

Bioethical Views and Spiritual Life among mainland Chinese Christians

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DEDICATION

This thesis is dedicated to my beloved wife, Shelley SII, my son Eugene WONG, and daughter Elena WONG. During these four years of study, your understanding, love, encouragement, and financial support allowed me to complete my doctoral degree. I am thankful for your understanding and support when I could not stay with you to take care of Eugene and Elena as well as not being able to spend time and play with our son and daughter on the weekends and holidays. Specifically, I had three and a half years to work at Shantou University in China. To my parents, WONG Hie Tieu and HII Pik Toh, I am very appreciative for their praying and unwavering support from the time I first began my studies on my first degree in Japan until now.

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ABSTRACT

The research problem of this study is “what bearing do spiritual life and church involvement have on the views about bioethical issues of Christians in mainland China?” These bioethical views are (a) In Vitro Fertilization (IVF), (b) Sex Selection, (c) Pre-Implantation Genetic Diagnosis and Selection of Embryos (PGD), (d) Savior Sibling, (e) Cloning, and (f) Stem Cell Therapy. The research question is “Does the spiritual life of mainland Chinese Christians affect their bioethical views that have been mediated by their participation in church activities and services?” The objective of the study is to examine (a) the correlation between Christians’ spiritual life and their participation in church activities and services; (b) the correlation between Christians’ participation in church activities and services and their views about bioethics; (c) the correlation between Christians’ spiritual life and their views about bioethics; and (d) the correlation between Christians’ spiritual life and their bioethical views that have been mediated by Christian participation in church activities and services. This research utilized an experimental design of quantitative methodology. After 20 weeks, 415 respondents were collected via a simple random sampling. According to the research framework design, correlation analysis, linear regression analysis, multiple regression analysis, and path analysis via SEM have been utilized. The results concluded that (a) the spiritual life of Christians affected their participation in church activities and services; (b) Christian participation in church activities and services affected their views about sex selection and cloning; (c) individual Bible reading and prayer behavior, which represents the spiritual life of the Christians, had an influence on their views about IVF; and (d) Christian participation in church activities and services as the mediating variable did not directly affect the correlation between Christian spiritual life and their views about six bioethical topics. Finally, the research added (a) the frequency of ethical teaching and (b) personal savior history that have been analyzed by multiple regression modeling via SEM. The results indicated that the personal savior history of Christians affected their views on IVF. Conversely, the frequency of ethical teaching did not affect these six bioethical views.

Keywords: Spiritual life of Christians, Christian participation in church activities and services, bioethical views, Chinese Christians, mainland China.

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CHAPTER ONE:

INTRODUCTION

1.1 BACKGROUND AND PROBLEM STATEMENT

1.1.1 Background

The book, *Practical Christian Ethics*, written by Man Kei Ho (2010) illustrates one interesting phenomenon about Chinese Christians and ethical thought in overseas Chinese churches today such as in Hong Kong, Taiwan, Malaysia, Singapore, Australia, Canada, and the United States. The phenomenon indicates that overseas Chinese Christians do not have a consistency of ethical decision making (Ho, 2010). Ho (2010) concluded that among overseas Chinese churches, regarding ethical issues, Chinese Christians are more utilitarian and selective than other Christians. Overseas Chinese Christians hold high some ethical standards for certain ethical issues, but they totally disregard equally important ethical standards for some ethical issues, refusing to submit their views to the judgments of the Bible. The reason is that before a person accepts Jesus Christ, his personal relationship, language, culture, and growth environment affect his views and ethical decision-making. When he becomes a Christian, his views and decision-making are still not consistent with ethical principles that have been taught by Scripture (Ho, 2010:1).

For instance, Ho (2010), in investigating homosexuality, points out that overseas Chinese Christians and churches continually condemn homosexuality and state that homosexuality is immoral, in violation of the laws of nature and the commandments of God. However, regarding premarital sexual behavior, divorce, and extramarital affairs, overseas Chinese Christians, pastors, elders, and other church leaders do not directly point out these problems. These problems may not just involve their church members, but also elders and pastoral staff. Pastors or other leaders of overseas Chinese Churches find it easy to reject homosexuality, because overseas Chinese churches are more conservative. Some overseas Chinese churches have a number of homosexual church members, specifically in North America. They assume a stance of inclusiveness instead of reproach because they explain that God accepts sinners in terms of the Scripture (Ho, 2010). Therefore, this issue provides a reason for this study to explore Christian ethics.

On the other hand, the second reason is that Chinese people refer to have a boy rather than a girl because of traditional culture. Specifically, people in mainland China also have this tendency because of the One-child policy (Scutii, 2014). Because of that, the study concerns Christian bioethical issues that are relevant to the beginning of human life and the end of human life in mainland China (Engelhardt, 2011; Scutii, 2014; Stott, 2006). The third reason is that Christian bioethics is one part of Christian ethics (Song, 2005) and relates to their living environment (Crossin, 1998; Ho, 2010; Stott, 2006). However, there are two elements of background influences on the research objective. One is Christian ethics. The second is the spiritual life of Christians.

1.1.1.1 *Christian ethics*

From a Christian perspective, Christian ethics explores what is right and wrong in terms of Christian doctrines and interpretations of the Bible. Christians are living in a pluralistic world. John Stott (2006:71) writes that pluralism occurs in “a society composed of different groups, some of them ethnic and religious groups, who do not share a Christian worldview”. According to Stott (2006), pluralism occurs because of three influencing factors: (a) the process of secularization, (b) an increase in religious alternatives, and (c) the development of a postmodern imagination (Stott, 2006:71-74). In other words, Christian ethics has been affected by cultural diversity, or multiculturalism, because Christians live in a globalizing and religiously pluralistic society, which reflects a changing and complex world. This is a universal problem with Christians today. Holloway (2000:4) asks what tactics Christians will adopt to face moral challenges in a new millennium. Thus, it is necessary to define Christian ethics.

For Christians, an individual ethical decision involves not only the authority of God, faith, obedience, and grace in terms of the interpretation of Scripture, but it also relates to Church traditions, Christian doctrines, and Christian theology (Horton, 2006; Stott, 2006). Furthermore, Christian ethics has its roots in the work of the Hebrew prophets, who called people to renew their covenant with God by walking in justice, kindness, and humility (Lovin, 2011:3). Holloway (2000) also discusses the uniqueness of Christian ethical thought and practices while also noting the possibility of rational dialogue with non-Christians.

Different groups or denominations of Christians have different models of ethical decision-making because of their diverse interpretations of the Scripture and because of differences in their regional contexts. Holloway (2000:5) writes that, “even if Christian faith no longer

commands a wide allegiance, Christian moral positions and arguments, abstracted from their theological and ecclesiological contexts, can be translated into the neutral language of rational argument and advocated publically on such grounds". Therefore, a Christian, who believes that all things come from God, "will answer questions about living a good human life differently from a scientific materialist who believes that everything is just matter in motion" (Lovin, 2011:vii).

Regarding the difference between Christian ethics and morals, Holmes (2007:12) comments that, "ethics is about the good (that is, what values and virtues we should cultivate) and about the right (that is, what our moral duties may be)". Geisler (2010:15) states that, "ethics deals with what is morally right and wrong". Morals concern *how* to do the good or the right that are considered community demands. Dyck (2009:565) declares the importance "as human beings to know what is morally right and wrong, good and evil". Therefore, Geisler (2000:15-18) concludes the unique characteristics of Christian ethics as follows:

- 1) Christian ethics is based on God's will;
- 2) Christian ethics is absolute;
- 3) Christian ethics is based on God's revelation;
- 4) Christian ethics is prescriptive;
- 5) Christian ethics is deontological.

Furthermore, Christian ethics is a virtue ethics on account of the renewal of Christians through redemption in Christ. Thus, Christians are renewed people with a new attitude and character.

This means that Christian ethics distinguishes between good and evil, and offers moral guidance to aid Christians to choose between good and evil. Therefore, the definitions of Christian ethics and morals used in this research are:

- 1) Ethics is defined as moral beliefs and rules about right and wrong.
- 2) Morals are principles and beliefs concerning right and wrong behavior.
- 3) Christian ethics deal with what people are doing and what they should do in general in terms of their doctrines.

As regards the bioethical issue, the main problems for Christians concern human life “at the beginning of life in abortion and at the end of life in euthanasia” (Stott, 2006: 419). Specifically, during the 21st century, more ethical topics relate to biotechnological development such as cloning, stem cell therapies, and biomedical treatments (Stott, 2006). Christians base their responses to these bioethical challenges on their belief that their life has been created by God and bears the image of God, as revealed in Scripture. This study adopted the following bioethical topics: (a) In Vitro Fertilization (IVF), (b) Sex Selection, (c) Pre-Implantation Genetic Diagnosis and Selection of Embryos (PGD), (d) Savior Siblings, (e) Cloning, and (f) Stem Cell Therapy.

1.1.1.2 *Spiritual life*

It is important to recognize that the spiritual life of Christians relates to their ethical thought and choices. On this topic, Grenz (2002:88) notes, “evangelicals in general and Baptists in particular have generally understood spirituality either as merely another term for discipleship, or in the context of the typical Reformed depiction of sanctification as the journey of the growth of the Christian.” Is spirituality the same as spiritual life for a Christian? Grenz (2002:87) answers that “...spirituality is not necessarily dependent on adherence to religious beliefs or participation in religious practices.” Grenz (2002:89) also writes that the term is essentially another way of speaking about what is generally termed the Christian life. Consequently, Grenz concludes, “The description of the Christian journey as life in Christ rightly pinpoints the central theological theme of Christian spirituality” (2002:90). On this basis, this research adopts the expression “spiritual life” instead of but equivalent to “spirituality”.

Spohn (1997) researched the correlation between spirituality and ethics. The definition of spirituality included everything from New Age practices to feminist political writings and Twelve Step programs (Spohn, 1997:109). Spohn (1997:114) writes, “Perception, motivation, and identity are three regions of moral experience where the concerns and practices of spirituality are supplementing, if not supplanting, formal ethical approaches.” Spohn (1997:110) cites the definition of spirituality of Bernard McGinn (1985) below:

Christian spirituality is the lived experience of Christian belief in both its general and more specialized form ... it can likewise be distinguished from Christian ethics in that it treats not all human actions in their relation to God, but those acts in which the relation to God is immediate and explicit.

According to Spohn's description, spirituality relates to Christian belief that influences ethics for Christians. Lastly, Spohn (1997:122) concludes, "ethics must look to specific traditions and movements to fill in the outline with narratives, symbols and practices that constitute a more or less coherent way of life." In other words, Christian spirituality relates to Christian ethical decision-making and thought that has been affected by Christian belief.

1.1.1.3 *Empirical research of bioethics*

Regarding the adoption of empirical methods to explore Christian ethics or bioethics, Borry, Schotsmans, and Direrickx (2006) found that 4029 articles had been published between 1990 and 2003 from the journals studied. In this period only 10.8 percent (n=435) of these articles had adopted an empirical design. The three journals with the highest percentages of published empirical research in this period were (a) *Nursing Ethics* with 39.5 percent (n = 145), (b) *Journal of Medical Ethics* with 16.8 percent (n = 128), and (c) *Journal of Clinical Ethics* with 15.4 percent (n = 93). Furthermore, most empirical studies (64.6 percent) adopted quantitative research (n = 281). To compare the proportion of empirical research in 1990 with 2003, the result showed that 5.4 percent in 1990 had increased to 15.4 percent in 2003. It shows that empirical research on medical ethics and bioethics will tend to increase in the future (Borry, Schotsmans, & Direrickx, 2006).

Likewise, regarding research content, Kon (2009) divided the current empirical research contents of bioethics into four hierarchical levels. Articles at the first level concerned review of the literature and were perhaps the most common example of such research. The second level explored how well actual clinical practice matches ethical ideals. The third level addressed how to get clinical practice closer in line with ethical ideals. Articles at the fourth level integrated all data from multiple empirical studies on a single bioethical topic. Additionally, this level utilized these data to inform, and potentially change, ethical ideals.

The study of Schmidt (2009) indicated a relatively strong correlation between moral beliefs and religious beliefs. Christians who "endorse traditional religious beliefs, participate in religious activities such as church services relatively frequently, and/or identify themselves as strongly religious, also tend to have distinctive moral views compared to the total average of the sample, in the sense that they are prone to hold more restrictive views" (Schmidt, 2009:73).

Sugarman (2004:231) indicated that "empirical research is the key component of contemporary bioethics. However, to date myriad topics remain unaddressed and the most

powerful methods have not always been employed.” On the other hand, Shelton (2004:72) stated his opinion about future bioethical research: “for empirical bioethics to fully play this role in the future of bioethics, then the generation of new empirical data must be understood to be closely connected to moral progress, which is the core mission of bioethics.”

As illustrated above, bioethical research via empirical research is limited. Furthermore, there has been much less research done on mainland Chinese Christian ethical thought than on overseas Chinese Christians, and because the environment of mainland Chinese Christian churches is completely different than the environment of overseas Chinese Christians, this study focused on mainland Chinese Christians and bioethical topics. Furthermore, the research adopted an experimental design that utilizes quantitative methods to explore the correlation among three variables. The three variables of the research are (a) the spiritual life of Christians, (b) Christian participation in church activities and services, and (c) Christian ethical positions on bioethics.

1.1.2 Research problem and research question

The research problem is, “What bearing do spiritual life and church involvement have on the views about bioethical issues of Christians in mainland China?” The term “bioethical issues” here refers to certain beginning-of-life biomedical interventions. These include (a) IVF, (b) sex selection, (c) PGD, (d) savior sibling, (e) cloning, and (f) stem cell therapy. The research question is, “Does the spiritual life of mainland Chinese Christians affect their bioethical views that have been mediated by their participation in church activities and services?” The research question can be divided into the four sub-problem questions below:

- 1) Does the spiritual life of mainland Chinese Christians affect their participation in church activities and services?
- 2) Does the mainland Chinese Christians participation in church activities and services affect their views about bioethics?
- 3) Does the spiritual life of mainland Chinese Christians affect their views about bioethics?
- 4) Does the mainland Chinese Christians’ participation in church activities and services have an effect on the correlation between Christian spiritual life and their views about bioethics?

1.2 ASSUMPTIONS OF THE STUDY

There are two assumptions for this study. First, a pastor, a minister, or a leader of a church has the duty and responsibility to teach Christians about Christian ethics and bioethics in terms of the interpretation of Scripture via preaching, leading Bible study groups, and fellowship. As a result, Christians should have clear direction and definite decisions about biomedical issues. Second, this research assumes that Christians should grow in their spiritual life. The growing spiritual life of Christians is the teaching of Jesus, found in the Bible and transmitted through Christian pastors and ministers.

In order to grow in spiritual life, Christians should have a life of daily prayer, Bible reading, and regular participation in church activities and services. Furthermore, their leaders and pastors of the church will teach and preach in church different activities such as Adult Sunday School. Consequently, if Christians participate regularly in church activities, daily prayer, and Bible reading, they should have clear ethical attitudes, cognitive opinions, and resources for decision-making about biomedical issues. Because there has been much less research done on mainland Chinese Christian ethical thought than on overseas Chinese Christians, and because the environment of mainland Chinese Christian churches is completely different than the environment of overseas Chinese Christians, this study focuses on mainland Chinese Christians. Furthermore, this study topic is concerned with bioethical topics. The research adopted an experimental design that utilized a quantitative method to explore the correlation among three variables. The three variables of the research are (a) the spiritual life of Christians, (b) Christian participation in church activities and services, and (c) Christian ethical positions on bioethics.

1.3 AIM AND OBJECTIVES

1.3.1 Aim

The aim of this study is to contribute to a better understanding of the correlation between Christian spiritual life and Christian bioethical views with regard to (a) IVF, (b) sex selection, (c) PGD, (d) savior sibling, (e) cloning, and (f) stem cell therapy in mainland Chinese churches. Christian participation in church activities and services is the mediating variable that affects the correlation between Christian spiritual life and Christian bioethical views.

1.3.2 Objectives

In order to achieve this aim as above, the following objectives will be pursued:

- 1) To examine the correlation between Christian spiritual life and church activities and services attended by mainland Chinese Christians.
- 2) To examine the correlation between participation in church activities and services of mainland Chinese Christian and their views about bioethics.
- 3) To examine the correlation between the spiritual life of mainland Chinese Christians and their views about bioethics.
- 4) To examine the correlation between the spiritual life of mainland Chinese Christians and their views about bioethics that have been mediated by their participation in church activities and services.

In terms of these research questions and objectives, the research's theoretical framework is shown below.



Figure 1.1: The structure of the theoretical framework design

1.4 CENTRAL THEORETICAL ARGUMENT

With the purpose of comprehending the bioethical views of mainland Chinese Christians, the central theoretical argument of this study is that the Christian spiritual life of mainland Chinese Christians can contribute to the development of their ethical codes in decision-making regarding bioethical issues. This means that this study is concerned with the

question of whether the factors that influence bioethical views depend on the individual's church environment or on their personal behavior.

1.5 METHODOLOGY

This research has utilized an experimental design that consists of (a) a comparative literary research and (b) a quantitative research via statistical analysis in terms of a social research design. The comparative literary research is a review of the literature on these related variables. The quantitative research adopted a quantitative method to collect data via a questionnaire. Finally, this research utilized statistical analysis to identify correlations among three variables as illustrated above.

This questionnaire consists of questions about (a) Christian spiritual life, (b) Christian participation in church activities and services, and (c) their views about various bioethical issues. In order to measure (a) Christian spiritual life and (b) Christian participation in church activities and services, the questionnaire design adopted a measurement of the frequency of behavior. For instance, for one question that relates to Bible reading behavior, representing Christian spiritual life, the answer provides frequency of behavior such as (a) at least once per day, (b) a few times per week, (c) at least once per week, (d) at least once per month, and (e) not applicable. Participants can select one answer to reflect their existing circumstances.

In order to quantify answers to the bioethical issues, each of these bioethical topics has five sub-questions. The questionnaire design adopted a five-point Likert scale for each sub-question. One represents "strongly disagree", three represents "neutrality", five represents "strongly agree". Participants could select their answer from one to five, reflecting their attitude, cognition, thought, and opinion from "strongly disagree" to "strongly agree".

This questionnaire was written in English initially. Then the questionnaire was translated into Chinese. In order to have validity and reliability, the questionnaire was sent to two Chinese Christian native-speaking professors in China, in order to verify and edit the meaning, language, and clarity of the questions. Furthermore, before data collection, the questionnaire was tried out in a pilot test. The data was collected from Shantou city. The final size of the research sample was more than 400 participants, via a simple random sampling of people in local churches, who were contacted via personal networking with leaders who asked their members to fill out the questionnaire.

In order to save research time of data collection and cost of transportation, communication, and so on, this research had four research limitations as listed below.

- 1) The research sample of the pilot test consisted of mainland Chinese churches in Shantou city. However, the research sample was collected from different locations in China.
- 2) The data collection period was controlled by being restricted to a 16-week period.
- 3) The data was collected by means of a simple random sampling and a questionnaire.
- 4) The research utilized statistical analysis to analyze collected data.

On the subject of the data analysis, the research adopted four steps for statistical analysis. The first step provided descriptive statistics to illustrate the basic information of all variables in this study. The second step employed correlation analysis in order to demonstrate the relationships among these variables. Furthermore, the correlation analysis was employed four times. (a) It analyzed the correlation among variables. (b) It analyzed the correlation between the spiritual life of Christians and their participation in church activity and service. (c) It analyzed the correlation between Christian participation in church activity and service and their bioethical views. (d) It analyzed the correlation between the spiritual life of Christians and their bioethical views.

The third step adopted linear and multiple regression analysis to explore the correlation (a) between Christian spiritual life and their participation in church activity and service, (b) between Christian participation in church activity and service and their bioethical views, and (c) between Christian spiritual life and their bioethical views. The fourth step adopted path analysis and multiple regression analysis via Structural Equation Modeling (SEM) in order to identify the cause and effect relationships among these three variables.

1.6 CHAPTER DIVISIONS

The following chapter breakdown is offered:

1. Chapter One consists of the research background, problem statement, aim and objectives of this research, the central theoretical argument, and the methodology.
2. Chapter Two concerns the literature review of each of the variables.

3. Chapter Three discusses the methodology of this study.
4. Chapter Four analyzes the descriptive statistics of the research sample and correlation analysis.
5. Chapter Five analyzes the correlation between Christian spiritual life and church activities and services of Christians.
6. Chapter Six analyzes the correlation between Christian participation in church activities and services and various bioethical views.
7. Chapter Seven analyzes the correlation between Christian spiritual life and various bioethical views.
8. Chapter Eight analyzes the effect of Christian participation in church activities and services on the correlation between Christian spiritual life and various bioethical views.
9. Chapter Nine presents the summary and conclusion of this research.

1.7 A SCHEMATIC REPRESENTATION OF THE RESEARCH

PROBLEM STATEMENT	AIM & OBJECTIVES	METHODOLOGY
Does the spiritual life of mainland Chinese Christians affect their participation in church activities and services?	To examine the correlation between Christian spiritual life and their participation in church activities and services.	By correlation analysis, linear and multiple regression analysis.
Does the mainland Chinese Christians participation in church activities and services affect their views about bioethics?	To examine the correlation between participation in church activities and services affect their views about bioethics.	By correlation analysis, multiple regression analysis.

PROBLEM STATEMENT	AIM & OBJECTIVES	METHODOLOGY
Does the spiritual life of mainland Chinese Christians affect their views about bioethics?	To examine the correlation between the spiritual life of Christians and their views about bioethics	By correlation analysis, multiple regression analysis.
Does the mainland Chinese Christians' participation in church activities and services have an effect on the correlation between Christian spiritual life and their views about bioethics?	To examine the correlation between the spiritual life of mainland Chinese Christians and their views about bioethics that have been mediated by their participation in church activities and services.	Path analysis via SEM model.

CHAPTER TWO:

REVIEW OF THE LITERATURE

The purpose of this study is to examine the relationship between the Christian spiritual life and the views of Chinese Christians about bioethics that have been mediated by Christian participation in church activities and services. Specifically, this research targeted a population of Chinese Christians who are from local churches in mainland China. Figure 1.1 of Chapter One illustrated the structure of the theoretical framework and showed three variables. These three variables were: (a) spiritual life of Christians, represented by individual Bible reading and prayer behavior; (b) Christian participation in church activities and services; and (c) Christian bioethical views. The bioethical topics consisted of (a) IVF, (b) Sex Selection, (c) PGD, (d) Savior Sibling, (e) Cloning, and (f) Stem Cell Therapy.

The main reason for this study stems from the observable fact that has been described in Chapter One (1.1.1 Background) concerning how Chinese Christians handle their ethical issues overseas. Furthermore, this question has been investigated by some researchers like Man Kei Ho (2010). Man Kei Ho (2010) in his book, *Practical Christian Ethics*, highlighted the phenomenon that overseas Chinese Christians tend to be utilitarian and selective when compared with other Christians. Ho (2010) said that before a person becomes a Christian, his living environment and culture affect the person's attitudes and understanding, in turn affecting his ethical decision-making and views.

On the other hand, some evidences from articles in published journals also studied the relationships among three variables mentioned above. For instance, the book *Christian Spirituality and Bioethics: A Narrative Approach Based on the Metaphor of Journal* was written by Graham James O'Brien in 2007 to discuss Christian spirituality and bioethics. The book explored and illustrated the relationship between Christian spirituality and bioethics in Chapter Five. O'Brien (2007:130) said that "Christian spirituality is a justifiable category within a contemporary bioethical decision-making process." The reason is that "any bioethical framework needs to be sufficiently broad so as to cope with the diversity of scientific knowledge and application" (O'Brien, 2007: 125). Allen Verhey (2005) wrote an article named "*What Makes Christian Bioethics Christian? Bible, Story, and Communal Discernment.*" This article stated that "reading scripture and remembering the story can, should, and sometimes

does illumine both the enduring problems and the novel quandaries of medicine, even it if does not tell us precisely what to do" (Verhey, 2005:313).

Regarding empirical research on Christian ethics, Ulla Schmidt (2009:28) concluded that "empirical research of the type presented above might have significance for constructive theory of Christian ethics." Kevin G. Smith (2010:97) also concluded,

I find myself in complete agreement with their theoretical basis for bringing practical theology and qualitative research together through a mutually critical correlation model in which theology takes logical priority over qualitative research... any theological student undertaking empirical research as part of a practical theological research project.

Building on these studies, the research problem of this study is, "What bearing do spiritual life and church involvement have on the views about bioethical issues of Christians in mainland China?" The research question is, "Does the spiritual life of mainland Chinese Christians affect their bioethical views that have been mediated by their participation in church activities and services?" The remainder of this chapter will review the literature on the three variables mentioned above.

2.1 SPIRITUAL LIFE OF CHRISTIANS

This study utilizes the term "spiritual life". There are two reasons for choosing the expression "spiritual life" in preference to the term "spirituality". On the one hand, on the subject of the definition of spirituality, Feldmeier (2007) explains that spirituality involves a diversity of definitions and meanings. Grenz (2002:87) writes that "spirituality is not necessarily dependent on adherence to religious beliefs or participation in religious practices." Hardwing (2000:28) shows that "spirituality" is ambiguous. Tu (2006:1030) also provides a definition of spirituality in general as "actually a form of philosophy of one's life attitudes and value system that originates from culture, education, and personal experience." In other words, non-Christian people, other religious believers such as New Age people, or non-religious people also adopt the term "spirituality" to refer to their own concepts.

Christian scholars have mostly preferred to modify the term "spirituality" as "Christian spirituality". Thompson (1992:648) stated, in regard to Christian spirituality, that "for

Christians, the ultimate concern is God revealed in Jesus, and experienced through the gift of the Holy Spirit". Seong Eun Kim (2013) wrote an article entitled "The Relationship of Parental Attachment and Christian Spirituality with Intergenerational Conflict between Korean-American Young Adults and their Parents" in the *Journal of Psychology and Theology*. Gisela H. Kreglinger (2013) utilized the term in her article "Grace Hunting: Paul Gerhardt's Lutheran Christian Spirituality" in the *Journal of Spiritual Formation and Soul Care*. Vivian Ligo (2011) also used it in the article "Configuring a Christian Spirituality of Work" in *Theology Today*. Evan B. Howard (2008) also utilized and illustrated the definition of Christian spirituality from Walter Principe. The meaning of Christian spirituality can be divided into three levels (Howard, 2008:11) as below:

At the level of practice, Christian spirituality refers simply to our actual, lived relationship with God through Christ... At the level of dynamics, Christian spirituality refers to the formulation of a teaching about or a way of understanding lived relationship with God through Christ... At the level of study, Christian spirituality is the academic discipline that systematically investigates either the lived experience or the formulations about the dynamics of relationship with God.

On the other hand, Thompson (2005) suggests utilizing the expression "spiritual life" instead of "spirituality" because "spiritual life" can be defined according to Scripture. Thompson (2005:6) writes that "the spiritual life is simply the increasing vitality and sway of God's Spirit in us." Freeman (2005) utilizes the expression "spiritual life" presenting the title of his paper, "Britain's spiritual life: How can it be deepened?" in the *Journal of Religious History*. Mark Moring (2006) also adopts "spiritual life" in his article, "Keeping the Faith" in *Ignite Your Faith*. Howard (2008) utilizes the expression in his article "Advancing the discussion: Reflections on the study of Christian spiritual life" published in the *Journal of Spiritual Formation and Soul Care*. Jorge N. Ferrer (2008) wrote one article named "What Does it Mean to Live a Fully Embodied Spiritual Life?" in the *International Journal of Transpersonal Studies*. Because this expression is generally accepted, this study has adopted "Christian spiritual life" instead of "spirituality".

As indicated by Crossin (1998) in his *Walking in Virtue: Moral Decisions and Spiritual Growth in Daily Life* and by Feldmeier (2007) in *The Developing Christian: Spiritual Growth through the Life Cycle*, the Christian spiritual life is a journey in which spiritual growth is to be

experienced. Feldmeier (2007:17) writes that Christian spirituality is a life of grace and faith of God. He defines grace as “God’s saving action in the soul of humanity (Romans 3:9)” and faith as “more than a set of beliefs to which we give assent” (2007:18). Moreover, Feldmeier (2007) concludes that Christian spirituality is life in the Spirit, and is Christocentric, Trinitarian, communal, and prayerful. Whitney (1991) demonstrated that Christians should practise spiritual disciplines in order to comply with Bible teaching. The growth of spiritual life depends on disciplines which may vary depending on church culture and theological traditions, but such disciplines may include Bible reading, prayer, worship, evangelism, service, stewardship, fasting, silence and solitude, journaling, and learning throughout one’s whole life. In addition, Christian prayer should have both an individual component and also communal elements such as prayer meetings (Whitney, 1991). As a result, Christian spiritual practices should relate to growth in spiritual life (Simpson, Woike, Musick, Newman, & Fuqua, 2009).

Many scholars and practitioners of Christian faith indicate that the growth of a Christian’s individual spiritual life relates to daily activities and services associated with church, such as Bible reading, individual prayer, Bible group and/or prayer meeting attendance, joining a choir, etc. (Crossin, 1998; Cunningham & Egan, 1996; Feldmeier, 2007; Thompson, 2005). For instance, Mark Moring (2006) illustrates how college students grow in their Christian spiritual life; he points out that Christian faith is one of the important elements for the growth of their spiritual life. Moring lists several elements that contribute to maturing the spiritual life of a Christian; these include (a) daily devotions, (b) fellowship, (c) church, (d) small groups, (e) discipleship, (f) service, and (g) evangelism (Moring, 2006). Here, daily devotions refer to the practice of reading one’s own Bible and praying every day (Moring, 2006:62-63). Moring (2006) contends, on the basis of his experience with college students, that these Christian spiritual practices should reform a Christian’s spiritual life. Moring (2006) also indicates that spiritual practice includes religious activities such as prayer, worship, and serving in various church activities, such as joining a choir, teaching in Sunday school, handling hospitality services in Sunday worship, or becoming a member of the worship ministry.

In addition, these spiritual practices should promote improvement in one’s individual spiritual life (Crossin, 1998; Thompson, 2005; Cunningham & Egan, 1996; Feldmeier, 2007; Simpson *et al.*, 2009). For instance, a Roman Catholic researcher, Feldmeier (2007:63), illustrates the models of spiritual development through the life cycle of human development. When a child is 2 to 12 years old, parents can teach Bible stories and lead children to imagine God, to experience faith, and say prayers. These actions will encourage the child’s spiritual

development. Feldmeier (2007) shows how these spiritual practices should improve the growth of a Christian's spiritual life.

It has been found that the spiritual life and spiritual practices of Christians are affected by their church culture and theological traditions (Feldmeier, 2007; Gallagher & Newton, 2009; Moring, 2006; Thompson, 2005). Gallagher and Newton (2009) studied Christian spiritual growth and its measurement at four different churches. These four churches represented (a) conservative protestant, (b) mainline protestant, (c) eastern Orthodox, and (d) an emerging church. They found that church congregational culture and theological tradition influenced the Christian spiritual growth of their members. Furthermore, the measurement method also depended on their church culture and theological tradition.

For instance, First Presbyterian Church emphasized worship, thoughtfulness, and acceptance, defining individual spiritual growth as a spiritual journey. Members of this church were middle and upper income families and older people. They traced their ethnic roots back to historic centres of Presbyterianism in Scotland, Ireland, Switzerland and other nations in Northern Europe. Moreover, their preaching emphasized "the value of an intellectually respectable faith that is compassionate, generous, and tolerant of diverse interpretations and experiences" (Gallagher & Newton, 2009:240). Their printed sermons, bulletins, newsletters and Sunday school materials concerned topics like Christian living, stewardship, community service, and events for the elderly and youth. The researchers found that First Presbyterian Church congregants expressed diverse perspectives on the meaning of spiritual growth. Their study found "some support for the notion that churches with strong and clear core messages of spiritual growth cultivate stronger congregational commitments" (Gallagher & Newton, 2009:232). In other words, spiritual growth depended on their church congregational culture and broader theological tradition.

The religious education programs of churches aim for growth in spiritual life through teaching. There are several theories regarding the growth of spiritual life. Ratcliff (1993) has outlined the main theories. For instance, Fowler (1974) has developed a series of faith stages. Fleck, Ballard, and Reilly (1975) suggest a three-stage development model of religious concepts and spiritual maturity. Ratcliff (1993:73) wrote that Wesley's two-crisis theology "referred to John Wesley's writing for expanded statements of the holiness position". Wesley's two-crisis theology, suggesting that "two crisis experiences are central to spiritual development" (Ratcliff, 1993:73), described the process of holiness in the Christian through personal salvation by faith, the witness of the Spirit, and sanctification. Darling (1969) suggested a four-stage model of spiritual development based on the stages of

physical and emotional development. Grenz (2002:90) summarizes, “The description of the Christian journey as life in Christ rightly pinpoints the central theological theme of Christian spirituality”.

One study by Griffin (2003) found that Christian spiritual growth has a significant relation to Christian youth ministries such as summer camps, rock climbing, backpacking, and other activities. The objective of Griffin’s study was to examine the correlation between adventure-based programs and the Christian spiritual growth of teenagers. The research sample consisted of 114 participants aged from 16 to 20. These participated in a two-week outdoor program that included challenge course activities, backpacking, rock climbing, and whitewater rafting. At the same time, they participated in an explicitly Christian spiritual life growth course. The results indicated that these adventure-based programs affect Christian spiritual growth. The study found that “Christian spiritual beliefs could be strengthened through a combination of explicit spiritual teaching and the real world settings of group and personal challenges in the out-of-doors” (Griffin, 2003:351).

However, one study by Tu (2006) explored the relationship between illness adaptation and spiritual growth via three cases. The result showed that “spiritual growth may change and enrich a patient’s life after illness.” During a period of illness, a Christian patient may continually pray to God and communicate with other Christians. Finally, he/she obeys God’s leading via the Holy Spirit’s illumination of Scripture or some Christians’ sharing. For instance, some Christians shared their individual experience about God’s leading. These sharing or individual experiences will encourage the Christian’s individual spiritual life growth. Furthermore, any severe disappointment or maladjustment may also provide an opportunity for spiritual growth (Tu, 2006:1030).

