bapa saya memberi pujian kepada saya apabila saya menunjukkan prestasi yang baik dalam pencapaian akademik.
My parents praise me verbally when I get good results in my academic performance.

Tidak pernah	*Never*	1
Jarang-jarang	*Rarely*	2
Kadang-kadang	*Sometimes*	3
Kebanyakan kali	*About half of the time*	4
Setiap kali	*Every time this happens*	5

M4. Walaupun saya mencapai keputusan yang tidak begitu baik, ibu bapa saya tetap memberi galakan agar saya berusaha dengan lebih gigih lagi.
When I do not get good grades, my parents will encourage me to try harder.

Tidak pernah	*Never*	1
Jarang-jarang	*Rarely*	2
Kadang-kadang	*Sometimes*	3
Kebanyakan kali	*About half of the time*	4
Setiap kali	*Every time this happens*	5

M8. Sejauh manakah ibu bapa anda berminat dengan pelajaran anda?
How enthusiastic are your parents about your education?

Tidak berminat langsung	*Not at all enthusiastic*	1
Jarang-jarang berminat	*Rarely enthusiastic*	2
Kadang-kadang berminat	*Sometimes*	3
Berminat	*Enthusiastic*	4
Sangat berminat	*Very enthusiastic*	5

W1. Berapa kerapkah ibu bapa anda berbincang dengan anda tentang isu semasa?
How often do your parents discuss with you about daily issues?

Tidak pernah	*Never*	1
Jarang-jarang	*Rarely*	2
Kadang-kadang	*Sometimes*	3
Kebanyakan kali	*About half of the time*	4
Setiap kali	*Every time this happens*	5

W3. Berapa kerapkah anda menonton rancangan televisyen atau beriadah bersama keluarga termasuk ibu bapa saya (berjenaka, berjogging, permainan dll.).
How often do you watch television or play together (telling jokes, jogging, games, etc.) with your family including your parents?

Tidak pernah	*Never*	1
Jarang-jarang	*Rarely*	2
Kadang-kadang	*Sometimes*	3
Kebanyakan kali	*About half of the time*	4
Setiap kali	*Every time this happens*	5

W4. Saya akan menceritakan apa-apa kejadian atau peristiwa yang berlaku di universiti atau kolej kepada ibu bapa saya di rumah.
I always inform my parents at home of any incidents, events or happenings in university or college.

Tidak pernah	*Never*	1
Jarang-jarang	*Rarely*	2
Kadang-kadang	*Sometimes*	3
Kebanyakan kali	*About half of the time*	4
Setiap kali	*Every time this happens*	5

X1. Ibu bapa saya akan memarahi saya apabila saya gagal dalam peperiksaan.
My parents scold me when I failed my examination.

Tidak pernah	*Never*	1
Jarang-jarang	*Rarely*	2
Kadang-kadang	*Sometimes*	3
Kebanyakan kali	*About half of the time*	4
Setiap kali	*Every time this happens*	5

X2. Ibu bapa saya tidak mempercayai saya apabila saya menyatakan tidak ada tugasan untuk disiapkan di rumah.
My parents do not trust me if I tell themthat I have no assignments to do.

Tidak pernah	Never	1
Jarang-jarang	Rarely	2
Kadang-kadang	Sometimes	3
Kebanyakan kali	About half of the time	4
Setiap kali	Every time this happens	5

X3. Ibu bapa saya menghukum saya tanpa sebab yang nyata.
My parents punished me without any valid reason.

Tidak pernah	Never	1
Jarang-jarang	Rarely	2
Kadang-kadang	Sometimes	3
Kebanyakan kali	About half of the time	4
Setiap kali	Every time this happens	5

X5. Saya tidak dibenarkan bercanggahan pendapat dengan ibu bapa saya.
I am not allowed to have different ideas which contradict those of my parents.

Sangat tidak setuju	Strongly disagree	1
Tidak setuju	Disagree	2
Tidak begitu setuju	Somewhat Disagree	3
Setuju	Agree	4
Sangat setuju	Strongly agree	5

X6. Ibu bapa saya selalu berleter apabila saya melakukan sesuatu yang mereka anggap tidak betul.
My parents always like to grumble when I did something wrong.

Tidak pernah	Never	1
Jarang-jarang	Rarely	2
Kadang-kadang	Sometimes	3
Kebanyakan kali	About half of the time	4
Setiap kali	Every time this happens	5

Inventori Perapatan Dengan Ibu Bapa
Parent s' Attachment Inventory

23. Soalan-soalan berikut adalah berkaitan hubungan anda dengan ibubapa anda atau salah seorang ibu atau bapa yang anda paling rapat. Sila **BULATKAN** jawapan anda.

The following questions are concerning your relationship with your parents or the parent that you are closest to. Please CIRCLE your answers.

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	KENYATAAN / *STATEMENT*	TIDAK BETUL / *NEVER TRUE*	JARANG-JARANG BETUL/ *SELDOM TRUE*	KADANG-KALA BETUL/ *SOMETIMES TRUE*	KERAP BETUL/ *OFTEN TRUE*	SENTIASA BETUL/ *ALWAYS TRUE*
a	Ibu bapa saya menghormati perasaan saya. *My parents respect my feelings.*	1	2	3	4	5
b	Ibubapa saya peka apabila saya terganggu tentang sesuatu perkara. *My parents sense when I am upset about something.*	1	2	3	4	5
c	Saya berasa terganggu lebih banyak kali dari yang diketahui oleh ibubapa saya. *I get upset more often than my parents know about.*	1	2	3	4	5
d	Apabila kami berbincang, ibubapa menerima pendapat atau pandangan saya. *When we discuss things, my parents consider my point of view.*	1	2	3	4	5
e	Ibubapa saya yakin dan percaya dengan pertimbangan dan keputusan saya. *My parents trust my judgment.*	1	2	3	4	5
f	Ibubapa membantu saya memahami diri saya. *My parents help me to understand myself better.*	1	2	3	4	5
g	Saya memberitahu ibubapa saya tentang masalah-masalah saya. *I tell my parents about my problems and troubles.*	1	2	3	4	5
h	Ibubapa menggalakkan saya supaya berterus-terang dan membincangkan masalah yang saya hadapi. *My parents encourage me to talk about my difficulties.*	1	2	3	4	5

	KENYATAAN / *STATEMENT*	TIDAK BETUL / *NEVER TRUE*	JARANG-JARANG BETUL/ *SELDOM TRUE*	KADANG-KALA BETUL/ *SOMETIMES TRUE*	KERAP BETUL/ *OFTEN TRUE*	SENTIASA BETUL/ *ALWAYS TRUE*
i	Saya tidak tahu kepada siapa saya boleh harapkanpada masa ini. I don't know to whom I can depend on these days.	1	2	3	4	5
j	Saya mempercayai ibubapa saya. *I trust my parents.*	1	2	3	4	5
k	Ibubapa saya tidak memahami apa yang saya lalui masa kini. *My parents don't understand what I am going through these days.*	1	2	3	4	5
l	Saya boleh bergantung kepada ibubapa saya, sekiranya saya perlu berbincang tentang perkara-perkara yang mengganggu saya. *I can count on my parents when I need to talk about something that is bothering me.*	1	2	3	4	5
m	Saya rasa ibubapa saya tidak memahami diri saya. *I feel that my parents do not understand me.*	1	2	3	4	5
n	Sekiranya ibubapa menyedari ada sesuatu yang mengganggu saya, mereka akan bertanya saya mengenainya. *If my parents know something is bothering me, they ask me about it.*	1	2	3	4	5

BAHAGIAN C : MAKLUMAT RAKAN SEBAYA
SECTION C : PEER INFORMATION

24. **Adakah anda mempunyai kawan di kolej / universiti?**
    Do you have any friend at your college / university?

Ya / Yes	1	Tidak / No	2

25. Adakah anda mempunyai teman lelaki atau teman wanita yang istimewa?
Do you have a special boyfriend or girlfriend?

Ya / Yes	1	Tidak / No	2

(Jika **TIDAK**, sila teruskan dengan**Soalan** no. **29**)
(*If **NO**, please proceed with **Question** No. **29***)

26. JIKA **YA,** berapa lamakah anda telah menjalinkan hubungan tersebut dengan teman istimewa anda?
*If **YES**, how long have you been having a relationship with your partner?*

Lebih daripada 1 tahun/*More than 1 year*	1	Kurang daripada 1 tahun / *Less than 1 year*	2

27. Berapakah teman lelaki atau wanita istimewa anda setakat ini?
How many special girlfriends or boyfriends have you had so far?

1	1	3	3
2	2	4 dan ke atas / *4 and above*	4

28. Bagaimanakah anda menghuraikan perhubungan anda?
How would you describe your relationship?

Kasual (biasa saja) / *Casual*	1
Serius tapi tiada niat untuk berkahwin /*Serious but no intention of marriage*	2
Serius dengan niat untuk berkahwin/ *Serious with Intention of marriage*	3
Tidak bersesuaian/ *Not applicable*	4

29. Berapa orangkah rakan-rakan anda yang telah mengadakan hubungan seksual?
How many of your friends have had sexual intercourse?

Tiada / *None*	1	Sesetengah / *Some*	3
Hanya beberapa orang / *A few*	2	Kebanyakan / *Most*	4

Inventori Perapatan Dengan Rakan-rakan karib
Peers' Attachment Inventory

30. Soalan-soalan berikut adalah mengenai hubungan anda dengan kawan-kawan karib. Sila **BULATKAN** jawapan anda
*The following questions are about your relationship with your close friends. Please **CIRCLE** your answers.*

	KENYATAAN / STATEMENT	TIDAK BETUL / NEVER TRUE	JARANG-JARANG BETUL / SELDOM TRUE	KADANG-KALA BETUL / SOMETIMES TRUE	KERAP BETUL / OFTEN TRUE	SENTIASA BETUL / ALWAYS TRUE
a	Kawan-kawan saya peka apabila saya terganggu tentang sesuatu perkara. *My friends sense when I am upset about something.*	1	2	3	4	5
b	Kawan-kawan saya memahami saya. *My friends understand me.*	1	2	3	4	5
c	Kawan-kawan menggalakkan saya menceritakan masalah saya. *My friends encourage me to talk about my difficulties.*	1	2	3	4	5
d	Saya rasa saya perlu sentiasa berhubung rapat dengan kawan-kawan saya. *I feel the need to be in touch with my friends more often.*	1	2	3	4	5
e	Kawan-kawan saya tidak memahami apa yang saya lalui dan hadapi masa ini. *My friends don't understand what I am going through these days.*	1	2	3	4	5
f	Saya rasa terpinggir apabila bersama kawan-kawan saya. *I feel alone or apart when I am with my friends.*	1	2	3	4	5
g	Kawan-kawan saya sedia mendengar apa yang saya perkatakan. *My friends listen to what I have to say.*	1	2	3	4	5
h	Kawan-kawan saya sedia berbincang dan mudah didekati. *My friends are fairly easy to talk to.*	1	2	3	4	5
i	Kawan-kawan saya akan cuba memahami jika saya merasa marah tentang sesuatu.	1	2	3	4	5

	KENYATAAN / STATEMENT	TIDAK BETUL / NEVER TRUE	JARANG-JARANG BETUL/ SELDOM TRUE	KADANG-KALA BETUL/ SOMETIMES TRUE	KERAP BETUL/ OFTEN TRUE	SENTIASA BETUL/ ALWAYS TRUE
	When I am angry about something, my friends try to be understanding.					
j	Kawan-kawan saya mengambil berat akan perkembangan saya. My friends are concerned with my well-being.	1	2	3	4	5
k	Saya berasa marah terhadap kawan-kawan saya. I feel angry with my friends.	1	2	3	4	5
l	Saya boleh bergantung kepada kawan-kawan saya, sekiranya perlu berbincang tentang perkara-perkara yang menganggu saya. I can count on my friends when I need to talk about something that is bothering me.	1	2	3	4	5
m	Saya mempercayai kawan-kawan saya. I trust my friends.	1	2	3	4	5
n	Kawan-kawan menghormati perasaan saya. My friends respect my feelings.	1	2	3	4	5
o	Saya berasa terganggu lebih banyak kali dari yang diketahui oleh kawan-kawan saya. I get upset more often than my friends know about.	1	2	3	4	5
p	Saya memberitahu kawan-kawan saya tentang masalah saya. I tell my friends about my problems and troubles.	1	2	3	4	5
q	Sekiranya kawan-kawan saya menyedari ada sesuatu yang menganggu saya, mereka akan bertanya saya mengenainya.	1	2	3	4	5

KENYATAAN / STATEMENT	TIDAK BETUL / NEVER TRUE	JARANG-JARANG BETUL/ SELDOM TRUE	KADANG-KALA BETUL/ SOMETIMES TRUE	KERAP BETUL/ OFTEN TRUE	SENTIASA BETUL/ ALWAYS TRUE
If my friends know something is bothering me, they ask me about it.					