Therefore, researchers and scholars appear to be in agreement on two general conclusions. First, spiritual life is affected by the teaching of the pastors or elders, and by individual Scripture reading (Simpson, 2010) or individual living experience (Tu, 2006). In other words, church culture and theological tradition is taught by church educators such as pastors, elders, ministers, or Adult Sunday School instructors. Their teaching, sometimes unintentionally, influences the growth of spiritual life. Additionally, spiritual practices are valuable in growing and reforming Christian spiritual life (Crossin, 1998; Feldmeier, 2007; Moring, 2006). The spiritual life is a journey, walking with Jesus and being led by the Holy Spirit. As Tu (2009:1030) describes, “spiritual growth is the search for the meaning of one’s existence, relationships, and the place of an individual in the universe through the

experiences of self or others, so as to establish or adjust a person's life attitudes and behavior".

Second, participation in church activities affects Christian spiritual life. Simpson *et al.* (2009) studied the correlation between religious participation and relationship with God via empirical research. They assessed three variables: (a) participation in religious and/or spiritual activities, (b) frequency of religious meetings and/or church attendance, and (c) time spent in private religious activity such as prayer, meditation, and reading of Scripture. The results indicated that religious participation had significant effects on relationship with God. This means that spiritual life growth should relate to church activities.

All in all, Christian practices tend to promote the reformation and growth of the spiritual life of Christians. Their participation in church activities and services should be one indicator that reveals the maturation of their spiritual life. In the present study, the spiritual life of Christians is represented by individual Bible reading and prayer behavior. These indicators of the personal spiritual life of Christians are analyzed statistically to find whether they influence (a) participation in church activities and services (see Chapter Five) and (b) their views about bioethical topics (see Chapter Seven).

2.2 PARTICIPATION IN CHURCH ACTIVITIES AND SERVICES

The spiritual life of Christians should demonstrate growth. Their participation in church activities and services should reveal the increasing maturity of their spiritual life. As described at 2.1 above, the spiritual life of Christians should influence their participation in church activities and services. Because of that, this section is concerned with (a) Christian participation in church activities and services, and with how this participation is related to (b) their views about bioethical topics. For this study, church activities and services need to be defined.

There have been studies on what type of activities will influence Christian spiritual life. For instance, *Spiritual Disciplines for the Christian Life* by Donald S. Whitney (1991) concluded that Christian spiritual disciplines promote spiritual growth. The disciplines include (a) Bible studying, (b) prayer, (c) worship, (d) evangelism, (e) service, (f) stewardship, (g) fasting, (h) silence and solitude, (i) journaling, and (j) learning (Whitney, 1991:17).

The book of Marjorie J. Thompson (2005), *Soul Feast: An Invitation to the Christian Spiritual Life*, illustrates that in order to understand faith with God; Christians should begin to practise

some of the basic disciplines of the Christian spiritual life. The basic disciplines include (a) spiritual reading, (b) prayer, (c) common worship, (d) fasting, and (e) hospitality (Thompson, 2005). Furthermore, a Christian life is “a pattern of spiritual disciplines that provides structure and direction for growth in holiness” (Thompson, 2005:146).

The book named *Christian Ethics: Where Life and Faith Meet* has been written by Russell A. Morris (2011). Morris (2011) indicates that, to become mature, a Christian’s spiritual life must demonstrate growth. Furthermore, he describes that spiritual growth is necessary for Christians because of spiritual growth is integrated with Christian belief and behavior. Practising Christian living consists of (a) example, (b) purity, (c) integrity, (d) self-control, (e) community, (f) etiquette, and (g) family based on biblical guidelines (Morris, 2011:6). These seven areas also become challenges and critique Christian spiritual growth and development (Morris, 2011). This means that Christian belief and behavior, including participation in church activities and services, should relate to the growth of spiritual life.

Lawrence S. Cunningham and Keith J. Egan (1996:7) in their book *Christian Spirituality: Themes from the Tradition* indicate that “Christian spirituality is the lived encounter with Jesus Christ in the Spirit”. How to live with God becomes a main topic that relates to spiritual maturity. Therefore, Cunningham and Egan (1996:29) conclude that the Bible is “a fundamental source for being a disciple of Jesus”. Because of that, Cunningham and Egan assert that Christian spirituality is a journey. Furthermore, (a) Bible study, (b) prayer, (c) meditation and contemplation, (d) asceticism, (e) living in the presence of God, (f) solitude in community, (g) friendship, and (h) Eucharist help to develop Christian spiritual life. Norris (2007) also mentioned that without Bible reading and prayer, Christians may still fast (Matthew 6:16-17) and worship (John 4:24).

In considering spiritual growth as related to church activities, Thompson (2005:8) writes that “Christian spirituality begins with God, depends on Gods, and ends in God”. Therefore, Christian spiritual growth would be expected to express religious behavior such as Bible reading, prayer, worship, service and so on. In other words, Christian spiritual growth “is an essential component to living an exemplary Christian life” (Morris, 2011:8). Morris also indicates (2011:5) that when the spiritual growth of Christians occurs, their lives should demonstrate the process of maturity in the Christian life. This means that spiritual growth occurs as Christians embrace and obey God’s instructions for living (Morris, 2011:69).

Gallagher and Newton (2009) utilized empirical research to explore spiritual growth and connectedness in congregations and communities. Their research targeted four groups of

Christians: (a) conservative protestant, (b) mainline protestant, (c) Eastern Orthodox, and (d) an emerging church in the Pacific Northwest US. They found out that the growth of the congregations' spiritual life was strongly related to community. Furthermore, the church has to provide (a) an environment that nurtures spiritual formation and cultivates a sense of community and religious identity, (b) a clearly articulated message around spiritual growth that would be associated with a greater sense of congregational coherence and community, and (c) emphasis on the salience and centrality of gaining proficiency in the narrative and language of a particular religious tradition of spiritual formation (Gallagher & Newton, 2009).

The empirical research of Simpson *et al.* explores the relationships among (a) involvement in religious/spiritual activities (IRV), (b) frequency of attendance at religious meetings/church (ARM), and (c) time spent in private religious activity (PRA) such as prayer, studying Scripture, etc. The results concluded that the IRV, ARM, and PRA have a significant relationship with each other (Simpson *et al.*, 2009:366).

In summary, Christian activities illustrated above divide mainly into (a) Bible reading, (b) prayer, (c) worship, and (d) services that will promote Christian spiritual life. Furthermore, Crossin (1988:1) illustrates that the relationship between moral decision and spiritual growth depends on Christian development that consists of (a) the guidance of the Holy Spirit, (b) the study of Scripture, (c) interactions in community, (d) respect for our own and others' human dignity, (e) the formation of conscience, and (f) wise moral judgment. This means that the spiritual life of Christians should relate to their attendance at church activities and should affect their moral judgments. Therefore, this study decided to utilize participation in church activities and service in church activities as the mediating variable that examines the relationship between spiritual life and various bioethical views in Chapter Eight.

On the other hand, a few studies, like those of Sutton (2008) and Kilner (2011), have indicated that attendance and service in church activities are related to bioethical views. They find that Christian practice or behavior reflects beliefs which have been affected by their participation in church activities and the growth of spiritual life. For this reason, Chapter Six examines whether Christians' participation in church activities and services will affect their bioethical reviews, or not.

2.3 CHRISTIAN BIOETHICAL VIEWS

The bioethical views of Christians are the dependent variables in this study. Christian bioethics, as a part of Christian ethics (Song, 2005), relates to right decision-making and

evaluates medical progress. Regarding these critical questions Christians will argue on the basis of human worth and intrinsic value (Crossin, 1988:63). As Christians, everyone has their own view about bioethical issues (Meilaeander, 2013; Sutton, 2008). Furthermore, Meilaeander (2013) and Sutton (2008) conclude that Christian bioethical views are reflections of beliefs and, in turn, are reflected in practice. However, bioethics also relates to legal issues of medical practice and research (Sutton, 2008).

As well, Kilner (2011) writes that bioethical issues relate to a person's life and health. Christians should know how to select "what is good and right" (Kilner, 2011:11) through wise discernment. This means that Christian bioethics does not just relate to individual Christians and patients, but it also involves pastors, church leaders, medical doctors, scientists, and politicians. There should be debate on bioethical topics between scientists, politicians, lawyers, biologists, and others regarding Christian views on these issues, because Christians are facing bioethical challenges that relate to wisdom, birth and death (Kilner, 2011). Christian theology is relevant to these issues because it illustrates the relationships among God, the Person of Christ, the Trinity, salvation in Christ, the doctrine of the Church, human nature, sin, grace, etc. (Griniezakis & Symeonides, 2005; McGrath, 2011).

The definition of bioethics by John Bekos (2013:100) concludes that bioethics deals with "ethical questions that are connected both with the beginning and the end of human life." Engelhardt (2011:87) writes, "Christian bioethics rightly understood is all about Christ." Therefore, in order to improve the quality of life through medical procedures, Christians should consider Christian bioethics in terms of what has been revealed by God in Scripture regarding what is good and right. Christian bioethics is not just related to a particular area of human action, theology, doctrine of church, culture and tradition, but Christian bioethics also has to involve the effects of medicine, biology, and gene technology (Collange, 2005). Because Christian bioethics includes diverse topics, there are also many factors that influence the issues. These following sections will consider (a) decision-making in bioethics, (b) bioethics and Christian theology, and (c) Christian bioethics.

2.3.1 Decision-Making in Bioethics

From a Christian perspective, Emeka C. Ekeke (2011:23) writes about how to define the meaning of bioethics, and discusses ethical issues among Christians and medical practitioners. Specifically, when Christians face a bioethical problem, they have to make a decision. Fundamentally, bioethical questions connect with the beginning and the end of

human life (Bekos, 2013; Stott, 2006). This connection involves consideration of medical treatments, Christian theology, culture, church, and decision-makers such as patients, patients' family members, friends, and so forth (Song, 2005; Sutton, 2008; Kilner, 2011).

Regarding bioethical decision-making of Christians, most Christians are not theologians, doctors, scientists, etc. On the one hand, many pastors and church leaders do not realize what is right or wrong about bioethical topics or how to ascertain the meaning of biomedical treatment. On the other hand, different people give different definitions of bioethics and the rights of Christians. When Christians face these ethical and bioethical challenges, how do they handle them, for example, if they are considering a heart transplant or treatment for a fatal disease in hospital? What measures can ethically be taken in order to improve the quality of life? To take another example illustrating a case about bioethical decision-making, a Christian couple does not have a child, but they do not want to adopt a child. They prefer to have their own boy child. Therefore, can they utilize the medical technology of sex selection through IVF to get a boy child? This is a problem requiring them to make a decision. However, the problem may turn into a conflict between particular Christian positions and views about bioethics.

This example shows that patients, Christian theologians, medical researchers, and scientists should discuss bioethical problems together (Griniezakis & Symeonides, 2005). Medical doctors, biologists, philosophers, and lawyers can be expected to have a developed understanding of bioethics (Griniezakis & Symeonides, 2005). However, normal Christians, although they know that ethics relates to eternal life and sanctity, do not usually fully comprehend Christian bioethics. They may know that bioethics explores the relationship between life and death, or issues of bodily health, but when they have to make a decision about their sickness or unhealthy situation they need to comprehend some principles of bioethics from a Christian standpoint. Because of that, Christian theologians, medical doctors, scientists and related professors should have a great deal to offer to each other. Christian bioethics needs the insights and perspectives of many other areas to explore the options of Christians when they face bioethical challenges (Kilner, 2011).

At the same time, their decision-making involves patients' family members, friends, and relatives, and will probably include consideration of the cost of medical treatments. According to the research of Delkeskamp-Hayes (2011), and Henig, Faul, and Raffin (2001), the biomedical treatment does not only depend on the health problem of the individual, but it also involves the cost of treatments and relates to personal individuals such as a community members and family members. Furthermore, the health problems are diversified and do not

have a standard answer. Finally, however, both medical staff and pastors have to respect patient autonomy, and the decision-making ultimately depends on patient(s) and their families.

Another example comes from Susan A. Salladay (2008), a nurse ethicist and educator. She adopted the case of Terri Schiavo ("Life and Death disagreements" published in the *Journal of Christian Nursing*, 24:38-40) to talk about Christian bioethics. She writes that "Christian ethics is about 'who we are called to be' rather than a set of 'rules' or 'who we want to be'. And who we are called to be is in Christ Jesus." This means that Christians may allow a sick patient, through prayer, confession and communion, to surrender him/herself into the hand of God (Tu, 2006). Scripture does not deal with these modern bioethical issues in detail, so how to interpret Scripture becomes an important factor for Christians today (Collange, 2005:222).

Furthermore, evangelical Christians believe that "the teaching of Scripture is the final court of appeal for ethics. Human reason, church tradition, and the natural and social sciences may aid moral reflection, but divine revelation... constitutes the 'bottom line' of the decision-making process" (Davis, 2004:15). Evangelical ethics means that these Christians believe the Bible functions normatively in ethics "through its specific commands and precepts, general principles, various precedents, and overall worldview" (Davis, 2004:15). Thus, Davis (2004:15) concludes that "evangelicals believe that the canonical Scriptures are the very Word of God, the only infallible and inerrant rule of faith and practice, and consequently are the highest authority for both doctrine and morals."

However, as Christians, they should know how to discern bioethical standards. Christians should have guidelines from their churches, although each church may have different doctrines and traditions. After all, Christian bioethics is a component of general Christian ethics, according to Song (2005). There are two ways to approach Christian ethics in general. One is to recognize the authority of (a) the Scriptures (Bible), (b) tradition (authority of church culture), (c) experience (inspiration of the Holy Spirit), and logic (reason).

The other approach is based on natural laws. Consequently, as Meilaender (2013) writes, bioethics regards the rights of human persons. Because of this, the bioethical debate explores the purpose of human life and belief, and understandings of the human person (Beckwith, 2007). Almost all bioethical cases are related to the quality of human life (Bekos, 2013). This means that what is in opposition to human dignity is not considered to be good.

2.3.2 Bioethics and Christian Theology

Makarios Griniezakis and Deacon Nathanael Symeonides (2002) explored the relationship between bioethics and Christian theology. They said that in general, medical doctors, biologists, philosophers, and lawyers in the past constantly paid attention to bioethical issues and were in conversation with each other, but theologians did not involve themselves or debate these bioethical topics with them. However, today, theologians have started to talk about bioethical topics and have become involved with them in order to express their opinions. In order to either integrate bioethics and Christian theology, or to answer the gap between bioethics and Christian theology, Christian theologians should work with scientists, physicians, medical doctors, or related professional people to get more detail or insight into the human person. The main difference that separates Christian theologians from other professional people is their belief or faith.

As Griniezakis and Symeonides (2002:8) indicate, “Christian tradition in particular holds that Holy Scripture is divinely inspired and that the writings of the Fathers breathe the inspiration and enlightenment of the Holy Spirit.” This clearly implies that Christian ethics endeavors to analyze issues, distinguish values and evaluate human behavior from a scriptural perspective. Moreover, from this perspective, Christians are obligated to obey the commandments of God.

The commandments of God are to be taught to people from Scripture. But the teaching of the Scripture will be affected by church doctrines, tradition, and experience, etc. Therefore, churches will have their own positions on how to handle bioethical issues. Leaders of churches can provide some guidelines to handle these problems but generally they do not analyze human behavior so as to provide sufficient help in decision-making in biomedical issues. Specifically, pastors demonstrate pastoral care for each member through prayer, talking, sharing, and consulting. It seems Christian theologians should provide the principles of bioethics and suggest arguments that integrate bioethics and Christian theology. On the other hand, Christian theologians should present the opinions and views of Christians (Griniezakis & Symeonides, 2002).

However, Engelhardt (2010: 118) writes that “a Christian ethics, especially from a European Protestant perspective, tends to converge with the general tradition of human rights and with the constitutions framing Europe’s legal and social democracies.” This means that Christian bioethics is related to the culture of modernity (Engelhardt, 2010:117). In traditional Christian

perspective, the emphasis is on human duties rather than on human rights (Engelhardt, 2010:125).

Taking one example of the conflict between bioethics and Christianity, traditional Christian bioethics regards abortion, homosexuality and euthanasia as moral commitments of modernity, and does not recognize human dignity and social justice. Here, “traditional Christian” means Western Christian theology, including Protestant and Roman Catholic theology (Engelhardt, 2010). Engelhardt (2010) concluded that there are multiple conflicts in Christian bioethics. Basically, Christian bioethics has been affected by two main elements. One is social modernity, and the other is Christian culture, including external culture. Therefore, there is a deep gap between Christian theology and bioethics. Furthermore, the framework of contemporary Christian bioethics reflects the culture and philosophical synthesis at the root of Western society (Engelhardt, 2011) and secular Western culture (Collins, 2000).

The other example, explored by Collange (2005), is the relationship between sin and bioethics. In terms of the definition of Collange (2005:176), the characterization of sin is separation from God so that people cannot live in a holy way. Romans 1:18-32 describes sin as “not merely a moral fault, but it concerns the whole of humanity, which finds itself entirely under the reign of sin” (Collange, 2005:176). This means that people cannot recognize the meaning of sin that is opposite to holiness. Sin may be characterized as a distorted response to necessity and temporality (Waster, 2005:292). It shows that the relationship between Christians and God is dependent on faithfulness and trust. In addition, God’s mercy, manifested in Christ, extends to all areas of human existence, including medicine, biology, and gene technology. Collange (2005) adopted the example of cloning to illustrate the relationship between sin and bioethics. Theoretically, it is possible to use cloning to produce one organism from another. Such a biomedical procedure exchanges a process that has previously been considered “good” for one that is novel. In other words, such a procedure or exchange will change the self-sufficiency and singularity of a part of man. In terms of Genesis 1:27, Christians should reject cloning and consider it as a sinful action (Collange, 2005).

2.3.3 Christian bioethics

Volume 11 of the journal *Christian Bioethics* had five articles exploring “what is Christian about Christian bioethics”. Cozby (2005) indicated that each author had his own approach,

discussing the topic from a different perspective and methodology. However, Cozby (2005:266) concluded that “The insight of true Christian bioethics is that Christ’s work leads to a transformation of humanity through Him.” The problem is how to know Christ’s work. It seems Scripture is a key. Scripture is God’s message and becomes the eternal divine Word as a gift to humanity “in order to redeem us and share with us about His holiness and glory” (Cozby, 2005:266). Alternatively, H. Tristram Engelhardt (2005:244-247) summarized these five articles that have been written by Waters, Erickson, Verhey, and Trotter, including Cozby’s article as below.

- 1) Cozby (2005) indicated that Christians should distinguish morality from Christian bioethics. He observes that the four authors (Waters, Erickson, Verhey, and Trotter) conceptualized Christianity and Christian bioethics in different approaches. Cozby (2005:255) and states that “In my view, this tactic entails a discussion of exactly what ‘Christian’ means, i.e., what doctrines are fundamental to Christianity and form the necessary presuppositions for any theological discipline, including bioethics.” According to Cozby (2005:257) the fact that “human beings are created in God’s image and likeness links the doctrines of the Trinity and the Incarnation with ethics”. Thus, “ethics revolves around what it means to be truly human” (Cozby, 2005:257). Furthermore, “the Holy Trinity provides the model for human society and behavior” (Cozby, 2005:257). As a result, Cozby says that it is basic to Christian ethics that as humans we have to share and reflect His holiness, His mercy and His love in our daily life and community. Christian bioethics is to let Christ’s work lead to a transformation of humanity through Him. Furthermore, it relates to Scriptural interpretation in terms of church doctrine and church history such as Roman Catholics and Orthodox. These components determine the role of Church culture in ethical decision-making (Cozby, 2005). Therefore, Engelhardt (2005:245) concludes, “This plurality of Christianities brings into question the meaning of a Christian bioethics. In all of this, Fr. Cozby has in the background his experience and knowledge of the unity of the Church of the first seven Councils, which still defines Orthodox Christianity.”
- 2) Waters (2005) makes a clear distinction between morality and bioethics in terms of incarnation because Christ makes the defining difference. Waters states that “Christians have or at least should have a morality and bioethics shaped and informed by the Incarnation” (Engelhardt, 2005:245). Therefore, according to Engelhardt (2005:245), “Waters recognizes that Christian bioethics sees what secular bioethics cannot discern, and he grounds the difference in the Incarnation ... Waters’ position is

not without controversy, as is clear from Solomon's contribution to this issue. Defenders of natural-law approaches to Christian bioethics wish largely or at times completely to deny that Christians have any content-full moral knowledge not possessed by others."

- 3) Erickson (2005) declaimed that his article did not reflect Christian bioethics. Nevertheless, Erickson (2005:269) mentioned that "To confess to a Christian bioethics is to admit that Christians cannot pretend fully to understand either cures or their meaning." Furthermore, unless they have knowledge about contemporary medical procedures and involvement, Christian bioethicists have to commit themselves to God via total faith. Nevertheless, Engelhardt (2005:246) cited one sentence from Erickson: "if God is personal and creator of all, then nature and not just persons are inextricably related to Him and inexplicable without reference to Him." It seems that God has totally sovereignty on human life.
- 4) Trotter (2005) emphasized traditional Christianity rather than Christian bioethics. Traditional Christianity defined the first thousand years of Christianity as it exists today in the Orthodox Church. However, Trotter (2015:269) stated that Christian bioethics should "involve a set of practices, not simply the enunciation of a set of beliefs." Nevertheless, Engelhardt (2005:246) wrote that "Trotter is absolutely correct that many of the disputes in Christian bioethics are grounded in the circumstance that there is not one sense of Christian tradition."

Trotter (2005) focuses primarily on the attempt of both a secular and a Christian post-traditional culture (which is post-traditional in wishing to reshape the taken-for-granted social and moral commitments of Christendom, as with the affirmation of homosexual laws) to transform Christian charity into concerns for social justice, compassion, and social responsibility. In contrast, for Christians, love of one's neighbor expressed in almsgiving is not directed to setting poverty aside (since the poor will always be with us – John 12:8), but is nested in a spiritual life that aims at union with God and with one's neighbor through God (Trotter, 2005).

However, Erickson (2005) argued that personhood and the personal are fundamental to understanding the body, soul, and spirit. Thus, Erickson (2005:269) concluded that "a Christian bioethicist must express a total personal commitment to Christian faith."

- 5) Allen Verhey (2005:297) wrote that “Scripture is somehow normative for any bioethics that would be Christian”. This means that, for Verhey, Scripture is the measurement and canon for any bioethics. Scripture is also a guide for Christian bioethics. Therefore, Verhey (2005) stated that even if Scripture is silent, it is not a problem for the Christian, because the church understands what is Christian and what is Christian life. Church is just not a unique community that worships and reads Scripture together, but also a place to practise moral discussion and discernment. Furthermore, “it is empowered by the Spirit, who gives remembrance, for the task of mutual admonition and encouragement” (Verhey, 2005:313). Because of that, Engelhardt (2005:247) concluded that “Scripture identifies church, and church identifies Scripture.”

In conclusion, medicine should not interfere to improve the quality of human life (Waters, 2005). This means that Christian bioethics should help Christians who are conformed to Christ and have freedom to obey Christ. Moreover, Engelhardt (2011:87) wrote that “Christian bioethics rightly understood is all about Christ” and illustrated Christian bioethics as below (Engelhardt, 2005:249).

Christians are in deep and fundamental disagreement. They disagree about the nature of the central issues involved in articulating a Christian morality or bioethics. There is deep and apparently irreconcilable difference regarding the meaning and force of Scripture, the church, Christian knowledge, theology, philosophy, natural law, and rational philosophical reflection...

2.3.4 Principles of Christian bioethics

D. Gareth Jones’s opinion (2014) divided IVF into five categories based on Christian responses at Pew Survey. These five categories are (a) embryo centered – categorical; (b) embryo centered – precautionary; (c) embryo centered – human control; (d) child and family centered – addressing infertility; and (e) desire centered – overcoming human limitations (Jones, 2014:142). IVF is argued in ongoing debates by scientists, ethicists, and theologians that represent their own areas. Jones (2014:142) writes,

Older women flock to use it, the donation of eggs and sperm, let alone embryos, in conjunction with IVF has become commonplace; pre-implantation genetic

diagnosis (PGD) for the detection of genetic defects in embryos depends upon the use of IVF.

Therefore, Jones (2014:164) writes that “IVF is not a panacea for anyone and will be accompanied by myriad demands upon them” and concludes that “Christians, like others, are to balance these pluses and minuses, to utilize elements in IVF that are helpful in bringing full-orbed health to individuals and families, and to reject excesses that are counterproductive to family life.”

Because of that, Christians should know practical principles of Christian bioethics to help each other when they face a bioethical problem. In regard to the principles for Christian handling of biomedical issues, two articles are summarized below.

First, Emeka C. Ekeke (2011) adopts seven principles for handling bioethical topics. Ekeke combined these principles from the website “JesusChristSavior.net/ethics” and Thomas Beauchamp and James F. Childress (2012). These seven principles are:

- 1) The principle of autonomy,
- 2) The principle of beneficence,
- 3) The principle of justice,
- 4) The principle of nonmaleficence,
- 5) The principle of moral code and moral justification,
- 6) The principle of doctor-patient relationship, and
- 7) The principle of a virtuous character and moral integrity of the physician.

These principles reflect God’s sovereignty, Christian faith and belief. Even if bioethical decisions are related to a personal’s health problem, they may be very individualized and diverse. The bioethical decision-making depends on each individual’s existing situation. It also reflects his/her maturing spiritual life. Generally, the bioethical decision-making should depend on an individual’s existing circumstances that relate to who, what, where, when, why and how. It seems that these questions become the normal elements that are argued among Christians who are involved with bioethical decision-making (Crossin, 1988). Because bioethical questions explore the beginning of life and death of a human being from a religious

perspective, Crossin (1988) writes that this phenomenon of argument involves many actions, circumstances and consequences that bear heavily for decision-making. Consequently, Emeka C. Ekeke (2011:5) writes about the relationship between biomedical ethics issues and Christians as below:

Biomedical issues today have become issues that are creating serious concern among ethicists and Christians because of the grave consequences arising from biological technological advancement in the treatment and preservation of human life.

Second, the article "*Biomedical Ethics and the Withdrawal of Advanced Life Support*" written by Henig, Faul and Raffin (2001) examines the decision-making issues of patients handling the bioethical problem of the withdrawal of advanced life support. This article explored the factors that must be considered when we may be contemplating abandoning a human life, because it is important for patients to consider a quality of life or to ascertain the value of quality of life before they make a biomedical decision. Consequently, Henig, Faul and Raffin (2001:81) provide Fundamental Principles of Biomedical Ethics for patients, physicians and health care providers to make a decision in a practical and analytic manner. These principles are:

- 1) Beneficence: the first principle that emphasizes relief of suffering.
- 2) Nonmaleficence: the second principle emphasizes the protection of patients, in order to avoid potentially dangerous diagnostic and therapeutic procedures.
- 3) Autonomy: the third principle emphasizes the sovereignty of a patient.
- 4) Justice: the fourth principle mandates equal treatment for all. This requires that physicians do not consider a patient's status in society when they make recommendations to take out care.

For health care providers, there are another four practical principles related to difficult decisions about patient healthcare (Henig, Faul & Raffin, 2001:81-82):

- 1) To establish the source of authority for decision-making.
- 2) To achieve effective communication with patient and family.

- 3) To make an early determination and do an ongoing review of the patient's desires.
- 4) To recognize the patient's rights.

On the other hand, legal precedents in bioethical decision-making, such as government regulations, rules, and policies, have prohibited the groundwork for end of life decision-making. In the United States, "most state courts have supported withholding and withdrawing life support from patients who will not regain a reasonable quality of life" (Henig, Faul, & Raffin, 2001:79). The main reason is that to either withdraw or withhold advanced life support seems one of the most difficult end of life decisions. The bioethical conflict occurs between the patient's wishes and the physician's communication about medical futility. Because of that, these principles of biomedical ethics should become guidelines to patients, the patient's family, and physicians.

2.3.5 Various Studies on Bioethical Views

The Pew Survey has been organized by Pew Research Center (Pew Research Center, 2013:para.24). The data collection period was from March 21 to April 8, 2013 in the USA. The sample was 4006 adults who were 18 years of age or older. This survey collected Christian bioethical views on abortion, IVF, and stem cell therapy. Respondents' opinions were expressed as morally acceptable, morally wrong, or not a moral issue. The results of the survey (Pew Research Center, 2013) show that only 22 percent of respondents say they personally consider embryonic stem cell research to be morally wrong. In contrast, 32 percent of respondents consider stem cell research to be morally acceptable. 36 percent of respondents say stem cell research is not a moral issue. Regarding abortion, just 15 percent of respondents say an abortion is morally acceptable, and 49 percent say they personally consider an abortion to be morally wrong. Finally, 23 percent of respondents say it is not a moral issue. In contrast, regarding IVF, 12 percent of respondents say they personally consider using IVF to be morally wrong, 33 percent say it is morally acceptable, and 46 percent say it is not a moral issue.

John Wyatt has written a chapter titled "The New Biotechnology" in the book *Issues Facing Christians Today* by John Stott (2006). In this chapter, Wyatt (2006) indicates that a Christian faces major bioethical problems in life today. Specifically, the problem of abortion at the beginning of life and the problem of euthanasia at the end of life (Wyatt, 2006:419). Wyatt describes new advances in biotechnology, and develops discussion on the creation and

manipulation of human life. These issues have also become new bioethical challenges that Christians must respond to. In this chapter, Wyatt (2006) illustrates (a) IVF, (b) sex selection, (c) PGD, (d) savior sibling, (e) cloning, and (f) stem cell therapy.

Wyatt (2006) explains that IVF is used not only to provide a child for infertile couples, it has also offered laboratory access to the human egg and the human embryo, enabling embryo testing, research and manipulation to be carried out. This means that the development of IVF has changed our understanding of human reproduction and parenthood. Specifically, embryos can be used for research or for manipulation to create embryonic stem cells intended for therapeutic purposes. Sex selection is available for parents to select and screen embryos via sophisticated genetic techniques. These techniques can also identify embryos that carry serious or fatal diseases. PGD represents pre-implantation genetic diagnosis and embryo selection. In order to have a quality of life, PGD is restricted to the detection of childhood diseases such as cancer. Because of PGD, pre-implantation genetic testing makes possible the selection of embryos to create a child who can act as a matched tissue donor for an existing sibling. This is called a savior sibling. Stem cell therapies are used to treat a range of medical diseases. Tissues such as blood, skin, muscle and brain cells could be grown in the laboratory and implanted without the need for anti-rejection treatment because of the identical genetic match with the patient. Therefore, sex selection, PGD, savior sibling, cloning, and stem cell therapy are related to IVF treatment. Because of this, this study decided to adopt (a) IVF, (b) sex selection, (c) PGD, (d) savior sibling, (e) cloning, and (f) stem cell therapy to represent bioethical views as dependent variables. Each of these became a topic in the questionnaire (see Appendix A, Bioethical Questionnaire – English version).

- 1) IVF (in vitro fertilization, also known as artificial insemination) involves collection of female ovum germ cells and male sperm, and the zygotes are produced by in vitro fertilization in artificial conditions. The fertilized zygote forms an embryo which is cultured for two to six days in a test tube, and then implanted back into the mother. We cannot currently culture in vitro embryos to full term infants. The IVF babies created by this technique are called test-tube babies.
- 2) Sex selection: Sex selection is sometimes done to ensure “family balancing.” Modern science and technology can provide various techniques for gender selection before the implantation of the embryo and after implanting. Before artificial insemination, sex selection can be attempted by a sperm-sorting method or a genetic diagnosis program;

after embryo implantation, a foetus with “inappropriate” gender may be aborted, or the baby may be killed during childbirth or abandoned after birth.

- 3) Pre-implantation genetic diagnosis and selection of embryos (PGD): DNA diagnostics, also known as gene diagnosis, by means of molecular biology and molecular genetics techniques, can test embryos for specific genetic disorders. Because genetic diseases are caused by a single defective gene, if the embryo has the defective gene, the baby may develop abnormally or experience early death, and so bring immense suffering to the family. Through genetic diagnosis techniques of embryo selection a baby can be “customized” to not carry the abnormal gene.
- 4) Savior sibling: A person who is suffering a fatal disease can sometimes be cured by transplantation of organs or cells from a sibling. Parents may choose to have a child so that an organ or cell transplant from it can be provided to its brothers or sisters under the advice of the doctor. This child is referred to as a Savior Sibling. Savior Sibling is mostly used as a reproductive IVF technique to save lives.
- 5) Cloning: Cloning in a broad sense refers to the use of biotechnology to produce a new organism by asexual reproduction. Cloning an organism means creating a new organism with exactly the same genetic information as the original organism.
- 6) Stem cell therapy: Stem cells are cells which form a variety of tissues and organs of the body. They are able to self-replicate and have the potential to differentiate. Stem cell therapy is a method of extracting and isolating the bone marrow stem cells of patients and transplanting them into the patient's body for the purpose of repairing diseased cells or rebuilding the normal cells and tissues.

CHAPTER THREE:

METHODOLOGY

This chapter deals with (a) research design, (b) selection of participants, (c) instrumentation, (d) validity and reliability, (e) methodological limitation, (f) procedure, and (g) data processing and analysis. The chapter explains the methodology related to the design and development of its questionnaire, including the data collection process, in order to accomplish the purpose of this study. The purpose of this study is to examine the effect of mainland Chinese Christian participation in church activities and services on the correlation between the spiritual life of Christians and their views about bioethics. Obviously, individual Bible reading and prayer behavior represent Christian spiritual life as the independent variables. Christians' participation in church activities and services was the mediating variable. Various bioethical views of Christians were dependent variables; these concerned (a) IVF, (b) Sex Selection, (c) PGD, (d) Savior Sibling, (e) Cloning, and (f) Stem Cell Therapy.

3.1 RESEARCH DESIGN

This section describes the research methodology that was utilized to collect and analyze the data in order to have a better understanding of Christian bioethical views in mainland China. The methodological framework for this study is represented in Figure 1.1 of Chapter One (see 1.3.2). Specifically, the research design utilized a correlative approach that examined the correlation among three variables: (a) independent variable, (b) dependent variable, and (c) mediating variable as illustrated at Figure 1.1. In the final analysis of this study, one mediating variable was added in order to explore whether there was an effect on the correlation between independent variable(s) and dependent variable, or not.

In order to achieve the objective of this study, the study adopted a questionnaire instrument to collect data. The questionnaire was designed to be self-administered. Participants took approximately 10 to 15 minutes to read and answer the questionnaire. The questionnaire was designed to collect data in four areas: (a) Christian spiritual life, (b) Christian participation in church activities and services, (c) various bioethical views, and (d) demographics.

The questionnaire design employed dichotomous questions, multiple-choice questions, and the five-point Likert Scale (Cooper & Schindler, 2006; Malhotra, 2004). Appendices A and B contain the survey questionnaires. The Mandarin version of the questionnaire in Appendix B was used to collect the data. In order to save time and transportation costs, the research design utilized the questionnaire to collect data from the population via simple random sampling. The population of this study consisted of Christians in mainland China only.

3.2 POPULATION AND SAMPLE

This study concerned Christian bioethical views in China; therefore, the population targeted Christian participants in church in mainland China. There were three criteria for selection of these participants for this study. First, these participants had to be in mainland China. Second, these participants should attend church and participate in church activities such as Sunday worship, Adult Sunday School, Bible reading group, prayer meeting, Sunday school teaching, or choir. Third, these participants had to be at least 18 years old. In order to have meaningful and representative data, this study adopted a simple random sampling (Creswell, 2009). Only five to thirty participants were selected from each activity at church or workshop locations depending on the number of attendees on that day. If the Sunday worship had more than 200 people, around 20 to 30 participants were selected. This means that the sample represented around 10 to 15 percent of the total population. Because of the financial costs and limited time, only a few cities or churches were selected.

3.3 INSTRUMENTATION

This study utilized a questionnaire as an instrument to collect data from the research sample. Consequently, the questionnaire became the important tool to communicate with participants. This questionnaire consisted of four parts: (a) various bioethical views, (b) Christian spiritual life, (c) church activities and services, and (d) demographics. Each part asked different questions. For instance, there were six topics in the bioethical questions. One topic had five sub-questions. The questionnaire incorporated dichotomous questions, multiple-choice questions, and a five-point Likert scale. Participants took around 10 to 15 minutes to complete the questionnaire.

This questionnaire was developed in English initially, as illustrated in Appendix A. In order to have an accurate translation, the questionnaire was translated from English to Mandarin, as illustrated in Appendix B. This translation was assessed and validated by two bilingual

professors at the Center for Christian Studies in the College of Liberal Arts, Shantou University, China. A pilot test was conducted before questionnaire distribution; this pilot test involved at least 40 participants who completed the questionnaire in order to assess the validity, reliability, and usability of the instrument. The results of the pilot test are presented in Chapter Three, section 3.7, Data Processing and Analysis.

The first part of the questionnaire, collecting information about bioethical views, consisted of six topics, and each topic was divided into five sub-questions which asked about the participant's attitude, cognition, and opinion. These six topics were (a) IVF, (b) Sex Selection, (c) PGD, (d) Savior Sibling, (e) Cloning, and (f) Stem Cell Therapy. These questions were designed to be answered on a five-point Likert scale. One represented "strongly disagree", three represented "neutrality", and five represented "strongly agree" for each question.

The second part asked about personal Christian spiritual life, and had two questions that asked about their personal behavior. One asked about the frequency of individual Bible reading. The other asked about the frequency of individual prayer. This study assumed that Christian spiritual life can be defined by the frequency of personal individual Bible reading and prayer behavior. The measurement of the frequency of Bible reading and individual prayer was (a) at least once a day, (b) a few times per week, (c) at least once per week, (d) at least once per month, and (e) non-application.

The third part inquired about Christian participation in church activities and services. Participation in church activities was assessed by the frequency of attendance at (a) Bible study, (b) Bible group, (c) fellowship, (d) prayer meeting, (e) Sunday worship, and (f) adult Sunday school. The frequency of participation was reported as (a) once per week, (b) three or four times per month, and (c) non-attendance. Participation in church services was indicated by the Christian's involvement in church ministries such as choir, Sunday school teaching, new personal care worker, etc. The participation in church services was measured by attendance at these ministries.

The final part of this questionnaire asked demographical questions regarding age, gender, and baptism status, etc.

3.4 VALIDITY AND RELIABILITY

In order to have validity and reliability, the questionnaire was translated from English to Mandarin. Validity refers to "the success of measures used for prediction or estimation"

(Cooper & Schindler, 2006:319). Leedy and Ormrod (2005:28) also define the validity of a measurement instrument as “the extent to which the instrument measures what it is supposed to measure”.

On the subject of validity, first, the Mandarin version of the questionnaire was validated by two bilingual professors at the Center for Christian Studies in the College of Liberal Arts, Shantou University, China. Second, the validity of the Mandarin version of the questionnaire was tested by a pilot test. Third, this study utilized factor analysis to analyze these variables. Mertler and Vannatta (2005:249) explain that “factor analysis is essentially a process by which the number of variables is reduced by determining which variables cluster together, and factors are the groupings of variables that are measuring some common entity or construct. Therefore, factor analysis summarizes “several variables into a few factors” (Hair, J.F., Bush, R.P., *et al.*, 2006:591). Furthermore, these variables have been grouped by shared common variance (Mertler & Vannatta, 2005:170).

In order to measure the validity of variables, the KMO (Kaiser-Meyer-Olkin measure of sampling adequacy) and Bartlett’s test of sphericity were adopted at the initial stage. When the value of KMO is above 0.80, and the value of Bartlett’s test of sphericity is 0.000 and significant, it means these questions can be used to represent that variable (Hair, Black *et al.*, 2006; Mertler & Vannatta, 2005). In other words, these sub-questions of each topic of bioethical views can be used for data collection.

On the subject of reliability, this study utilizes Cronbach’s Alpha (α) to measure these correlation items from multi-choice formatted questions and the five-point Likert scale. The range of Alpha (α) is between zero and one. In general, α must be 0.70 and above to indicate acceptable reliability. However, exploratory research can accept Alpha as 0.60 (Hair *et al.*, 2006). In other words, the questions of (a) IVF, (b) Sex Selection, (c) PGD, (d) Savior Siblings, (e) Cloning, and (f) Stem Cell Therapies should meet the minimum requirement of $\alpha = 0.70$ and above for this study.

3.5 METHODOLOGICAL LIMITATION

Because of the objectives of this study, there were four limitations. First was the location of the research sample. China is a large country. The study could not collect data from each village, city, and county of China. In other words, this research sample could not collect a national sample by systemic sampling. Because of that, the sample collection method was simple random sampling. Second, because of time constraints, the collection period was

limited. The data collection took only 16 weeks to complete. It did not include the four weeks of the pilot test. Because the research sample was a specific and unique population, the research sample was limited to Chinese who were attending church activities. Furthermore, in order to achieve the research objective, the research content and topics were limited. In other words, the study concerned only Christian bioethical views and the religious activities of the respondents. The third limitation was that all participants had to know what bioethics was. In other words, participants could understand the essential definition and description of each topic of bioethics in detail after they read the questionnaire. Finally, the study only distributed the questionnaire to participants directly, meaning that face-to-face interaction was used. Furthermore, the collection location was limited to churches in a few cities and nearby areas.

3.6 PROCEDURE

This study targeted Christian participants in mainland China. It utilized a simple random sampling to collect a research sample from the population. Two approaches were used in accessing and selecting this research sample. The first was through personal networking, approaching each church's leader(s) or member(s). At each church the questionnaire was distributed to these participants at one church activity. Subsequently some of these initial participants introduced their friends in the other churches in nearby locations, and so on. These locations were Shantou, Beijing, Guangzhou and nearby areas. In these places there were face-to-face opportunities to explain the questionnaire.

The second approach was through the alumni network of Malaysia Bible Seminary – contact was made with alumni who are in China at present. The main location of this group was Wenzhou. Furthermore, Wenzhou is near to Shanghai and the Hangzhou area. The approach method was the same as the first approach to access a research sample. However, this group of participants was almost all church leaders, or full time workers.

After communicating with the church leaders and members, the strategy was to visit their churches' workshops or Bible reading groups, Sunday schools, or any other activities. In these various activities, the questionnaire was distributed by each participant after church activities. Before participants did the questionnaire, the concept of bioethics was explained face-to-face. In order to get accurate data, the definition of each bioethical topic was explained within five to ten minutes. In these five to ten minutes only basic information about

each topic of bioethics was given. For example, what is IVF? In other words, the explanation did not illustrate any opinion, suggestion, or personal attitude from a Christian viewpoint.

Because of the simple random sampling, each meeting only collected five to thirty participants, depending on the number of participants at that activity. For instance, out of 20 people in a Bible reading group, only three or five participants were selected. If the fellowship had 80 people, around eight to ten participants were selected. This means that the sample represented average 10 to 15 percent of the total population. At the end of 16 weeks, these data were keyed into an Excel sheet and translated to the Statistical Package for the Social Sciences (SPSS) software and SPSS Analysis of Moment Structures (AMOS) software for ongoing analysis.

3.7 DATA PROCESSING AND ANALYSIS

In order to have validity and reliability, this study utilized a pilot test. Within four weeks, 96 participants were collected from five churches at different locations with different church activities.

On the subject of validity, factor analysis was used to measure these variables of bioethical views. The KMO (Kasier-Meyer-Olkin measure of sampling adequacy) and Bartlett's test of sphericity were adopted.

The results for the KMO were (a) IVF 0.819, (b) Sex selection 0.827, (c) PGD 0.799, (d) Savior Sibling 0.813, (e) Cloning 0.828, and (f) Stem Cell Therapy 0.839. The result of Bartlett's test of sphericity was (a) IVF 0.000, (b) Cloning 0.000, (c) Sex selection 0.00, (d) Genetic diagnosis and embryo selection 0.000, (e) Savior Sibling 0.000, and (f) Stem Cell Therapy 0.000.

With regard to the KMO, all results were above 0.7. Furthermore, the results for Bartlett's test of sphericity show significance as 0.000. This means that factor analysis was conducted to determine what, if any, underlying structure exists for measures on the following five sub-questions for each component.

After factor rotation, one component that presents IVF accounted for 74.169 percent of the total variance in the original variables of these five sub-questions of IVF. One component that presents Cloning accounted for 81.895 percent of the total variance in the original variables of these five sub-questions of Cloning. One component that presents Sex Selection

accounted for 81.414 percent of the total variance in the original variables of these five sub-questions of Sex Selection. One component that presents PGD accounted for 76.068 percent of the total variance in the original variables of these five sub-questions of PGD and Selection of Embryos. One component that presents Savior Sibling accounted for 81.895 percent of the total variance in the original variables of these five sub-questions of Savior Sibling. One component that presents Stem Cell Therapy Cloning accounted for 77.896 percent of the total variance in the original variables of these five sub-questions of Stem Cell Therapy Cloning. From these results shown above, it was concluded that the questionnaire design and structure for each topic of bioethical views given to participants in this study was valid.

On the subject of reliability, participants to each bioethical topic were measured by Cronbach's Alpha (α). The results of Cronbach's Alpha indicated that (a) IVF was 0.872, (b) Cloning was 0.942, (c) Sex selection was 0.940, (d) PGD was 0.906, (e) Savior Sibling was 0.908, and (f) Stem Cell Therapy was 0.872. These results show that Cronbach's Alpha (α) is over 0.70 (Hair *et al.*, 2006). These results demonstrate that the questionnaire is reliable.

In summary, the results indicated that the questionnaire for this study was a valid and reliable instrument to collect data for the next step.

3.7.1 Descriptive analysis

Descriptive analysis adopts descriptive statistics to illustrate the collected data on a sample set. Leedy and Ormrod (2005:257) explain that descriptive statistics examines data for measures of central tendency (mean, median, and mode), amount of variability (variance, standard deviation, range, and inter-quartile range), and the extent of the relationship among variables (correlation coefficients). In other words, descriptive analysis summarizes participant profiles in representing parameters such as mean and standard deviation.

3.7.2 Correlation coefficient analysis

Correlation coefficient analysis (Pearson product-moment correlation coefficient, r) was used to measure the strength of association among all variables, in order to process multiple regression analysis. The value is between -1 and +1 and indicates correlation between one variable and another variable. When the value of r is near to zero, it indicates that there is no correlation between the variables. In general, the values of 0.4 and 0.8 are cutting points to

describe the degree of correlation (either negative or positive value) for both variables (Hair *et al.*, 2006). There are three degrees of correlation: weak, moderate, and strong. Sometimes the value of 0.5 is employed as a cutting point (Lind *et al.*, 2006). When the value is below 0.5, the correlation is weak. When the value is above 0.5, the correlation is strong.

3.7.3 Regression analysis

The objective of regression analysis is to utilize one variable in exploring its association with the other variable(s). It describes and tests the existence of predictable relationships among a set of variables (Mertler & Vannatta, 2005:199). Linear regression analysis involves one independent variable to predict one dependent variable (Leedy *et al.*, 2005; Hair & Black *et al.*, 2006; Mertler & Vannatta, 2005). Multiple regression analysis involves two or more independent variables to predict one dependent variable (Leedy *et al.*, 2005; Hair, Black *et al.*, 2006; Mertler & Vannatta, 2005). In other words, the objective of multiple regression analysis is a “prediction”. Multiple regression analysis can add one independent mediating variable to predict the relationship between independent variable(s) and a dependent variable (Hair, Black *et al.*, 2006). In other words, the added variable has a mediating effect on that relationship. Hair and Black (2006:201) explain that the added variable will change “the form of relationship between another independent variable and the dependent variable.” Therefore, regression analysis is used to “predict changes in the dependent variable in response to changes in independent variables” (Hair, Black *et al.*, 2006:18).

In linear and multiple regression analysis, the coefficient of determination (R^2), beta coefficient, tolerance, and variance inflation factor (VIF) interpret the correlation between independent variable(s) and the dependent variable (Hair, Black *et al.*, 2006; Mertler & Vannatta, 2005).

The R^2 (R square) is also called the coefficient of determination that explains “the proportion of one variable in the pair that can be explained by the other variable” (Mertler & Vannatta, 2005:168). The R^2 should have a meaningful description to explain a dependent variable to predict the corrective relationship with combination independent variable in multiple linear regressions (Mertler & Vannatta, 2005). Additionally, the value of R^2 is between zero and one. In multiple regression and hierarchical regression analysis, the adjusted coefficient of determination, adjusted R^2 , is the “modified measure of the coefficient of determination that takes into account the number of independent variables included in the regression equation and the sample size” (Hair, Black *et al.*, 2006:170). When the R^2 in regression analysis or the

adjusted R^2 in multiple or hierarchical regression analysis is high, it is a better prediction of dependent variables that are explained by independent variable(s) (Hair, Black *et al.*, 2006).

The Beta defines the standardizing of regression coefficients that “allow for a direct comparison between coefficients as to their relative explanatory power of the dependent variable” (Hair, Black *et al.*, 2006:170). The coefficient range is between negative one and positive one. When the Beta has a high value, there is a strong power of prediction for variables (Hair, Black *et al.*, 2006).

Tolerance is an indication of multicollinearity that measures collinearity among independent variables, specifically, in a multiple regression analysis. Its value is from zero to one (Mertler & Vannatta, 2005). The tolerance value near zero means that “the variable is more highly predicted by the other independent variables” (Hair, Black *et al.*, 2006:176). The variance inflation factor (VIF) also works with tolerance in providing an indication of the existence of strong linearity between a predictor and all remaining predictors (Mertler & Vannatta, 2005:189). When the VIF has a large value, it indicates “a high degree of collinearity or multicollinearity among independent variables” (Hair, Black *et al.*, 2006:176).

3.7.4 Path analysis

Path Analysis is the statistical technique used to observe a causal relationship among three or more variables. Path analysis and structural equation modeling (SEM) are two techniques that are classified as causal modeling approaches. Path analysis is a subset of SEM. Furthermore, “Path analysis is an extension of multiple regression” analysis to explore correlation among independent (or exogenous) variables, any number of dependent (endogenous) variables, and any number of intermediate variables, which are both dependent on some variables and predictive of others in terms of a path diagram (Streiner, 2005:115; Mertler & Vannatta, 2005; Byrne, 2010; Blunch, 2008). Mertler & Vannatta (2005:199) illustrated that “path analysis has a substantial advantage over the simple model in that both direct and indirect causal effects can be estimated.”

In order to realize the results of path analysis, the concepts of path analysis and statistical indexes are illustrated below (Blungch, 2008; Byrne, 2010; Streiner, 2005; Webley & Lea, 1997).

- 1) Path diagrams “provide a visual portrayal of relations which are assumed to hold among variables under study” (Byrne, 2010:9). A diagram shows the correlation among

independent, intermediate, and dependent variables. In a path diagram there are two types of headed arrow. One is a single-headed arrow which shows the cause of the independent, intermediate and dependent variable. The second is a double-headed arrow which shows the covariance between the two variables. Exogenous variables are independent variables, and endogenous variables are dependent variables.

- 2) The path coefficient is a standardized regression coefficient (beta), showing the direct effect of an independent variable on a dependent variable in the path model.
- 3) The effect decomposition is divided into (a) direct effect and (b) indirect effect. The direct effect means the effect of one variable on another. There is a single-headed arrow to show the correlation between both variables in the model. The indirect effect means that there are three variables in the model. First, one variable mediates the correlation between two variables in the model; second, it is computed as the effect of paths linking variables. Finally, the total effect is the direct effect of β plus indirect effect(s) of β .

To evaluate the statistical significance of mediated models, there are four methods to identify whether the effect is direct or indirect, as follows:

- 1) B-K method by Baron and Kenny (Baron and Kenny, 1986)
- 2) Difference in coefficients (Sobel, 1982)
- 3) Product of Coefficients (Robins & Greenland, 1992)
- 4) Bootstrap distribution of effects or PRODCLIN2 (Mackinnon, 2008)

As illustrated in the path diagram at Figure 1.1, Chapter One, this study only has one mediator variable. Thus, in order to measure a statistical significance of the effect of either partial or complete mediation, researchers suggest to adopt the Sobel test to evaluate the effect decomposition (Sobel, 1982). If there are two or more mediating variables (multiple mediating variables), researchers suggest utilizing Bootstrapped methods to obtain confidence intervals (Mackinnon, 2008). However, before the study utilizes the Sobel test, the condition is that the exogenous variable has a significant effect on the endogenous variable. If not, the Sobel test will not apply at the final step.

CHAPTER FOUR:

DESCRIPTIVE STATISTICS OF RESEARCH SAMPLE

This chapter consists of two sections that present the results of the research, describing in statistical terms the characteristics of the research sample on the basis of the collected data. First, the descriptive statistics analyzed the participants' attitudes, cognition, and opinions about their bioethical views. At the same time, descriptive statistics provided information about the behavior of participants. It also included the demographic information of participants. Second, correlation analysis has been adopted, in order to measure the strength of association of all variables to each other.

4.1 DESCRIPTIVE STATISTICS

After 20 weeks, the study collected 415 respondents in China, including 96 respondents from the pilot test within a four-week period. The demographical data is reported at Appendix C, from Table AC.1 to Table AC 8.

The top three locations were (a) 30.6% of respondents from Shantou, (b) 22.65% of respondents from Beijing, and (c) 18.07% of respondents from the minority cities combined.

The top three age ranges were (a) 43.86% aged from 21 to 30, (b) 27.71% aged from 31 to 40, and (c) 18.07% aged from 41 to 50.

The gender of respondents was (a) 33.73% male and (b) 66.27% female.

On the subject of baptism, 83.13% of respondents were baptized as adults, and 3.61% of respondents were baptized as infants.

As regards their status in church, (a) 71.09% of respondents were laity, (b) 18.31% of respondents were full time workers, and (c) 10.6% of respondents were either deacons or elders.

On the subject of personal salvation history, (a) 38.07% of respondents had been committed to Christ for 10 years and above, (b) 20.72% of respondents wrote 7 to 9 years, (c) 20% of respondents wrote 3 to 6 years.

Regarding the question, how often does your pastor teach Christian ethics in your church, the frequency distribution was (a) 27.71% once per year or less than once, (b) 22.65% once per week, and (c) 17.59% several times per year.

The church activities consisted of (a) Bible study/Bible group/Fellowship, (b) Prayer Meeting, (c) Sunday Worship, and (d) Adult Sunday School. The percentages for attendance at each activity are summarized in Table 4.1.

Table 4.1: Frequency Distribution of Church Activity of Respondents

Attendance	Bible Study / Bible Group / Fellowship	Prayer Meeting	Sunday Worship	Adult Sunday School
Once a week	56.1%	30.6%	64.6%	27%
Three or four times a month	34%	34%	33.3%	21.9%
Non-participation	9.9%	45.8%	2.2%	51.1%

Regarding the Christians' participation in church services, the question provided these possible answers: (a) Bible studying/Bible group/Fellowship/Sunday/Prayer meeting, (b) Choir, entertainment/new personal care worker, (c) Worship ministry and related tasks, (d) Other, and (e) N/A. Furthermore, the participants could select more than one answer. The answer "1" indicates "N/A", "2" indicates involvement in one service, "3" indicates involvement in two types of service, and "4" indicates involvement in three or more types of service. The answer "other" was counted as one service and scored "2".

The frequency distribution shows that (a) 28% of respondents were not involved, (b) 44.8% of respondents were involved in one service, (c) 21.7% of respondents were involved in two types of service, and (d) 5.5% were involved in three or more types of service in church.

The criteria for personal spiritual life consisted of (a) individual Bible reading and (b) prayer. The percentages are summarized in Table 4.2.

Table 4.2: Frequency Distribution of Personal Spiritual Life Criteria

	Bible Reading	Prayer
At least once per day	50.4%	66.7%
Few times per week	29.4%	21.2%
At least once per week	8.9%	5.1%
At least once per month	5.3%	1.9%
Not applicable	6%	5.1%

The overall minimum, maximum, mean, and standard deviation were calculated for each of the interval scaled constructs as shown at Table 4.3. Respondents' attitudes, cognition, and opinions were scaled from 1 to 5 where 1 indicated "strongly disagree", 2 indicated "do not agree", 3 indicated "neutrality", 4 indicated "agree", and 5 indicated "strongly agree".

As indicated in Table 4.3, the mean score for the Sex Selection was 4.233, which was the highest calculated mean score. Therefore, on average, participants generally agreed with the statements about Sex Selection, indicating their opposition to these practices. In contrast, Stem Cell Therapy garnered the lowest mean score at 2.923, meaning that Stem Cell Therapy was viewed as largely a neutral consideration.

Table 4.3: Mean and Standard Deviation of Responses to IVF, Sex Selection, PGD, Savior Sibling, Cloning, and Stem Cell Therapy

	N	Minimum	Maximum	Mean	Standard Deviation
IVF	415	1.0	5.0	3.323	0.903
Sex Selection	415	1.0	5.0	4.233	1.062
PGD	415	1.0	5.0	3.647	0.971
Savior Sibling	415	1.0	5.0	3.456	1.022
Cloning	415	1.0	5.0	4.078	1.080
Stem Cell Therapy	415	1.0	5.0	2.923	0.905

4.2 CORRELATION COEFFICIENT ANALYSIS

Because of the adoption of multiple regression analysis for this study, correlation coefficient analysis (Pearson product-moment correlation coefficient, r) was used to measure the strength of association among all variables. Values between -1 and +1 indicate correlation between one variable and another variable. When the value of r is near to zero, it indicates that there is no correlation between the variables (Hair *et al.*, 2006; Lind *et al.*, 2006).

The first purpose of the correlation analysis was to identify all variables that have a multicollinearity issue. When some variables have a multicollinearity issue, the multiple regression analysis has to change to other statistical methods. The second purpose of the correlation analysis was to make sure of the strength of association of each variable with the others. The correlation analysis examined nine variables: (a) IVF, (b) sex selection, (c) PGD, (d) savior sibling, (e) cloning, (f) stem cell therapy, (g) spiritual life, (h) church activities, and (i) church services.

The correlation analysis indicated that nine variables had a significant correlation with each other (see Table 4.4). However, the degrees of significance were less than 0.80. This means that these nine variables did not have a multicollinearity problem. In other words, these nine variables can be adopted for multiple regression analysis according to the theoretical framework in Figure 1.1 of Chapter One. Although the nine variables did not have a multicollinearity issue, the results of correlation analysis demonstrated statistical significance among some of the nine variables. Based on Table 4.4, these findings resulting from the correlation analysis can be summarized in three points.

First, these six variables of bioethical views had a significant correlation with each other as shown in Table 4.4. The various bioethical views were (a) IVF, (b) sex selection, (c) PGD, (d) savior sibling, (e) cloning and (f) stem cell therapy. Furthermore, the strongest correlation was between Sex Selection and Cloning. In contrast, the weakest correlation was Sex Selection and IVF. Moreover, the correlation among six variables was a significant positive relationship with each other. Table 4.5, Table 4.6, and Table 4.7 illustrate in detail the relationship between the various bioethical views and the other variables.

Table 4.4: Correlation Analysis of IVF, Cloning, Sex Selection, PGD, Savior Sibling, Stem Cell Therapy, Spiritual life, Church activities, and Services

	IVF	Cloning	Sex Selection	PGD	Savior Sibling	Stem Cell	Spiritual Life	Church Activity	Church Service
IVF	1	0.370**	0.307**	0.435**	0.515**	0.385**	0.026	-0.016	0.067
Cloning	0.370**	1	0.757**	0.486**	0.396**	0.032	0.011	-0.104*	0.113*
Sex Selection	0.307**	0.757**	1	0.506**	0.416**	0.023	-0.026	-0.137**	0.093
PGD	0.435**	0.486**	0.506**	1	0.545**	0.361**	-0.041	-0.032	0.089
Savior	0.515**	0.396**	0.416**	0.545**	1	0.393**	-0.020	-0.039	0.088
Stem	0.385**	0.032	0.023	0.361**	0.393**	1	0.028	-0.029	0.032
Spiritual Life	0.026	0.011	-0.026	-0.041	-0.020	0.028	1	0.284**	0.193**
Church Activity	-0.016	-0.104*	-0.137**	-0.032	-0.039	-0.029	0.284**	1	0.353**
Church Service	0.067	0.113*	0.093	0.089	0.088	0.032	0.193**	0.353**	1

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Second, Table 4.5 provided one interesting result between attendance at church activities and participation in church services. The correlation analysis showed that when Christians attended their church activates more often, they were also more involved in service in their church.

Exploring in more detail the correlation between Christian spiritual life and participation in church activity and service, and looking at the related variables of Bible reading and individual prayer as shown in Table 4.5, the results indicated that (a) spiritual life had a correlation with attendance in church activity; (b) spiritual life had a correlation with participation in church service. In other words, when Christians read the Bible or prayed individually, they more frequently attended church activities such as Bible group, fellowship, and prayer meeting. At the same time, they more frequently participated in church services like committee of fellowship, choir, and worship ministry. The strongest correlation was between the spiritual life of Christians and their participation in church activities. The weakest correlation was between the spiritual life of Christians and their participation in church services.

Table 4.5: Correlation Analysis of Bible Reading, Individual Prayer, Church Activity, and Service

	Bible Reading	Prayer	Church Activity	Church Service
Bible Reading	1	0.615**	0.287**	0.435**
Prayer	0.615**	1	0.221**	0.486**
Church Activity	0.287**	0.221**	1	0.353**
Church Service	0.157**	0.191**	0.353**	1

** . Correlation is significant at the 0.01 level (2-tailed).

Third, Table 4.6 indicates that participation in church activity and service have influenced responses to some topics of bioethics such as sex selection, cloning, and PGD. However, as regards various bioethical views of Christians with Christian participation in church activity and church service, the result indicated that church activity had a significant negative correlation with cloning. Simultaneously, there was a significant negative correlation between church activity and sex selection. The result illustrated that when Christians frequently attended more church activities, their attitude, cognition, and opinion did not refuse cloning and sex selection.

Table 4.6: Correlation Analysis of IVF, Cloning, Sex Selection, PGD, Savior Sibling, Stem Cell Therapy, Church Activities, and Services

	IVF	Sex Selection	PGD	Savior Sibling	Cloning	Stem Cell	Church Activity	Church Service
IVF	1	0.312**	0.469**	0.496**	0.381**	0.390**	-0.036	0.036
Sex Selection	0.312**	1	0.539**	0.440**	0.781**	0.008	-0.132**	0.095
PGD	0.469**	0.539**	1	0.582**	0.504**	0.363**	-0.038	0.101*
Savior	0.496**	0.440**	0.582**	1	0.413**	0.417**	-0.043	0.082
Cloning	0.381**	0.781**	0.504**	0.413**	1	-0.008	-0.116*	0.090
Stem	0.390**	0.008	0.363**	0.417**	-0.008	1	-0.015	0.016
Church Activity	-0.036	-0.132**	0.038	-0.043	-0.116*	-0.015	1	0.353**
Church Service	0.036	0.095	0.101*	0.082	0.090	0.016	0.353**	1

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Based on Table 4.7, the significant correlation means that the various bioethical views of Christians did not have a correlation with their spiritual life (either Bible reading or prayer). Furthermore, the results at Table 4.4 also show that there was no significant correlation between various bioethical views and spiritual life. However, when spiritual life was divided into (a) individual Bible reading and (b) individual prayer behavior, the result shows that individual Bible reading is correlated with prayer behavior as well as the results based on Table 4.5.

Table 4.7: Correlation Analysis of IVF, Cloning, Sex Selection, PGD, Savior Sibling, Stem Cell Therapy, Bible Reading, and Prayer

	IVF	Sex Selection	PGD	Savior Sibling	Cloning	Stem Cell	Bible Reading	Prayer
IVF	1	0.312**	0.469**	0.496**	0.381**	0.390**	0.073	-0.060
Sex Selection	0.312**	1	0.539**	0.440**	0.781**	0.008	-0.029	-0.031
PGD	0.469**	0.539**	1	0.582**	0.504**	0.363**	-0.035	-0.054
Savior	0.496**	0.440**	0.582**	1	0.413**	0.417**	0.004	-0.055
Cloning	0.381**	0.781**	0.504**	0.413**	1	-0.008	-0.009	0.007
Stem	0.390**	0.008	0.363**	0.417**	-0.008	1	0.043	-0.007
Bible reading	0.073	-0.029	-0.035	0.004	-0.009	0.043	1	0.615**
Prayer	-0.060	-0.031	-0.054	-0.055	0.007	-0.007	0.615**	1

** . Correlation is significant at the 0.01 level (2-tailed).

As a consequence of these results via correlation analysis, they can be summarized in one statement: the component activities in which Christians participate in church are related with each other. For instance, when Christians attended Sunday worship more frequently, they also attended the adult Sunday school more regularly. At the same time, Christian spiritual life is related to participation in church services. In addition, the results also indicated that Bible reading of Christians related to their participation in church activities such as (a) prayer meetings, and (b) individual prayer, and vice versa. Overall, these three variables, (a) Christian spiritual life, (b) Christian attendance at church activities and (c) serving in the church, are correlated with each other.

On the subject of the relationship between various bioethical views and the spiritual life of Christians, or between various bioethical views and Christian participation in church activity and service, the results show that bioethical views on sex selection, PGD, and cloning relate to Christian participation in church activity and service. In contrast, (a) individual Bible reading and (b) prayer behavior, representing the spiritual life of Christians, did not relate to various bioethical views.

CHAPTER FIVE:

THE CORRELATION BETWEEN CHRISTIAN SPIRITUAL LIFE AND PARTICIPATION IN CHURCH ACTIVITY AND SERVICE

Chapter Five explores the correlation between (a) Christian spiritual life and Christian participation in (b) church activities and (c) services in terms of the research framework design at Figure 1.1, Chapter One. This chapter consists of (a) research framework design and definition, (b) data analysis, (c) findings based on the results, and (d) discussion and conclusion.

The section dealing with the research framework design and definition illustrates the meaning of the variables of this study, namely: (a) Christian spiritual life, (b) Christian participation in church activities and (c) services. Christian spiritual life consisted of (a) individual Bible reading and (b) prayer. Participation in church activities consisted of attendance at (a) Bible study, Bible group, Fellowship, (b) Prayer Meeting, (c) Sunday Worship, and (d) Adult Sunday school. Participation in church services consisted of (a) Bible studying, Bible group, Fellowship, Sunday Worship, Prayer meeting, (b) Choir, entertainment, new personal care worker, (c) Worship ministry and related tasks, (d) Other, and (e) N/A.

This section of the research framework design and definition also outlines the methods of measuring each variable through questionnaires. The methods were utilized to quantify Christian spiritual life by determining the frequency of individual Bible reading and prayer behavior. In addition, the methods were used to quantify participation in church activities and service behavior by determining either frequency or number.

The section on data analysis presents the results gained from statistical analysis. This section indicates only whether the results are either significant or not significant; it does not illustrate the meaning of these results. The section on findings based on the results provides the meaning of these analyses and indicates the correlation between the variables. Finally, the discussion and conclusion concerns the application of these findings.

5.1 RESEARCH FRAMEWORK DESIGN AND DEFINITION

Based on Figure 1.1 in Chapter One, this research has utilized a linear and multiple regression analysis to examine the above nine variables with respect to (a) Christian spiritual life, (b) Christian participation in church activities and (c) services, and (d) various bioethical views. In order to provide the detail of the theoretical framework in this chapter, Figure 5.1 only selects these related variables, spiritual life of Christians, church activities and service, from Figure 1.1 in Chapter One.

As illustrated at Figure 5.1, there were four variables of this research. The spiritual life of Christians consists of two elements. One is Bible reading and the other is individual prayer. Individual Bible reading and the prayer behavior of Christians were independent variables. Two dependent variables were Christian participation in (a) church activity and (b) service.



Figure 5.1: The correlation between Christian spiritual life and Christian participation in church activities and services

Christian participation in church activities consisted of (a) Bible study, Bible group, fellowship, (b) prayer meeting, (c) Sunday worship, and (d) Adult Sunday School. Christian participation in church services consisted of (a) Bible studying, Bible group, fellowship, Sunday worship, Sunday school, Prayer meeting, (b) choir, entertainment, new person care worker, (c) worship ministry and related tasks, (d) other, and (e) non-participation.

Because this research adopted a quantitative research design, these variables were measured by respondents' behavior in terms of Figure 5.1. The objective of this chapter is to examine the correlation between the spiritual life of Christians and their participation in church activity and service; consequently, an important component of this chapter is to define and measure (a) the behavior of Christians in their spiritual life, and (b) their participation in church activities and services.