Kecenderungan kepada pengaruh rakan sebaya

Susceptibility to peer pressure

31. Bagi setiap situasi berikut, sila **BULATKAN** pada nombor yang menggambarkan bagaimana anda akan bertindak balas dalam situasi sedemikian.

    *For each situation below, **CIRCLE** the number that best describes how YOU would respond in such a situation.*

NO	1 = Saya pasti akan melakukannya 2 = Saya akan melakukannya 3 = Saya tidak akan melakukannya 4 = Saya pasti tidak akan melakukannya	*1 = I definitely would do it.* *2 = I would do it.* *3 = I would not do it* *4 = I definitely would not do it*	1	2	3	4
1	Keputusan peperiksaan telah diumumkan. Anda dan rakan-rakan anda menghadapi kesukaran dalam memilih kursus yang mana untuk diikuti. Rakan-rakan anda menyatakan bahawa mereka akan mendapatkan nasihat daripada ibu bapa mereka dan anda juga perlu berbuat demikian. Anda berfikir yang ia tidak perlu, tetapi rakan-rakan anda memberitahu anda yang ia akan membantu. Adakah anda akan mendapatkan nasihat daripada ibu bapa anda? *The exam results have been announced. You and your friends have a problem choosing which course to take. Your friends say that they will ask for their parents' advice and that you should also do so. You don't think it is necessary, but your friends tell you it helps. Would you ask your parents for advice?*		1	2	3	4
5	Rakan-rakan anda membuat keputusan untuk mencuba menghisap rokok. Setiap seorang daripada mereka mengambil satu sedutan rokok dan mereka meminta anda supaya mengambil satu sedutan rokok. Anda sebenarnya tidak mahu tetapi mereka menyatakan ia hanya satu sedutan sahaja. Adakah anda akan mengambil satu sedutan rokok? *Your friends decide to try out a cigarette. They each take a puff and tell you to take a puff too. You don't really want to, but they say it's only a puff. Would you take a puff of the cigarette?*		1	2	3	4
8	Peperiksaan makin hampir dan rakan-rakan anda sudah mula mengulangkaji. Mereka menyarankan anda supaya mengulangkaji pelajaran juga, tetapi anda berasa yang anda masih ada masa. Adakah anda akan mula mengulangkaji juga? *Exams are coming and your friends have already started studying. They tell you to start studying also, but you feel that there is still time. Would you start studying too?*		1	2	3	4
9	Pada satu hari selepas akitiviti ko-kurikulum, hanya anda dan rakan-rakan anda yang masih berada di kolej / universiti. Rakan-rakan anda mahu menconteng dinding kolej / universiti dengan					

NO	1 = Saya pasti akan melakukannya 2 = Saya akan melakukannya 3 = Saya tidak akan melakukannya 4 = Saya pasti tidak akan melakukannya	1 = I definitely would do it. 2 = I would do it. 3 = I would not do it 4 = I definitely would not do it	1	2	3	4
	menggunakan pen marker. Anda merasakan ia bukan satu idea yang bagus, tetapi rakan-rakan anda menyarankan anda supaya melakukannya. Adakah anda akan mencontreng dinding kolej / universiti dengan menggunakan pen marker? *One day after co-curricular activities, you and your friends are the only ones left in the college / university. Your friends want to write on the walls with a marker pen. You don't think it's a good idea, but your friends tell you to do it anyway. Would you write on the walls with the marker?*		1	2	3	4
12	Anda menyedari yang semua rakan-rakan anda telah membuat keputusan untuk melanjutkan pelajaran ke peringkat yang lebih tinggi. Anda tidak berminat tetapi rakan-rakan anda menyarankan anda untuk melanjutkan pelajaran ke peringkat yang lebih tinggi. Adakah anda akan cuba untuk melanjutkan pelajaran? *You realize that all your friends decide to further their studies to higher levels. You are not interested, but your friends advise you to continue your studies to ahigher level. Would you try to further your studies?*		1	2	3	4
13	Anda dan rakan-rakan anda sedang dalam perjalanan balik dari kolej / universiti. Seseorang telah melanggar anda. Rakan-rakan anda mahukan anda bergaduh dengan orang yang melanggar anda. Anda merasakan yang ia bukan satu idea yang baik, tetapi mereka menyuruh anda melakukannya juga. Adakah anda akan bergaduh dengan orang tersebut? *You and your friends are walking home from college / university. Somebody bumps into you and your friends want you to teach him/her a lesson (pick a fight). You don't think that's a good idea, but your friends tell you to do it anyway. Would you pick a fight with the person?*		1	2	3	4
14	Pada satu malam, anda bertengkar dengan ibu bapa anda. Rakan-rakan anda mendapat tahu mengenainya dan menyarankan anda agar berbaik semula dengan ibu bapa anda, walaupun anda sebenarnya tidak mahu. Adakah anda akan berbaik semula dengan ibu bapa anda? *One night, you quarrel with your parents. Your friends learn about it and tell you to try to get along well with your parents, even though you would rather not. Would you try to get along well with your parents?*		1	2	3	4
16	Anda dan rakan-rakan anda merancang untuk keluar selepas kuliah. Bagaimanapun, anda dan rakan-rakan anda diberikan tugasan. Rakan-rakan anda membuat keputusan untuk terus pulang bagi menyiapkan tugasan tersebut. Anda sebaliknya tidak ingin berbuat demikian, tetapi rakan-rakan anda menyarankan anda untuk dan menyiapkan tugasan anda. Adakah anda akan pulang untuk menyiapkan tugasan anda? *You and your friends plan to go out after the lecture. However, you and your friends were given assignments. Your friends decide to go home and do the assignments instead. You would rather not, but your friends tell you to go home and do your assignment. Would you go home and do your assignment?*		1	2	3	4

NO	1 = Saya pasti akan melakukannya 2 = Saya akan melakukannya 3 = Saya tidak akan melakukannya 4 = Saya pasti tidak akan melakukannya	1 = I definitely would do it. 2 = I would do it. 3= I would not do it 4 =I definitely would not do it	1	2	3	4
17	Anda dan rakan-rakan anda sedang membincangkan rancangan sempena cuti seminggu yang akan datang. Rakan-rakan anda memberitahu anda yang mereka merancang untuk menghabiskan masa bersama keluarga. Mereka menyarankan anda untuk berbuat sedemikian, tetapi anda rasa anda tidak mahu. Adakah anda akan menghabiskan cuti anda bersama keluarga anda? *You and your friends are discussing what to do during the upcoming one-week holiday. Your friends tell you that they intend to spend the holidays with their families and that you should also spend your free time doing things with your family, but you would rather not. Would you spend theholidays with your family?*		1	2	3	4
18	Anda dan rakan-rakan anda berada di satu parti di mana terdapat minuman bir terhidang di atas meja. Rakan-rakan anda merancang untuk mencubanya. Anda berasa ianya bukan satu idea yang baik tetapi mereka menyuruh anda mencubanya sedikit. Adakah anda akan minum bir tersebut? *You and your friends are at a party. There's beer on the table. Your friends plan to try some beer. You don't think that's a good idea but they tell you to drink a little. Would you drink the beer?*		1	2	3	4
19	Rakan-rakan anda ingin pergi ke satu parti dan mereka mengajak anda untuk menyertai mereka. Anda tidak berapa gemar pergi ke parti, tetapi mereka tetap menyuruh anda untuk pergi ke parti tersebut. Adakah anda akan pergi ke parti tersebut? *Your friends are going to a party and they ask you to join them. You don't really like parties, but they tell you to go anyway. Would you go to the party?*		1	2	3	4
21	Anda baru sahaja menyedari yang anda mempunyai kelas tambahan dan akan pulang lewat. Rakan-rakan anda menyuruh anda untuk menghubungi ibu bapa anda dan memberitahu mereka, tetapi anda tidak rasa ianya perlu. Adakah anda akan menghubungi ibu bapa anda untuk memberitahu mereka? *You have just realized that you have extra class and will be home late. Your friends tell you to call your parents to let them know, but you don't think it is necessary. Would you call your parents to let them know?*		1	2	3	4
22	Anda tidak suka seorang pensyarah di kolej / universiti anda dan anda merancang untuk tidak menghiraukan pensyarah tersebut. Rakan-rakan anda menyarankan anda supaya cuba berbaik dengan pensyarah tersebut, tetapi anda merasakan ianya tidak perlu. Adakah anda akan cuba berbaik dengan beliau? *You don't like a lecturer at your college / university and plan to ignore him/her. Your friends tell you to try to get along with the lecturer, but you don't think it's necessary. Would you try to get along with him/her?*		1	2	3	4
23	Anda dan rakan-rakan anda pergi ke sebuah gedung membeli-belah. Anda menyedari terdapat satu barang yang tidak mempunyai tag harga. Rakan-rakan anda menyarankan anda untuk membawa barang tersebut pulang tanpa membayarnya. Anda merasakan yang ia bukan satu idea yang baik, tetapi		1	2	3	4

NO	1 = Saya pasti akan melakukannya 2 = Saya akan melakukannya 3 = Saya tidak akan melakukannya 4 = Saya pasti tidak akan melakukannya	1 = I definitely would do it. 2 = I would do it. 3 = I would not do it 4 = I definitely would not do it	1	2	3	4
	rakan-rakan anda menyuruh anda mengambilnya pulang. Adakah anda akan mengambil barang tersebut tanpa membayarnya terlebih dahulu? *You and your friends go to a shopping mall. You notice an item without a price tag. Your friends tell you to just bring it home without paying. You don't think it's a good idea, but your friends tell you to go ahead and take it. Would you takethe item without paying?*					
27	Pensyarah anda menyuruh anda menghias papan kenyataan bilik kuliah anda. Anda sebenarnya tidak mahu, tetapi rakan-rakan anda menyuruh anda untuk berbuat baik dengan pensyarah anda dan membuat apa yang disuruh olehnya. Adakah anda akan menghias papan kenyataan bilik kuliah anda? *Your lecturer asks you to decorate the class notice board. You would rather not do it, but your friends tell you to be nice to the lecturer and do it. Would you decorate the class notice board?*		1	2	3	4
31	Semasa mengulangkaji untuk ujian, rakan-rakan anda memberitahu anda yang mereka cuba untuk mendapatkan markah yang cemerlang untuk ujian tersebut. Anda merasakan yang ia tidak penting, tetapi rakan-rakan anda menyarankan anda untuk cuba mendapatkan keputusan yang bagus untuk ujian tersebut. Adakah anda akan cuba mendapatkan keputusan yang bagus? *Whilst studying for a test, your friends tell you that they are trying to get good marks for the test. You think that it doesn't matter, but they tell you to try to get good grades for the test. Would you try to get good grades too?*		1	2	3	4
32	Dalam perjalanan pulang, anda terpijak lopak dengan tidak sengaja. Rakan-rakan anda memberikan anda beberapa helai tisu untuk membersihkan diri anda. Selepas membersihkan diri, anda mencari tong sampah tetapi gagal menemuinya. Rakan-rakan anda menyuruh anda membuang tisu-tisu tersebut ke atas lantai, tetapi anda tidak fikir ianya satu idea yang baik. Adakah anda akan membuang tisu-tisu tersebut ke atas lantai? *On your way home, you accidentally step into a puddle. Your friends give you several tissue papers to clean up. After cleaning up, you look around and cannot find a rubbish bin. Your friends tell you to just throw it on the floor, but you don't think it's a good idea. Would you throw the tissues onto the floor?*		1	2	3	4
34	Keluarga anda ingin bercuti ke Pulau Pinang semasa cuti hujung minggu. Anda tidak berminat untuk turut serta. Rakan-rakan anda menyarankan anda mengikuti keluarga anda. Adakah anda akan mengikuti keluarga anda? *Your family is going to Penang over the weekend. You are not interested, but your friends tell you to go to Penang with your family. Would you go to Penang with your family?*		1	2	3	4