On the subject of Christian spiritual life, the study adopted individual (a) Bible reading and (b) prayer behavior as indicators. The study utilized the frequency of each activity to measure Christian spiritual life. In other words, the questions asked about the personal behavior of participants. Question 12 (see Appendix A, Bioethical Questionnaire – English version) asked how frequently the participant prayed or read the Bible. Participants answered the question according to their own circumstances, describing the frequency of individual prayer and Bible reading per day, per week, per month, or not applicable. The data were then modified. “Not applicable” scored “1”. “At least once per month” scored “2”. “At least once per week” scored “3”. “Few times per week” scored “4”. “At least once per day” scored “5”. Finally, the totals were averaged. Furthermore, the data was shown as an ordinal scale.

On the subject of participation (that is, attendance) in church activities, this research measured the frequency of each church activity as below at Question 10 (see Appendix A, Bioethical Questionnaire – English version). The research adopted the following categories: (a) Bible study, Bible study group, Fellowship, (b) prayer meeting, (c) Sunday worship, and (d) adult Sunday school, defining the frequency of each activity as per week, per month, or non-participation. Furthermore, the frequency of church activities combined all church activities of participants. For instance, one respondent selected Sunday school and Worship every week. The frequency of selected activities was shown as an ordinal scale. Non-participation scored “1”, three or four times a month scored “2”, and once a week scored “3”. Finally, the totals were averaged. Furthermore, the data was shown as an ordinal scale.

On the subject of Christian participation (that is, actively serving) in church services, the study asked participants to report their forms of serving in church as below at Question 16 (see Appendix A, Bioethical Questionnaire – English version). They could select multiple answers if there were more than one type of service. Therefore, the data have been modified. For instance, when a participant selected two services such as Bible group and choir, the number was “3”. Or, if a participant selected “N/A”, the number was “1”. They could select multiple answers if there were more than one type of service. Furthermore, the data was shown as an ordinal scale.

5.2 RESEARCH QUESTION AND HYPOTHESES

In terms of Figure 5.1 of the research framework, the research question and hypothesis of this chapter were as below:

Research Question: Does the spiritual life of mainland Chinese Christians affect their participation in church activities and services?

H₁: The spiritual life of mainland Chinese Christians affects their participation in church activities.

H₂: The spiritual life of mainland Chinese Christians affects their participation in church services.

5.3 DATA ANALYSIS

The research sample consisted of 415 participants in China via a simple random sampling gathered over 20 weeks. The data were collected at different locations in China. Initially, in order to perform a statistical test, some data were coded into dummy data. For instance, 1 represented male and 2 represented female. Some data were modified. For instance, the data of Question 16 were modified as shown at Appendix A, Bioethical Questionnaire (English version), because these participants selected their services in their church. If they had two types of service in church, the modified datum would be 3. Conversely, if someone selected the N/A answer, the datum would be 1.

Because multiple regression analysis was adopted for this research, these four variables were first examined by correlation analysis as an initial step as shown as Table 4.5, Chapter Four. The main purpose of correlation analysis was to identify whether these variables had a multicollinearity issue. When some variables have a multicollinearity issue, the multiple regression analysis has to change to other statistical methods. For instance, if the variables have multicollinearity, factor analysis will be utilized before multiple regression analysis in order to reduce the number of variables. According to Table 4.5 at Chapter Four, the results indicate that no multicollinearity problem was present for these four variables. In other words, the spiritual life indicators of (a) Bible reading and (b) prayer could be analyzed with regard to (c) church activity, and (d) church service using multiple regression analysis.

Figure 5.1 illustrates the correlation between the spiritual life of Christians and their participation in church activities and services. In order to analyze the influence of spiritual life on the Christians' participation in church activities and services, linear regression analysis and multiple regression analysis have been adopted. These analyzed results are illustrated at Table 5.1, Table 5.2, Table 5.3, and Table 5.4.

After the linear regression analysis, Table 5.1 indicates that the spiritual life of Christians has a significant influence on Christian participation in church activity. This means that the research finding fails to reject hypothesis H_1 . Furthermore, 81% of the variation of the church activity is explained by the spiritual life of the Christians. It is concluded that Christian participation in church activity can be expressed by the following regression model, where ϵ indicates a normally distributed random residual whose mean is 0.

$$\text{Church Activity} = 1.565 + 0.143 \times \text{Spiritual Life} + \epsilon$$

Table 5.1: Regression Results of Personal Spiritual Life Related to Church Activity

	<i>B</i>	<i>SE b</i> (std. error)	β
Constant	1.560	0.104	
Spiritual Life	0.143	0.024	0.284***

a. Dependent Variable: Church Activity

Note. $R^2 = 0.081$. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

However, the measurement of spiritual life is divided into (a) Bible reading and (b) prayer behavior. Therefore, Table 5.2 adopted these two variables of Christian spiritual life to explore the correlation with their participation in church activities as illustrated at Question 10. After multiple regression analysis, Table 5.2 indicates that Bible reading had a significant influence on Christian participation in church activity. Conversely, prayer did not have a significant influence on Christian participation in church activity. Furthermore, 85% of the variation of the church activity is explained by Bible reading. It is concluded that Christian participation in church activity can be expressed by the following regression model, where ϵ indicates a normally distributed random residual whose mean is 0.

$$\text{Church Activity} = 1.565 + 0.104 \times \text{Bible Reading} + \epsilon$$

Table 5.2: Regression Results of Bible Reading and Prayer Meeting Related to Church Activity

	<i>B</i>	<i>SE b</i> (std. error)	<i>B</i>
Constant	1.559	0.107	
Bible Reading	0.104	0.026	0.242***
Prayer	0.035	0.029	0.072

a. Dependent Variable: Church Activity

Note. $R^2 = 0.085$. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

After the linear regression analysis, Table 5.3 indicates that the spiritual life of the Christian has a significant influence on their participation in church service. This means that the research finding fails to reject hypothesis H_2 . Furthermore, 37% of the variation of church service is explained by spiritual life. It is concluded that Christian participation in church service can be expressed by the following regression model, where ε indicates a normally distributed random residual whose mean is 0.

$$\text{Church Service} = 1.340 + 0.166 \times \text{Spiritual Life} + \varepsilon$$

Table 5.3: Regression Results of Personal Spiritual Life Related to Church Service

	<i>B</i>	<i>SE b</i> (std. error)	β
Constant	1.340	0.182	
Spiritual life	0.166	0.042	0.193***

a. Dependent Variable: Church Service

Note. $R^2 = 0.037$. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

However, the measurement of the spiritual life is divided into individual (a) Bible reading and (b) prayer behavior. Therefore, Table 5.4 adopted two variables of Christian spiritual life to explore the correlation with their participation in church activities as illustrated at Question 10. After multiple regression analysis, Table 5.4 indicates that prayer had a significant influence on Christian participation in church service. Conversely, Bible reading did not have a significant influence on Christian participation in church service. Furthermore, 39% of the

variation of the church activity is explained by prayer. It is concluded that Christian participation in church service can be expressed by the following regression model, where ε indicates a normally distributed random residual whose mean is 0.

$$\text{Church Service} = 1.305 + 0.124 \times \text{Prayer} + \varepsilon$$

Table 5.4: Regression Results of Bible Reading and Prayer Meeting Related to Church Service

	<i>B</i>	<i>SE b</i> (std. error)	β
Constant	1.305	0.186	
Bible Reading	0.046	0.045	0.063
Prayer	0.125	0.050	0.153*

a. Dependent Variable: Church Service

Note. $R^2 = 0.039$. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

5.4 FINDINGS BASED ON RESULTS

The findings based on the results of the linear regression analysis are summarized in Table 5.1 and Table 5.3. The results indicated that the spiritual life of Christians affected their participation in church activities and services. In order to quantify the elements of Christian spiritual life, as in the research framework design at Figure 5.1, this research utilized the individual Bible reading and prayer behavior of Christians to indicate their spiritual life. The research adopted multiple regression analysis that is summarized in Table 5.2 and Table 5.4. The findings resulting from the linear and multiple regression analysis (Tables 5.1 through 5.4) can be summarized in two points.

First, Christian spiritual life had a significant influence on attendance at church activities, as shown in Table 5.1. The R^2 was 0.081. This means that 81% of the variation in attendance at church activities is explained by spiritual life. Table 5.2 shows that only the individual Bible reading behavior of Christians had a significant influence on attendance at church activities. Furthermore, the R^2 was 0.085. That is, 85% of the variation of attendance is explained by individual Bible reading behavior. In other words, there is still a 15% influence of unknown elements that affected Christians who attended various church activities. The results indicated that the individual Bible reading behavior of Christians should affect Christian

attendance at various activities such as Bible group, fellowship, prayer meeting, Sunday worship, adult Sunday school, et cetera.

Second, Christian spiritual life had a significant influence on participation in church service, as shown in Table 5.3. The R^2 was 0.037. This means that 37% of the variation in participation in the church activity is explained by spiritual life. Table 5.4 shows that only the individual prayer behavior of Christians had a significant influence on participation in church services. Furthermore, the R^2 was 0.039. This means that 39% of the variation in participation in the church services is explained by the individual prayer behavior of Christians. In other words, 61% of the variation is not explained by factors considered in this research. The results indicate that the individual prayer behavior of Christians should affect their service in church activities such as a choir, worship ministry, et cetera.

Based on these results, the conclusion is that individual Bible reading and prayer are important behaviors that affected Christians' attendance at church activities such as prayer meetings and active service in ministries such as choir and worship.

5.5 DISCUSSION AND CONCLUSION

This chapter has presented results of the research investigating four variables: (a) Bible reading (b) prayer, participation in (c) church activities, and (d) services. The results have revealed that (a) the Bible reading behavior of Christians affected attendance at church activity; (b) the prayer behavior of Christians affected participation in church service. These results have proved that Bible reading and prayer influence Christians' participation in church activities and services. These results support the assumption that individual Bible reading and prayer behavior will promote the growth of the spiritual life of Christians. Obviously, Christian participation in church activity and service is an essential element that illustrates the Christian spiritual life growth process. In other words, when Christians have a maturing spiritual life, they tend to participate in various church activities and to serve in various church ministries.

The traditional growth pattern of Chinese Christians' spiritual life is illustrated below. However, there is one condition: it assumes that the pastor(s), elder(s), or minister(s) of each church should teach, counsel, and guide new believers how to have a Christian spiritual life, how to live their life with God, and how to participate and serve in their church activities. Christian education becomes an important role in the spiritual life growth process (Keely,

2006; Simpson, 2010; Feldmeier, 2007; Moring, 2006). This teaching, especially to new believers, can take various forms, such as Bible reading groups, Adult Sunday School, and fellowship groups.

First, after people have accepted Christ Jesus as their personal savior, a pastor and/or minister always encourages these new believers to have an individual Bible reading and prayer time every day. At the same time, or shortly after, the pastor and/or minister encourages these Christians to attend different church activities such as Bible group, prayer meeting, or choir. Maybe then the pastor or elder(s) ask them to serve in some way in the church, for instance, as a Sunday school instructor, in the choir, or in ministry related services.

Second, regarding the individual Bible reading and prayer behavior of Christians, individual spiritual life influenced their attendance and service in different church activities. In general, Christians should believe that individual Bible reading and prayer will grow their spiritual life, and after some time, they may like to serve in different church activities. The results of this study also indicated that individual Bible reading and prayer influenced the growth of their spiritual life. Therefore, these results also illustrated and provided the logic of the correlation between Christians' spiritual life behaviors and their participation and service in church activities.

The results of this research support the idea that the spiritual life of Christians affects their participation and service in church activities, as previously described by Simpson *et al.* (2009), Crossin (1998), Feldmeier (2007) and Moring (2006). However, the research still has limitations. The research did not illustrate a cause and effect relationship. Nor did the study describe the details of the spiritual life growth process. For instance, how much time must Christians spend on Bible reading and prayer in order to affect their participation and service in church activities? Should Christians spend at least 30 minutes per day in Bible reading and prayer, in order to speed up the growth of their spiritual life?

As a conclusion, this research corroborated that the spiritual life of Christians is related to their participation and service in church activities. However, the research initially made one assumption: in each church the pastor(s), elder(s), or minister(s) should advise all Christians, after they have received Jesus as their personal savior, what they should do in the next step. Fundamentally, the pastor, elder, or minister should not just tell Christians how to read the

Bible and pray every day, but also ask them to attend Sunday worship, and to join a Bible reading group, and so on.

Therefore, the research provided two perspectives. On the one hand, Christian spiritual life, either Bible reading or prayer, affected their participation in church activities and services. Therefore, Christians should do Bible reading and prayer every day. Attending church activities and serving in various ministries all become duties for Christians. On the other hand, Christians should ask “What Would Jesus Do (WWJD)?” when they encounter problems (Baker & More, 2003). Christians should ask “What would Jesus do?” if Jesus has faced the same problem as they have faced. Baker and More (2003:5) explained that WWJD is an act-centered, problem solving approach. In other words, Christians should read Scripture and pray every day in order to nurture their spiritual life - to know and learn Jesus Christ. Before that, Christians can consider the example of Jesus Christ to handle the problems.

CHAPTER SIX:

THE CORRELATION BETWEEN CHRISTIAN PARTICIPATION IN CHURCH ACTIVITIES AND SERVICES AND VARIOUS BIOETHICAL VIEWS

Chapter Six examines the correlation between (a) Christians' participation in church activities and services, and (b) their bioethical views in terms of the research framework design at Figure 1.1, Chapter One. This chapter consists of (a) research framework design and definition, (b) data analysis, (c) findings based on the results, and (d) discussion and conclusion.

The section dealing with the research framework design and definition illustrates the meaning of the variables of this study, namely: (a) Christian participation in church activities and (b) services, and (c) various bioethical views. Christian participation in church activities consisted of attendance at (a) Bible study, Bible group, Fellowship, (b) Prayer Meeting, (c) Sunday Worship, and (d) Adult Sunday School. Participation in church services consisted of (a) Bible studying, Bible group, Fellowship, Sunday Worship, Prayer meeting, (b) Choir, entertainment, new personal care worker, (c) Worship ministry and related tasks, (d) Other, and (e) N/A. These church activities and services were independent variables. Various bioethical views of Christians consisted of (a) IVF, (b) sex selection, (c) PGD, (d) savior sibling, (e) cloning, and (f) stem cell therapy and were dependent variables.

This section also outlines the methods of measuring each variable through questionnaires, and the methods used to quantify participation in church activities and service behavior by either frequency or number. These variables of bioethical views were measured by respondents' attitudes, cognition, and opinions via a five-point Likert scale.

The section on data analysis presents the results gained from statistical analysis. This section indicates only whether the results are either significant or not significant; it does not illustrate the meaning of these results. The section on findings based on the results provides the meaning of these analyses and indicates the correlation between the variables. Finally, the discussion and conclusion concerns the application of these findings.

6.1 RESEARCH FRAMEWORK DESIGN AND DEFINITION

Based on Figure 1.1 in Chapter One, this research has utilized a multiple regression analysis to examine these nine variables: (a) Christian spiritual life, (b) Christian's participation in (b) church activities and (c) services, and (d) various bioethical views. In order to provide the detail of the theoretical framework of Chapter Six, Figure 6.1 shows only selected variables from Figure 1.1 in Chapter One.

As illustrated at Figure 6.1, Christians' participation in church activities and service consisted of two elements and were independent variables. Furthermore, participation in (a) church activity and (b) service of Christians were measured by personal behavior. One is attendance at church activities that consisted of (a) Bible study, Bible group, fellowship, (b) prayer meeting, (c) Sunday worship, and (d) Adult Sunday School. The other is participation in church services that consisted of (a) Bible studying, Bible group, fellowship, Sunday worship, Sunday school, Prayer meeting, (b) choir, entertainment, new person care worker, (c) worship ministry and related tasks, (d) other, and (e) non-participation. The research collected Christians' responses to various bioethical issues regarding (a) IVF, (b) Cloning, (c) Sex Selection, (d) PGD, (e) Savior Sibling, and (f) Stem Cell Therapy; these were dependent variables. Furthermore, responses to these six categories of bioethical views were measured by Christians' attitudes, cognition, and opinions. Figure 6.1 presents and illustrates each variable in detail.

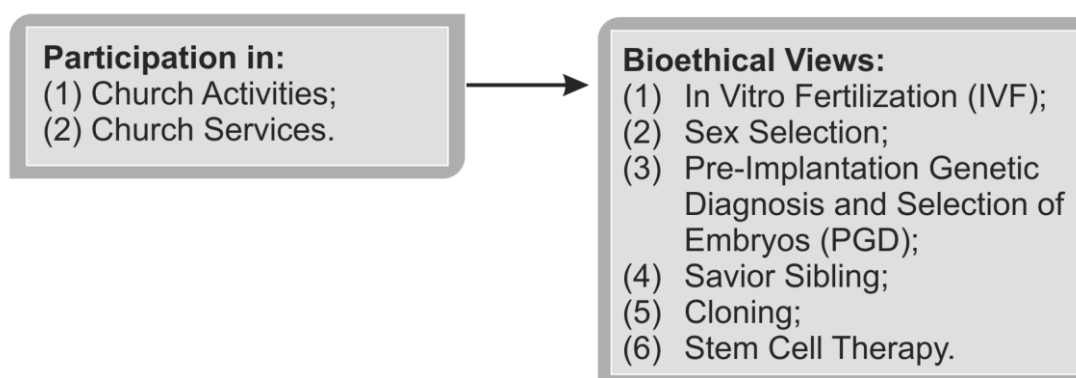


Figure 6.1: The correlation between the church activity and service of Christians and their various bioethical views.

This research adopted a quantitative research design, and these variables were measured by respondents' attitudes, cognition, opinions, or behaviors in terms of Figure 6.1. The objective of this chapter is to examine the correlation between Christian participation in church activities and service and their bioethical views; consequently, an important component of this chapter is to define and measure the behavior of the Christian participation in church activities and services, and their attitudes, cognition, and opinions related to various bioethical views.

On the subject of participation (that is, attendance) in church activities, this research measured the frequency of each church activity as below at Question 10 (see Appendix A, Bioethical Questionnaire – English version). Christian participation in church activities consisted of (a) Bible study, Bible group, fellowship, (b) prayer meeting, (c) Sunday worship, and (d) Adult Sunday School. This research adopted the frequency of respondents' church attendance. The frequency of these activities was combined. For instance, one respondent selected Sunday school and Worship every week. On an ordinal scale, non-participation scored "1", three or four times a month scored "2", and once a week scored "3". Finally, the totals were averaged.

On the subject of participation (that is, actively serving) in church services, the study asked participants to report their forms of serving in church as below at Question 16 (see Appendix A, Bioethical Questionnaire – English version). These options were (a) Bible studying, Bible group, fellowship, Sunday worship, prayer meeting, (b) Choir, entertainment, new personal care worker, (c) Worship ministry and related tasks, (d) other, and (e) N/A. For instance, if a participant selected "N/A", the number was "1". When a participant selected two, such as Bible group and choir, the number was "3". They could select multiple answers if there were more than one type of service. Furthermore, the data was shown as an ordinal scale.

Bioethical views of Christians consisted of (a) IVF, (b) Cloning, (c) Sex Selection, (d) PGD, (e) Savior Sibling, and (f) Stem Cell Therapy. The questions for each topic are shown as Question One to Six at Appendix A (English version of bioethical questionnaire). Each topic question has five sub-questions. Each of the five sub-questions asked about the attitudes, cognition, and opinions regarding each bioethical topic.

For instance, the first bioethical topic (Question 1) was IVF, as shown below. The question adopted a five-point Likert scale, as explained above, to measure the participant's attitude, cognition, and opinion. "1" indicates "strongly disagree", "2" indicates "do not agree", "3"

indicates “neutrality”, “4” indicates “agree”, and “5” indicates “strongly agree”. Finally, the scores of the five selected answers were averaged. For instance, if sub-question 1 scored 4, sub-question 2 scored 4, sub-question 3 scored 4, sub-question 4 scored 3, and sub-question 5 scored 3, the average number was 3.6, representing the topic of IVF. The data have been modified. The data was shown as an ordinal scale.

6.2 RESEARCH QUESTION AND HYPOTHESES

In terms of Figure 6.1 of the research framework, the research question and hypotheses of this Chapter were as below:

Research Question: Does the mainland Chinese Christians’ participation in church activities and services affect their views about bioethics?

H₁: Participation in church activities and services of mainland Chinese Christians affects their views about IVF.

H₂: Participation in church activities and services of mainland Chinese Christians affects their views about sex selection.

H₃: Participation in church activities and services of mainland Chinese Christians affects their views about PGD.

H₄: Participation in church activities and services of mainland Chinese Christians affects their views about savior sibling.

H₅: Participation in church activities and services of mainland Chinese Christians affects their views about cloning.

H₆: Participation in church activities and services of mainland Chinese Christian affects their views about stem cell therapy.

6.3 DATA ANALYSIS

This methodology has been explained above (see section 5.2 Data Analysis, Chapter Five). Because multiple regression analysis was adopted for this study, these nine variables have been examined by correlation analysis as an initial step as shown at Table 4.6, Chapter

Four. The main purpose of correlation analysis was to identify whether these variables had a multicollinearity issue. According to Table 4.6 at Chapter Four, the results indicated that no multicollinearity problem was present for these eight variables. In other words, (a) church activity, (b) church service and (c) various bioethical views could be analyzed using multiple regression analysis.

Figure 6.1 above illustrates the correlation between Christian participation in church activity and service and the bioethical views of the participants. To analyze the influence of the Christian participation in church activities and services on their bioethical views, multiple regression analysis has been adopted. These analyzed results are illustrated at Table 6.1 through Table 6.6.

After multiple regression analysis, Table 6.1 indicated that church activity and service had no influence on views about IVF. This means the research finding fails to accept hypothesis H₁.

Table 6.1: Regression Results of Church Activities and Services Related to IVF

5	B	SE b (std. error)	β
Constant	3.424	0.204	
Church Activity	-0.102	0.096	-0.056
Church Service	0.059	0.056	0.056

Dependent Variable: IVF

Note. $R^2 = 0.004$. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

After multiple regression analysis, Table 6.2 indicates that Christian participation in church activity and service had a significant influence on their views about sex selection. The research finding fails to reject hypothesis H₂. Furthermore, 40% of the variation of the sex selection is explained by church activity and service. It is concluded that Christian participation in church activity and service can be expressed by the following regression model, where ϵ indicates a normally distributed random residual whose mean is 0.

$$\text{Sex Selection} = 4.695 - 0.404 \times \text{Church Activity} + 0.203 \times \text{Church Service} + \epsilon$$

Table 6.2: Regression Results of Church Activities and Services Related to Sex Selection

	<i>B</i>	<i>SE b</i> (std. error)	β
Constant	4.695	0.235	
Church Activity	-0.404	0.110	-0.189***
Church Service	0.203	0.065	0.162**

Dependent Variable: Sex Selection
 Note. $R^2 = 0.040$. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

After multiple regression analysis, Table 6.3 indicates that Christian participation in church service had a significant influence on views about PGD. In contrast, Christian participation in church activity did not have a significant influence on views about PGD. This means that hypothesis H_3 cannot be totally accepted or rejected. Furthermore, 16% of the variation of the PGD is explained by Christian participation in church service. It is concluded that Christian participation in church service can be expressed by the following regression model, where ε indicates a normally distributed random residual whose mean is 0.

$$\text{PGD} = 3.699 + 0.149 \times \text{Church Service} + \varepsilon$$

Table 6.3: Regression Results of Church Activities and Services Related to PGD

	<i>B</i>	<i>SE b</i> (std. error)	β
Constant	3.699	0.218	
Church Activity	-0.164	0.102	-0.084
Church Service	0.149	0.060	0.130*

Dependent Variable: PGD
 Note. $R^2 = 0.16$. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

After multiple regression analysis, Table 6.4 indicates that Christian participation in church service had a significant influence on views about Savior Siblings. In contrast, Christian participation in church activity did not have a significant influence on views about Savior Siblings. This means that hypothesis H_4 cannot be accepted or rejected. Furthermore, 13% of the variation is explained by Christian participation in church service. It is concluded that

Christian participation in church service can be expressed by the following regression model, where ε indicates a normally distributed random residual whose mean is 0.

$$\text{PGD} = 3.550 + 0.133 \times \text{Church Service} + \varepsilon$$

Table 6.4: Regression Results of Church Activities and Services Related to Savior Sibling

	<i>B</i>	<i>SE b</i> (std. error)	β
Constant	3.550	0.229	
Church Activity	-0.168	0.108	-0.082
Church Service	0.133	0.063	0.111*

Dependent Variable: Savior Sibling

Note. $R^2 = 0.13$. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

After multiple regression analysis, Table 6.5 indicates that Christian participation in church activity and service had a significant influence on views about cloning. This means the research finding fails to reject hypothesis H_5 . Furthermore, 33% of the variation is explained by church activity and service. It is concluded that Christian participation in church activity and service can be expressed by the following regression model, where ε indicates a normally distributed random residual whose mean is 0.

$$\text{Cloning} = 4.485 - 0.366 \times \text{Church Activity} + 0.190 \times \text{Church Service} + \varepsilon$$

Table 6.5: Regression Results of Church Activities and Services Related to Cloning

	<i>B</i>	<i>SE b</i> (std. error)	β
Constant	4.485	0.240	
Church Activity	-0.366	0.113	-0.168**
Church Service	0.190	0.066	0.149**

Dependent Variable: Cloning

Note. $R^2 = 0.33$. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

After multiple regression analysis, Table 6.6 indicated that church activity and service had no influence on views about stem cell therapies. The research finding fails to accept hypothesis H₆. In other words, attendance at church activities and/or service in different activities in church had no influenced on their attitude, cognition, and opinion of stem cell therapy.

Table 6.6: Regression Results of Church Activities and Services Related to Stem Cell Therapy

	<i>B</i>	<i>SE b</i> (std. error)	β
Constant	2.963	0.204	
Church Activity	-0.043	0.096	-0.024
Church Service	0.026	0.056	0.025

a. Dependent Variable: Stem Cell Therapy

Note. $R^2 = 0.001$. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

6.4 FINDINGS BASED ON RESULTS

The findings based on the results of the multiple regression analysis are summarized in Table 6.1 through Table 6.6. The results indicated that Christian participation in church activity and service affected views about sex selection and cloning. However, the results indicated that the views on PGD and savior siblings were affected by Christian participation in church service only, and views about IVF and stem cell therapy were not affected by participation in church activity and service. Consequently, the results from Table 6.1 to Table 6.6 via multiple regression analysis can be summarized in three points.

First, two bioethical views of Christians, regarding IVF and stem cell therapy, were not affected by Christian participation in church activity and service, as shown at Table 6.1 and Table 6.6. This means participation in church activity and service did not influence the Christians' attitude, cognition, and opinion of IVF and stem cell therapy in mainland China.

Second, views on sex selection and cloning were influenced by Christian participation in church activity and service, as shown at Table 6.2 and Table 6.5.

Based on Table 6.2, the R^2 was 0.040. This means that 40% of the variation of the sex selection is explained by participation in church activity and service. In other words, 60% of variation of sex selection is explained by factors that are not included in this research. To

compare the ranking between church activity and service, the major element of influence was church service. The result illustrates that when Christians participate in more services and various activities in church such as a choir, worship ministry, et cetera, they refuse to condone sex selection.

On the other hand, attendance at church activities is a significant negative β that has influenced views on sex selection. This seems to indicate that when Christians spend less time attending various activities such as Bible group, fellowship, prayer meeting, Sunday worship, adult Sunday school, et cetera, they are more likely to agree with sex selection. The reason may be that they do not comprehend the definition of sex selection from a Christian viewpoint, or they may not have attended any bioethical topics in fellowship or adult Sunday school. Alternatively, their leaders or pastors may have preached or have taught the topic of sex selection on the one day when they did not attend church activities. Therefore, they may prefer to accept sex selection because they do not know the meaning of sex selection from the perspective of Christian theology.

Table 6.5 indicated that the R^2 was 0.033. This means that 33% of the variation of the views about cloning is explained by participation in church activity and service. In other words, 67% of the variation is explained by factors that are not included in this research. To compare the ranking between church activity and service, the major element of influence was church service. This means that if Christians attend more activities in church such as a choir, worship ministry, et cetera, they refuse to condone cloning.

On the other hand, church activity is a significant negative β that has influenced views on cloning. This seems to indicate that when Christians have participated less frequently in various activities such as Bible group, fellowship, prayer meeting, Sunday worship, adult Sunday school, et cetera, they tend to agree with cloning. The reasons may be the same as those suggested above for the topic of sex selection. The main reason may be that they do not fully comprehend the meaning of cloning from the viewpoint of Christian theology because they attend church activities less frequently. For instance, when they attended Adult Sunday school, or Sunday worship, their pastors or Sunday school instructors did not preach or give a lecture on this topic. Perhaps, when their pastors have given their views on the topic of cloning, they did not attend that day. Because of that, they choose to allow cloning.

Third, the results indicated that Christian participation in church service has a significant influence on views about PGD and savior siblings, as shown at Table 6.3 and Table 6.4.

Based on Table 6.3, the R^2 was 0.016. This means that 16% of the variation is explained by participation in church service. In other words, 84% of variation is explained by factors that are not included in this research. Based on Table 6.4, the R^2 was 0.013. This means that 13% of the variation of the savior sibling results is explained by participation in church service. In other words, 87% of the variation is explained by factors that are not included in this research. To summarize Table 6.3 and Table 6.4, Table 6.3 concluded that 84% of the influence is unknown. At the same time, Table 6.4 indicated that 87% of influence is unknown.

Overall, in accordance with these results, Christian participation in church activities and services affected some bioethical views. On the one hand, specifically, Bible study, Bible group, fellowship, prayer meeting, Sunday worship, and Adult Sunday school of Church activities affected Christian bioethical decision-making regarding sex selection and cloning. On the other hand, Christian participation in church services, such as Bible studying, Bible group, fellowship, Sunday worship, prayer meeting, choir, entertainment, new personal care worker, worship ministry, and so forth, affected views about sex selection, PGD, savior siblings, and cloning. Finally, results of this research indicated that views about IVF and Stem Cell Therapies were not affected by Christian participation in church activities and services.

6.5 DISCUSSION AND CONCLUSION

This chapter has presented results of the research of two variables; one was Christian participation in (a) church activities, and (b) services; the other was bioethical views that consisted of (a) IVF, (b) sex selection, (c) PGD, (d) savior sibling, (e) cloning, and (f) stem cell therapy. The results have revealed that (a) Christian participation in church activity and services did not influence views on IVF and stem cell therapy; (b) participation in church activity and services had a significant influence on views about sex selection and cloning; (c) Christian participation in church services had a significant influence on views about PGD and savior siblings. As a result, this research concludes that Christians' participation in church activities and services affected their decision-making in regard to some bioethical views. The results as agree with those of Crossin (1988), Sutton (2008) and Kilner (2011), who concluded that if Christians attend church activities and services, their spiritual maturity will reflect their views about bioethics.

On the one hand, the participation in church activity is defined by attendance at activities in their church such as fellowship, Bible group, or Sunday worship. This research has assumed that these participants attend their Sunday worship or Bible group, or fellowship at least every week, and that when these participants attend these church activities their pastor(s) or missionary(s) teach some Christian ethics or bioethics in their sermons or in adult Sunday school.

On the other hand, if Christians actively serve in church activities, like teaching the Bible in Adult Sunday School, or are in charge of junior fellowship in the church, the pastor(s), missionary(s), or leader(s) should provide some instruction to these servers, including knowledge of Christian ethics and bioethics, so that the members can have guidelines for facing bioethical problems.

However, there may be two main explanations for these results shown in this chapter. First, one of the results indicated that participation in church activity and service has a significant influence on views about sex selection and cloning. This can be explained by the fact that Chinese people prefer to have a boy in their family, especially in Shantou city, Guangdong, and other southern provinces like Fujian because of traditional culture (Scutii, 2014). Furthermore, sex selection is related to IVF treatment. In these two provinces, specifically, they have more than one child because of the traditional culture. On the topic of cloning, in 1996, Dolly was the first cloned sheep in the world (Freudenrich, 2001). On the topic of IVF, in 1988, first test-tube baby is born in China (Heiling, 2013). These news became a hot topic worldwide, and also in China. Furthermore, Chinese government regulations and rules prohibit these treatments because of one-child policy (Cheng, 2011). Therefore, maybe, this is a reason for these churches' leaders who teach these bioethical topics in their churches and illustrate the meaning of sex selection and cloning.

Second, the results showed that Christian participation in church service has a significant influence on views about PGD and savior siblings. As described above, participation in church service means that Christians serve or are involved in their church activities. They should have some knowledge about PGD and savior siblings before they start to serve as Adult Sunday school teachers or leaders of fellowships. Furthermore, the issues of PGD and savior siblings are related to IVF treatment. Pastors should be aware of some bioethical problems experiences by their members who participate in church activities.

On the topic of PGD and savior siblings, the Chinese family in a traditional culture may consider having the PGD and savior sibling process if they can pay these treatment fees. Therefore, these leaders of churches should guide and teach about PGD and savior siblings to their members who attend their church activities. In other words, bioethical teaching, especially regarding PGD and savior siblings, should be given in Chinese churches.

In contrast with views about sex selection, cloning, PGD and savior siblings, only views about IVF and stem cell therapy were not affected by participation in church activity and service. The main reason may be the treatment cost for the advanced technology of IVF and stem cell therapy in China. Another reason may be that the bioethical issues of IVF and stem cell therapy are hot topics in their living communities or churches. However, IVF treatment relates to sex selection, PGD, savior sibling, cloning, and stem cell therapy via biotechnology development (Wyatt, 2006). In other words, participants already have knowledge of IVF, and accept this as compatible with their traditional Chinese culture. Alternatively, leaders may accept the social environment and do not teach and illustrate these two topics of IVF and stem cell therapy in their churches activities.

This research has provided some possible indications as to what topics of bioethics are discussed in Chinese society and in Chinese churches. However, the results concluded that participation in church activity and service affected some bioethical views, depending on the leaders in their churches and church cultural environment. The results of this research also provided an indication of the state of bioethical teaching in churches in China. In other words, church leaders like pastors, elders, and ministers have to discuss and share about the common bioethical topics in their sermons, or their adult Sunday school. Christians in their churches or in their communities should discuss the same bioethical topics so that they are able to make a decision if their family or relatives face these bioethical problems. Because of this, leaders of these churches should teach the relationship between bioethics and their Christian beliefs.

Finally, as Fedler (2006:51) writes, the questions “What should I do?” or “Who should I be?” are important when Christians face bioethical issues in their life. Or, as Baker and More (2003) ask, if Jesus were living with us during our generation, what would he do when facing the same problems as we do? Unfortunately for us, Jesus did not face these bioethical issues that we face today. However, he did face some ethical questions. For instance, the story in John 8:1-11 tells how Jesus faced a problem about an adulterous woman. Finally, Jesus said, “Let any one of you who is without sin be the first to throw a stone at her” (John

8:8). This means that the Bible should have some principles to guide today's Christians when they confront bioethical dilemmas.

CHAPTER SEVEN:

THE CORRELATION BETWEEN CHRISTIAN SPIRITUAL LIFE AND VARIOUS BIOETHICAL VIEWS

Chapter Seven examines the correlation between (a) the spiritual life of Christians and (b) their bioethical views in terms of the research framework design at Figure 1.1, Chapter One. This chapter consists of (a) research framework design and definition, (b) data analysis, (c) findings based on the results, and (d) discussion and conclusion.

The section dealing with the research framework design and definition illustrates the meaning of the variables of this study, namely: (a) spiritual life of Christians, and (b) various bioethical views. Spiritual life of Christians consisted of (a) Bible reading, and (b) prayer. Individual Bible reading and prayer behavior of Christians and were independent variables. Various bioethical views consisted of (a) IVF, (b) sex selection, (c) PGD, (d) savior sibling, (e) cloning, and (f) stem cell therapy and were dependent variables.

This section also outlines the methods of measuring each variable through questionnaires, and the methods utilized to quantify participation in church activities and services behavior by either frequency or number. These variables of bioethical views were measured by respondents' attitudes, cognition, and opinions via a five-point Likert scale.

The section on data analysis presents the results gained from statistical analysis. This section indicates only whether the results are either significant or not significant; it does not illustrate the meaning of these results. The section on findings based on the results provides the meaning of these analyses and indicates the correlation between the variables. Finally, the section of discussion and conclusion concerns the application of these findings.

7.1 RESEARCH FRAMEWORK DESIGN AND DEFINITION

Based on Figure 1.1 in Chapter One, this study has utilized a multiple regression analysis to examine these nine variables of (a) Christian spiritual life and (b) various bioethical views. In order to provide the detail of the theoretical framework of Chapter Seven, Figure 7.1 shows only selected variables from Figure 1.1 in Chapter One.

As illustrated at Figure 7.1, Christian spiritual life consisted of behaviors of (a) Bible reading and (b) individual prayer that were independent variables. Bioethical views consisted of (a) IVF, (b) Cloning, (c) Sex Selection, (d) PGD, (e) Savior Sibling, and (f) Stem Cell Therapy and were dependent variables. These six variables were measured by attitudes, cognition, and opinions. Figure 7.1 illustrates each variable in detail.

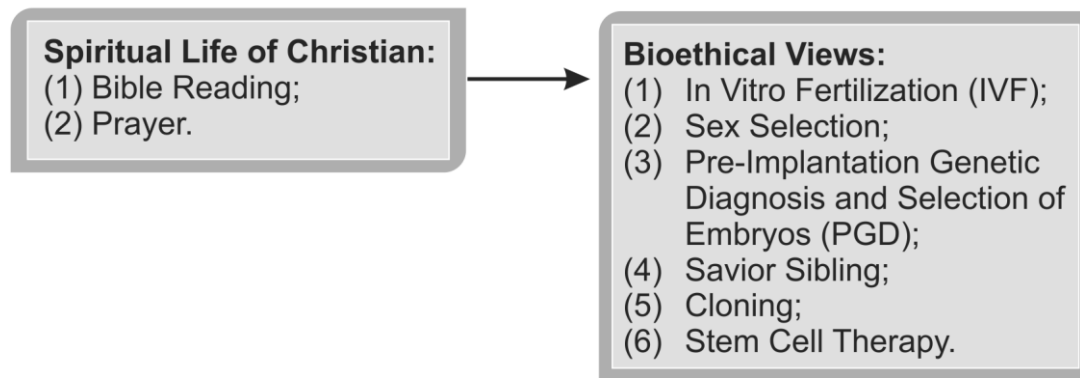


Figure 7.1: The correlation between the spiritual life of Christians and their various bioethical views.

This study adopted a quantitative research design, and these variables were measured by respondents' attitudes, cognition, opinions, and behaviors in terms of Figure 7.1. The objective of this chapter is to explore the correlation between Christian spiritual life, that consisted of (a) individual Bible reading and (b) prayer behavior of Christians, and their bioethical views. Consequently, an important component of this Chapter is to define and measure the behavior of the Christian spiritual life, and their attitudes, cognition, and opinions about these six bioethical views.

On the subject of Christian spiritual life, the study adopted (a) individual Bible reading and (b) prayer behavior as indicators. Moreover, the study utilized the frequency of each activity to measure Christian spiritual life. In other words, the question asked about the personal behavior of participants: how frequently the participants prayed or read the Bible, as below at Question 12 (see Appendix A, Bioethical Questionnaire – English version). Participants answered the questions according to their own circumstances, describing the frequency of individual prayer and Bible reading per day, per week, per month, or not applicable. "Not applicable" scored 1. "At least once per month" scored 2. "At least once per week" scored 3.

“Few times per week” scored 4. “At least once per day” scored 5. Finally, the numbers were averaged. Furthermore, the data was shown as an ordinal scale.

Various bioethical views of Christians consisted of (a) IVF, (b) Cloning, (c) Sex Selection, (d) PGD, (e) Savior Sibling, and (f) Stem Cell Therapy. The questions for each topic are shown in Appendix A (English version of bioethical questionnaire). Each topic question had five sub-questions. Each of the five sub-questions asked about the attitude, cognition, and opinion about each bioethical topic.

Moreover, the answer adopted a five-point Likert scale to measure the participant’s attitude, cognition, and opinion. “1” indicates “strongly disagree”, “2” indicates “do not agree”, “3” indicates “neutrality”, “4” indicates “agree”, and “5” indicates “strongly agree”. Finally, the scores of the five selected answers were averaged. For instance, if sub-question 1 scored 4, sub-question 2 scored 4, sub-question 3 scored 4, sub-question 4 scored 3, and sub-question 5 scored 3, the average number was 3.6, representing the topic of Sex Selection. The data have been modified. The data were shown as an ordinal scale.

7.2 RESEARCH QUESTION AND HYPOTHESES

In terms of Figure 7.1 of the research framework, the research question and hypotheses of this chapter are as below.

Research Question: Does the spiritual life of mainland Chinese Christians affect their views about bioethics?

H₁: Individual Bible reading and prayer behavior of mainland Chinese Christians affects their views about IVF.

H₂: Individual Bible reading and prayer behavior of mainland Chinese Christians affects their views about sex selection.

H₃: Individual Bible reading and prayer behavior of mainland Chinese Christians affects their views about PGD

H₄: Individual Bible reading and prayer behavior of mainland Chinese Christians affects their views about savior sibling.

H₅: Individual Bible reading and prayer behavior of mainland Chinese Christians affects their views about cloning.

H₆: Individual Bible reading and prayer behavior of mainland Chinese Christians affects their views about stem cell therapy.

7.3 DATA ANALYSIS

This methodology has been explained above (see section 5.2, Chapter Five). Figure 7.1 illustrates the correlation between the spiritual life of Christians and their bioethical views. Because multiple regression analysis was adopted for this study, these eight variables have been examined by correlation analysis as an initial step as shown at Table 4.7 of Chapter Four. According to Table 4.7 at Chapter Four, the results showed that no multicollinearity problem is present for these eight variables. This means that (a) Bible reading, (b) prayer, and (c) various bioethical views could be analyzed using multiple regression analysis.

Figure 7.1 above illustrates the correlation between the Christian spiritual life and the bioethical views of the participants. To analyze the influence of the Bible reading and prayer, representing Christian spiritual life, on their bioethical views, multiple regression analysis has been adopted. These analyzed results are illustrated at Table 7.1 through Table 7.6

After multiple regression analysis, Table 7.1 indicates that individual Bible reading and prayer behavior of Christians had a significant influence on their views about IVF. This means the research finding fails to reject hypothesis H₁. Furthermore, 23% of the variation of the IVF is explained by individual Bible reading and prayer. In other words, individual Bible reading and prayer behavior of Christians, which represents the spiritual life of the Christians, affected their views about IVF. It is concluded that Bible reading and prayer can be expressed by the following regression model, where ϵ indicates a normally distributed random residual whose mean is 0.

$$\text{IVF} = 3.406 + 0.0138 \times \text{Bible Reading} - 0.147 \times \text{Prayer} + \epsilon$$

Table 7.1: Regression Results of Bible Reading and Prayer Related to IVF

	<i>B</i>	<i>SE b</i> (std. error)	β
Constant	3.406	0.200	
Bible Reading	0.138	0.048	0.177*
Prayer	-0.147	0.054	-0.069*

a. Dependent Variable: IVF

Note. $R^2 = 0.023$. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

After multiple regression analysis, Table 7.2 indicates that individual Bible reading and prayer behavior of Christians did not influence their views on Sex Selection. The research finding fails to accept hypothesis H_2 . In other words, Bible reading and prayer of Christians had no influence on their attitudes, cognition, and opinions on the sex selection issue.

Table 7.2: Regression Results of Bible Reading and Prayer Related to Sex Selection

	<i>B</i>	<i>SE b</i> (std. error)	β
Constant	4.389	0.238	
Bible Reading	-0.016	0.057	-0.017
Prayer	-0.020	0.064	-0.020

a. Dependent Variable: Sex Selection

Note. $R^2 = 0.001$. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

After multiple regression analysis, Table 7.3 indicates that individual Bible reading and prayer behavior of Christians did not influence their views on PGD. The research finding fails to accept hypothesis H_3 . In other words, Bible reading and prayer of Christians had no influence on their attitudes, cognition, and opinions about the PGD issue.

Table 7.3: Regression Results of Bible Reading and Prayer Related to PGD

	<i>B</i>	<i>SE b</i> (std. error)	β
Constant	3.876	0.218	
Bible Reading	0.002	0.052	0.003
Prayer	-0.049	0.059	-0.053

a. Dependent Variable: Sex Selection

Note. $R^2 = 0.003$. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

After multiple regression analysis, Table 7.4 indicates that individual Bible reading and prayer behavior of Christians did not influence their views on savior siblings. The research finding fails to accept hypothesis H_4 . In other words, Bible reading and prayer had no influence on their attitudes, cognition, and opinions regarding the savior sibling issue.

Table 7.4: Regression Results of Bible Reading and Prayer Related to Savior Sibling

	<i>B</i>	<i>SE b</i> (std. error)	β
Constant	3.641	0.229	
Bible Reading	0.054	0.055	0.061
Prayer	-0.092	0.062	-0.093

a. Dependent Variable: Savior Siblings

Note. $R^2 = 0.005$. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

After multiple regression analysis, Table 7.5 indicates that individual Bible reading and prayer behavior of Christians did not influence their views on cloning. The research finding fails to accept hypothesis H_5 . In other words, Bible reading and prayer had no influence on their attitudes, cognition, and opinions on the cloning issue.

Table 7.5: Regression Results of Bible Reading and Prayer Related to Cloning

	<i>B</i>	<i>SE b</i> (std. error)	β
Constant	4.068	0.242	
Bible Reading	-0.020	0.058	-0.022
Prayer	0.021	0.065	0.021

a. Dependent Variable: Cloning

Note. $R^2 = 0.000$. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

After multiple regression analysis, Table 7.6 indicates that individual Bible reading and prayer behavior of Christians did not influence their views on stem cell therapy. The research finding fails to accept hypothesis H_6 . In other words, Bible reading and prayer had no influence on their attitudes, cognition, and opinions regarding the issue of stem cell therapy.

Table 7.6: Regression Results of Bible Reading and Prayer Related to Stem Cell Therapy

	<i>B</i>	<i>SE b</i> (std. error)	β
Constant	2.884	0.203	
Bible Reading	0.059	0.049	0.075
Prayer	-0.046	0.055	-0.053

a. Dependent Variable: Stem Cell Therapy

Note. $R^2 = 0.004$. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

7.4 FINDINGS BASED ON RESULTS

The findings based on the results of the multiple regression analysis are summarized in Table 7.1 through Table 7.6. The results indicate that individual Bible reading and prayer behavior, which represents the spiritual life of the Christians, had an influence on their views about IVF. By contrast, Bible reading and individual prayer behavior of the Christians did not have a significant influence on their views regarding (a) sex selection, (b) PGD, (c) savior siblings, (d) cloning, or (e) stem cell therapy. Consequently, the results from Table 7.1 to Table 7.6 via multiple regression analysis can be summarized in two points.

First, the results of the research concluded that Bible reading and prayer had a significant influence on views about IVF, shown in Table 7.1. The R^2 was 0.023. This means that 23% of the variation is explained by Bible reading and individual prayer. This means that there were still unknown elements of influence (77%) that affected Christians' views about IVF.

Second, as regards views about IVF in terms of Table 7.1, to compare the ranking between Bible reading and individual prayer, the major element of influence was Bible reading. The β of Bible reading was 0.177 and the β of prayer was -0.069. To interpret the β , when Christians read the Bible more, they strongly refuse to advocate IVF. As regards prayer, the β was a significant negative figure. This means that because Christians have less individual prayer behavior, they have a tendency to accept IVF.

7.5 DISCUSSION AND CONCLUSION

This chapter has presented two results of this research. (a) Individual Bible reading and prayer behavior of Christians affected their views on IVF, and (b) individual Bible reading and prayer behavior of Christians did not affect the other five bioethical views. These results may possibly be explained by two main reasons.

First, as regards Bible reading, Christians essentially read Scripture that may not directly reflect bioethical problems. In other words, even if Scripture is God's words, Scripture may not have specific guidelines or practical principles about bioethical issues. However, Scripture contains cases of an ethical nature and provides principles that should enable us to handle ethical issues.

Scripture has two main sources for Christian ethics: one is the Ten Commandments of the Old Testament, and the second is the faith, hope and love promoted in the New Testament (Davis, 2004; Vandrunen, 2009). Thompson (2005:21) writes that Bible reading must take a thoughtful approach to the printed word. Christians read Scripture guided by the Spirit (Cunningham & Egan, 1996). In facing decisions about bioethical issues, the Methodist approach utilizes four guiding elements: (a) Scripture, (b) Church tradition, (c) reason, and (d) experience (Morris, 2011:81). In other words, on the one hand, Bible reading should help Christians to realize the principles that are relevant to dealing with bioethical issues, even if Scripture does not provide a direct answer or solution to solve various bioethical issues. On the other hand, Scripture should provide the principles for Christians to deal with ethical issues indirectly. For instance, when Christians read Scripture, the meaning of words in

Scripture is interpreted by the Spirit. At the same time, Christians should release all their own thoughts, feelings and intentions to God (Thompson, 2005). They may get the message from the Scripture and make out the way that handles the problem based on their faith, hope, and love of God.

Second, as regards prayer, the individual prayer of Christians is basically the communication channel with God. In other words, when Christians face problems, they communicate with God via prayer (Thompson, 2005; Cunningham & Egan, 1996). Therefore, the content of individual prayer can be divided into two: one's own needs, and the needs of other people. There are two elements of prayer: listening and speaking, because prayer is communication, to and fro. Furthermore, God speaks to Christians via Scripture (Crossin, 1988). In other words, prayer means that Christians have to listen to God via Scripture and speak with God via prayer (Thompson, 2005). Furthermore, Christians have to live in the Spirit (Crossin, 1988).

The results show that when Christians do not face the conflict of bioethical issues which have been mentioned above, they would not pray to God and listen from God, and vice versa. Because of that, this research found that five of the six bioethical topics were not related to the Christians' Bible reading and individual prayer behavior. Only views about IVF have been affected by Bible reading and individual prayer in this research. As mentioned in Chapter Seven, IVF treatment relates to sex selection, PGD, savior sibling, cloning, and stem cell therapy via biotechnology development (Wyatt, 2006). In other words, the findings illustrate that the IVF issue has become a common bioethical topic among Christians in China at present.

This chapter concludes with one statement from David Vandrunen (2009:93-94). He writes,

Scripture calls us not only to act in certain ways but also to be a certain kind of people. If we put into practice the kind of the life that Scripture commends, then, we must be the kind of people who are able to do so. The whole Christian life demands development in the virtues, and those who are growing in the virtues are equipped to respond to difficult bioethical decisions in ways that the nonvirtuous are not.

CHAPTER EIGHT:
**THE EFFECT OF CHRISTIAN PARTICIPATION IN CHURCH
ACTIVITIES AND SERVICES ON THE CORRELATION BETWEEN
CHRISTIAN SPIRITUAL LIFE AND VARIOUS BIOETHICAL VIEWS**

Chapter Eight examines the effect of Christian participation in church activities and services on the correlation between (a) Christian spiritual life, and (b) their bioethical views in terms of the research framework design at Figure 1.1, Chapter One. This chapter consists of (a) research framework design and definition, (b) data analysis, (c) findings based on the results, multiple regression model via SEM, and (e) discussion and conclusion.

The section dealing with the research framework design and definition illustrates the meaning of the variables of this study as above, namely: (a) spiritual life of Christians, (b) Christian participation in church activities and (c) services, and (d) various bioethical views. However, based on the research framework design of this chapter as shown at Figure 1.1, Chapter One, as well as Figure 8.1, three variables consisted of (a) independent variable, (b) mediating variable, and (c) dependent variable.

This section also outlines the methods of measuring each variable through questionnaires, the methods used to quantify Christian spiritual life by either frequency or number of individual Bible reading and prayer behavior, and the methods used to quantify participation in church activities and service behavior by either frequency or number. These variables of bioethical views were measured by respondents' attitudes, cognition, and opinions via a five-point Likert scale.

The section on data analysis presents the results gained from statistical analysis. This section indicates only whether the results are either significant or not significant; it does not illustrate the meaning of these results. The section on findings based on the results provides the meaning of these analyses and indicates the correlation between the variables. Finally, the section of discussion and conclusion concerns the application of these findings.

8.1 RESEARCH FRAMEWORK DESIGN AND DEFINITION

Based on Figure 1.1 in Chapter One as well as Figure 8.1 below, this research has utilized path analysis to examine the effect of Christian participation in (a) church activities and (b) services on the correlation between (c) Christian spiritual life, and (d) their views about bioethics.

Figure 8.1 illustrates the nine variables of this research. The spiritual life of Christians consists of two elements. One is Bible reading and the other is individual prayer. The individual Bible reading and prayer behavior of Christians were the two exogenous variables.

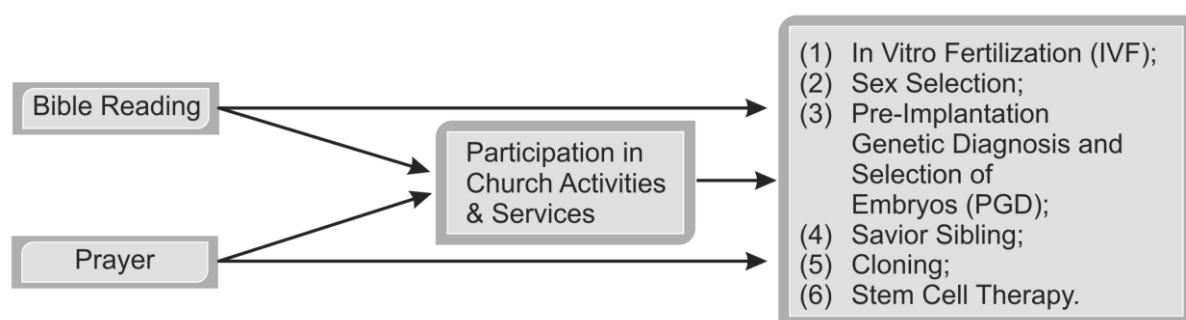


Figure 8.1: The effect of Christian participation in church activities and services on the correlation between Christian spiritual life, and their bioethical views

Participation in church activity and service of Christians consisted of two elements and were mediating variables. This research integrated the participation in church activities and church services into one mediating variable in terms of Figure 8.1.

According the figure 8.1, the research collected various bioethical views of Christians regarding (a) IVF, (b) Cloning, (c) Sex Selection, (d) PGD, (e) Savior Sibling, and (f) Stem Cell Therapy; these were endogenous variables. Furthermore, responses to these six categories of bioethical views were measured by Christians' attitudes, cognition, and opinions.

The research framework design adopted a quantitative research design; these variables were measured by respondents' attitudes, cognition, opinions, or behavior in terms of Figure 8.1. The objective of this chapter is to explore whether or not there is an effect of Christian

participation in (a) church activities and (b) services on the correlation between (c) Christian spiritual life, and (d) their bioethical views. This means that this research was concerned with whether there was a direct or indirect effect of the Christian participation in church activities and services as a mediating variable, or not.

The definition and measurement of (a) Bible reading and prayer, representing the spiritual life of Christians, (b) participation in church activities and (c) service, and (d) their various bioethical views in detail have been outlined above in Chapter Five, Chapter Six, and Chapter Seven. Because the bioethical views have six variables in terms of Figure 8.1, the path diagram has been divided into six endogenous variables that correspond to the six topics of bioethical views for the purpose of path analysis via SEM.

8.2 RESEARCH QUESTION AND HYPOTHESES

In terms of Figure 8.1 of the research framework, the research question and hypotheses of this chapter are as below.

Research Question: Does the mainland Chinese Christians' participation in church activities and services have an effect on the correlation between Christian spiritual life and their views about bioethics?

- H₁: The correlation between Bible reading and prayer of mainland Chinese Christians and their views about IVF has been mediated by their participation in church activities and services.
- H₂: The correlation between Bible reading and prayer of mainland Chinese Christians and their views about sex selection has been mediated by their participation in church activities and services.
- H₃: The correlation between Bible reading and prayer of mainland Chinese Christians and their views about PGD has been mediated by their participation in church activities and services.
- H₄: The correlation between Bible reading and prayer of mainland Chinese Christians and their views about savior siblings has been mediated by their participation in church activities and services.

- H₅: The correlation between Bible reading and prayer of mainland Chinese Christians and their views about cloning has been mediated by their participation in church activities and services.
- H₆: The correlation between Bible reading and prayer of mainland Chinese Christians and their views about stem cell therapy has been mediated by their participation in church activities and services.

8.3 DATA ANALYSIS

This sample data collection has been explained above (see section 5.2, Data Analysis, Chapter Five). The path analysis method has been utilized as above (see section 3.7.4, Path Analysis). In order to process path analysis, participation in church activities and service of Christians has been integrated and modified in terms of the path diagram at Figure 8.1.

On the subject of participation (that is, attendance) in church activities, this research measured the frequency of each church activity using Question 10 in Appendix A, Bioethical Questionnaire (English version). At the same time, on the subject of Christian participation (that is, actively serving) in church services, the study asked participants to report their forms of serving in church using Question 16 in Appendix A. Section 5.1 has described the measurement and modification of these data. In order to integrate the data of participation in church activities and services, the frequency of church activities combined all church activities of participants and modified their serving in church. Furthermore, each variable of the totals was averaged. Furthermore, the data were coded into and dummy data.

On the subject of Christian spiritual life, Bible reading and prayer behavior of Christians were measured by the frequency of each activity. In other words, the questions asked about the personal behavior of participants. Question 12 asked how frequently the participant prayed or read the Bible (see Appendix A, Bioethical Questionnaire - English version). Participants answered the question according to their own circumstances, describing the frequency of individual prayer and Bible reading per day, per week, per month, or not applicable. The data were then modified. "Not applicable" scored "1". "At least once per month" scored "2". "At least once per week" scored "3". "Few times per week" scored "4". "At least once per day" scored "5". Finally, the totals were averaged.

The various bioethical views (see Appendix A, Bioethical Questionnaire - English version), were endogenous variables in this research. Respondent's attitudes, cognition, and opinions of various bioethical views were scaled from 1 to 5 where 1 indicated "strongly disagree", 2 indicated "do not agree", 3 indicated "neutrality", 4 indicated "agree", and 5 indicated "strongly agree". Finally, the totals were averaged.

Table 8.1 provides the descriptive statistical analysis for each variable. The overall minimum, maximum, mean, and standard deviation were calculated for each of the interval scaled constructs as shown at Table 8.1.

Table 8.1: Mean and Standard Deviation of Responses to Questions on Bible Reading, Prayer, Church Activity & Service, IVF, Sex Selection, PGD, Savior Sibling, Cloning, and Stem Cell Therapy

	Minimum	Maximum	Mean	Std. Deviation
Bible Reading	1.00	5.00	4.13	1.15
Prayer	1.00	5.00	4.43	1.04
Church Activity & Service	1.13	3.50	2.11	0.56
IVF	1.00	5.00	3.32	0.90
Sex Selection	1.00	5.00	4.23	1.06
PGD	1.00	5.00	3.65	0.97
Savior Sibling	1.00	5.00	3.46	1.02
Cloning	1.00	5.00	4.08	1.08
Stem Cell Therapy	1.00	5.00	2.92	0.91

8.3.1 Path analysis of In Vitro Fertilization

A path analysis was conducted to determine the cause and effect relationships among the variables of (a) spiritual life, (b) church activities and services, and (c) views on IVF. As regards the topic of IVF, after path analysis, presented in Figure 8.2, three correlations were found. First, the correlation between church activity and service and IVF has β of 0.01 at the path modeling. Second, the correlation between Bible reading and IVF has β of 0.18. Third, the correlation between Prayer and IVF has β of -0.17.

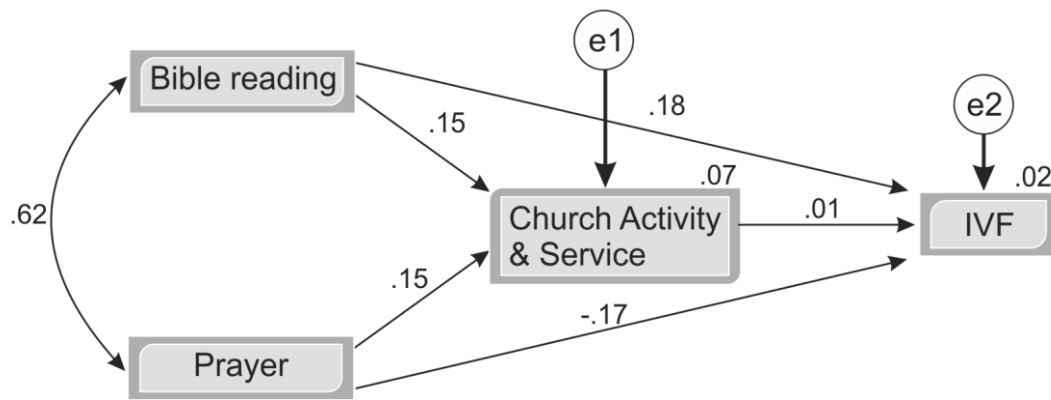


Figure 8.2: Path diagram of the correlation among Bible reading, prayer, church activity & service, and views about IVF

The R^2 shows 0.02 at the path modeling of IVF in terms of Figure 8.2. This means 2% of the variation of the sex selection result is explained by church activity and service, Bible reading, and prayer in the path model. This includes direct and indirect effect influence elements. In other words, 98% of influence elements were unknown in the path model of IVF.

Based on Figure 8.2, on the one hand, church activity and service have been affected by Bible reading and shows 15% of β . On the other hand, church activity and service have been affected by prayer and show 15% of β . The R^2 was 0.07 for church activity and service. The result indicates that 7% of the variation is explained by individual Bible reading and prayer behavior of Christians. 93% of influence elements were unknown.

Table 8.2 and Table 8.3 provide the correlation coefficient. The P represents prayer, BR represents Bible reading, CAS represents church activity and service, and IVF represents IVF. Table 8.2 provides unstandardized coefficient (B), standard error, z-value, and p-value (probability). Table 8.3 provides standardized coefficient (β) to illustrate the direction relationship of one variable to the other variables. These values of β are shown as at Figure 8.2.

Table 8.2: Regression Result by Unstandardized Coefficient of Bible Reading, Prayer, Church Activity & Service, and IVF

			B	S.E.	z-Value.	p-value
CAS	<---	BR	.075	.029	2.573	.010*
CAS	<---	P	.080	.033	2.453	.014*
IVF	<---	CAS	.015	.081	.181	.856
IVF	<---	P	-.149	.054	-2.744	.006**
IVF	<---	BR	.137	.049	2.822	.005**

*p<0.05, **p<0.01, ***p<0.001

Table 8.3: Regression Result by Standardized Coefficient of Bible Reading, Prayer, Church Activity & Service, and IVF

			β
CAS	<---	BR	.154
CAS	<---	P	.147
IVF	<---	CAS	.009
IVF	<---	P	-.170
IVF	<---	BR	.175

In terms of the path diagram of IVF at Table 8.3 and Figure 8.2, the mediating variable of church activity and service did not have a significant influence on views about IVF. However, as presented at Table 8.3, there were four variables that had a significant influence. These were (a) Bible reading, which had a significant influence on church activity and service; (b) prayer, which had a significant influence on church activity and service; (c) Bible reading, which had a significant influence on IVF; and (d) prayer, which had a significant influence on views about IVF.

Table 8.4 and Table 8.5 provide the correlation coefficient between Bible reading and prayer. Furthermore, both variables had a significant influence on each other as at Figure 8.2.

Table 8.4: Regression Result by Unstandardized Coefficient of Bible Reading and Prayer

			B	S.E.	C.R.	p-value
BR	<-->	P	.733	.069	10.660	***

*p<0.05, **p<0.01, ***p<0.001

Table 8.5: Regression Result by Standardized Coefficient of Bible Reading and Prayer

			β
BR	<-->	P	.615

Table 8.6 indicates the direct effect, indirect effect, and total effect among Bible reading, prayer, church activity and service, and views about IVF. Because the correlation between participation in church activities and services of Christians and views about IVF did not have a significant influence according to Table 8.2, therefore, this research did not examine the statistical significance of the mediate model as illustrated at section 3.7.4 of Chapter Three.

Table 8.6: The Causal Effect of Bible Reading, Prayer, Church Activity & Service, and IVF

Outcome	Determinant	Causal Effects		
		Direct Effect	Indirect Effect	Total Effect
Church Activity & Service ($R^2 = 0.073$)	Bible Reading	0.154	-	0.154
	Prayer	0.147	-	0.147
IVF ($R^2 = 0.023$)	Bible Reading	0.175	0.001	0.177
	Prayer	-0.170	0.001	-0.169
	Church Activity & Service	0.009	-	0.009

This path diagram shows that the views about IVF were not affected by participation in church activities and services of Christians. The research finding fails to accept hypothesis

H₁. In other words, participation in church activities and services did not affect the correlation between spiritual life of Christians and their views about IVF.

8.3.2: Path analysis of Sex Selection

As regards the topic of sex selection, after path analysis, presented in Figure 8.3, three correlations were found. First, the correlation between church activity and service and sex selection has β of 0.02 at the path modeling. Second, the correlation between Bible reading and sex selection has β of -0.02. Third, the correlation between prayer and sex selection has β of -0.02.

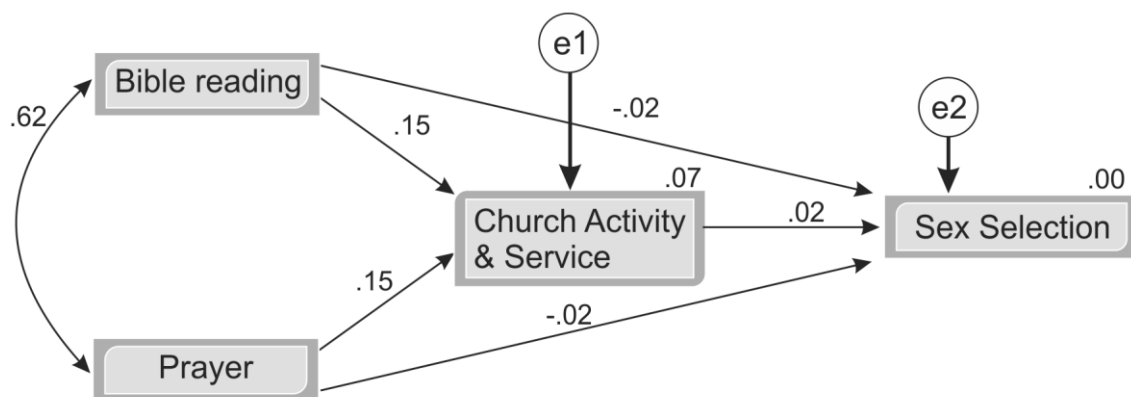


Figure 8.3: Path diagram of the correlation among Bible reading, prayer, church activity and service, and views about sex selection

The R^2 shows 0.00 at the path modeling of sex selection in terms of Figure 8.3. This means 100% of influence elements were unknown in the path model. The effect of participation in church activities and services did not affect the correlation between Bible reading and prayer behavior and sex selection. In other words, 100% of influence elements were unknown in this path modeling of sex selection.

Based on Figure 8.3, on the one hand, church activity and service have been affected by Bible reading of Christians and shows 15% of β . On the other hand, church activity and service have been affected by prayer of Christians and shows 15% of β . The R^2 was 0.07 at church activity and service. The result indicates that 7% of the variation is explained by

individual Bible reading and prayer behavior of Christians. 93% of influence elements were unknown.

Table 8.7 and Table 8.8 provide the correlation coefficient. The P represents prayer, BR represents Bible reading, CAS represents church activity and service, and SS represents sex selection. Table 8.7 provides unstandardized coefficient (B), standard error, z-value, and p-value (probability). Table 8.8 provides standardized coefficient (β) to illustrate the direction relationship from one variable to the other variables. These values of β are shown as at Figure 8.3.