BAHAGIAN D: PENGLIBATAN SEKOLAH
SECTION D: *SCHOOL INVOLVEMENT*

Skala Penglibatan Sekolah Multi-dimensi
Multidimensional School Engagement Scale

32. Berikut adalah beberapa pernyataan tentang penglibatan anda di sekolah. Baca setiap pernyataan dan sila **BULATKAN** jawapan anda:
*Following are several statements concerning your involvement at school. Read each statement and **CIRCLE** your answers.*

BAHAGIAN A / *PART A*

A	Berapa kerapkah anda melakukan perkara-perkara berikut: *How often do you do the following:*	Tidak pernah *Never*	Amat jarang *Seldom*	Kadang-kadang *Sometimes*	Agak kerap *Frequently*	Selalu *Always*
A1	Datang ke kelas tanpa pensel dan kertas. (*Come to class without pencil or paper*).	1	2	3	4	5
A2	Datang ke kelas tanpa buku. (*Come to class without books*).	1	2	3	4	5
A3	Datang ke kelas tanpa menyiapkan tugasan. (*Come to class without your assignment done*).	1	2	3	4	5
A4	Ponteng kelas. (*Miss / skip class/ truancy*).	1	2	3	4	5
A5	Lewat masuk kelas. (*Arrive late for class*).	1	2	3	4	5
A6	Datang ke kelas tanpa membuat persediaan. (*Come to class unprepared*).	1	2	3	4	5
A7	Melanggar peraturan kolej / universiti (*Violate college / university rules*).	1	2	3	4	5
A8	Datang lewat ke kolej / university. (*Come to college / university late*).	1	2	3	4	5

BAHAGIAN B / *PART B*

B	Berapa kerapkah anda melakukan perkara-perkara berikut: *How often do you do the following:*	Tidak pernah/ *Never*	Amat jarang/ *Seldom*	Kadang-kadang/ *Sometimes*	Agak kerap/ *Frequently*	Selalu/ *Always*
B1	Apabila membaca buku pelajaran, saya membentuk soalan-soalan untuk membantu tumpuan pembacaan saya. *(When reading for this course, I make up questions to help focus my reading).*	1	2	3	4	5
B2	Apabila keliru tentang sesuatu yang sedang dibaca, saya berpatah balik dan cuba mencari jawapannya. *(When I become confused about something I'm reading for this class, I go back and try to figure it out).*	1	2	3	4	5
B3	Sekiranya bahan bacaan sukar difahami, saya mengubah cara membaca bahan itu. *(If course readings are difficult to understand, I change the way I read the material).*	1	2	3	4	5
B4	Sebelum mempelajari dengan terperinci bahan bacaan baru, saya melihat sepintas lalu bagaimana bahan itu disusun. *(Before I study new course material thoroughly, I often skim it to see how it is organized).*	1	2	3	4	5
B5	Saya mengajukan soalan kepada diri sendiri untuk memastikan saya faham bahan yang sedang dipelajari. *(I ask myself questions to make sure I understand the material I have been*	1	2	3	4	5

B	Berapa kerapkah anda melakukan perkara-perkara berikut: *How often do you do the following:*	Tidak pernah/ *Never*	Amat jarang/ *Seldom*	Kadang-kadang/ *Sometimes*	Agak kerap/ *Frequently*	Selalu/ *Always*
	studying in this class).					
B6	Saya cuba mengubah cara saya belajar untuk menyesuaikan diri dengan keperluan mata pelajaran dan gaya pengajaran guru. (*I try to change the way I study in order to fit the course requirements and the instructor's teaching style).*	1	2	3	4	5
B7	Ketika belajar, saya tidak sekadar membaca sekali lalu; sebaliknya saya memikirkan tentang topik itu terlebih dahulu dan menentukan apa yang harus dipelajari daripadanya. (*I try to think through a topic, and decide what I am supposed to learn from it rather than just reading it over when studying for this course).*	1	2	3	4	5
B8	Ketika belajar, saya akan menentukan konsep-konsep yang saya kurang fahami. (*When studying for this course I try to determine which concept I don't understand).*	1	2	3	4	5
B9	Ketika belajar, saya akan menentukan matlamat untuk diri sendiri supaya ia menjadi panduan untuk pembelajaran saya. (*When I study for this class, I set goals for myself to direct my activities in each study period).*	1	2	3	4	5
B10	Sekiranya terkeliru mengambil nota di dalam kelas, saya akan pastikan					

B	Berapa kerapkah anda melakukan perkara-perkara berikut: *How often do you do the following:*	Tidak pernah/ *Never*	Amat jarang/ *Seldom*	Kadang-kadang/ *Sometimes*	Agak kerap/ *Frequently*	Selalu/ *Always*
	masalah itu diselesaikan selepas kelas. (*If I get confused taking notes in class, I make sure I sort it out afterwards*).	1	2	3	4	5

BAHAGIAN C / *PART C*

C		Tidak benar/ *Not True*	Agak Tidak Benar/ *Somewhat not True*	Tidak Pasti/ *Unsure*	Agak Benar/ *Somewhat True*	Benar/ *True*
C1	Saya merasakan yang saya sebahagian daripada kolej / universiti ini. (*I feel like I am a part of this college/university*).	1	2	3	4	5
C2	Agak sukar bagi orang macam saya diterima di kolej / universiti ini. (*It is hard for people like me to be accepted here*).	1	2	3	4	5
C3	Kadang-kala saya rasa terasing di kolej / universiti ini. (*Sometimes I feel I don't belong here*).	1	2	3	4	5
C4	Orang-orang di kolej / universiti ini mesra dengan saya. (*People at this college / university are friendly to me*).	1	2	3	4	5
C5	Pensyarah-pensyarah di sini tidak berminat dengan orang macam saya. (*The lecturers here are not interested in people like me*).	1	2	3	4	5
C6	Saya dilibatkan dalam banyak aktiviti di kolej / universiti ini. (*I am included in lots of activities in this college / university*).	1	2	3	4	5

C		Tidak benar/ *Not True*	Agak Tidak Benar/ *Somewhat not True*	Tidak Pasti/ *Unsure*	Agak Benar/ *Somewhat True*	Benar/ *True*
C7	Saya dihormati sama seperti pelajar-pelajar lain. (*I am treated with as much respect as other students*).	1	2	3	4	5
C8	Saya tidak perlu berpura-pura menjadi orang lain di kolej / universiti ini. (*I can really be myself at this college / university*).	1	2	3	4	5
C9	Pensyarah-pensyarah di sini menghormati saya. (*The lecturers here respect me*).	1	2	3	4	5
C10	Alangkah baiknya kalau saya berada di kolej / universiti lain. (*I wish I were in different college / university*).	1	2	3	4	5
C11	Saya merasa bangga menjadi sebahagian daripada kolej / universiti ini. (*I feel proud to be part of this college / university*).	1	2	3	4	5

BAHAGIAN E : MAKLUMAT PERIBADI
SECTION E: INDIVIDUAL INFORMATION

Skala Harga Diri (Rosenberg's)

Rosenberg's Self-Esteem Scale

33. Pernyataan–pernyataan di bawah adalah merupakan persepsi anda tentang diri anda. Sila **BULATKAN** jawapan yang terbaik.
*Statements below are about your perception about yourself. Please **CIRCLE** the answer which fits you the best.*

No	Pernyataan / *Statement*	Sangat Tidak bersetuju/ *Strongly Disagree*	Tidak Bersetuju / *Disagree*	Berkecuali/ *Neutral*	Bersetuju/ *Agree*	Sangat Setuju/ *Strongly Agree*
a	Pada keseluruhannya saya berpuas hati dengan diri saya.	1	2	3	4	5

No	Pernyataan / *Statement*	Sangat Tidak bersetuju/ *Strongly Disagree*	Tidak Bersetuju / *Disagree*	Berkecuali/ *Neutral*	Bersetuju/ *Agree*	Sangat Setuju/ *Strongly Agree*
	On the whole, I am satisfied with myself.					
b	Saya rasa saya mempunyai beberapa kualiti yang baik. *I feel that I have a number of good qualities.*	1	2	3	4	5
c	Kadangkala saya rasa tidak berguna langsung. *At times, I think I am no good at all.*	1	2	3	4	5
d	Saya boleh melakukan pekerjaan seperti kebanyakan orang lain. *I am able to do things as well as most other people.*	1	2	3	4	5
e	Saya merasakan tidak banyak yang boleh saya banggakan. *I feel I do not have much to be proud of.*	1	2	3	4	5
f	Kadangkala saya sememangnya rasa tidak berguna. *I certainly feel useless at times.*	1	2	3	4	5
g	Saya rasa saya seorang yang berharga, sekurang-kurangnya pada tahap yang sama dengani orang lain. *I feel I'm a person of worth, at least on an equal plane with others.*	1	2	3	4	5
h	Saya berhajat untuk lebih hormat pada diri saya sendiri. *I wish I could have more respect for myself.*	1	2	3	4	5
i	Setelah mengambilkira segala-galanya, saya cenderung berasa yang saya seorang yang gagal.	1	2	3	4	5

No	Pernyataan / *Statement*	Sangat Tidak bersetuju/ *Strongly Disagree*	Tidak Bersetuju / *Disagree*	Berkecuali/ *Neutral*	Bersetuju/ *Agree*	Sangat Setuju/ *Strongly Agree*
	All in all, I am inclined to feel that I am a failure.					
j	Saya mengambil sikap positif terhadap diri saya. *I take a positive attitude toward myself.*	1	2	3	4	5

Index Agama Universiti Duke (Sila <u>BULATKAN</u> jawapan anda)
Duke University Religion Index (DUREL) (Please <u>CIRCLE</u> your answers)

34. Berapa kerapkah anda menghadiri aktiviti keagamaan di masjid, gereja, kuil, tokong atau perjumpaan agama yang lain?
How often do you attend religious activities in a mosque, church, temple, or other religious meetings?

1	2	3	4	5	6
Tidak pernah	Sekali setahun atau kurang dari itu	Beberapa kali setahun	Beberapa kali sebulan	Seminggu sekali	Lebih dari sekali dalam seminggu
Never	*Once a year or less*	*A few times a year*	*A few times a month*	*Once a week*	*More than once a week*

35. Berapa kerapkah anda meluangkan masa untuk aktiviti keagamaan secara bersendirian seperti bersembahyang, bermeditasi atau membaca kitab seperti Al-Quran atau Bible?
How often do you spend time in private religious activities such as prayer, meditation or Bible study?

1	2	3	4	5	6
Jarang atau tidak pernah	Beberapa kali sebulan	Sekali seminggu	Dua kali atau lebih dalam seminggu	Setiap hari	Lebih dari sekali dalam sehari
Rarely or never	*A few times a month*	*Once a week*	*Two or more times/week*	*Daily*	*More than once a day*

Bahagian berikutnya mengandungi 3 kenyataan tentang kepercayaan agama atau amalan. Sila tandakan jawapan bagi kenyataan yang tepat bagi anda.
The following section contains 3 statements about religious belief or experience. Please mark the extent to which each statement is true or not true for you.

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36. Saya dapat merasakan kehadiran Maha Pencipta (Tuhan) dalam hidup saya.
In my life, I experience the presence of the Divine (i.e. God)

1	2	3	4	5
Tidak benar sama sekali	Lebih cenderung kepada tidak benar	Tidak pasti	Lebih cenderung kepada benar	Amat benar sekali
Definitely not true	*Tends not to be true*	*Unsure*	*Tends to be true*	*Definitely true of me*

37. Kepercayaan terhadap agama saya menjadi pedoman kepada kehidupan saya secara menyeluruh.
My religious beliefs are what really lie behind my whole approach to life.

1	2	3	4	5
Tidak benar sama sekali	Lebih cenderung kepada tidak benar	Tidak pasti	Lebih cenderung kepada benar	Amat benar sekali
Definitely not true	*Tends not to be true*	*Unsure*	*Tends to be true*	*Definitely true of me*

38. Saya telah sedaya upaya menerapkan elemen keagamaan saya dalam menangani segala urusan kehidupan saya.
I try hard to carry my religion over into all other dealings in life.

1	2	3	4	5
Tidak benar sama sekali	Lebih cenderung kepada tidak benar	Tidak pasti	Lebih cenderung kepada benar	Amat benar sekali
Definitely not true	*Tends not to be true*	*Unsure*	*Tends to be true*	*Definitely true of me*

Soalan-soalan yang berikut adalah mengenai tingkah laku sosial anda. Sila BULATKAN jawapan anda.
The next series of questions are concerning your social behaviour. Please CIRCLE your answers.

39. Pernahkan anda cuba merokok sepanjang hidup anda?
Have you ever tried cigarette before in your whole life?

Ya / Yes	1	Tidak / No	2

40. Berapakah umur anda apabila anda merokok sebatang rokok untuk pertama kalinya?
How old were you when you smoke a whole cigarette for the first time?

Tidak pernah merokok	*Never smoked before*	1
8 tahun atau kurang	*8 years old or less*	2
9 tahun atau 10 tahun	*9 or 10 years old*	3
11 atau 12 tahun	*11 or 12 years old*	4
13 atau 14 tahun	*13 or 14 years old*	5
15 atau 16 tahun	*15 or 16 years old*	6
17 tahun atau lebih	*17 years old or older*	7

41. 30 hari yang lepas, berapa harikah anda merokok?
In the past 30 days, how many days have you smoked cigarettes?

0 hari	0 days	1
1 atau 2 hari	1 or 2 days	2
3 hingga 5 hari	3 to 5 days	3
6 hingga 9 hari	6 to 9 days	4
10 hingga 19 hari	10 to 19 days	5
20 hingga 29 hari	20 to 29 days	6
Keseluruhan 30 hari	All 30 days	7

42. Dalam tempoh 30 hari yang lepas, pada hari-hari yang anda telah merokok, berapakah bilangan rokok yang anda telah hisap dalam sehari?
On the days that you have smoked in the past 30 days, how many cigarettes did you smoke for a day?

Tiada	Nil	1
Kurang dari 1 batang	Less than 1 cigarette	2
2 hingga 5 batang	2 to 5 cigarettes	3
6 hingga 10 batang	6 to 10 cigarettes	4
11 hingga 20 batang	11 to 20 cigarettes	5
Lebih daripada 20 batang	More than 20 cigarettes	6

43. Adakah anda mempunyai sejarah merokok sekurang-kurangnya sebatang rokok setiap hari selama 30 hari?
Do you have a history of daily smoking for at least 30 days, at least a cigarette daily?

Ya / Yes	1	Tidak / No	2

44. Sepanjang hidup anda, berapa harikah yang anda telah mengambil sekurang-kurangnya satu gelas minuman beralkohol?
How many days in your whole life, have you drank at least one drink of alcohol?

0 hari	0 day	1
1 atau 2 hari	1 or 2 days	2
3 hingga 9 hari	3 to 9 days	3
10 hingga 19 hari	10 to 19 days	4
20 hingga 39 hari	20 to 39 days	5
40 hingga 99 hari	40 to 99 days	6
100 atau lebih hari	100 or more days	7

45. Berapakah usia anda ketika anda minum minuman beralkohol, lebih daripada satu hirup?
How old were you when you experienced a drink of alcohol, which is more than small sips?

Tidak pernah minum minuman beralkohol	Never dranked before	1
8 tahun atau kurang	8 years old or less	2

9 tahun atau 10 tahun	9 or 10 years old	3
11 atau 12 tahun	11 or 12 years old	4
13 atau 14 tahun	13 or 14 years old	5
15 atau 16 tahun	15 or 16 years olD	6
17 tahun atau lebih	17 years old or older	7

46. Selama 30 hari yang lepas, berapa harikah anda telah minum minuman beralkohol sekurang-kurangnya segelas?
For the past 30 days, how many days have you had at least a drink of alcohol?

0 hari	0 day	1
1 atau 2 hari	1 or 2 days	2
3 hingga 5 hari	3 to 5 days	3
6 hingga 9 hari	6 to 9 days	4
10 hingga 19 hari	10 to 19 days	5
20 hingga 29 hari	20 to 29 days	6
Keseluruhan 30 hari	All 30 days	7

47. 30 hari yang lepas, pernahkah anda minum minuman beralkohol sebanyak 5 gelas atau lebih dalam satu masa dan untuk berapa hari?
For the past 30 days, within few hours, have you ever had 5 or more drinks at one setting and for how many days?

0 hari	0 day	1
1 hari	1 day	2
2 hari	2 days	3
3 hingga 5 hari	3 to 5 days	4
6 hingga 9 hari	6 to 9 days	5
10 hingga 19 hari	10 to 19 days	6
20 hari ke atas	20 or more days	7

48. Berapa kalikah anda telah menghisap atau mengambil dadah terlarang sepanjang hidup anda?
How many times have you used illegal drugs in your life?

0 kali	0 time	1
1 atau 2 kali	1 or 2 times	2
3 hingga 9kali	3 to 9 times	3
10 hingga 19 kali	10 to 19 times	4
20 hingga 39 kali	20 to 39 times	5
40 hingga 99 hari	40 to 99times	6
100 kali atau lebih	100 or moretimes	7

49. Berapakah umur anda ketika anda cuba menghisap atau mengambil dadah terlarang buat pertama kali?
How old were you when you attempted illegal drugs for the first time?

Tidak pernah mencuba	Never tried before	1
8 tahun atau kurang	8 years old or less	2
9 tahun atau 10 tahun	9 or 10 years old	3

11 atau 12 tahun	*11 or 12 years old*	4
13 atau 14 tahun	*13 or 14 years old*	5
15 atau 16 tahun	*15 or 16 years ol*	6
17 tahun atau lebih	*17 years old or older*	7

50. Berapa kalikah anda telah menghisap atau mengambil dadah terlarang dalam masa 30 hari lepas?
How many occasions have you taken illegal drugs during the past 30 days?

0 kali	*0 time*	1
1 atau 2 kali	*1 or 2 times*	2
3 hingga 9kali	*3 to 9 times*	3
10 hingga 19 kali	*10 to 19 times*	4
20 hingga 39 kali	*20 to 39 times*	5
40 kali atau lebih	*40 or moretimes*	7

BAHAGIAN F: PERLAKUAN SEKSUAL
SECTION F: *SEXUAL BEHAVIOUR*

Untuk wanita:
For females:

51. Bilakah haid pertama anda? [   ] tahun / *years old*
When did you get your first menstruation?

Untuk lelaki:
***For males*:**

52. Bilakah anda menyedari perubahan fizikal yang ketara (seperti pecah suara atau rembesan air mani pada kali pertama)?
*When did you first notice significant physical changes (such as hoarseness of voice or the first nocturnal emission)?*tahun / *years* [   ]

53. Apakah definasi anda akan hubungan seksual?
What is your definition of sexual intercourse?

Penetrasi vagina /*Vaginal penetration*	1
Penetrasi bahagian belakang (punggung) / *Anal penetration*	2
Seks oral / *Oral sex*	3
Lain-lain. Sila nyatakan / [_____] *Others. Please specify*	4

54. Pernahkah anda melakukan hubungan seksual?
Have you ever had sexual intercourse?

Ya / *Yes*	1	*Tidak / No*	2

55. Berapakah umur anda ketika anda pertama kali melakukan hubungan seksual?
How old are you when you had your first sexual intercourse?

Tidak pernah melakukan hubungan seksual / *Never had sexual intercourse*	1
11 tahun atau lebih muda / *11 years old or younger*	2
12 tahun / *12 years old*	3
13 tahun / *13 years old*	4
14 tahun / *14 years old*	5
15 tahun / *15 years old*	6
16 tahun / *16 years old*	7
17 tahun atau lebih / *17 years old or older*	8

56. Bilakah kali pertama anda melakukan hubungan seksual?
When did you have sexual intercourse for the first time?

☐ Bulan / *month* ☐ tahun / *year*	
Tidak ingat / *Unable to recall*	1
Tidak pernah melakukan hubungan seksual / *Never had sexual intercourse*	2

57. Ketika kali pertama anda melakukan hubungan seksual, adakah anda dipaksa (dirogol, sumbang mahram)?
Were you forced to have sexual intercourse for the first time (rape, incest)?

Ya / Yes	1	Tidak / No	2	Tidak pernah melakukan hubungan seksual / *Never had sexual intercourse*	3

58. Pernahkah anda mempunyai sejarah melakukan perlakuan yang berhubungkait dengan hubungan seksual seperti bercium, menyentuh payu darah, menyentuh kemaluan, memberi atau menerima seks oral?
Have you ever had history of sexually related acts such as kissing, touching of breasts, touching of genitals, giving or receiving oral sex?

Ya / Yes	1	Tidak / No	2

59. Sepanjang hidup anda, berapa ramaikah pasangan seksual yang pernah anda ada?
Throughout your life, how many sexual partners have you had?

Tidak pernah melakukan hubungan seksual / *Never had sexual intercourse*	1
1 orang / *1 person*	2
2 orang / *2 people*	3
3 orang / *3 people*	4
4 orang / *4 people*	5
5 orang / *5 people*	6
6 orang atau lebih/ *6 or more people*	7

60. *3 bulan lepas,pernahkah anda melakukan hubungan seksual?*
During the past 3 months, have you ever had sexual intercourse?

Ya / Yes	1	Tidak / No	2

61. Berapa ramaikah pasangan seksual yang anda pernah ada sepanjang 3 bulan lalu?
How many sexual partners have you had in the past 3 months?

Tidak pernah melakukan hubungan seksual / *Never had sexual intercourse*	1
Pernah melakukan hubungan seksual, tetapi tidak mengadakan hubungan seksual sepanjang 3 bulan yang lalu / *Have had sexual intercourse but not for the past 3 months*	2
1 orang / *1 person*	3
2 orang / *2 people*	4
3 orang / *3 people*	5
4 orang / *4 people*	6
5 orang / *5 people*	7
6 orang atau lebih / *6 or more people*	8

62. Adakah anda minum minuman beralkohol sebelum kali terakhir anda melakukan hubungan seksual?
Did you drink alcohol or use drugs before you had sexual intercourse the last time?