Table 8.7: Regression Result by Unstandardized Coefficient of Bible Reading, Prayer, Church Activity & Service, and Sex Selection

			B	S.E.	z-Value	p-value
CAS	<---	BR	.075	.029	2.573	.010*
CAS	<---	P	.080	.033	2.453	.014*
SS	<---	CAS	.047	.097	.482	.630
SS	<---	P	-.024	.064	-.375	.707
SS	<---	BR	-.019	.058	-.334	.738

*p<0.05, **p<0.01, ***p<0.001

Table 8.8: Regression Result by Standardized Coefficient of Bible Reading, Prayer, Church Activity & Service, and Sex Selection

			β
CAS	<---	BR	.154
CAS	<---	P	.147
SS	<---	CAS	.025
SS	<---	P	-.024
SS	<---	BR	-.021

In terms of the path diagram of sex selection at Table 8.7 and Figure 8.3, the mediating variable of church activity and service did not have a significant influence on sex selection. However, as presented at Table 8.7, there were two correlations that had a significant

influence. These were (a) Bible reading, which had a significant influence on church activity and service; and (b) prayer, which had a significant influence on church activity and service.

Table 8.9 indicates the direct effect, indirect effect, and total effect among Bible reading, prayer, church activity and service, and views about sex selection. Because the correlation between participation in church activities and services and views about sex selection did not have a significant influence according to Table 8.7, therefore, this research did not examine the statistical significance of the mediate model as illustrated at section 3.7.4 of Chapter Three.

Table 8.9: The Causal Effect of Bible Reading, Prayer, Church Activity & Service, and Sex Selection

Outcome	Determinant	Causal Effects		
		Direct Effect	Indirect Effect	Total Effect
Church Activity & Service (R ² = 0.073)	Bible Reading	0.154	-	0.154
	Prayer	0.147	-	0.147
IVF (R ² = 0.002)	Bible Reading	-0.021	0.004	-0.020
	Prayer	-0.024	0.004	-0.017
	Church Activity & Service	0.025	-	0.025

This path diagram shows that views about sex selection were not affected by participation in church activities and services of Christians. The research finding fails to accept hypothesis H₂. This means that the participation in church activities and services did not affect the correlation between spiritual life of Christians and their views about sex selection.

8.3.3 Path analysis of Pre-implantation Genetic Diagnosis and Selection of Embryos

As regards the topic of PGD, after path analysis, presented in Figure 8.4, three correlations were found. First, the correlation between church activity and service and PGD has β of 0.08 at the path modeling. Second, the correlation between Bible reading and PGD has β of -0.01. Third, the correlation between prayer and PGD has β of -0.06.

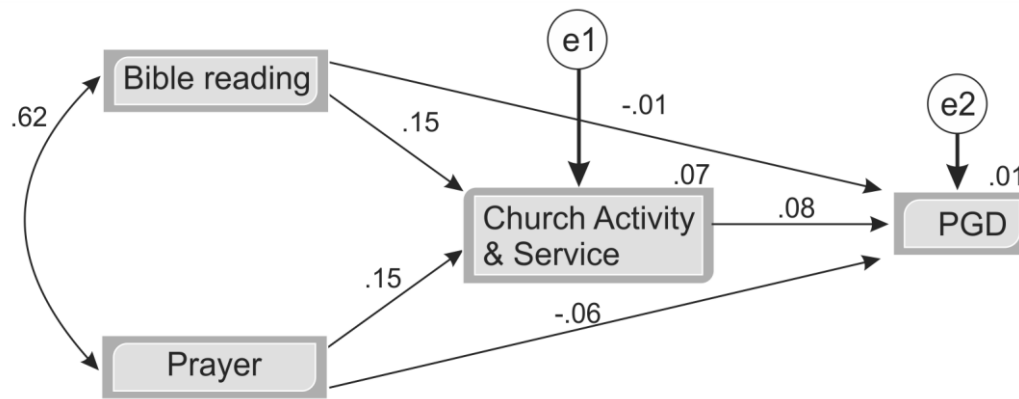


Figure 8.4: Path diagram of the correlation among Bible reading, prayer, church activity & service, and views about PGD

The R^2 shows 0.01 at the path modeling of PGD in terms of Figure 8.4. This means 1% of the variation of the PGD result is explained by church activity and service, Bible reading, and prayer in the path model. This includes direct and indirect effect influence elements. In other words, 99% of influence elements were unknown in the path modeling of PGD.

Based on Figure 8.4, on the one hand, church activity and service have been affected by Bible reading and shows 15% of β . On the other hand, church activity and service have been affected by prayer and show 15% of β . The R^2 was 0.07 at church activity and service. The result indicates that 7% of the variation is explained by individual Bible reading and prayer behavior. In other words, 93% of influence elements were unknown in the path modeling of PGD.

Table 8.10 and Table 8.11 provide the correlation coefficient. The P represents prayer, BR represents Bible reading, CAS represents church activity and Service, and PGD represents views on pre-implantation genetic diagnosis and selection of embryos. Table 8.10 provides unstandardized coefficient (B), standard error, z-value, and p-value (probability). Table 8.11 provides standardized coefficient (β) to illustrate the direction of relationship from one variable to the other variables. These values of β are shown as at Figure 8.4.

Table 8.10: Regression Result by Unstandardized Coefficient of Bible Reading, Prayer, Church Activity & Service, and PGD.

		B	S.E.	z-value	p-value
CAS	<---BR	.075	.029	2.573	.010*
CAS	<---P	.080	.033	2.453	.014*
PGD	<---CAS	.135	.088	1.538	.124
PGD	<---P	-.060	.059	-1.028	.304
PGD	<---BR	-.012	.053	-.237	.813

*p<0.05, **p<0.01, ***p<0.001

Table 8.11: Regression Result by Standardized Coefficient of Bible Reading, Prayer, Church Activity & Service, and PGD.

			β
CAS	<---	BR	.154
CAS	<---	P	.147
PGD	<---	CAS	.078
PGD	<---	P	-.064
PGD	<---	BR	-.015

In terms of the path diagram of PGD at Table 8.10 and Figure 8.4, the mediating variable of church activity and service did not have a significant influence on views about PGD. However, as presented at Table 8.10, two correlations had a significant influence. These were (a) Bible reading, which had a significant influence on church activity and service; and (b) prayer, which had a significant influence on church activity and service.

Table 8.12 indicates the direct effect, indirect effect, and total effect among Bible reading, prayer, church activity and service, and views about PGD. Because the participation in church activities and services and views about PGD did not have a significant influence according to Table 8.10, therefore, this research did not examine the statistical significance of the mediate model as illustrated at section 3.7.4 of Chapter Three.

Table 8.12: The Causal Effect of Bible Reading, Prayer, Church Activity & Service, and PGD

Outcome	Determinant	Direct Effect	Causal Effects	
			Indirect Effect	Total Effect
Church Activity & Service ($R^2 = 0.073$)	Bible Reading	0.154	-	0.154
	Prayer	0.147	-	0.147
PGD ($R^2 = 0.009$)	Bible Reading	-0.015	0.012	-0.003
	Prayer	-0.064	0.012	-0.053
	Church Activity & Service	0.078	-	0.078

As a result, this path diagram shows that views about PGD were not affected by participation in church activities and services of Christians. This means that the research finding fails to accept hypothesis H₃. In other words, participation in church activities and services did not affect the correlation between spiritual life of Christians and their views about PGD.

8.3.4 Path analysis of Savior Sibling

As regards the topic of savior sibling, after path analysis, presented in Figure 8.5, three correlations were found. First, the correlation between church activity and service and savior sibling has β of 0.05 at the path modeling. Second, the correlation between Bible reading and savior sibling has β of 0.05. Third, the correlation between prayer and savior sibling has β of -0.10.

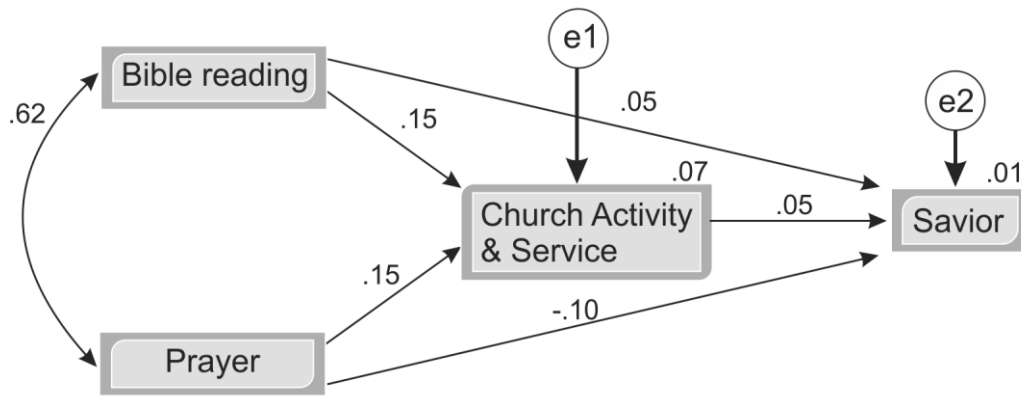


Figure 8.5: Path diagram of the correlation among Bible reading, prayer, church activity & service, and views about savior sibling

The R^2 shows 0.01 at the path modeling of savior sibling in terms of Figure 8.5. This means 1% of the variation of the sex selection result is explained by church activity and service, Bible reading, and prayer in the path model. This includes direct and indirect effect influence elements. In other words, 99% of influence elements were unknown in the path modeling of savior sibling.

Based on Figure 8.5, on the one hand, church activity and service have been affected by Bible reading and show 15% of β . On the other hand, church activity and service have been affected by prayer and show 15% of β . The R^2 was 0.07 for church activity and service. The result indicates that 7% of the variation is explained by individual Bible reading and prayer behavior. 93% of influence elements were unknown.

Table 8.13 and Table 8.14 provide the correlation coefficient. The P represents prayer, BR represents Bible reading, CAS represents church activity and service, and S represents views on savior sibling. Table 8.13 provides unstandardized coefficient (B), standard error, z-value, and p-value (probability). Table 8.14 provides standardized coefficient (β) to illustrate the direction of relationship from one variable to the other variables. Furthermore, these values of β are shown as at Figure 8.5.

Table 8.13: Regression Result by Unstandardized Coefficient of Bible Reading, Prayer, Church Activity & Service, and Savior Sibling

			B	S.E.	z-value	p-value
CAS	<---	P	.075	.029	2.573	.010*
CAS	<---	BR	.080	.033	2.453	.014*
S	<---	CAS	.099	.093	1.066	.287
S	<---	BR	-.099	.062	-1.610	.107
S	<---	P	.046	.055	.836	.403

*p<0.05, **p<0.01, ***p<0.001

Table 8.14: Regression Result by Standardized Coefficient of Bible Reading, Prayer, Church Activity & Service, and Savior Sibling

			β
CAS	<---	BR	.154
CAS	<---	P	.147
S	<---	CA S	.054
S	<---	P	-.101
S	<---	BR	.052

In terms of the path diagram of savior sibling at Table 8.17 and Figure 8.5, the mediating variable of church activity and service did not have a significant influence on views about savior sibling. However, as presented at Table 8.17, two variables had a significant influence. These were (a) Bible reading, which had a significant influence on church activity and service; and (b) prayer, which had a significant influence on church activity and service.

Table 8.15 indicates the direct effect, indirect effect, and total effect among Bible reading, prayer, church activity and service, and views about savior sibling. Because the participation in church activities and services and views about savior sibling did not have a directly significant influence according to Table 8.13, therefore, this research did not examine the statistical significance of the mediate model as illustrated at section 3.7.4 of Chapter Three.

Table 8.15: The Causal Effect of Bible Reading, Prayer, Church Activity & Service, and Savior Sibling

Outcome	Determinant	Causal Effects		
		Direct Effect	Indirect Effect	Total Effect
Church Activity & Service ($R^2 = 0.073$)	Bible Reading	0.154	-	0.154
	Prayer	0.147	-	0.147
Savior ($R^2 = 0.008$)	Bible Reading	-0.052	0.008	0.061
	Prayer	-0.101	0.008	-0.093
	Church Activity & Service	0.054	-	0.054

This path diagram shows that the views about savior siblings were not affected by participation in church activities and services. This means that the research finding fails to accept hypothesis H₄. In other words, participation in church activities and services did not affect the correlation between spiritual life of Christians and their views about savior siblings.

8.3.5 Path analysis of cloning

As regards the topic of cloning, after path analysis, presented in Figure 8.6, three correlations are noted. First, the correlation between church activity and service and cloning has β of 0.02 at the path modeling. Second, the correlation between Bible Reading and cloning has β of -0.02. Third, the correlation between prayer and cloning has β of 0.02.

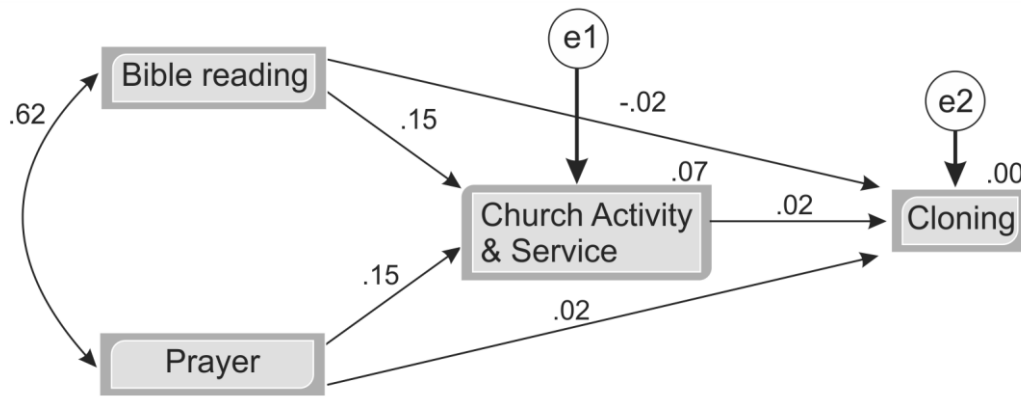


Figure 8.6: Path diagram of the correlation among Bible reading, prayer, church activity & service, and cloning

The R^2 shows 0.00 at the path modeling of cloning in terms of Figure 8.6. This means 0% of the variation of the cloning result is explained by church activity and service, Bible reading, and prayer in the path model. This includes direct and indirect effect influence elements. In other words, 100% of influence elements were unknown in the path modeling of cloning.

Furthermore, based on Figure 8.6, on the one hand, church activity and service have been affected by Bible reading and show 15% of β . On the other hand, Church activity and service have been affected by prayer and show 15% of β . The R^2 was 0.07 for church activity and service. The result indicates that 7% of the variation is explained by individual Bible reading and prayer behavior. 93% of influence elements were unknown.

Table 8.16 and Table 8.17 provide the correlation coefficient. The P represents prayer, BR represents Bible reading, CAS represents church activities and services, and C represents views on cloning. Table 8.16 provides unstandardized coefficient (B), standard error, z-value, and p-value (probability). Table 8.17 provides standardized coefficient (β) to illustrate the direction of relationship from one variable to the other variables. These values of β are shown as at Figure 8.6.

Table 8.16: Regression Result by Unstandardized Coefficient of Bible Reading, Prayer, Church Activity & Service, and Cloning

		B	S.E.	C.R.	p-value
CAS <---	BR	.075	.029	2.573	.010*
CAS <---	P	.080	.033	2.453	.014*
C <---	CAS	.035	.098	.358	.720
C <---	P	.019	.066	.285	.776
C <---	BR	-.023	.059	-.393	.694

*p<0.05, **p<0.01, ***p<0.001

Table 8.17: Regression Result by Standardized Coefficient of Bible Reading, Prayer, Church Activity & Service, and Cloning

			β
CAS <---	BR		.154
CAS <---	P		.147
C <---	CAS		.018
C <---	P		.018
C <---	BR		-.025

In terms of the path diagram of cloning at Table 8.16 and Figure 8.6, the mediating variable of church activity and service did not have a significant influence on views about cloning. However, as presented at Table 8.16, there were two correlations that had a significant influence. These were (a) Bible reading, which had a significant influence on church activity and service; and (b) prayer, which had a significant influence on church activity and service.

Table 8.18 indicates the direct effect, indirect effect, and total effect among Bible reading, prayer, church activity and service, and views about cloning. Because the participation in church activities and services and views about cloning did not have a directly significant influence according to Table 8.16, therefore, this research did not examine the statistical significance of the mediate model as illustrated at section 3.7.4 of Chapter Three.

Table 8.18: The Causal Effect of Bible Reading, Prayer, Church Activity & Service, and Cloning

Outcome	Determinant	Causal Effects		
		Direct Effect	Indirect Effect	Total Effect
Church Activity & Service ($R^2 = 0.073$)	Bible Reading	0.154	-	0.154
	Prayer	0.147	-	0.147
Cloning ($R^2 = 0.001$)	Bible Reading	-0.025	0.003	-0.022
	Prayer	0.018	0.003	0.021
	Church Activity & Service	0.018	-	0.018

This path diagram shows that view about cloning were not affected by participation in church activities and services of Christians. This means that the research finding fails to accept hypothesis H₅. In other words, participation in church activities and services did not affect the correlation between spiritual life of Christians and their views about cloning.

8.3.6 Path analysis of Stem Cell Therapy

As regards the topic of stem cell therapy, after path analysis, presented in Figure 8.7, three correlations are noted. First, the correlation between church activity and service and stem cell therapy has β of 0.00 at the path modeling. Second, the correlation between Bible reading and stem cell therapy has β of 0.08. Third, the correlation between prayer and stem cell therapy has β of -0.05.

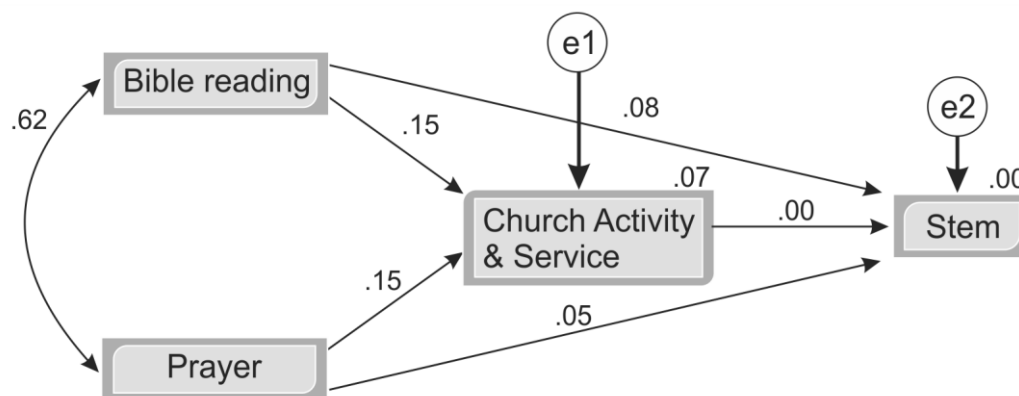


Figure 8.7: Path diagram of the correlation among Bible reading, prayer, church activity & service, and stem cell therapy

The R^2 shows 0.00 at the path modeling of stem cell therapy in terms of Figure 8.7. It means 0% of the variation of the stem cell therapy is explained by church activity and service, Bible reading, and prayer in the path model. This includes direct and indirect effect influence elements. In other words, 100% of influence elements were unknown in the path modeling of stem cell therapy.

Based on Figure 8.7, on the one hand, church activity and service have been affected by Bible reading and show 15% of β . On the other hand, church activity and service have been affected by prayer behavior and show 15% of β . The R^2 was 0.07 for church activity and service. The result indicates that 7% of the variation is explained by individual Bible reading and prayer behavior. 93% of influence elements were unknown.

Table 8.19 and Table 8.20 provide the correlation coefficient. The P represents prayer, BR represents Bible reading, CAS represents church activity and service, and SC represents views on stem cell therapy. Table 8.19 provides unstandardized coefficient (B), standard error, z-value, and p-value (probability). Table 8.20 provides standardized coefficient (β) to illustrate the direction of relationship from one variable to the other variables. These values of β are shown as at Figure 8.7.

Table 8.19: Regression Result by Unstandardized Coefficient of Bible Reading, Prayer, Church Activity & Service, and Stem Cell Therapy

		B	S.E.	z-value	p-value
CAS	<--- BR	.075	.029	2.573	.010*
CAS	<--- P	.080	.033	2.453	.014*
SC	<--- CAS	.000	.082	-.001	.999
SC	<--- P	-.046	.055	-.843	.400
SC	<--- BR	.059	.049	1.199	.231

*p<0.05, **p<0.01, ***p<0.001

Table 8.20: Regression Result by standardized coefficient of Bible Reading, Prayer, Church Activity & Service, and Stem Cell Therapy

				β
CAS	<---	BR		.154
CAS	<---	P		.147
SC	<---	CAS		.000
SC	<---	P		-.053
SC	<---	BR		.075

In terms of the path diagram of stem cell therapy at Table 8.19 and Figure 8.7, the mediating variable of church activity and service did not have a significant influence on views about stem cell therapy. However, as presented at Table 8.19, there were two variables that had a significant influence. These were (a) Bible reading, which had a significant influence on church activity and service; and (b) prayer, which had a significant influence on church activity and service.

Table 8.21 indicates the direct effect, indirect effect, and total effect among Bible reading, Prayer, church activity and service, and stem cell therapy. Because the participation in church activities and services of Christians did not have a directly significant influence on stem cell therapy in terms of Table 8.19, therefore, this research did not examine the statistical significance of the mediate model as illustrated at section 3.7.4 of Chapter Three.

Table 8.21: The Causal Effect of Bible Reading, Prayer, Church Activity & Service, and Stem

Outcome	Determinant	Causal Effects		
		Direct Effect	Indirect Effect	Total Effect
Church Activity & Service ($R^2 = 0.073$)	Bible Reading	0.154	-	0.154
	Prayer	0.147	-	0.147
Stem ($R^2 = 0.004$)	Bible Reading	0.075	0.000	0.075
	Prayer	-0.053	0.000	-0.053
	Church Activity & Service	0.000	-	0.000

The path diagram of stem cell therapy indicates that participation in church activities and services did not affect the correlation between the spiritual life of Christians and their views about stem cell therapy. This means the research finding fails to accept hypothesis H_6 .

8.4 FINDINGS BASED ON RESULTS

Based on Figure 8.1 (the research framework), and the results shown in Table 8.2, Table 8.7, Table 8.10, Table 8.13, Table 8.16, and Table 8.19, these results can now be summarized. This result indicates that the Christian participation in church activities and services did not have an effect on the correlation between the spiritual life of Christians and their views about bioethics. In other words, the research of this chapter concludes that the research finding fails to accept hypotheses H_1 to H_6 . However, Chapter Eight provided three findings.

First, Table 8.2, Table 8.7, Table 8.10, Table 8.13, Table 8.16, and Table 8.19 indicated that (a) the mediating variable that represents the Christian participation in church activities and services did not affect these six bioethical views of Christians. The path analyses of this chapter could not provide any meaningful results in this research to explore the correlation between (a) spiritual life of Christians and (b) their six bioethical views that has been mediated by their participation in church activities and services. This means that participation in church activities and services did not affect the correlation between the spiritual life of Chinese Christians and their views about bioethics. Because unknown elements could not be accounted for in this research, consequently, to adopt multiple regression analysis was a suitable research method for this research.

To compare the results of Chapter Eight with Table 6.1 through Table 6.6 of Chapter Six, the results there showed that some bioethical views were affected by either church activity or church service. These were sex selection and cloning. Only views on PGD and savior siblings were affected by participation in church service. Even if there were different results from Chapter Six and Chapter Eight, maybe the statistical analysis method was a key to explore this topic, as discussed in the next section 8.5.

Second, on the topic of the relationship between the spiritual life of Christians and their participation in church activities and services, there was the same finding as at Chapter Five. According to the results at Table 8.2, Table 8.7, Table 8.10, Table 8.13, Table 8.16, and Table 8.19, either individual Bible reading or prayer behavior, or both, have influenced their

participation in activities and services. The R^2 indicated 0.07 at Figure 8.2 and Table 8.2 of Chapter Eight from path analysis. This means that 93% of the influence elements were unknown.

Comparing the results of Chapter Eight with those of Chapter Five, Chapter Five has illustrated its results in terms of Table 5.1 and Table 5.3. The results indicated two conclusions. First, the influence of the spiritual life of Christians on their participation in church activities had R^2 of 0.081. Second, the influence of the spiritual life of Christians on their participation in church services had R^2 of 0.037. When comparing the correlation coefficient at Table 8.6 of Chapter Eight and Table 4.7 of Chapter Four, Table 4.7 indicated the β is 0.615. Table 8.5 also indicated that β is 0.615. In other words, even though there are different analysis methods, the results were the same for this topic.

Third, the results of path diagram analysis have provided one interesting scenario in terms of Figure 8.1. It indicated that only individual Bible reading and prayer behavior of Christians affected their views on IVF (see Table 8.2). However, the interesting result was the β at Table 8.2 and Table 8.3. On the one hand, individual prayer behavior of Christians affected their IVF view with a negative influence, where β was -0.170. On the other hand, Bible reading behavior of Christians affected their IVF view with a positive influence, where β was 0.175.

Compared with the result at Table 7.1 of Chapter Seven, the results after multiple regression analysis also indicate that Bible reading and prayer behavior of Christians have affected their IVF views. Furthermore, Table 7.1 showed that R^2 is 0.023. Besides, β of prayer was -0.069 and β of Bible reading was 0.1777 according to Table 7.1.

8.5 MULTIPLE REGRESSION MODEL VIA SEM

Because of the results of the path analysis shown above, this research decided to add two variables to explore. The data for the two variables were collected via the same questionnaire in Appendix A, Bioethical Questionnaire (English version). The two variables were (a) frequency of ethical teaching from Question 12 and (b) personal savior history from Question 13. This methodology has been outlined above (5.2, Data Analysis section, Chapter Five). These two variables were combined with (a) Bible reading, (b) prayer, (c) church activity, and (d) church service as endogenous variables for multiple regression model via SEM.

8.5.1 Structure of research framework

This research also adopted a quantitative research design, and these variables were measured by respondents' attitudes, cognition, opinions, or behaviors in terms of Figure 8.8. The objective of this section is to examine the correlation between Bible reading, prayer, church activity, church service, frequency of ethical teaching, length of time since the respondent had accepted Christ as their personal savior, and their bioethical views.

As illustrated at Figure 8.8, exogenous variables were (a) Bible reading, (b) prayer, (c) church activity, (d) church service, (e) frequency of ethical teaching, and (f) length of time since the respondent had accepted Christ as their personal savior. Endogenous variables were (a) IVF, (b) sex selection, (c) PGD, (d) savior sibling, (e) cloning, and (f) stem cell. This research utilized a multiple regression model via the SEM method to explore correlations.

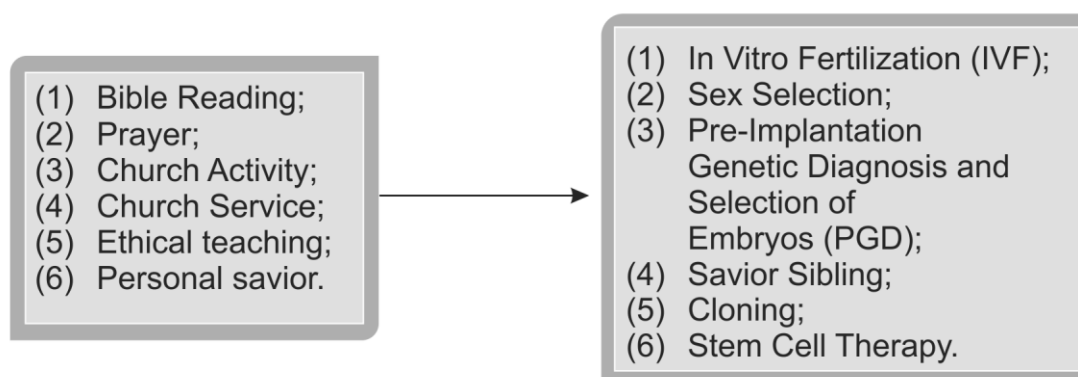


Figure 8.8: The research framework design of multiple regression analysis

8.5.2 Definition and measurement

On the subject of the definition and measurement of spiritual life of Christians, their participation in church activities and services, and various bioethical views have been outlined above at 5.1, 6.1, and 7.1, Research Framework Design and Definition of Chapter Five through Chapter Seven.

On the subject of ethical teaching, the study asked participants to select their answer to describe the frequency of ethical teaching at their churches (see Question 12 at Appendix A, Bioethical Questionnaire - English version). Participants answered the question according to

their own circumstances, describing the frequency of the ethical teaching in their church per week, per month, per year, or once per year or less than once. “Once per year or less than once” scored “1”. “Less than once per month” scored “2”. “Several times per year” scored “3”. “Two or three times per month” scored “4”. “Once per month” scored “5”. “Once per week” scored “6”. The data was shown as an ordinal scale.

On the subject of personal savior, the study asked participants about the length of time since they accepted Christ as their personal savior (see Question 13 at Appendix A, Bioethical Questionnaire - English version). Participants answered the question according to their own circumstances, describing their personal savior history in terms of (a) less than 3 years, (b) 3-6 years, (c) 7-9 years, (d) above 10 years, (e) N/A. The data were then modified. “N/A” scored “1”. “Less than 3 years” scored “2”. “3-6 years” scored “3”. “7-9 years” scored “4”. “Above 10 years” scored “5”. The data was shown as an ordinal scale.

8.5.3 Data analysis

Statistic analysis of these variables has been outlined at 4.1, Descriptive Statistics of Chapter Four. Those results included responses about (a) church activities, (b) church services, (c) Bible reading, and (d) prayer, (e) frequency of ethical teaching, and (f) history of personal salvation. For the various bioethical views, see 4.1 above. Table 8.22 and Table 8.23 summarize these respondents’ selections as below.

Table 8.22 shows that 27.7% of respondents indicated that in their church ethical issues were taught “once per year or less than once”. 22.65% of respondents also indicated that their ethical teaching in churches was “once per week”.

Table 8.22: Frequency Distribution of the Ethical Teaching in Churches

Ethical Teaching	Frequency	Percent
Once per week	94	22.65
Once per month	64	15.42
Two or three times per month	28	6.75
Several times per year	73	17.59
Less than once per month	41	9.88
Once a year or less than once	115	27.71
Total	415	100.00

Table 8.23 shows that 38.1% of respondents had accepted Jesus Christ as a personal savior for more than 10 years. There were two groups that had a similar percentage. These two groups were (a) 20.0% of 3 to 6 years and (b) 20.7% of 7 to 9 years. In other words, 78.8% of respondents claimed they had accepted Jesus Christ as a personal savior.

Table 8.23: Frequency Distribution of the Personal Savior History of Respondents

Personal savior	Frequency	Percent
N/A	6	1.4
Below 3 yrs	82	19.8
3-6 yrs	83	20.0
7-9 yrs	86	20.7
Above 10 yrs	158	38.1
Total	415	100.0

Path analysis proceeded to analyze all variables as either independent variables or dependent variables at one time. After path analysis, the values of β and R^2 are presented in Figure 8.9. The details of R^2 are shown at Table 8.21; the high figure of R^2 for sex selection was 0.16 and the low figure of R^2 for stem cell therapy was 0.01. These values of β for the correlation of exogenous and endogenous variables with each other are also shown in Figure 8.9.

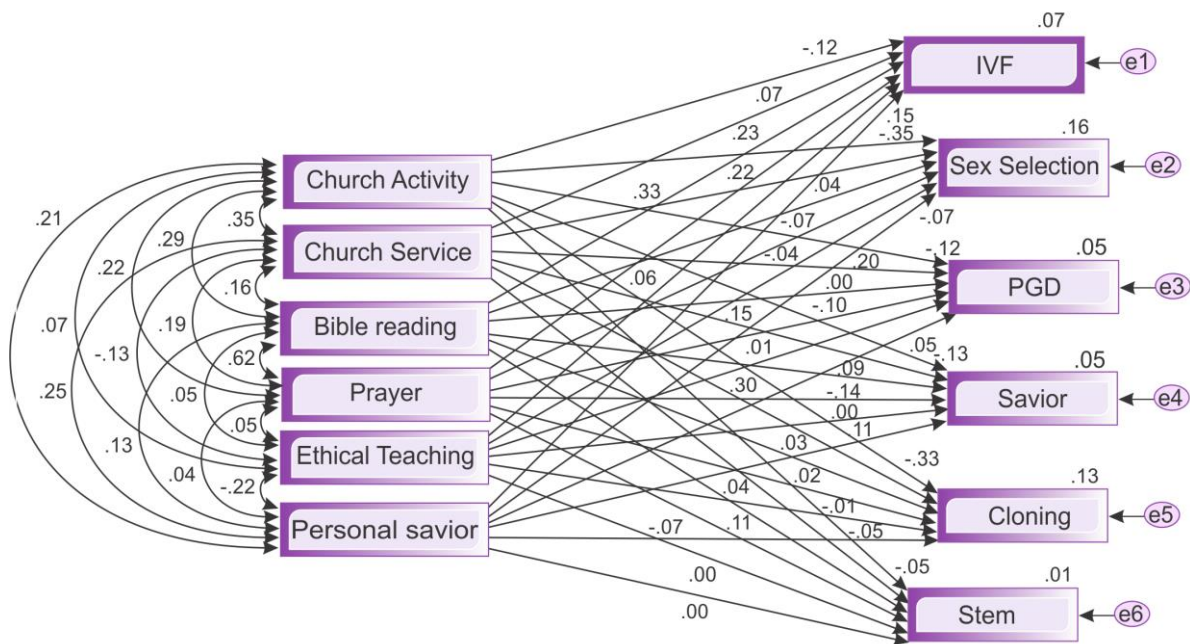


Figure 8.9: Path Diagram of the Multiple Regression Analysis

Table 8.22 and Table 8.23 show the correlation coefficient. Table 8.22 provides unstandardized coefficient (B), standard error (S.E.), z-value, and p-value (probability). Table 8.23 provides standardized coefficient (β) to illustrate the direction of relationship from one variable to the other variables. Furthermore, these values of β are shown as at Figure 8.9. The “BR” represents Bible reading, “P” represents prayer, “CA” represents church activity, “CS” represents church service, “PS” represents personal savior history, and “ET” represents frequency of ethical teaching.

Table 8.22 indicates that there were eight significant correlations between exogenous and endogenous variables. These significant correlations are summarized below.

- 1) Participation in church activities of Christians affected their views on sex selection;
- 2) Participation in church activities of Christians affected their views on cloning;
- 3) Participation in church services affected their views on sex selection;
- 4) Participation in church services affected their views on PGD;

- 5) Participation in church services affected their views on cloning;
- 6) Individual Bible reading behavior affected their views on IVF;
- 7) Individual prayer behavior affected their views on IVF;
- 8) Personal savior history affected their views on IVF.

The results were the same as those reported in Chapter Six through Chapter Seven. However, this research found that the personal savior history of Christians also affects their views on IVF.

Table 8.24: Correlation Analysis of Unstandardized Coefficient of Bible Reading, Prayer, Church Activity & Service, and bioethical views

			B	S.E.	z-value	p-value
IVF	<---	CA	-.172	.098	-1.753	.080
Sex	<---	CA	-.388	.115	-3.365	***
PGD	<---	CA	-.153	.107	-1.436	.151
Savior	<---	CA	-.189	.112	-1.685	.092
Cloning	<---	CA	-.370	.118	-3.138	.002*
Stem	<---	CA	-.065	.100	-.652	.515
IVF	<---	CS	.054	.057	.943	.346
Sex	<---	CS	.213	.067	3.182	.001*
PGD	<---	CS	.152	.062	2.463	.014*
Savior	<---	CS	.125	.065	1.917	.055
Cloning	<---	CS	.194	.068	2.835	.005*
Stem	<---	CS	.028	.058	.477	.633
IVF	<---	BR	.138	.049	2.813	.005*
Sex	<---	BR	.021	.058	.369	.712
PGD	<---	BR	.002	.053	.034	.973
Savior	<---	BR	.056	.056	1.008	.314
Cloning	<---	BR	.013	.059	.222	.824
Stem	<---	BR	.064	.050	1.288	.198
IVF	<---	P	-.143	.054	-2.645	.008*
Sex	<---	P	-.036	.063	-.565	.572

			B	S.E.	z-value	p-value
PGD	<---	P	-.061	.059	-1.047	.295
Savior	<---	P	-.095	.062	-1.550	.121
Cloning	<---	P	.008	.065	.129	.897
Stem	<---	P	-.047	.055	-.860	.390
IVF	<---	ET	.026	.029	.880	.379
Sex	<---	ET	-.013	.034	-.364	.715
PGD	<---	ET	.004	.032	.117	.907
Savior	<---	ET	-.001	.033	-.033	.974
Cloning	<---	ET	-.002	.035	-.052	.959
Stem	<---	ET	-.001	.030	-.030	.976
Stem	<---	PS	.001	.040	.014	.989
Cloning	<---	PS	-.022	.047	-.467	.640
Savior	<---	PS	.066	.045	1.456	.145
PGD	<---	PS	.027	.043	.629	.529
Sex	<---	PS	-.034	.046	-.735	.462
IVF	<---	PS	.085	.039	2.165	.030*

*p<0.05, **p<0.01, ***p<0.001

Regarding the values of β in this research, Figure 8.9 and Table 8.23 show these values to illustrate the degree of influence from one of the exogenous variables to the other endogenous variables. Among these eight significant correlations from exogenous variables to endogenous variables, the high β was -0.352, which demonstrates that church services of Christians have significantly affected their views about sex selection. The low β was 0.147, which demonstrates that personal savior history of Christians has significantly affected their views about IVF.

Table 8.25: Correlation Analysis of Standardized Coefficient of Bible Reading, Prayer, Church Activity & Service, and bioethical views

				β
IVF	<---	CA		-.125
Sex	<---	CA		-.352
PGD	<---	CA		-.119
Savior	<---	CA		-.134
Cloning	<---	CA		-.332
Stem	<---	CA		-.049
IVF	<---	CS		.066
Sex	<---	CS		.330
PGD	<---	CS		.202
Savior	<---	CS		.150
Cloning	<---	CS		.297
Stem	<---	CS		.035
IVF	<---	BR		.232
Sex	<---	BR		.045
PGD	<---	BR		.003
Savior	<---	BR		.093
Cloning	<---	BR		.027
Stem	<---	BR		.112
IVF	<---	P		-.216
Sex	<---	P		-.068
PGD	<---	P		-.099
Savior	<---	P		-.141
Cloning	<---	P		.016
Stem	<---	P		-.074
IVF	<---	ET		.058
Sex	<---	ET		-.035

β			
PGD	<---	ET	.009
Savior	<---	ET	-.002
Cloning	<---	ET	-.005
Stem	<---	ET	-.002
Stem	<---	PS	.001
Cloning	<---	PS	-.047
Savior	<---	PS	.111
PGD	<---	PS	.050
Sex	<---	PS	-.074
IVF	<---	PS	.147

Table 8.24 demonstrates the correlation among these exogenous variables. There were 11 significant correlations among exogenous variables. These significant correlations are summarized below.

- 1) Church service has a correlation with Bible reading, prayer, ethical teaching, personal savior history, and vice versa;
- 2) Church activity has a correlation with church service, Bible reading, prayer, personal savior history, and vice versa;
- 3) Bible reading has a correlation with prayer, personal savior history, and vice versa;
- 4) Personal savior history has a correlation with ethical teaching, and vice versa.

Table 8.26: Correlation Analysis of Unstandardized Coefficient of Church Activity, Church Service, Bible Reading, Prayer, Ethical Teaching, and Personal Savior History

			Beta	S.E.	z-value	p-value
CS	<-->	BR	.153	.049	3.149	.002**
CS	<-->	P	.167	.044	3.825	***
CS	<-->	ET	-.170	.065	-2.621	.009**
CS	<-->	PS	.252	.051	4.982	***
CA	<-->	CS	.148	.022	6.777	***
BR	<-->	P	.733	.069	10.660	***
BR	<-->	ET	.089	.088	1.008	.313
BR	<-->	PS	.173	.067	2.565	.010*
CA	<-->	BR	.164	.029	5.605	***
P	<-->	ET	.080	.079	1.018	.309
P	<-->	PS	.043	.060	.716	.474
CA	<-->	P	.113	.026	4.391	***
CA	<-->	ET	.050	.038	1.320	.187
CA	<-->	PS	.121	.029	4.127	***
ET	<-->	PS	-.393	.092	-4.278	***

*p<0.05, **p<0.01, ***p<0.001

Table 8.25 shows that β has been illustrated as well as at Figure 8.9. Table 8.25 illustrates that the high β was 0.615 and belonged to the significant correlation between Bible reading and prayer. On the other hand, the low β was 0.127 and was the significant correlation between Bible reading and personal savior history.

Table 8.27: Correlation Analysis of Standardized Coefficient of Church Activity, Church Service, Bible Reading, Prayer, Ethical Teaching and Personal Savior History

				β
CS	<-->	BR		.157
CS	<-->	P		.191
CS	<-->	ET		-.130
CS	<-->	PS		.253
CA	<-->	CS		.353
BR	<-->	P		.615
BR	<-->	ET		.050
BR	<-->	PS		.127
CA	<-->	BR		.287
P	<-->	ET		.050
P	<-->	PS		.035
CA	<-->	P		.221
CA	<-->	ET		.065
CA	<-->	PS		.207
ET	<-->	PS		-.215

8.5.4 Findings based on results

Based on the results at Figure 8.9, Table 8.22, and Table 8.24, six findings can be summarized.

- 1) Participation in church activities and services of Christians affected their views on cloning and sex selection. Only participation in church services affected their views on PGD;
- 2) Individual Bible reading and prayer behavior of Christians affected their views on IVF. Personal savior history also affected their views on IVF;
- 3) Church service has a correlation with Bible reading, prayer, ethical teaching, personal savior history, and vice versa;

- 4) Church activity has a correlation with church service, Bible reading, prayer, personal savior history, and vice versa;
- 5) Bible reading has a correlation with prayer, personal savior history, and vice versa;
- 6) Personal savior history has a correlation with ethical teaching, and vice versa.

Some results of this section were the same as results found in Chapters Five through Seven. For instance, Bible reading and prayer behavior of Christians affected their church activities and services. Or, participation in church activities and services affected their views on IVF. This section was concerned only with two variables: (a) ethical teaching and (b) personal savior history.

However, this research uncovered four new findings that can be compared with those of previous chapters. One is that personal savior history of Christians affected their views on IVF. The second is that participation in church services of Christians has a correlation with personal savior history, and vice versa. The third is that participation in church activities of Christians has a correlation with their personal savior history. The fourth is that personal savior history of Christians is related to the frequency of ethical teaching in their church.

8.6 DISCUSSION AND CONCLUSION

This section is divided into three parts: (a) the conclusion of Figure 8.1, (b) the conclusion of Figure 8.8, and (c) discussion.

The objective of this chapter is to explore whether or not there is an effect of participation in church activities and services of Christians on the correlation between (a) spiritual life of Christians and (b) their various bioethical views. As shown in the path diagram of Figure 8.1, there were three groups of variables. First, the spiritual life of Christians consisted of (a) Bible reading and (b) prayer behavior as independent variables. Second, participation in church activities and services were combined into one as a mediating variable. Third, the various bioethical views were divided into six dependent variables.

Regarding the conclusion based on Figure 8.1, the path analysis led to three findings, as illustrated above at 8.3 Data Analysis. First, the mediating variables did not have an effect on the relationship between the spiritual life of Christians and their bioethical views (see the

results via path analysis of Table 8.2, Table 8.7, Table 8.10, Table 8.13, Table 8.16, and Table 8.19). Second, the spiritual life of Christians had a significant correlation with their participation in church activities and services. Third, the spiritual life of Christians, consisting of individual Bible reading and prayer behavior, affected their views on IVF. This means the second and third findings were the same as the previous findings at Chapters Five, Six, and Seven, although they adopted different statistical analytical methods.

In order to investigate what are the main elements of influence affecting the bioethical views of Christians, it was decided to adopt other data that had been collected by questionnaire and to add two new variables as explained at 8.5, Multiple Regression Model via SEM. Because two new variables were added, this research adopted multiple regression analysis via the SEM method. As the research framework of Figure 8.8 has displayed, this research examined the correlation among 12 variables. These variables were divided into (a) exogenous variables (Bible reading, prayer, church activity, church service, frequency of ethical teaching, and personal savior history) and (b) endogenous variables (IVF, sex selection, PGD, savior sibling, cloning, and stem cell therapy).

Regarding the conclusion based on Figure 8.8, four results were found as shown in section 8.4. These four results were compared with those of previous chapters Five through Seven. The first finding was that the personal savior history of Christians affected their views on IVF. Second, participation in church services had a correlation with personal savior history, and vice versa. Third, participation in church activities had a correlation with their personal savior history, and vice versa. Fourth, personal savior history had a correlation with the frequency of ethical teaching in their church, and vice versa.

However, the distinctive feature of this study was the utilization of the SEM design and the adoption of a mediating variable to explore the relationships between exogenous and endogenous variables. As a result, it was concluded that the mediating variable, representing Christian participation in church activities and services, did not have an effect on the correlation between the spiritual life of Christians and their bioethical views. Nevertheless, these findings provide two topics for the discussion of bioethics in churches in mainland China. These topics are based on the results in terms of Figure 8.1 and Figure 8.8 respectively.

The first topic has three reasons. The first reason is that, the effect of participation in church activities and services of Christians on these six bioethical views is possibly because many

churches did not present bioethical topics in their worship, Adult Sunday School, Bible study group, or fellowship. The second reason may be that these bioethical topics may not be an issue in Chinese society because of government regulations and rules. Because of that, church activities do not provide seminars or sharing regarding these bioethical issues. The third reason may be that biotechnology and treatment costs may not be generalized in Chinese society at present. Therefore, these bioethical topics may directly reflect the circumstances of Christians in China. For instance, perhaps the majority of Christians may not pay attention to the PGD treatment. These may be the reasons for the finding of this research, that participation in church activities and services did not affect their bioethical views.

The second topic of discussion is the new research framework design of Figure 8.8. This research utilized multiple regression analysis via the SEM method. Two new variables were added: frequency of ethical teaching and personal savior history. The results are reported above, but summarized here:

- 1) Personal savior history affected views on IVF.
- 2) Participation in church services had a correlation with personal savior history, and vice versa.
- 3) Participation in church activities had a correlation with their personal savior history.
- 4) Personal savior history was related to frequency of their churches' ethical teaching.

One reason that might explain these results is that social influence factors affect Christians more strongly than church influence factors, because Christians spend less time in church activities than in social activities (see Chapter Eight). Ho (2010) also mentions this point.

Another possible reason involves the assumptions of this study. Although this study is experimental research, the research framework structure may have problems that are based on the two assumptions that have been described in section 1.1.2 of Chapter One. It may be that not all pastors or ministers can provide a clear knowledge of Christian ethical choices. On the other hand, the growth of Christian spiritual life and behavior has been partially discussed in section 5.4, the Discussion and Conclusion section of Chapter Five. It may relate to Christian spiritual maturity (Crossin, 1998).

Therefore, the assumption of this study (at 1.2 Assumptions of the Study, Chapter One) should be correct. After people have accepted Christ Jesus as their personal savior, a pastor and/or minister always encourages these new believers to have an individual Bible reading and prayer time every day, and to attend church activities such as Bible group, prayer meeting, or choir. They may then be asked to serve in some activities in the church.

After that, when Christians have spent a period participating in church activities and services, they should hear or pay attention to some ethical or bioethical topics in their churches. The results concluded that IVF is a very common topic in Chinese society at present. If they attended their church activities or services, they should know the topic of IVF and know how to handle this issue in their churches, because their leaders and pastors will have talked about this topic in their worship, or Bible reading group. Thus, ideally, the pastors and leaders should have a complete understanding about the conflict between bioethical arguments and biomedical treatment as the assumption of this study described.

In contrast, other bioethical topics such as PGD and stem cell therapy may not be common in Chinese society at present. Because of that, Christian leaders and pastors may give fewer talks about this topic in churches. This is an assumption about what is happening in Chinese churches at the moment. As the results indicated that participation in church activities and services means that they have accepted Jesus Christ, they can start to serve in their churches. Therefore, it also relates to personal savior history, because they should have accepted Jesus Christ as a personal savior at the initial step. At the same time, it should be related to Christian spiritual life: either Bible reading or prayer, or participation in church activities and services.

In conclusion, these results from Chapters Five to Eight were consistent with the assumption of Christian behavior in the circumstances of mainland China. This study reported on the decisions of Christians for each bioethical topic: either “strongly disagree” or “strongly agree”, or “neutrality”. The results indicate what are the influences affecting Christians’ attitudes, cognition, and opinions about bioethical issues. In other words, these results have reflected the Christians’ attitudes, cognition, and opinions and how to handle bioethical issues at present or in the near future. One statement of John Wyatt (2006:440) makes a suitable conclusion for this chapter. He writes:

There are no near solutions or obvious panaceas to the challenges and questions which biotechnology is rising. What is clear is that we need to struggle together as a Christian community to try to understand more clearly the rapid changes which are occurring in our midst and to discern how to respond from a position of Christian faith.

CHAPTER NINE:

SUMMARY AND CONCLUSION

This chapter is divided into four sections. First section summarizes (a) the research design and (b) the research methodology. The second section summarizes all the results from Chapter Five to Chapter Eight in terms of Figure 1.1 at Chapter One. The third section discusses responses to these results. Finally, the fourth section summarizes the conclusion of this study, providing practical principles of bioethical decision-making for Christians. These principles do not allow Christians to solve their bioethical problems immediately, but they can at least provide some essential guidelines.

9.1 RESEARCH DESIGN AND METHODOLOGY

9.1.1 Research design

The problem statement of this study was “What bearing do spiritual life and church involvement have on the views about bioethical issues of Christians in mainland China?” The study adopted three variables: (a) Christian spiritual life, (b) Christian participation in church activities and services, and (c) Christian views about bioethics. The study adopted a quantitative research method via a questionnaire administered with simple random sampling. The purpose of this study was to examine the effect of Christian participation in church activities and services on the correlation between the spiritual life of Christians and their bioethical views. Therefore, the research question was, “Does the spiritual life of mainland Chinese Christians affect their bioethical views that have been mediated by their participation in church activities and services?”

In order to understand the cause and effect correlation among the three variables, the research framework of this study was illustrated at Figure 1.1 of Chapter One. The independent variable was (a) the spiritual life of Christians; the mediating variable was (b) the Christian participation in church activities and services; and the dependent variable was (c) various bioethical views. In order to process a quantitative research approach, the data must meet the statistical analysis requirements such as correlation analysis, regression, and path analysis.

Regarding the definition and measurement of each variable, Christian spiritual life consisted of (a) individual Bible reading and (b) prayer behavior. The study utilized the frequency of each activity to measure Christian spiritual life. Christian participation in church activities consisted of (a) Bible study, Bible group, fellowship, (b) prayer meeting, (c) Sunday worship, and (d) Adult Sunday School. Christian participation in church services consisted of (a) Bible studying, Bible group, fellowship, Sunday worship, Sunday school, prayer meeting, (b) choir, entertainment, new person care worker, (c) worship ministry and related tasks, (d) other, and (e) non-participation. Frequency of participation in church activities and services of Christians was measured. The various bioethical views were (a) IVF, (b) Sex Selection, (c) PGD, (d) Savior Sibling, (e) Cloning, and (f) Stem Cell Therapy. Responses to these six categories of bioethical views were measured by Christians' attitudes, cognition, and opinions. The questions of each bioethical topic adopted a five-point Likert scale, as explained above.

The study had two assumptions. The first assumption was that after a Christian has accepted Jesus Christ as a personal savior, his/her pastor, minister, or leader of church should give a guide to grow his/her spiritual life. At the same time, the pastor, minister or leader should encourage the Christian to attend or join in church activities such as adult Sunday school or Bible reading group. In addition, after he/she regularly participates in different church activities, the pastor, minister or leader should also encourage serving in different church activities such as being a leader at Bible reading group, or involvement in choir or worship ministry. The second assumption was that during attendance at different church activities and service, the Christian has been taught by their pastor, minister, elder(s), or leader(s) about topics of ethics or bioethics in church activities such as Sunday worship, Adult Sunday school, or Bible reading group.

Because of the objective of this study, there were three methodological limitations. First, the location of the research sample was limited. Only a few cities or churches were selected. Second, the collection period was limited. This study spent only 20 weeks for data collection, including a four-week period of the pilot test. Third, this study provided the essential definition and description of each bioethical topic in the questionnaire. Fourth, the distribution of the questionnaire of this study was limited to face-to-face interaction. Because of that, the study adopted two approaches to target these research samples. One was through personal networking, approaching each church's leader(s) or member(s). The other was through the alumni network of Malaysia Bible Seminary – contact was made with alumni who are in China at present. This means that the location, time, and research subjects of the study have been limited. These research samples were from Shantou, Beijing, Guangzhou, and nearby

locations. As a result, the study cannot claim to represent all Christians' attitudes and opinions about all bioethical topics, as these were limited to only six topics.

9.1.2 Research methodology

As regards the research methodology, the study utilized an experimental design via a quantitative research method in terms of Figure 1.1 of Chapter One. In order to achieve the quantitative research, there were three requirements. First, in order to collect effective data, the study should target a research sample from the population with appropriate instrumentation, that is, suitable questionnaire design and development. Second, in order to analyze data, the study should adopt reasonable statistical methods of analysis. Third, in order to have valid and reliable data, the study should have a pilot test before data collection.

There were three criteria for selection of the participants for this study. First, these participants had to be in mainland China. Second, these participants should attend church activities such as Sunday worship, Adult Sunday School, Bible reading group, prayer meeting, Sunday school teaching, fellowship, or choir. The reason for this was that the questionnaire was distributed to participants only after church activities. Third, these participants had to be at least 18 years old.

The questionnaire design and development is outlined in Chapter Tree, 3.3 Instrumentation. The questionnaire consisted of four parts: (a) various bioethical views, (b) Christian spiritual life, (c) Christian participation in church. There were six topics in the bioethical questions. One topic had five sub-questions. The questionnaire incorporated dichotomous questions, multiple-choice questions, and a five-point Likert scale. Participants took around 10 to 15 minutes to complete the questionnaire.

This questionnaire was developed in English initially, as shown in Appendix A. In order to have an accurate translation, the questionnaire was translated from English to Mandarin, as shown in Appendix B. The questionnaire was sent to two Chinese Christian native speaking professors who are in China, in order to verify and edit the meaning, language, and clarity of the questions. Furthermore, before data collection, the questionnaire was examined via a pilot test in order to have valid and reliable data.

The pilot test was conducted before questionnaire distribution. The result of the pilot test collected 96 participants within a four-week period (see 3.7 of Data Processing and Analysis of Chapter Three). Furthermore, the validity of the pilot test was shown by factor analysis.

The KMO of factor analysis showed all results were above 0.7. The reliability in the pilot test showed that the Cronbach's Alpha (α) were over 0.70. In other words, the questionnaire was a valid and reliable instrument to collect data for next step.

9.2 SUMMARY OF FINDINGS

The statistical analysis of this study consisted of (a) descriptive analysis, (b) correlation coefficient analysis, (c) regression analysis, and (d) path analysis as illustrated at 3.7 Data Processing and Analysis of Chapter Three. These statistical analyses applied from Chapter Four to Chapter Eight were based on the research framework design of each chapter.

The study collected 415 respondents in China and spent approximately 20 weeks. Regarding the demographic of respondents, the detailed presentation is shown in Appendix C from Table AC.1 to Table AC.8. At the same time, regarding data related to (a) Christian spiritual life, (b) Christian participation in church activities and services, and (c) Christian views about bioethics, these descriptive analyses are illustrated at 4.1 (Descriptive Statistics of Chapter Four).

Correlation coefficient analysis was used to measure the strength of correlation among all variables. As explained in section 4.2 (Correlation Coefficient Analysis of Chapter Four), these variables did not have a multicollinearity issue (see Table 4.4 through Table 4.7, Chapter Four).

Chapter Five examined the correlation between spiritual life of Christians and their participation in church activities and services via multiple regression analysis in terms of Figure 5.1. After multiple regression analysis, it was concluded that the spiritual life of Christians affects their participation in church activities and services based on Table 5.1 and 5.3.

Chapter Six examined the correlation between Christians' participation in activities and services and their bioethical views via multiple regression analysis in terms of Figure 6.1. After multiple regression analysis, on the one hand, it was concluded that Christians' participation in church activities and services affected their views about sex selection and cloning based on Table 6.2 and Table 6.5. On the other hand, Christians' participation in church services affected their views about PGD and savior siblings based on Table 6.3 and Table 6.4.

Chapter Seven examined the correlation between the spiritual life of Christians and their bioethical views via multiple regression analysis in terms of Figure 7.1. After multiple regression analysis, it was concluded that the spiritual life of Christians affects their views about IVF based on Table 7.1.

Chapter Eight examined the effect of Christians' participation in (a) church activities and (b) services on the correlation between (c) Christian spiritual life, and (d) their bioethical views via path analysis in terms of Figure 8.1. After path analysis, Table 8.3, Table 8.9, Table 8.15, Table 8.21, Table 8.27, and Table 8.33 of Chapter Eight showed that the relationship between the spiritual life of Christians and their views about bioethics was not mediated by their participation in church activities and services. However, these findings of Chapter Eight concluded that only Bible reading and prayer, representing the spiritual life of Christians, affected their participation in church activities and services. Furthermore, Table 8.3 indicated that the spiritual life of Christians also directly affected their views about IVF.

At the same time, this research added two new variables, (a) frequency of ethical teaching and (b) personal savior history (see section 8.5, Chapter Eight). This section adopted multiple regression modeling via SEM as shown at Figure 8.8. As shown in section 8.5.4, six results were found. These six results were compared with those of previous chapters Five through Seven.

First, Christians' participation in church activities and services affected their views on cloning and sex selection. Only participation in church services affected their views on PGD. Second, individual Bible reading and prayer behavior of Christians affected their views on IVF. Personal savior history also affected their views on IVF. Third, church service has a correlation with Bible reading, prayer, ethical teaching, personal savior history, and vice versa. Fourth, church activity has a correlation with church service, Bible reading, prayer, personal savior history, and vice versa. Fifth, Bible reading has a correlation with prayer, personal savior history, and vice versa. Sixth, personal savior history has a correlation with ethical teaching, and vice versa.

This research of Chapter Eight summarized two points about various bioethical views of Christians who are in mainland China at present. The first point is that the spiritual life of Christians affected their participation in church activities and services. Furthermore, the spiritual life of Christians directly affected their views about IVF. In contrast, Christians' participation in church activities and services directly affected their views about sex selection and cloning. The second point is that the personal savior history of Christians directly

affected their views about IVF. In addition, Christians' participation in church activities and services had a relationship with their personal savior history. At the same time, the frequency of ethical teaching in their church had a relationship with personal savior history. This means that Christian views about bioethical topics were affected by a variety of influences. These elements of influence were related to church activities, social activities, community services, etc.

However, because of the research limitations noted in section 3.5 Methodological Limitation (Chapter Five), this study limited the variables to (a) Bible reading, (b) prayer, (c) church activity, (d) church service, (e) personal savior history, and (f) frequency of ethical teaching. It was concluded that only views about IVF were affected by these variables. In contrast, each variable affected each of the other variables. The results for IVF clearly illustrate the cause and effect association with Christian spiritual life and church life. The Christians' views on sex selection were affected by their participation in church activity and service.

In conclusion, this study contributes to the description of Christian bioethical views in mainland China. On the one hand, pastors, ministers, leaders, or elders should encourage their church members to have frequent individual Bible reading and prayer, because frequent individual Bible reading and prayer is correlated with participation in church activities and services. On the other hand, Bible reading, prayer behavior, church activities, and church services affect views about various bioethical issues. However, this study indicates that Christians' participation in church activities and services did not have a significant effect on the bioethical views.

9.3 DISCUSSION

These influential factors can be divided into two groups that affected Christians in mainland Chinese society. There are external factors that exert their influence from outside of the church environment, and there are internal factors arising from inside the church environment. However, this study only examined influential factors from inside the church.

In general, although this study did not collect data regarding all social elements of influence, these social elements would be key factors affecting Christians' bioethical views. It was suggested above that Christians spend less time in church activities than in social activities. Engelhardt (2010) and Ho (2010) also indicated this situation.

For instance, one Christian may spend around four to six hours per week for participation in church activities and services, including individual personal Bible reading and prayer. In contrast, the Christian still has at least 40 to 50 hours per week in social activities (without 8 hours per day for working and sleeping). Based on this assumption, the degree of social influence is stronger than the degree of church influence. For this reason it is necessary to introduce some information about Chinese social backgrounds.

The relevant factors of the Chinese social environment are: (a) social development background, (b) One-child policy, and (c) government regulations and rules. Finally, (d) church environment also has been discussed.

9.3.1 Social development background

In regard to the social background of China in the past 20 to 30 years, the key events from the 1980s to the present are summarized below. These key events relate to policy, economy, society, health, and culture in China (Heiling, 2013).

- 1) 1979: Introduction of China's strict "One Child" family planning program at the provincial level, and in 1980 at the national level.
- 2) 1980: Special Economic Zones in ShenZhen, Zhuhai, Shantou, Xiamen, and the entire province of Hainan.
- 3) 1982: China's population surpasses one billion people.
- 4) 1986: Deng Xiaoping boosts "Open Door" policy to encourage foreign direct investments.
- 5) 1987: Kentucky Fried Chicken (KFC) comes to China and introduces the western style fast food to China.
- 6) 1988: First test-tube baby is born in China.
- 7) 1989 June: Crack down of Tiananmen Square demonstrations with military power.
- 8) 1991: First McDonald's restaurant opens in Beijing.
- 9) 1992: Deng Xiaoping accelerates market reforms to establish a "socialist market economy".

- 10) 1997 Feb: Death of Deng Xiaoping.
- 11) 1997 July: China gets control over Hong Kong's sovereignty.
- 12) 1999: China gets control over Macau's sovereignty.
- 13) 2001: Beijing is awarded the 2008 Olympic Games.
- 14) 2001 Nov: China becomes a member of the World Trade Organization.
- 15) 2001 Dec: The Standing Committee of the 9th National People's Congress adopts "Population and Family Planning Laws".
- 16) 2002 Nov: First case of SARS in Guangdong.
- 17) 2004 Dec: China has at least 94 million internet users.
- 18) 2005 June: China has at least 103 million internet users.
- 19) 2007 Dec: Internet users in China reach 210 million.
- 20) 2008 Sep: Sick toll in baby milk scandal rises to 13,000.
- 21) 2009 Feb: China makes largest investment in foreign company.
- 22) 2010 Mar: China has some 90 million diabetics.
- 23) 2011 Feb: China overtakes Japan as world's second-biggest economy.

Included in the timeline above are four major incidents in Chinese society. These are (a) socialist market economy, (b) SARS, (c) Tiananmen Square Crackdown of 1989 (also known as the June Fourth Incident), and (d) One-child policy. From these four main events it can be seen that China changed its economic system from socialism to capitalism, called socialist market economy, which affected China's social structure and environment. Politically, China is still controlled by one party. This means that the population does not yet enjoy a liberalization of religious policy such as that defined by Western countries.

Because of that, the Tiananmen Square Crackdown (CNN Library, 2015) happened in June 1989. This incident illustrated the conflict between socialism and capitalism. Specifically, the students demonstrated to show their concerns regarding the problems of inflation, limited

career prospects, corruption, freedom of the press, freedom of speech, et cetera. However, the government decided to utilize police and internal security forces to control this incident.

On the other hand, SARS (Severe Acute Respiratory Syndrome) began in the city of Foshan, a city southwest of Guangdong province of China on November 16, 2002 (Center for Disease Control and Prevention, 2013; World Health Organization, 2013). According Sandra Gonzales Gompf, MD, on the website of Medicinenet.com (2013), "SARS is an infection caused by a virus. It causes fever, cough, and other symptoms. SARS can also cause serious lung problems and even death." From November 1, 2002 to July 31, 2003, China had 349 deaths and Hong Kong had 299 deaths (World Health Organization, Dec 2013). The SARS had an impact and became a strong influence on the social life of Chinese at that time (Huang, 2013).

Specifically, as Huang (2013:para.2) described, after the Tiananmen crackdown in 1989,

The SARS epidemic was not simply a public health problem. Indeed, it caused the most severe socio-political crisis for the Chinese leadership since the 1989 Tiananmen crackdown. The outbreak of the disease fueled fears among economists that China's economy was headed for a serious downturn. A fatal period of hesitation regarding information-sharing and action spawned anxiety, panic, and rumor-mongering across the country and undermined the government's efforts to create a milder image of itself in the international arena.

The case of Tiananmen Square Crackdown and the outbreak of SARS show that Chinese people were terrified and not confident of their changing social and economic development at that period. Furthermore, during the period from the 1990s to 2000s, their social economic systems were reformed to the socialist market economic system. For instance, before the socialist market economy, all university graduates were assigned jobs either in the city or the countryside. However, since the socialist market economy, everyone has to find their own job. All Chinese people in that period experienced trepidation and helplessness, although the social situation has been reformed and the economy has developed rapidly. The One-child policy of China is another social phenomenon that illustrates China social background and current circumstances.

9.3.2 One-child Policy

The One-child policy was enforced by the Chinese government in 1979 at the provincial level and in 1980 at the national level (Heiling, 2013). The main purpose of the One-child policy in China was to reduce the growth rate of population and to control population numbers (Heiling, 2013; Pletcher, 2015; McKenzie, 2015; Cook, 1999). The background of the One-child policy was that Chinese people had around four children per family at that period. However, that period also had a food shortage. Therefore, the Chinese government utilized the restriction of the One-child policy to control the country's population growth, and to stabilize the living conditions, food and water supplies. However, the One-child policy allowed that ethnic minorities and those who lived in the countryside could have a second child if the first child was a girl or was disabled (Scutti, 2014). Recently, in January 2014, the China government indicated that it may allow some couples in some provinces to have a second child if either the father or mother was an only child themselves (McKenzie, 2015; Scutti, 2014; Phillips, 2015). Nevertheless, this policy is not practice yet (Scutti, 2014).

On the other hand, the One-child policy has caused some problems over three decades, for example, birth tourism (Torrent, 2013; Bezlova, 2009; Cook, 1999; Scutti, 2014). However, this study will consider three other problems: (a) the policy forces abortions and human rights violation; (b) it causes gender imbalance, and (c) it causes social problems.

First, the One-child policy in practice forces abortions and challenges human rights. The disadvantages of the One-child policy are many. However, the main problem is that it causes human rights abuses in China (Smith, 2014). According to a 1968 proclamation of the International Conference on Human Rights, "Parents have a basic human right to determine freely and responsibly the number and the spacing of their children" (Torrent, 2013:para.14). The One-child policy does not allow this right in China. Obviously, the One-child policy in China is in opposition to the 1968 proclamation on Human Rights.

The case of Feng Jianmei (Moore, 2012; Torrent, 2013; Scutti, 2014) illustrates the situation of forced abortion in China's society today. Although Feng had a seven-month pregnancy, the person in charge of local government still forced the abortion. The main reason was that Feng did not get approval from local government to have a second child. Torrent (2013:para.14) writes,

In 2002, China outlawed the use of physical force to make a woman submit to an abortion or sterilization, but it is not entirely enforced. In the execution of the policy, many local governments still demand abortions if the pregnancy violates local regulations, or even force abortions on women violating the policy, such as Feng Jianmei's case.

Furthermore, one report from Newsweek, named "One-child Policy is one big Problem for China", was from Scutti (2014). Scutti illustrated the problem of forced abortion because of Chinese traditional culture (Cheng, 2011). The culture issue illustrates the third point. In addition to the human rights issue, the forced abortion also directly causes a gender imbalance in China. Recently, according to the report from Phillips (2015), the Chinese government may release a "Two-child policy" instead of the "One-child policy". The Two-child policy would mean that all Chinese couples could have two children if either the father or mother was an only child themselves.

Second, regarding the gender imbalance, based on the report from Scutti (2014), the sex ratio at birth in China was (a) 106 boys to every 100 girls in 1979, (b) 111 boys to every 100 girls in 1990, (c) 121 boys to every 100 girls in 2005. The normal sex ratio is around 104 to 106 boys to every 100 girls. This means that Chinese traditional culture prefers boys rather than girls. This creates a gender imbalance in addition to sex selection abortion. Even if government regulations prohibit sex identification during prenatal screening (Cheng, 2011), pregnant women or their family still can find out the gender of the foetus in many ways (Payne, 2013). After that, they will abort their foetus if they do not want it (Payne, 2013; Smith, 2014). This problem generates the third point—other social problems.