Tidak pernah mengadakan hubungan seksual / *Never had sexual activity*	1
Ya / *Yes*	2
Tidak / *No*	3

63. Adakah anda atau pasangan anda menggunakan kondom pada kali terakhir anda melakukan hubungan seksual?
Did you or your partner use a condom the last time you had a sexual intercourse?

Tidak pernah mengadakan hubungan seksual / *Never had sexual activity*	1
Ya / *Yes*	2
Tidak / *No*	3

64. Sila pilih **SATU** kaedah daripada item-item di bawah yang anda atau pasangan anda gunakan untuk mengelakkan kehamilan pada kali terakhir anda melakukan hubungan seksual. (Pilih hanya **SATU** jawapan)
*Please choose **ONE** method from the items listed below which either you or your partner have used to prevent pregnancy the last time you had a sexual intercourse.(Select only **ONE** response)*

Tidak pernah mengadakan hubungan seksual / *Never had sexual intercourse*	1
Tidak menggunakan sebarang kaedah / *Did not use any method*	2
Pil perancang / *Birth control pills*	3
Kondom / *Condoms*	4
Depo-Provera (sebarang suntikan pencegah kehamilan), Implanon (sebarang implan), IUD / *Depo-Provera (or any injectable birth control), Implanon (or any implants), IUD*	5
Mengeluarkan zakar sebelum ejakulasi/ *Withdrawal*	6

Kaedah lain. Sila nyatakan / *Other methods.* *Please specify*	7
Tidak pasti / *Not sure*	8

65. Pernahkan anda hamil atau membuatkan gadis lain hamil?
Have you ever been pregnant or gotten a girl pregnant?

Tidak pernah / *Never*	1
Ya, sekali / *Yes, once*	2
Ya, 2 kali / *Yes, twice*	3
Ya, 3 kali / *Yes, 3 times*	4
Ya, 4 kali atau lebih / *Yes, 4 times or more*	5

BAHAGIAN G: DAYA KETAHANAN DIRI *SECTION G: RESILIENCE*

Resiliency Belief System Scale

66. Sila baca setiap pernyataan dengan teliti. Sila **TANDAKAN "X"** pada satu nombor yang menunjukkan berapa banyak yang anda bersetuju dengan setiap pernyataan tersebut.
*Please read each statement carefully. Please **MARK "X"** at one number for each statement to indicate how much you agree with it.*

1 = Sangat setuju 2 = Sederhana 3 = Setuju 4 = Tidak setuju 5 = Kurang setuju 6 = Sangat tidak setuju	1 = Strongly agree 2 = Moderately agree 3 = Agree 4 = Disagree 5 = Moderately disagree 6 = Strongly disagree		2	3	4	5	6
1	Kadang-kadang berbaloi mengambil risiko yang tidak perlu *(Sometimes it is worth to take risks that I shouldn't)*		2	3	4	5	6
2	Saya boleh tahu bila orang lain sedih *(I can tell when others are upset)*	1	2	3	4	5	6
3	Saya ada banyak harapan *(I have a lot of hope)*	1	2	3	4	5	6
4	Kadang-kadang saya perlu mengambil risiko supaya keadaan menjadi lebih baik *(Sometimes I need to take risks to make things better)*	1	2	3	4	5	6
5	Suatu hari nanti saya boleh guna ilmu yang ada untuk membantu orang lain *(Someday I will be able to use what I have learned to help others)*	1	2	3	4	5	6
6	Saya boleh rasa apa yang orang lain rasa *(I can feel what other people are feeling)*	1	2	3	4	5	6
7	Masa lampau tidak sepenting masa depan *(The past is not as important as the future)*	1	2	3	4	5	6
8	Ada orang tidak berjaya disebabkan oleh zaman kanak-kanak mereka	1	2	3	4	5	6

1 = Sangat setuju 2 = Sederhana 3 = Setuju 4 = Tidak setuju 5 = Kurang setuju 6 = Sangat tidak setuju	1 = Strongly agree 2 = Moderately agree 3 = Agree 4 = Disagree 5 = Moderately disagree 6 = Strongly disagree		2	3	4	5	6
	(Some people cannot make it because of their childhood)						
9	Biasanya saya boleh kenalpasti bila situasi mungkin berbahaya *(I can usually recognize when situations might be dangerous)*	1	2	3	4	5	6
10	Saya boleh buat kawan saya rasa lebih baik apabila mereka sedang bersedih *(I am able to make my friends feel better when they are sad)*	1	2	3	4	5	6
11	Saya mendapat keseronokan dengan membantu orang lain *(I get a lot of pleasure out of giving to others)*	1	2	3	4	5	6
12	Suatu hari nanti saya akan dapat memenuhi impian saya *(Someday I will able to make my dreams come true)*	1	2	3	4	5	6
13	Setiap orang boleh disayangi *(Everyone is able to be loved)*	1	2	3	4	5	6
14	Jika perlu, saya sanggup mengambil risiko *(If have to, I take a lot of risks)*	1	2	3	4	5	6
15	Saya boleh merasakan apabila situasi menjadi bahaya *(I can feel when a situation is dangerous)*	1	2	3	4	5	6
16	Saya gembira dengan kehidupan saya *(I am happy with my life)*	1	2	3	4	5	6
17	Walaupun ibu bapa melukakan hati anak mereka, mereka masih boleh menjadi ibu bapa yang baik *(Even though parents hurt their children, they can still be good parents)*	1	2	3	4	5	6
18	Secara umum, hidup ini menyeronokkan *(In general, life is good)*	1	2	3	4	5	6
19	Orang boleh bergantung kepada saya *(People can depend on me)*	1	2	3	4	5	6
20	Saya percaya mengambil risiko adalah terbaik, walau apa pun kesannya *(I belief that it is best to take a risk, no matter what the consequences are)*	1	2	3	4	5	6
21	Seseorang boleh melakukan satu kejahatan dan masih boleh menjadi orang yang sangat baik *(A person can do a bad thing and still be a really good person)*	1	2	3	4	5	6
22	Adik-beradik saya banyak bergantung kepada saya dalam kebanyakan masa	1	2	3	4	5	6

1 = Sangat setuju 2 = Sederhana 3 = Setuju 4 = Tidak setuju 5 = Kurang setuju 6 = Sangat tidak setuju	1 = Strongly agree 2 = Moderately agree 3 = Agree 4 = Disagree 5 = Moderately disagree 6 = Strongly disagree		2	3	4	5	6
	(My brothers and sisters depend on me a lot of the time)						
23	Jika sesuatu yang buruk berlaku, saya akan beritahu kawan saya mengenainya *(If something bad happened, I would talk to my friends about it)*	1	2	3	4	5	6
24	Saya boleh 'melepaskan' perkara-perkara buruk dalam kehidupan saya *(I am able to "let go" of the bad things in life)*	1	2	3	4	5	6
25	Saya percaya ada orang yang sayangkan saya *(I belief that someone loves me)*	1	2	3	4	5	6
26	Orang baik boleh berbuat jahat *(Good people can do bad things)*	1	2	3	4	5	6
27	Walau apapun yang terjadi, saya boleh mengatasinya *(No matter what happens, I will make it)*	1	2	3	4	5	6
28	Saya percaya akan 'kebaikan' orang lain *(I believe in the "goodness" of others)*	1	2	3	4	5	6
29	Suatu hari nanti saya akan dapat menggunakan apa yang telah dipelajari untuk menolong orang lain dalam hidup saya *(Someday I will be able to use what I have learned to help others in my life)*	1	2	3	4	5	6
30	Saya suka membantu orang lain yang tidak berdaya *(I like helping others who cannot help themselves)*	1	2	3	4	5	6
31	Saya menunggu masa depan dengan penuh harapan *(I look forward to the future)*	1	2	3	4	5	6
32	Guru-guru & kaunselor telah banyak membantu saya dalam menghadapi masa yang sukar *(My teachers or counsellors have been very helpful in getting me through rough times)*	1	2	3	4	5	6
33	Salah satu perkara yang sangat penting dalam hidup adalah membantu orang lain *(One of the most important things in life is giving to others)*	1	2	3	4	5	6
34	Jika salah seorang ibu/bapa saya menghidapi penyakit serius, saya akan mendapatkan banyak maklumat mengenainya supaya saya dapat membantu mereka *(If one of my parents developed a serious illness, I would learn a lot about it so I could help them)*	1	2	3	4	5	6
35	Saya rasa ada harapan untuk hari esok *(I feel like there is hope for tomorrow)*	1	2	3	4	5	6
36	Ada rahmat dari sesuatu kejadian buruk *(Something good always comes out of something bad)*	1	2	3	4	5	6

1 = Sangat setuju 2 = Sederhana 3 = Setuju 4 = Tidak setuju 5 = Kurang setuju 6 = Sangat tidak setuju	1 = Strongly agree 2 = Moderately agree 3 = Agree 4 = Disagree 5 = Moderately disagree 6 = Strongly disagree		2	3	4	5	6
37	Saya membantu orang lain yang tidak dapat menolong diri sendiri *(I help others who cannot help themselves)*	1	2	3	4	5	6
38	Saya tidak berasa saya tidak dapat mengawal keadaan *(I do not feel out of control)*	1	2	3	4	5	6
39	Saya menjaga kebajikan orang lain dalam kebanyakan masa *(Most of the time, I take care of people)*	1	2	3	4	5	6
40	Saya dapat mengawal kehidupan saya *(I am in control of my life)*	1	2	3	4	5	6
41	Saya boleh mengawal perasaan *(I am able to control my feeling)*	1	2	3	4	5	6
42	Saya mempunyai rancangan untuk masa depan saya *(I have a plan for the future)*	1	2	3	4	5	6
43	Saya mempunyai sikap yang baik mengenai kehidupan *(I have a good attitude about life)*	1	2	3	4	5	6
44	Saya percaya saya boleh disayangi walau apa pun yang saya lakukan *(I belief I can be loved no matter what I do)*	1	2	3	4	5	6
45	Saya boleh disayangi oleh guru, jurulatih, kaunselor atau orang lain selain daripada keluarga saya *(I can be loved by a teacher, coach, counsellor or someone else other than my family)*	1	2	3	4	5	6

Tamat.
Terima kasih atas kerjasama anda.

This is the end of the survey.
Thank you very much for your help.

Appendix E: Measures of Sampling Adequacy-Anti-Image Correlation Matrix (n=205)

	PP1	PP2	PP3	PP4	PP5	PP6	PP7	PP8	PP9	PP10	PP11	PP12	PP13	PP14	PP15	PP16	PP17	PP18
PP1	0.92																	
PP2		0.75																
PP3			0.90															
PP4				0.90														
PP5					0.91													
PP6						0.82												
PP7							0.77											
PP8								0.94										
PP9									0.95									
PP10										0.92								
PP11											0.66							
PP12												0.91						
PP13													0.92					
PP14														0.92				
PP15															0.76			
PP16																0.94		
PP17																	0.92	
PP18																		0.94

Appendix E, continued

	PP19	PP20	PP21	PP22	PP23	PP24	PP25	PP26	PP27	PP28	PP29	PP30	PP31	PP32	PP33	PP34	PP35
PP19	0.87																
PP20		0.82															
PP21			0.95														
PP22				0.93													
PP23					0.91												
PP24						0.76											
PP25							0.72										
PP26								0.80									
PP27									0.92								
PP28										0.86							
PP29											0.89						
PP30												0.68					
PP31													0.95				
PP32														0.93			
PP33															0.82		
PP34																0.92	
PP35																	0.77

Appendix F: Inter-Item Correlation Matrix for The 28-Item Susceptibility To Peer Pressure Scale (N=205)

	PP1	PP2	PP3	PP4	PP5	PP6	PP7	PP8	PP9	PP10	PP11	PP12	PP13	PP14	PP15	PP16	PP17	PP18	PP19	PP20
PP1	1.00																			
PP2	0.10	1.00																		
PP3	-0.18	0.29	1.00																	
PP4	0.25	0.22	0.03	1.00																
PP5	0.26	0.24	0.56	-0.08	1.00															
PP6	-0.07	0.18	0.27	-0.05	0.42	1.00														
PP7	-0.05	0.08	0.28	0.12	0.19	0.17	1.00													
PP8	0.51	0.04	-0.20	0.31	-0.40	-0.16	-0.12	1.00												
PP9	-0.29	0.13	0.47	-0.13	0.64	0.43	0.31	-0.41	1.00											
PP10	0.38	0.11	-0.25	0.22	-0.34	-0.15	-0.10	0.34	-0.33	1.00										
PP11	0.17	0.07	0.12	0.17	0.04	0.08	0.11	0.02	0.14	-0.01	1.00									
PP12	0.41	0.02	-0.20	0.26	-0.30	-0.14	-0.06	0.46	-0.37	0.35	-0.01	1.00								
PP13	-0.18	0.16	0.35	0.01	0.47	0.26	0.25	-0.26	0.48	-0.23	0.14	-0.28	1.00							
PP14	0.57	0.04	-0.21	0.27	-0.37	-0.15	-0.16	0.59	-0.42	0.43	0.04	0.44	-0.29	1.00						
PP15	0.06	0.26	0.18	0.07	0.20	0.36	0.10	0.07	0.14	-0.06	0.21	0.01	0.17	0.13	1.00					
PP16	0.45	-0.04	-0.26	0.18	-0.33	-0.16	-0.11	0.47	-0.32	0.47	0.05	0.42	-0.26	0.50	-0.03	1.00				
PP17	0.46	-0.03	-0.30	0.30	-0.46	-0.22	-0.04	0.54	-0.48	0.51	0.00	0.46	-0.25	0.53	-0.04	0.54	1.00			
PP18	-0.25	0.11	0.49	-0.10	0.65	0.39	0.27	-0.39	0.69	-0.32	0.17	-0.36	0.51	-0.38	0.17	-0.30	-0.45	1.00		
PP19	-0.14	0.23	0.45	-0.03	0.45	0.57	0.21	-0.20	0.51	-0.24	0.17	-0.26	0.39	-0.24	0.31	-0.23	-0.37	0.55	1.00	
PP20	0.15	0.09	0.07	0.13	-0.04	-0.02	0.03	0.20	0.00	0.14	0.15	0.20	-0.02	0.19	-0.01	0.14	0.17	0.05	0.05	1.00
PP21	0.52	0.04	-0.27	0.38	-0.37	-0.19	-0.07	0.56	-0.42	0.46	0.11	0.47	-0.22	0.57	0.03	0.50	0.61	-0.41	-0.26	0.22
PP22	0.42	0.01	-0.18	0.29	-0.24	-0.13	-0.14	0.51	-0.29	0.36	0.13	0.37	-0.17	0.49	0.04	0.51	0.48	-0.27	-0.17	0.25
PP23	-0.24	0.11	0.44	-0.06	0.60	0.37	0.25	-0.34	0.66	-0.29	0.05	-0.28	0.58	-0.36	0.12	-0.28	-0.35	0.68	0.53	0.02
PP24	0.12	0.21	0.13	0.15	0.07	0.20	0.11	0.08	0.09	0.11	0.16	-0.02	0.09	0.12	0.16	0.00	0.06	0.04	0.21	0.03
PP25	-0.02	0.12	0.23	0.08	0.30	0.15	0.13	0.01	0.24	0.03	0.18	0.00	0.24	0.10	0.08	0.00	0.02	0.26	0.26	0.14
PP26	0.13	0.28	0.18	0.14	0.16	0.21	0.23	0.04	0.19	0.08	0.17	0.04	0.14	0.02	0.14	0.04	-0.05	0.23	0.27	0.15
PP27	0.33	-0.05	-0.26	0.30	-0.37	-0.23	-0.01	0.41	-0.38	0.32	0.12	0.32	-0.19	0.39	-0.04	0.40	0.48	-0.29	-0.20	0.22
PP28	-0.22	0.13	0.25	0.02	0.36	0.27	0.19	-0.26	0.34	-0.19	0.10	-0.20	0.33	-0.23	0.13	-0.31	-0.22	0.33	0.21	0.00
PP29	0.35	0.06	-0.19	0.18	-0.21	-0.13	-0.06	0.28	-0.23	0.44	-0.01	0.18	-0.17	0.35	-0.01	0.36	0.42	-0.23	-0.13	0.20
PP30	0.22	0.19	0.05	0.25	0.02	0.03	0.17	0.13	0.02	0.21	0.07	0.07	0.09	0.22	0.17	0.10	0.24	0.04	0.21	0.03
PP31	0.47	0.02	-0.23	0.27	-0.38	-0.12	-0.07	0.65	-0.42	0.35	0.03	0.44	-0.29	0.61	0.08	0.45	0.51	-0.42	-0.22	0.23
PP32	-0.18	0.14	0.34	-0.07	0.43	0.28	0.14	-0.25	0.48	-0.30	0.13	-0.13	0.43	-0.22	0.19	-0.26	-0.33	0.47	0.41	0.06
PP33	-0.03	0.08	0.26	0.05	0.34	0.14	0.10	-0.08	0.30	-0.12	0.10	-0.01	0.30	-0.07	0.06	-0.18	-0.13	0.34	0.22	0.02
PP34	0.45	-0.02	-0.24	0.28	-0.37	-0.17	0.08	0.44	-0.34	0.44	-0.02	0.44	-0.22	0.47	-0.03	0.50	0.55	-0.28	-0.22	0.18
PP35	0.03	0.26	0.32	0.08	0.27	0.26	0.11	-0.06	0.24	-0.15	0.15	-0.04	0.35	-0.08	0.26	-0.06	-0.16	0.21	0.35	0.07

Appendix F, continued

	PP21	PP22	PP23	PP24	PP25	PP26	PP27	PP28	PP29	PP30	PP31	PP32	PP33	PP34	PP35
PP1															
PP2															
PP3															
PP4															
PP5															
PP6															
PP7															
PP8															
PP9															
PP10															
PP11															
PP12															
PP13															
PP14															
PP15															
PP16															
PP17															
PP18															
PP19															
PP20															
PP21	1.00														
PP22	0.52	1.00													
PP23	-0.36	-0.25	1.00												
PP24	0.06	0.15	0.09	1.00											
PP25	-0.02	0.15	0.23	0.24	1.00										
PP26	0.06	0.07	0.16	0.17	0.19	1.00									
PP27	0.46	0.51	-0.32	0.10	0.09	0.08	1.00								
PP28	-0.19	-0.13	0.38	0.10	0.12	0.19	-0.23	1.00							
PP29	0.43	0.35	-0.13	0.09	-0.01	0.02	0.38	-0.19	1.00						
PP30	0.16	0.11	0.08	0.30	0.10	0.21	0.23	0.05	0.15	1.00					
PP31	0.57	0.47	-0.36	0.09	0.00	0.03	0.40	-0.29	0.34	0.09	1.00				
PP32	-0.31	-0.21	0.43	0.07	0.21	0.20	-0.19	0.33	-0.20	0.09	-0.29	1.00			
PP33	-0.14	-0.10	0.29	0.09	0.18	0.21	-0.19	0.33	-0.15	0.14	-0.17	0.32	1.00		
PP34	0.50	0.41	-0.19	0.11	-0.05	0.04	0.48	-0.12	0.43	0.19	0.43	-0.27	-0.20	1.00	
PP35	0.00	-0.08	0.33	0.09	0.07	0.06	0.11	0.15	0.03	0.11	-0.03	0.16	0.20	-0.05	1.00

Appendix G: Map of the Regions in Malaysia

Note. The states circled are the Central Region
   Source: Go2travelmalaysia. (2011). Travel Malaysia Guide. Retrieved 3 August, 2014, from http://go2travelmalaysia.com/

REGIONS	STATES
Northern region	Perlis, Kedah, Perak and Pulau Pinang
Central region	Federal Territory of Kuala Lumpur, Federal Territory of Putrajaya, Selangor and Negeri Sembilan
Southern region	Melaka and Johor
Eastern region	Pahang, Terengganu and Kelantan
East Malaysia	Sabah, Sarawak and the Federal Territory of Labuan

3rd International Public Health Conference & 20th National Public Health Colloquium (Oral Presentation)

(Riverside Majestic Hotel, Kuching, Sarawak, Malaysia on 28 to 29 August 2013)
Malaysian Journal of Public Health Medicine, Vol. 13 (Suppl 1) 2013

SCIENTIFIC PAPERS PRESENTATION

EPIDEMIOLOGY / STATISTICS

PRO-A1

The Malaysian Version of Susceptibility to Peer Pressure Scale: Examining Its Construct Validity among Students in Institutions of Higher Learning

Shazimah A. Samad[1,2,3], Noran N. Hairi[1,2], Maslinor Ismail[1]

1. Department of Social and Preventive Medicine, Faculty of Medicine, University of Malaya, Malaysia
2. Julius Centre University of Malaya, Faculty of Medicine, University of Malaya, Malaysia
3. Ministry of Health, Malaysia

Introduction: Adolescence is a transitional stage predisposing adolescents to detach themselves from their family. As a result, they would depend on their peers for support and relationship. This heightened peer interaction may give rise to undesired consequences. An instrument to measure this peer pressure, the susceptibility to Peer Pressure Scale was developed and validated among adolescents in Singapore. The present study aimed at examining the reliability and construct validity of the susceptibility to Peer Pressure Scale.

Materials and Methods: A cross-sectional study involving 515 students in three tertiary level institutions was conducted between December 2012 and February 2013. The scale consisted of 35 hypothetical scenarios utilizing a 4-point Likert-type scale. Both forward and backward translations were performed prior to pilot test. The scale's reliability was determined by Cronbach's α and Kappa statistics, while its construct validity was assessed using exploratory and confirmatory factor analyses.

Results: The findings supported a two-factor structure instead of the original four-factor structure. The two factors explained 45.1% of the total variance. Cronbach's α for the two factors were .91 and .89, respectively. Majority of the items reached moderate to substantial agreement in test-retest analysis (.4 to .61). Multi-group analyses demonstrated stability across gender.

Conclusion: The Malay version of the susceptibility to Peer Pressure Scale displayed good psychometric properties. This 18-item scale is a valid and reliable instrument in the evaluation of the susceptibility to peer pressure. However, future studies to assess its stability across the different ethnic groups are warranted.

Acknowledgement: We would like to thank the author of the scale for the permission to utilize and modify the scale. The cooperation of the Students' Affairs of the tertiary level institutions and the respondents are greatly appreciated.

Keywords: adolescents, confirmatory factor analysis, construct validity, exploratory factor analysis, susceptibility to peer pressure

Psychometric Properties of the Susceptibility to Peer Pressure Scale among Late Adolescents in Institutions of Higher Learning in Malaysia submitted to Journal of Advanced Nursing

Subject:	New submission to Journal of Advanced Nursing - Manuscript ID JAN-2015-0118
From:	jan@wiley.com (jan@wiley.com)
To:	shazimah_eema@yahoo.com; noran@um.edu.my; maslinor@ummc.edu.my;
Date:	Wednesday, 11 February 2015, 23:41

11-Feb-2015

JAN-2015-0118: Psychometric Properties of the Susceptibility to Peer Pressure Scale among Late Adolescents in Institutions of Higher Learning in Malaysia

Dear Dr Abdul Samad:

Your manuscript has been successfully submitted to the Journal of Advanced Nursing. Please make a note of your manuscript ID:

JAN-2015-0118

Please note that all papers are subject to preliminary review by the Editor-in-Chief before being sent for review.

The review process is usually completed within 10 weeks, but can take longer, depending on reviewer availability (e.g. during holiday periods or if an alternative reviewer needs to be approached). This time frame includes selecting and inviting reviewers, awaiting their response to the request, consideration of the reviews by the assigned Editor and, finally, the Editor-in-Chief's decision and communication with the author. Please be patient during this process and it would be much appreciated if you would not email the Editorial Office to enquire about the status of your manuscript until a period of at least 10 weeks has lapsed. You can track the progress of your paper using the tracking facility in your author centre.

If there are any changes to your personal details or e-mail address, please login to ScholarOne Manuscripts at http://mc.manuscriptcentral.com/jan and edit your user information accordingly.

You can keep track of your manuscript at any time by logging on to your Author Centre at http://mc.manuscriptcentral.com/jan.
Thank you for submitting your manuscript to the Journal of Advanced Nursing.

Best wishes,

Gareth Watkins
Journal of Advanced Nursing

Role of Individual, Family and Peers in Sexual Initiation among Late Adolescents attending Institutions of Higher Learning in Malaysia

Subject:	Asia Pacific Journal of Public Health - Decision on Manuscript ID APJPH-15-Oct-514.R2
From:	lowwy@um.edu.my (lowwy@um.edu.my)
To:	shazimah_eema@yahoo.com; shazimahsamad@gmail.com;
Date:	Monday, 28 March 2016, 6:26

27-Mar-2016

Dear Dr. Abdul Samad,

It is a pleasure to accept your revised manuscript entitled "Role of Individual, Family and Peers in Sexual Initiation among Late Adolescents attending Institutions of Higher Learning in Malaysia" in its current form for publication in the Asia Pacific Journal of Public Health.

Thank you for your fine contribution. On behalf of the Editors of the Asia Pacific Journal of Public Health, we look forward to your continued contributions to the Journal.

Sincerely Yours,

Prof Wah-Yun Low, PhD
Editor-in-Chief
Asia Pacific Journal of Public Health
Faculty of Medicine, University of Malaya
50603, Kuala Lumpur, Malaysia
lowwy@um.edu.my

Appendix J: Permission Letters

Letter confirming ethical approval from University of Malaya Medical Centre (UMMC) Medical Ethics Committee (1)

No. Rujukan: PPUM/MDU/300/04/03

16 Mei 2012

Dr. Shazimah Abdul Samad
Jabatan Perubatan Kemasyarakatan & Pencegahan
Pusat Perubatan Universiti Malaya

Puan,

SURAT PEMAKLUMAN KEPUTUSAN PERMOHONAN MENJALANKAN PROJEK PENYELIDIKAN

Correlates of early sexual initiation and determination of sexual resilience among adolescents attending tertiary level institutions: Employing quantitative and qualitative approaches.
Protocol No : -
MEC Ref. No : 913.9

Dengan hormatnya saya merujuk kepada perkara di atas.

Bersama-sama ini dilampirkan surat pemakluman keputusan dan senarai ahli Jawatankuasa Etika Perubatan yang bermesyuarat pada 18 April 2012 untuk makluman dan tindakan puan selanjutnya.

2. Sila maklumkan kepada Jawatankuasa Etika Perubatan mengenai butiran kajian samada telah tamat atau diteruskan mengikut jangka masa kajian tersebut.

Sekian, terima kasih.

"BERKHIDMAT UNTUK NEGARA"

Saya yang menurut perintah,

Norashikin Mahmood
Setiausaha
Jawatankuasa Etika Perubatan
Pusat Perubatan Universiti Malaya

s.k :   Ketua
         Jabatan Perubatan Kemasyarakatan & Pencegahan

Surat ini adalah cetakan komputer dan tidak memerlukan tandatangan.

Letter confirming ethical approval from University of Malaya Medical Centre (UMMC)
Medical Ethics Committee

UNIVERSITI MALAYA

PUSAT PERUBATAN UM

**MEDICAL ETHICS COMMITTEE
UNIVERSITY MALAYA MEDICAL CENTRE**
ADDRESS: LEMBAH PANTAI, 59100 KUALA LUMPUR, MALAYSIA
TELEPHONE: 03-79493209 FAXIMILE: 03-79494638

NAME OF ETHICS COMMITTEE/IRB: Medical Ethics Committee, University Malaya Medical Centre **ADDRESS:** LEMBAH PANTAI 59100 KUALA LUMPUR	ETHICS COMMITTEE/IRB REFERENCE NUMBER: 913.9
PROTOCOL NO: **TITLE:** Correlates of early sexual initiation and determination of sexual resilience among adolescents attending tertiary level institutions: Employing quantitative and qualitative approaches	
PRINCIPAL INVESTIGATOR: Dr. Shazimah Abdul Samad **TELEPHONE:** **KOMTEL:**	**SPONSOR:**

The following item [✓] have been received and reviewed in connection with the above study to be conducted by the above investigator.

[✓] Application Form   Ver date: 02 April 12
[✓] Study Protocol   Ver date:
[ ] Investigator's Brochure   Ver date:
[✓] Patient Information Sheet   Ver date:
[✓] Consent Form
[ ] Questionnaire
[✓] Investigator(s) CV's (Dr. Shazimah Abdul Samad)

and have been [✓]

[✓] Approved
[ ] Conditionally approved (identify item and specify modification below or in accompanying letter)
[ ] Rejected (identify item and specify reasons below or in accompanying letter)

Comments:

However, there is no need for consent to be in written form, so that confidentiality is ensured.

Investigator are required to:
1) follow instructions, guidelines and requirements of the Medical Ethics Committee.
2) report any protocol deviations/violations to Medical Ethics Committee.
3) provide annual and closure report to the Medical Ethics Committee.
4) comply with International Conference on Harmonization – Guidelines for Good Clinical Practice (ICH-GCP) and Declaration of Helsinki.
5) note that Medical Ethics Committee may audit the approved study.

Date of approval: 18th APRIL 2012

c.c   Head
Department of Social & Preventive Medicine

Deputy Dean (Research)
Faculty of Medicine

Secretary
Medical Ethics Committee
University Malaya Medical Centre

PROF. DATUK LOOI LAI MENG
Chairman
Medical Ethics Committee

Letter confirming ethical approval from University of Malaya Medical Centre (UMMC)
Medical Ethics Committee (3)

UNIVERSITI MALAYA
PUSAT PERUBATAN UM

MEDICAL ETHICS COMMITTEE
UNIVERSITY MALAYA MEDICAL CENTRE
ADDRESS: LEMBAH PANTAI, 59100 KUALA LUMPUR, MALAYSIA
TELEPHONE: 03-79493209 FAXIMILE: 03-79494638

MEDICAL ETHICS COMMITTEE COMPOSITION, UNIVERSITY MALAYA MEDICAL CENTRE
Date: 18th APRIL 2012

Member (Title and Name)	Occupation (Designation)	Male/Female (M/F)	Tick (✓) if present when above items were reviewed
Chairperson: Y. Bhg. Prof. Datuk Looi Lai Meng	Senior Consultant Department of Pathology	Female	✓
Deputy Chairperson: Prof. Kulenthran Arumugam	Senior Consultant Medical Education Research and Development Unit (MERDU)	Male	✓
Secretary (non-voting): Cik Norashikin Mahmood	Scientific Officer Department of Quality	Female	✓
Members: 1. Y. Bhg. Prof. Dato' Patrick Tan Seow Koon	Deputy Director (Professional) University Malaya Medical Centre	Male	✓
2. Prof. Tan Chong Tin	Representative of Head Department of Medicine	Male	✓
3. Assoc. Prof. Stephen Thevananthan a/l Jambun	Representative of Head Department of Psychological Medicine	Male	✓
4. Assoc. Prof. Alizan Abdul Khalil	Head Department of Surgery	Male	
5. Dr. Poppy Rajan	Representative of Head Department of Pharmacology	Female	✓
6. Mrs. Harbans Kaur a/p Harcharan Singh	Representative of Chief Pharmacist Pharmacy Centre University Malaya Medical Centre	Female	✓
7. Y. Bhg. Assoc .Prof. Datin Grace Xavier	Representative of Dean (Research Fellow) Faculty of Law University Malaya	Female	✓
8. Y. Bhg. Datin Aminah bt. Pit Abdul Rahman	Public Representative	Female	✓
9. Madam Ong Eng Lee	Public Representative	Female	✓

Comments: The MEC of University Malaya Medical Centre is operating according to ICH-GCP guidelines and the Declaration of Helsinki. Member's no. 7, 8 & 9 are representatives from Faculty of Law in the University Malaya and the public. They are independent of the hospital or trial site.

....
PROF. DATUK LOOI LAI MENG
Chairman
Medical Ethics Committee

424

Approval Letter from Ministry of Higher Education (1)

KEMENTERIAN PENGAJIAN TINGGI MALAYSIA
BAHAGIAN PERANCANGAN DAN PENYELIDIKAN
ARAS 13, NO. 2, MENARA 2, JALAN P5/6, PRESINT 5
62200 WILAYAH PERSEKUTUAN PUTRAJAYA

TEL : 03-8870 5080 FAX : 03-8870 6809 WEB : http://www.mohe.gov.my

Ruj. Kami   : KPT.R.620 – 1/1/1 Jld.18 (36)
Tarikh   : 16 April 2012

Pn. Shazimah binti Abdul Samad
No. 16
Jalan TSJ 5A
Taman Sri Jelok
43000 Kajang
Selangor

(Tel: 019-572 6076)

Tuan/Puan,

Kebenaran Untuk Menjalankan Kajian Di IPTA / IPTS / Politeknik / Kolej Komuniti / Agensi / Jabatan / Bahagian di Kementerian Pengajian Tinggi Malaysia

Dengan segala hormatnya saya diarah merujuk perkara tersebut di atas.

2.   Sukacita dimaklumkan bahawa permohonan tuan/puan untuk menjalankan kajian bertajuk :

"Correlates of Early Sexual Initiation and Determination of Sexual Resilience among Adolescents Attending Tertiary Level Institutions: Employing Quantitative and Qualitative Approaches" diluluskan.

3.   Kelulusan ini adalah berdasarkan kepada cadangan penyelidikan dan instrumen kajian yang tuan/puan kemukakan ke Bahagian ini. **Kebenaran bagi menggunakan sampel kajian perlu diperoleh daripada Naib Canselor / Rektor / Presiden / Ketua Eksekutif / Pengarah / Dekan Fakulti di IPTA / IPTS / Politeknik / Kolej Komuniti / Agensi / Jabatan / Bahagian yang berkenaan.**

1

MENERAJU KEGEMILANGAN ILMU
Memperolehi persijilan ISO 9001 : 2008

Approval Letter from Ministry of Higher Education

4.   Sila kemukakan ke Bahagian ini senaskhah laporan akhir kajian setelah selesai kelak. Adalah dimaklumkan, tuan/puan hendaklah mendapat **kebenaran terlebih dahulu** daripada Bahagian ini sekiranya sebahagian atau sepenuhnya dapatan kajian tersebut hendak dibentangkan di mana-mana forum atau seminar atau untuk diumumkan kepada media massa.

Sekian untuk makluman dan tindakan tuan/puan selanjutnya. Terima kasih.

"BERKHIDMAT UNTUK NEGARA"

Saya yang menurut perintah,
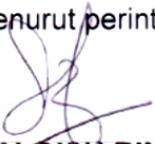
(SITI NUR BALQISH BINTI AMINUDDIN)
Bahagian Perancangan & Penyelidikan
b.p. Ketua Setiausaha
Kementerian Pengajian Tinggi Malaysia.

2

Approval from the author of the Susceptibility to Peer Pressure Scale

Subject:	RE: Susceptibility to peer pressure scale
From:	Sim Tick Ngee (psysimtn@nus.edu.sg)
To:	shazimah_eema@yahoo.com;
Date:	Tuesday, 11 September 2012, 16:50

Dear Shazimah,

Attached is the scale. Please feel free to use and/or modify it to suit your purposes.

Regards,

Tick Ngee

From: Shazimah abdul samad [mailto:shazimah_eema@yahoo.com]
Sent: Thursday, September 06, 2012 8:58 PM
To: Sim Tick Ngee
Subject: Susceptibility to peer pressure scale

Dear Associate Prof Tick Ngee Sim,

How do you do?
I'm a doctorate candidate of Public Health (DrPH) from University of Malaya,Malaysia.
I've read your article entitled ' *A Domain Conceptualization of Adolescent Susceptibility to Peer Pressure*'. I've been searching for a scale which has been used on Asian population. My thesis is concerning the correlates of adolescents' sexual activity and one of the factors I'm looking at is the peer influence.
Therefore, I'm very interested in utilizing the scale adapted by you used in the study above. It would be a great honour if you could give me the permission to use the scale in my study. I also would appreciate it very much if you could provide me a copy of the scale and its translation if possible.
Your assistance in this matter is greatly appreciated and I would like to thank you very much.

Warm regards,
Shazimah Abd Samad,
DrPH,
Social and Preventive Medicine,
Medicine Faculty,
University of Malaya,
Kuala Lumpur, Malaysia.

Approval from the author of the Students' Parents Actions Questionnaire 1

Subject:	Re: Seeking permission to utilize Students' Parents Actions Questionnaire 1
From:	William Koh (william8m@yahoo.com.my)
To:	shazimah_eema@yahoo.com;
Date:	Thursday, 20 September 2012, 19:58

Hi Shazimah,
Of course you may use the instrument I have developed. It uses a 5-point Likert scale.
The intensity of the scoring scheme was based on the frequency of action by parents.
Thus, it was assumed that the higher the frequency of certain action would indicate the tendency towards the particular dimension.

Hope this help.
All the best in your endeavour.

Dr. William Koh
Have a nice day.

From: Shazimah abdul samad <shazimah_eema@yahoo.com>
To: "william8m@yahoo.com.my" <william8m@yahoo.com.my>
Sent: Thursday, 20 September 2012 4:17 PM
Subject: Seeking permission to utilize Students' Parents Actions Questionnaire 1

Dear Dr Koh,
How do you do?
I'm a doctorate candidate of Public Health (DrPH) from University of Malaya.
I've read your article entitled ' *Multidimensional Parents' Action on Adolescents Academic Achievement in Malaysia'.*
My thesis is concerning the correlates of adolescents' sexual activity and one of the factors I'm looking at is the parental factor.
Therefore, I'm very interested in utilizing the scale that you have developed in the study above for my thesis. It would be a great honour if you could give me the permission to use the scale in my study. I also wonder if you could provide clarification on the scoring scheme if possible.
Your assistance in this matter is greatly appreciated and I would like to thank you very much.

Warm regards,
Shazimah Abd Samad,
DrPH,
Social and Preventive Medicine,
Medicine Faculty,
University of Malaya,
Kuala Lumpur, Malaysia.

Approval from the author of the Malay version of Rosenberg Self-esteem Scale

Subject:	Re: Seeking Permission for using the Malay version of Rosernberg Self-esteem scale
From:	Mohd Jamil Yaacob (jamil@kb.usm.my)
To:	shazimah_eema@yahoo.com;
Date:	Monday, 24 September 2012, 10:31

Dear Dr Shazimah.

It a great honour. You are welcome to use the questionnaire.

Dr Jamil

Assoc Prof & Head,
Dept of Psychiatry,
School of Medical Sciences,
Universiti Sains Malaysia,
16150 Kubang Kerian, Kelantan.

----- Original Message -----
From: "Shazimah abdul samad" <shazimah_eema@yahoo.com>
To: jamil@kb.usm.my
Sent: Thursday, September 20, 2012 2:56:07 PM GMT +08:00 Beijing / Chongqing / Hong Kong / Urumqi
Subject: Seeking Permission for using the Malay version of Rosernberg Self-esteem scale

Assalamualaikum, Assoc Prof Dr Mohd Jamil,
I'm a doctorate candidate of Public Health (DrPH) from University of Malaya.
I've read your article entitled ' Validity and Reliability Study of Rosenberg Self-esteem Scale in Seremban School Children'.
My thesis is concerning the correlates of adolescents' sexual activity and one of the factors I'm looking at is the adolescents' self-esteem.
Therefore, I'm very interested in utilizing the scale that you have validated in the study above. It would be a great honour if you could give me the permission to use the scale in my study.

Your assistance in this matter is greatly appreciated and I would like to thank you very much.

Warm regards,

Shazimah Abd Samad,
DrPH,
Social and Preventive Medicine,
Medicine Faculty,
University of Malaya,
Kuala Lumpur, Malaysia.

Approval from the author of the Resilience Belief Scale Scale

Subject:	Re: Memohon kebenaran untuk menggunakan "Validated Resilience Belief Scale"
From:	Azlina Abu Bakar (azlina@umt.edu.my)
To:	shazimah_eema@yahoo.com;
Date:	Monday, 29 October 2012, 16:51

Waalaikumussalam,

Yes, you may use the Scale.

Dr Azlina Abu Bakar,

Department of Psychology & Counseling
Faculty of Social Development (FPS)
UMT,21030 K.Terengganu
Terengganu.

On 19 October 2012 08:55, Shazimah abdul
samad <shazimah_eema@yahoo.com> wrote:

Assalamualaikum, Dr Azlina,
Saya, Shazimah Bt Abdul Samad, calon Doktor Kesihatan Awam, dari Jabatan
Perubatan Pencegahan dan Kemasyarakatan, Fakulti Perubatan, Universiti Malaya ingin
memohon jasa baik Yang Berbahagia Dr untuk kebenaran bagi menggunakan "The
Validated Resilience Belief Scale" dalam tesis saya.
Tajuk tesis saya, " Correlates of Sexual initiation and Sexual Resilience Among
Adolescents Attending Tertiary Level Institutions: A Mixed Method Study. Oleh yang
demikian, sekiranya Dr Azlina memberi kebenaran untuk penggunaan RBS dalam tesis
saya akan sangat membantu saya.
Kerjasama dan bantuan daripada Dr Azlina amat saya hargai dan saya dahului dengan
ucapan terima kasih.

Sekian, Wassalam.

Shazimah Abd Samad, MBBS, MPH,
Calon Doktor Kesihatan Awam,
Jabatan Perubatan Pencegahan dan Kemasyarakatan,
Fakulti Perubatan,
Universiti Malaya.

Approval from the author of the Multidimensional School Engagement Scale

Subject:	Re: Seeking permission to utilize Multidimensional School Engagement Scale (MSES)
From:	Prof. Dr. Rosna Bt Awang Hashim (Rosna Awang Hashim & Azlina Murad Sani, p. uum.edu.my)
To:	shazimah_eema@yahoo.com;
Cc:	norimah@uum.edu.my;
Date:	Friday, 9 November 2012, 14:04

Sorry I was out of town until last nite. Insya will email to u by next week. Pls liaise w Pn. Norimah, my special officer for the softcopy.

From: Shazimah abdul samad [mailto:shazimah_eema@yahoo.com]
Sent: Friday, November 09, 2012 09:59 AM
To: Prof. Dr. Rosna Bt Awang Hashim
Subject: Fw: Seeking permission to utilize Multidimensional School Engagement Scale (MSES)

Assalamualaikum, Prof Dr Rosna,
How do you do?
I am Shazimah Abdul Samad, Doctoral Candidate in Public Health, Social and Preventive Medicine, Faculty of Medicine, University of Malaya.
My thesis is entitled ' **Individual Resilience and Familial Correlates of Sexual initiation Among Adolescents attending Tertiary Level Institutions: A Mixed Methods Research'**.
One of the factors that I am looking at is school connectedness. Therefore,I am very interested in using the scale you have developed in my study.
I would like to seek for your permission to utilize the above scale and I would appreciate it very much if you could provide a copy of the scale (Malay version).

My supervisor is :
Assoc Prof Dr Noran Naqiah Mohd Hairi,
Head,
Julius Centre University Malaya
(Centre for Clinical Epidemiology and Evidence Based Medicine)
Department of Social and Preventive Medicine
Faculty of Medicine
University Malaya

+603 7967 4762 (tel)
+603 79674975 (Lan, Faxelid, Chuc, Mogren, & Lundborg)

 Thank you and have a weekend ahead.

Warm regards,

Shazimah Abd Samad,
DrPH Programme,
Social and Preventive Medicine,
Medicine Faculty,
University of Malaya.

Subject:	Re: Seeking permission to utilize the validated version of Inventory of Parent and Peer attachment scale
From:	Patrick, Chin Hooi Soh (chsoh@mmu.edu.my)
To:	shazimah_eema@yahoo.com;
Date:	Friday, 23 November 2012, 7:32

Sure as long as you quote my reference.

Wish you all the best and your studies sounds interesting....

Pat

On 23 November 2012 06:28, Shazimah abdul samad <shazimah_eema@yahoo.com> wrote:

Dear Dr Patrick Soh,

How are you?

I am Shazimah Abdul Samad, Doctoral Candidate in Public Health, Social and Preventive Medicine, Faculty of Medicine, University of Malaya.

My thesis is entitled ' **Individual Resilience and Factors Influencing Sexual initiation Among Adolescents : A Mixed Methods Research'**.

Two of the factors that I am looking at is Parent-adolescent relationship and peer influence. Therefore, I am very interested in using the scale you have validated in my study.

I would like to seek for your permission to utilize the Validated Inventory of Parent and Peer Attachment Scale.

My supervisor is :

Assoc Prof Dr Noran Naqiah Mohd Hairi,

Thank you and have a weekend ahead.

Looking forward to hear from you.

Warm regards,

Shazimah Abd Samad,
DrPH Programme,
Social and Preventive Medicine,
Medicine Faculty,
University of Malaya,
Kuala Lumpur, Malaysia.

Appendix K: Operational Definitions for Parental Occupations

Occupations	Operational Definitions	Examples
Professional	Professionals increase the existing stock of knowledge; apply scientific or artistic concepts and theories; teach about the foregoing in a systematic manner; or engage in any combination of these activities.	Doctor, lawyer, engineer, teacher, manager, lecturer, scientist, architect.
Managerial	Plan, direct, coordinate and evaluate the overall activities of enterprises, governments and other organizations, or of organizational units within them, and formulate and review their policies, laws, rules and regulations.	Mayor, senator, police chief, managing director, ambassador, chief executive
Clerical	Record, organize, store, compute and retrieve information, and perform a number of clerical duties in connection with money-handling operations, travel arrangements, request for information, and appointments.	Typist, stenographer, bank teller, receptionist, telephone operator.
Administrative and Commercial Managers	Plan, organize, direct, control and coordinate the financial, administrative, human resource, policy, planning, research and development, advertising, public relations, and sales and marketing activities of enterprisers and organizations, or of enterprisers that provide such services to other enterprises and organizations.	Sales manager, marketing manager, advertising manager.
Skilled	Capable of working independently and efficiently and turning out adequate working.	Technician, radiographer, nurse)
Semi-skilled	Possess sufficient knowledge of the particular trade to do the respective work and simple job with the assistance of simple tools and machines.	Factory operator
Unskilled	Lacking or not needing special trainings and whose work involves the performance of the simple duties which require the exercise of little or no independent judgment or previous experience.	Labourer, cleaner