Third, the One-child policy has caused a lot of social problems. The main two issues are (a) young adult men have less opportunity to get married because of the gender imbalance issue (Scutti, 20014), and (b) the social benefit issue (Torrent, 2013). For example, one phenomenon of family structure in China is called the "four-two-one problem". Four grandparents (4 adults) and parents (2 adults) look after one child. This means that if there is only one child of one family marriage, the couple has to support four retired people and their one child (Torrent, 2013; Bezlova, 2009). In China, this one child is called a "little emperor" (Torrent, 2013). At the same time, the One-child policy also causes government revenue problems. For instance, healthcare costs and social benefits for the older generation have been supported by the income tax paid by the younger generation.

In addition to the government revenue issue, the social problems also include a manpower issue for the country's economic development. Before 2011, China was a manufacturing center of the world. All manufacturing and industries need to have enough manpower to support them. After 2011, China was the second biggest economic country. This means that China needs more manpower to sustain its economic development.

In China, traditional culture is a significant influence on gender selection. Chinese people prefer boy children to girl children (Smith, 2014). In traditional social structure, boys hold the family name and support their parents in old age (Smith, 2014). Previously, China had no pensions, and there was inadequate social care. If a girl grew up, she married. This means that she joined her husband's family and looked after her parents-in-law, and contributed her financial support to her husband's household. In other words, "the roots of son-preference lie deep in Chinese culture" (Cheng, 2011: para.11).

9.3.3 Government regulations and rules

This point relates to Chinese government regulations and rules. The One-child policy manages each couple's allowance of one child through the birth certificate (Cook, 1999). The birth certificate entitles the couple to benefits, which include education costs, childcare, healthcare, employment rights, et cetera (Cook, 1999; Barot, 2012). In contrast, if a couple has more than one child, they are punished (Cook, 1999; Moore, 2014). The punishment includes (a) taxes of up to fifty percent of their income, (b) terminated employment, and (c) denial of other benefits as mentioned above (Cook, 1999). The terminated employment means that both adults may have lost their jobs. Before 1992, all people worked with government related organizations. Even today, if the couple is working with government related organizations such as policy department, or university, their job will be terminated. Furthermore, unplanned pregnancies without the official authorization have to lead to abortion unless they pay a fine (Cook, 1999).

In order to control the gender imbalance, the policy prohibits pregnant women from having sex identification during prenatal screening, including illegal foetal sex testing and sex-selective abortions (Cheng, 2011; Barot, 2012; Payne, 2013). Also, with the aim of increasing safeguards, the policy requires that two doctors are present at each ultrasound (Cheng, 2011). Furthermore, if hospitals or medical personnel breach government regulations, they risk having their medical licenses withdrawn (Cheng, 2011).

Besides the One-child policy, on the other hand, the China government made “The Population and Family Planning” law on September 1, 2002 (Hu, 2002). In order to reduce the fertility level of the population and the trend of over-rapid population growth, the China government considers population and family planning is an important component part of the strategy for China to manage its own national economic and social development (Hu, 2002).

During the communication between Zhao Bingli, vice minister of the State Family Planning Commission and Hu Huiting, a reporter of China.org.cn (Hu, 2002:para.11), Zhao explained that “China’s family planning policy is not the One-child policy... The government advocates each couple to have one child in accordance with the family planning policy.” Furthermore, Zhao summarized the objectives of the Population and Family Planning Laws (Hu, 2002:para.13):

- (a) To implement a social levy, the government will necessarily restrict those people who run counter to state laws and regulations and give birth to more children. These people who have to pay the levy add not only their own family’s difficulties, but also to overall social difficulties.
- (b) The Population and Family Planning law clearly stipulates that those citizens who give birth to more children than permitted by regulation will have to face the consequences of legally imposed economic penalties. This is mandatory.
- (c) Third is to protect and encourage those families which carry out family planning in agreement with the policy.

Since the Population and Family Planning Laws do not mention a Two-child policy to replace the One-child policy (Phillips, 2015), China maintains the One-child policy at the moment.

9.3.4 Church environment

The fourth relevant factor that has affected Christians in mainland Chinese society is the church environment, specifically, the frequency of ethical/bioethical teaching and the ethical training of pastors, missionaries, or full-time workers in the church. This study assumed two conditions. On the one hand, after a Christian has accepted Jesus Christ as personal savior, his/her pastor or minister should encourage him/her to attend church activities regularly. At the same time, the pastor or minister should stimulate him/her to start his/her personal spiritual life via daily individual Bible reading and prayer.

A pastor or minister of the church who has graduated from seminary training should have obtained a sufficient knowledge of ethical/bioethical issues. More specifically, bioethical knowledge is not just what the various bioethical topics are, but it also includes how to guide church members before they make a decision regarding a bioethical issue. Additionally, the pastor, minister, or leader(s) should give bioethical topics in worship, Bible reading group, fellowship, et cetera, and discuss these bioethical topics when they meet. This means that the pastor, minister, or leader(s) should undertake their responsibility or duty to develop each church member's spiritual life, to teach bioethical knowledge, and to provide consultation or counseling services.

Consequently, there are three points to debate and explore. Although these findings showed differentiation, the influential factors affected these six bioethical views of Christians. For instance, individual Bible reading and prayer behavior of Christians affected their views about IVF. In contrast, individual Bible reading and prayer behavior of Christians did not influence their views about other issues. Or, participation in church activities and services of Christians affected their views about sex selection and cloning. In contrast, participation in church activities and services of Christians affected their views about other issues. However, the results were limited to the research sample.

The demographics of the research sample are shown at Tables AC.1, AC.2, AC.3, AC.4, and AC.5 at Appendix C; these show the frequency distribution of the city of respondents, frequency distribution of the age of respondents, frequency distribution of the gender of respondents, frequency distribution of the baptism of respondents, and frequency distribution of the Christian member status of respondents, respectively. Furthermore, Table AC.6, Table AC.7, and Table AC.8 at Appendix C showed the frequency distribution of the personal savior history of respondents, frequency distribution of the ethical teaching in the respondents' churches, and frequency distribution of participation in the respondents' churches, respectively.

First, Table 9.1 shows the cross table between the age groups and personal savior history of the respondents. This group of people experienced the incidents mentioned above from 1979 to 2011. The major group tended to be the younger generation aged from 21 to 40. Furthermore, the personal savior history of this group is divided into two main ranges: (a) from three to six years and (b) above 10 years. This group of people experienced these four major incidents as illustrated at section 9.3.1 to 9.3.3. The changing social structure and economic developments in China have affected this group of Christians; specifically, the One-child policy affected their decision-making about Christian ethics, especially the abortion

issue. Furthermore, as illustrated above, social influence elements affected Christians' ethical attitudes, cognition and thought to a greater extent than the influence elements of their church. The reason is that Christians spend less time participating in church activities and services than they spend in social activities. Therefore, it is assumed that social influential factors are stronger than church influential factors because of the age and personal savior history of Christians.

Table 9.1: Personal Savior History of Christians Related to Age

Personal Savior History	Total					Total
	Below 20	21-30	31-40	41-50	Above 51	
Below 3 yr	5	41	16	15	5	82
3-6 yr	3	50	22	7	1	83
7-9 yr	2	36	24	16	8	86
Above 10 yr	4	53	51	35	15	158
N/A	0	2	2	2	0	6
Total	14	182	115	75	29	415

Second, In regard to the ethical teaching in churches, Table 8.22 revealed the frequency distribution of the ethical teaching in churches of the respondents. It was calculated that 55.54% of the total respondents answered “several times per year”, “less than once per month”, and “once a year or less”. This group of churches could be named “light ethical churches”. By contrast, a high frequency of ethical teaching was reported by 38.07% of the total respondents. This percentage combines answers of “once per week” and “once per month”. Thus, this group of churches may be called “heavy ethical churches”.

Likewise, Table 9.2 indicates the cross table between the frequency of ethical teaching in churches and the personal savior history of the respondents. Based on the definition of the “heavy ethical church” and “light ethical church”, respondents can be considered in two groups of churches. The pastor of a heavy ethical church will emphasize the frequency of ethical teaching. Conversely, the pastor of a light ethical church will give a reduced amount

of teaching on ethical topics in his church. However, the individual savior history of Christians did not show difference in either the heavy ethical church or light ethical church.

Table 9.2: Personal Savior History of Christians Related to Ethical Teaching Frequency

Personal Savior History	Ethical Teaching Frequency						Total
	One per wk	Once per mth	2 or 3 time per mth	Several times per yr	Less than one per mth	Once a yr or less than once	
Below 3 yr	27	12	8	14	10	11	82
3-6 yr	22	17	9	8	8	19	83
7-9 yr	16	17	4	14	6	29	86
Above 10 yr	29	18	6	37	16	52	158
N/A	0	0	1	0	1	4	6
Total	94	64	28	73	41	115	415

This study investigated views on the bioethical topics that were related to Chinese Christians. However, the data on the frequency of ethical teaching in church could not directly reflect the data which related to the study. The data illustrates the existing circumstances of ethical teaching in some mainland Chinese churches. Based on this presumption, the study still supposes the results as above. One group of Chinese churches emphasizes ethical teaching. During their ethical teaching, they may teach some topics about Christian bioethics. The other group of Chinese churches has less frequency of ethical teaching including Christian bioethics.

One result of this study illustrates this presupposition. Table 6.2 and Table 6.5 showed that when Christians attended church activities and were involved in church services, their attendance behavior affected their views about sex selection and cloning. In fact, they rejected sex selection and cloning. Otherwise, when Christians were involved only in service in their church, this service behavior affected their views about PGD and savior sibling. These findings point out that the problem depends on the frequency of ethical or bioethical teaching.

Lastly, this study adopted correlation analysis to investigate the relationships among age, personal savior history, and frequency of ethical teaching. Table 9.3 indicates that when personal savior history of Christians is longer, they also listen and learn more ethical teaching in church than young Christians (that is, those whose personal savior history is shorter). The age of Christians is related to their personal savior history too. The age of Christians is also related to the frequency of ethical teaching in church. But the age of Christians grows as well as their personal savior history, after they accept Jesus Christ as a personal savior. In other words, an older Christian is related to his/her personal savior history. When he/she has accepted Jesus Christ as personal savior, he/she learns about Christian ethics in church via different church activities. This presumption also confirmed by the findings at 8.5.4 (Findings Based on Results).

Table 9.3: Correlation Analysis of Age, Personal Savior History, and Frequency of Ethical Teaching

	Age	Personal Savior History	Ethical Teaching Frequency
Age	1	.179**	.137**
Personal Savior	.179**	1	.211**
Ethics Teaching	.137**	.211**	1

** . Correlation is significant at the 0.01 level (2-tailed).

To summarize from Table 9.1 to Table 9.3, the result of this study showed that (a) social and church influence factors affected the attitude, cognition and thought of Christians in relation to their views about bioethics, (b) social influence factors are stronger than church influence factors because of the time spent, and (c) attendance and service in various church activities affected Christian views about bioethics. Indeed, after a person has become a Christian, first, he/she has to attend different church activities in order to have a real Christian life and have fellowship with other Christians. Second, he/she should initiate his/her individual spiritual life with individual Bible reading and prayer. These are more important elements to improve or increase the degree of influence factors that affect Christian views about bioethical topics.

Regarding recommendations for future research, based on the findings of this research, there are two points. First, bioethical topics are not components of general knowledge for mainland Chinese Christian—they are new concepts, especially PGD, cloning, savior

siblings, and stem cell therapy. This means that they do not completely understand how to process information about these biomedical treatments although they may have some basic knowledge about them. Consequently, their attitudes, cognition, and thoughts about bioethics are limited. Therefore, future research should consider adopting a qualitative research method rather than a quantitative one. Furthermore, qualitative research can concentrate on a few people (one group of people) to develop a deep study of mainland Chinese Christians' bioethical decision-making processes. Second, future research should consider factors from outside of the church environment. For instance, Christians may get information or knowledge from communication media, newspapers, or doctors in order to make bioethical decisions. If future research includes factors from outside of the church, the research can compare these factors with those from inside of the church. This means that future research could examine which factors have a major influence, and whether they confirm this study's assumption.

9.4 CONCLUSION

Christians are living in multicultural and pluralistic social environments today (Stott, 2006). So as to respond to bioethical issues, on the one hand, Christians should comprehend the fundamental principles of bioethical issues (Henig, Faul, & Raffin, 2001). This means that a leader of a church, such as a pastor, missionary, deacon, or elder, must give more lectures or more discussions about Christian bioethical topics such as IVF and PGD in different church meetings or activities. On the other hand, Christians should experience growth in their spiritual life through Bible reading, prayer, and church living. The Scripture is, no doubt, the center of sources for bioethical decision-making, but it is read in the context of the church community. In actual fact, these two points have to relate to each other and influence each other.

First, in regard to the fundamental principles of bioethical issues, Ekeke (2011) has noted that there are seven principles that may function as guidelines for Christians. These seven principles are:

- 1) The principle of autonomy
- 2) The principle of beneficence
- 3) The principle of justice

- 4) The principle of nonmaleficence
- 5) The principle of moral code and moral justification
- 6) The principle of doctor-patient relationship
- 7) The principle of a virtuous character and moral integrity of the physician

These seven principles can be summarized in two fundamental points from the view of Christian theology. They relate to God's creation and God's sovereignty, which are related to each other. God's creation indicates that all things in the world have been created by God, including illness, infertility, et cetera. God's sovereignty is not affected by internal environmental factors. God's omnipotence is based on God's power to do what God wants. Furthermore, "all orders are under the final sovereignty of God" (Gill, 2006:629). This means that practical principles of Christian bioethics should include consideration of God's grace and promise to each Christian, as shown in Scripture. In other words, (a) God is the creator of human life (Genesis 1-2; Job 31:15; Psalm 139:13-16; Isaiah 44:24) and God wants human life to be protected (Genesis 9:6; Exodus 20:13; Proverbs 6:16-17); (b) God's sovereignty indicates that he is the Lord of human life (Exodus 20:2).

Second, in regard to the spiritual life of Christians, Bible reading and prayer are two-way communication channels between God and Christians. Bible reading is communication of God to Christians. Scripture contains the critical standards and guidelines to show how to live with Jesus. Furthermore, Scripture is the center for Christian bioethics, revealing God's creation and sovereignty. God shows in Scripture that he leads by his Spirit, through fellowship in the community and encouragement of each other in Christ. Of course, there is no simple way to get God's answer directly or immediately. Sometimes a Christian has to wait or show willingness to obey God's answer, and bioethical problems are usually complex. Furthermore, not all biomedical treatment or bioethical issues directly demonstrate an answer from Scripture.

In contrast to Bible reading, prayer is the communication channel that Christians use to talk with God about their problems, what they want and need. This means prayer is a way to keep a Christian's relationship with God. Through prayer a Christian is reminded that all problems are under God's hand, and prayer leads Christians to understand God. Without Bible reading and prayer, Christians still have to wait or accept the Spirit's direction via the Bible, where God has revealed his ethical wisdom. Bioethical problems may be new for

Christians today, but God has promised through the Holy Spirit to lead us to the truth that we need to be faithful to his will (John 14:15-17). Our prayer for the direction of the Spirit stems from an acknowledgment that God's wisdom is vastly superior to our own (Proverbs 3:5, 6; 1 Corinthians 3:18-20) (Winslow, s.a., 407). Accordingly, as Winslow (s.a., 407) explains,

The Bible tells us that the essential values and principles for our moral lives are unified in love. Jesus makes love for God and love for persons the essential foundation of ethics (Matthew 22:34-40). Paul affirms this as well: "The one who loves another has fulfilled the law... Love does no wrong to a neighbor; therefore, love is the fulfilling of the law" (Romans 13:8-10, NRSV).

Finally, on the one hand, biblical learning via one's own reading or through a pastor, minister, or the leader(s) of a church is basic. Christians should be secure in their faith and belief in terms of Scripture, but they are also confronted by new bioethical challenges because of the development of biotechnology. Scripture, community life and Christian faith are important because they claim to describe the way things are (McGrath, 2011:66).

On the other hand, Christians also should have confidence in God's sovereignty (McGrath, 2011). God controls all things in the world, whether they are bioethical topics or biomedical treatments. However, Christians are human beings. Sometimes, there is a weakness of faith and belief. As Romans 7:18 says, "For I know that good itself does not dwell in me, that is, in my sinful nature. For I have the desire to do what is good, but I cannot carry it out." This is a conflict that confronts Christians today, since Christians are on a journey of spiritual life. However, the objective of Christians is to glorify God.

Furthermore, the findings of this study are consistent with John W. Crossin's description in his book named *Walking in virtue: Moral decisions and spiritual growth in daily life*. Crossin (1998:4) says that "The Spirit inspires us to apply Jesus' teaching in practical ways in our everyday lives" to illustrate the relationship between moral decision-making in daily life and Christian spiritual growth. From an American Catholic standpoint, Crossin (1998:2, 7, 19) describes the relationship as below:

For the Christian, the standard is Jesus Christ and his teaching. We seek to live our lives in his Spirit and with his help. Thus we begin our work with some reflections on role of the Holy Spirit in our spiritual lives... The Spirit also guides

us in our ordinary, everyday actions. Jesus promised to be with us always, through his Spirit. All of our actions, even if seemingly insignificant, can be done under the Spirit's power. The Holy Spirit accepts our daily actions, performed in loving obedience to God's will, and makes us holy through them... Christians believe that the coming of Christ restored human dignity. Jesus' life, richly portrayed in the Scriptures, shows us the fullness of what it means to be human while he redeems us from our slavery to original and person sin. The Holy Spirit, sent by Jesus, enables us to live out the fullness of our spiritual gifts.

Crossin (1998) highlights three main components that reflect Christian spiritual growth and wisdom of ethical decision-making. These are (a) the study of Scripture and prayer, (b) interactions in community, and (c) Church. These are related to Christian ethical decision-making (Crossin, 1998). This means that Christians should know how to live in the Spirit and grow their spiritual life. The Spirit inspires us to apply Jesus' teaching in practical ways in our everyday lives (Crossin, 1994:4). The Spirit will guide us in our daily life and action via Scripture studying and prayer, because God speaks to us through Scripture.

Therefore, Crossin (1998:10) concludes, "The Spirit-inspired word of the Bible is a privileged source of divine communication." Besides studying the Scripture, prayer is important to understand God. "In prayer, the Scriptures speak to our entire being. At times, they speak to us very personally" (Crossin, 1998:17), because prayer is a relationship of conversation with God. Crossin (1998:46) also says that "As Christians we come to the virtuous life through our life of prayer. Prayer is ongoing and propels us out of ourselves to other... Our life of prayer influences our decision."

Without individual Bible studying and prayer, community and church are places to grow personal spiritual life (Crossin, 1998). First, the family is the basic community for Christians to grow their spiritual life in a loving environment. In this family community, parents will do their best to carefully teach self-discipline and self-restraint. Moreover, parents should take a responsibility to educate. Second, the small group is one of major influences on spiritual life in the Christian community, because every member may experience emotional support according to their needs. The small group is a place where every member can share individual faith and experience, pray together, and get support from others, in order to encourage each other. Third, attendance in church activities is essential for Christians. Furthermore, God calls us to serve others in Church. Crossin (1998:34-35) writes that

“membership in the church community is not just optional for faith – it is essential. Not only does the church follow the Holy Spirit and reverence the Scriptures, but it provides the preeminent place where the spiritual life is lived.”

Christians should not only have a daily spiritual life (studying Scripture and praying), but also participate in Church to serve others. When Christian spiritual life is more mature, they should have wisdom to handle ethical issues and make ethical decisions through (a) discerning God and (b) the authority of the Holy Spirit. The discerning of God indicates that “The Christian spiritual tradition, drawing on the teachings of the saints, provides us with some guidance in these matters of choosing between good courses of action” (Crossin, 1998:67). The authority in the Holy Spirit designates that “Christians receive the Spirit in Baptism. They live the life of the Spirit, however imperfectly; they seek the guidance of the Spirit in decision making” (Crossin, 1998:67).

In conclusion, this chapter adopted one statement from Alister E. McGath (2006) provides a fitting summary for this study of the bioethical views and spiritual life among mainland Chinese Christians:

It is an expression of a responsible and caring faith, a faith prepared to give an account of itself and to give careful consideration to its implications for the way we live. To care about doctrine is to care about the reliability of foundations of the Christian life... Christian doctrine is what sets Christian ethics apart from the ethics of the world around us. It defines what is distinctive, what is Christian, about Christian ethics (2006:150, 145)

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APPENDICES

APPENDIX A:

BIOETHICAL QUESTIONNAIRE (ENGLISH VERSION)

Bioethical Questionnaire

This questionnaire concerns bioethical topics for an academic research project. The questions do not have standard answers. Please give an answer according to your own thinking, opinion, or attitude. The information you provide will be kept strictly confidential and will not be used for individual presentation.

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There are six topics related to bioethics. Each provides several related attitude statements. Please select the statement that best represents your attitude and opinion, and tick (✓) in the box. For example, if you "strongly agree" to the statements, please tick (✓) in the "strongly agree" box at the far right of the table.

1. In Vitro Fertilization:

In vitro fertilization, also known as artificial insemination, involves collection of female ovum germ cells and the male sperm, and the zygotes are produced by in vitro fertilization in artificial conditions. The fertilized zygote forms an embryo which is cultured for 2-6 days in a test tube, and then implanted back into the mother. We cannot currently culture in vitro embryos to full term infants. The IVF babies created by this technique are called test-tube babies.

IVF	Strongly disagree (1)	Do not agree (2)	Neutrality (3)	Agree (4)	Strongly agree (5)
I know what In Vitro Fertilization is.					
I am firmly opposed In Vitro Fertilization.					
If I know my family and relatives want to do In Vitro Fertilization, I would highly discourage them.					
If I know my friends and colleagues want to do In Vitro Fertilization, I would highly discourage them.					
If I know my neighbors want to do In Vitro Fertilization, I would highly discourage them.					

2. Sex Selection:

Sex selection is sometimes done to ensure "family balancing." Modern science and technology can provide various techniques for gender selection before the implantation of the embryo and after implanting. Before artificial insemination, sex selection can be attempted by a sperm-sorting method or a genetic diagnosis program; after embryo implantation, a foetus with "inappropriate" gender may be aborted, or the baby may be killed during childbirth or abandoned after birth.

Sex Selection	Strongly disagree (1)	Do not agree (2)	Neutrality (3)	Agree (4)	Strongly agree (5)
I know what sex selection is.					
I am firmly opposed to sex selection.					
If I know my family and relatives want to do sex selection, I would highly discourage them.					
If I know my friends and colleagues want to do sex selection, I would highly discourage them.					
If I know my neighbors want to do sex selection, I would highly discourage them.					

3. Pre-Implantation Genetic diagnosis (PGD) and Selection of Embryos:

DNA diagnostics, also known as gene diagnosis, by means of molecular biology and molecular genetics techniques, can test embryos for specific genetic disorders. Because genetic diseases are caused by a single defective gene, if the embryo has the defective gene, the baby may develop abnormally or experience early death, and so bring immense suffering to the family. Through genetic diagnosis techniques of embryo selection a baby can be “customized” to not carry the abnormal gene.

PGD and Selection of Embryos	Strongly disagree (1)	Do not agree (2)	Neutrality (3)	Agree (4)	Strongly agree (5)
I know what PGD and Selection of Embryos is.					
I am firmly opposed to PGD and Selection of Embryos.					
If I know my family and relatives want to do PGD and Selection of Embryos, I would highly discourage them.					
If I know my friends and colleagues want to do PGD and Selection of Embryos, I would highly discourage them.					
If I know my neighbors to do PGD and Selection of Embryos, I would highly discourage them.					

4. Savior Sibling

A person who is suffering a fatal disease can sometimes be cured by transplantation of organs or cells from a sibling. Parents may choose to have a child so that an organ or cell transplant from it can be provided to its brothers or sisters under the advice of the doctor. This child is referred to as a Savior Sibling. Savior Sibling is mostly used as a reproductive IVF technique to save lives.

Savior Sibling	Strongly disagree (1)	Do not agree (2)	Neutrality (3)	Agree (4)	Strongly agree (5)
I know what Savior Sibling is.					
I strongly oppose the Savior Sibling.					
If I know family and relatives want to do Savior Sibling, I would highly discourage them.					
If I know my friends and colleagues					

want to do Savior Sibling, I would highly discourage them.					
If I know my neighbors to do Savior Sibling, I would highly discourage them.					

5. Cloning:

Cloning in a broad sense refers to the use of biotechnology to produce a new organism by asexual reproduction. Cloning an organism means creating a new organism with exactly the same genetic information as the original organism.

Cloning	Strongly disagree (1)	Do not agree (2)	Neutrality (3)	Agree (4)	Strongly agree (5)
I know what cloning is.					
I am firmly opposed to cloning.					
If I know my family and relatives want to do cloning, I would highly discourage them.					
If I know my friends and colleagues want to do cloning, I would highly discourage them.					
If I know my neighbors want to do cloning, I would highly discourage them.					

6. Stem Cell Therapy:

Stem cells are cells which form a variety of tissues and organs of the body. They are able to self-replicate and have the potential to differentiate. Stem cell therapy is a method of extracting and isolating the bone marrow stem cells of patients and transplanting them into the patient's body for the purpose of repairing diseased cells or rebuilding the normal cells and tissues.

Stem Cell Therapy	Strongly disagree (1)	Do not agree (2)	Neutrality (3)	Agree (4)	Strongly agree (5)
I know what Stem Cell Therapy is.					
I am firmly opposed to Stem Cell Therapy.					
If I know my family and relatives want to do Stem Cell Therapy, I would highly discourage them.					
If I know my friends and colleagues want to do Stem Cell Therapy, I would highly discourage them.					
If I know my neighbors to do Stem Cell Therapy, I would highly discourage them.					

Please select the most representative answer for your current situation, and tick (✓) in the box.

10. Your participation in church activities:

Attendance	Bible Study / Bible Group / Fellowship	Prayer Meeting	Sunday Worship	Adult Sunday School
Once a week				
three or four times a month				
Non-participation				

11. Your personal spiritual life:

	Bible Reading	Prayer
At least once per day		
Few times per week		
At least once per week		
At least once per month		
Not applicable		

12. How often does your pastor teach Christian ethics in your church (whether in Sunday worship, Bible study, small groups, fellowship, etc.)?

- ☐ Once per week
☐ Once per month
☐ Two or three times per month
☐ Several times per year
☐ Less than once per month
☐ Once per year or less than once

13. How long is it since you accepted Christ as your personal savior?

- ☐ Less than 3 years ☐ 7- 9 years ☐ N/A
☐ 3 - 6 years ☐ Above 10 years

14. Baptism : ☐ Adult Baptized ☐ Infant Baptized ☐ N/A

15. Please tick your participation in church services:

- ☐ Bible studying/Bible group/Fellowship/Sunday/Prayer meeting
☐ Choir, entertainment/new personal care worker
☐ Worship ministry and related tasks
☐ Other:
☐ N/A

16. Please select your situation:

☐ Full-time worker ☐ Deacons/Elders ☐ Laity

17. Gender: ☐ Male ☐ Female

18. Age:

☐ Below 20

☐ 21 – 30

☐ 31 – 40

☐ 41 – 50

☐ Above 51

APPENDIX B:

BIOETHICAL QUESTIONNAIRE (MANDARIN VERSION)

基督教生物伦理问卷

您好！感谢您填答这份问卷。这是一份关于基督教伦理和生物伦理相关问题的学术研究问卷，问卷采用不记名方式填写且仅供学术研究使用。所有问题没有标准答案，请依实情填答即可。您所填答的资料将被严格保密，绝不会用作个别展示或发表，请放心作答。在此由衷感谢您的协助！

黄旺明

西北大学（南非）和格林尼治神学院（英国）

以下有六个有关基督教伦理和生物伦理的议题及相关的态度表述，请您在五种类别中选取最能代表您所持态度的类别，在方框内打勾。例如：如果您“非常同意”该表述。请在最右边的“非常同意”处打勾（√）：

1. 人工受精：

人工受精又称体外人工受精，是将卵子与精子取出，在人为操作下进行体外受精，受精卵在试管中培养2-

6天形成胚胎后，再将其植回母体内。以目前的技术，尚无法在体外将胚胎培养至足月。利用这种体外受精技术生产出来的婴儿被称为试管婴儿。

人工受精	非常不同意(1)	不同意(2)	没意见(3)	同意(4)	非常同意(5)
我很清楚什么是体外人工受精					
我坚决反对体外人工受精					
若我知道我的家人、亲戚等想要体外人工受精，我会极力劝阻					
若我知道我的朋友、同事等想要体外人工受精，我会极力劝阻					
若我知道我的左邻右舍想要体外人工受精，我会极力劝阻					

2. 克隆：

克隆在广义上是指利用生物技术由无性生殖产生与原个体有完全相同基因组之后代的过程。克隆一个生物体意味着创造一个与原先的生物体具有完全一样的遗传信息的新生物体。

克隆	非常不同意(1)	不同意(2)	没意见(3)	同意(4)	非常同意(5)
我很清楚什么是克隆					
我坚决反对克隆					
若我知道我的家人、亲戚等想要去克隆，我会极力劝阻					
若我知道我的朋友、同事等想要去克隆，					

我会极力劝阻					
若我知道我的左邻右舍想去克隆，我会极力劝阻					

3. 性别选择:

性别选择的普遍是为了确保“家族平衡”。现代科学技术可满足在胚胎植入前，胚胎植入后，或分娩时三个时间段进行婴孩性别选择。在胚胎植入前可通过精子分类和遗传诊断两个方案进行人工受精；胚胎植入后可将性别不合适的婴儿进行人工流产；而分娩时则可杀害或摒弃婴孩。

性别选择	非常不同意(1)	不同意(2)	沒意見(3)	同意(4)	非常同意(5)
我很清楚什么是性别选择					
我坚决反对性别选择					
若我知道我的家人、亲戚等想进行性别选择，我会极力劝阻					
若我知道我的朋友、同事等想进行性别选择，我会极力劝阻					
若我知道我的左邻右舍想进行性别选择，我会极力劝阻					

4. 基因诊断和胚胎选择:

基因诊断又称DNA诊断，是指通过分子生物学和分子遗传学的技术，直接检测出分子结构水平和表达水平是否异常，从而对疾病做出判断。由于遗传疾病是由单一缺陷基因引起的，若胚胎拥有家族中运行的缺陷基因，婴儿就会确定发病，通常会早夭，给家庭带来巨大的痛苦。因此，可通过基因诊断技术进行胚胎选择，“定制”不带有异常基因的宝宝。

基因诊断和胚胎选择	非常不同意(1)	不同意(2)	沒意見(3)	同意(4)	非常同意(5)
我很清楚什么是基因诊断和胚胎选择					
我坚决反对基因诊断和胚胎选择					
若我知道我的家人、亲戚等想进行基因诊断和胚胎选择，我会极力劝阻					
若我知道我的朋友、同事等想进行基因诊断和胚胎选择，我会极力劝阻					
若我知道我的左邻右舍想进行基因诊断和胚胎选择，我会极力劝阻					

5. 救命手足:

家庭中有患有致命疾病并且通过移植能够痊愈的孩子，父母在医生建议下再生育孩子为其兄弟/姐妹提供器官或细胞移植。此孩子被称为救命手足。救命手足多运用试管婴儿生殖技术获得。该技术通过基因匹配和检测试验选择出与患病一方完全匹配且不携带疾病因子的受精卵植入母体。

救命手足	非常不同意(1)	不同意(2)	沒意見(3)	同意(4)	非常同意(5)
我很清楚什么是救命手足					
我坚决反对救命手足					

若我知道我的家人、亲戚等想要去救命手足，我会极力劝阻					
若我知道我的朋友、同事等想要去救命手足，我会极力劝阻					
若我知道我的左邻右舍想去救命手足，我会极力劝阻					

6. 干细胞疗法:

干细胞是形成人体各种组织器官的原始细胞并具有自我复制和多向分化潜能。干细胞疗法通过细胞生物学方法提取出患者骨髓中的干细胞，经过体外分离再将其移植入患者体内，从而达到修复病变细胞或重建功能正常的细胞和组织的目的。

干细胞疗法	非常不同意(1)	不同意(2)	没意见(3)	同意(4)	非常同意(5)
我很清楚什么是干细胞疗法					
我坚决反对干细胞疗法					
若我知道我的家人、亲戚等想要进行干细胞疗法，我会极力劝阻					
若我知道我的朋友、同事等想要进行干细胞疗法，我会极力劝阻					
若我知道我的左邻右舍想要进行干细胞疗法，我会极力劝阻					

请您在以下的议题中选取最能代表您的目前的实情，在方框内打勾(√)。

10. 参加教会活动:

出席次数	查经班/小组/团契	祷告会	主日崇拜	(成人)主日学
每周一次				
每月三、四次				
没有参加				

11.

在您的教会(不论在主日崇拜、查经班、小组、团契等)中,牧者会有关于基督教伦理方教导频数是:

- ☐每周好几次 ☐每月两三次 ☐每年好几次
☐大约每周一次 ☐大约每月一次 ☐每年一次或不到一次
☐每月不到一次

12. 您个人的灵命生活:

	祷告	读经
每天至少一次		
每天好几次		
每周好几次		
每月两三次		
没有灵命生活		

13.您接受基督为个人救主的年数：☐ 3年以下 ☐ 3-6年 ☐ 7-9年 ☐ 10年以上
☐ 未接受

14. 您的年龄：☐ 20岁以下 ☐ 21-30岁 ☐ 31-40岁 ☐ 41-50岁 ☐ 51岁以上

15.您的受洗情况：☐ 小洗(嬰孩洗) ☐ 成洗(成人洗) ☐ 未受洗

16.若您有负责、参与教会事奉的话，请写您出参与事奉项目：

☐ 查经班/小组/团契/主日学/祷告会 ☐ 沒有参与教会事奉

☐ 詩班/招待/关心新人事工

☐ 崇拜事奉的人员等

☐ 其他：_____

17.请选择适合您实际信仰情况的选项：☐ 全职同工 ☐ 执事、长老 ☐ 平信徒

18.性别：☐ 男 ☐ 女

APPENDIX C:

DESCRIPTIVE STATISTICS OF RESPONDENTS

Table AC.1 Frequency Distribution of the City of Respondents

	Frequency	Percent
Beijing	94	22.65
Shantou	127	30.60
Guangzhou	27	6.51
Wenzhou	27	6.51
Shenzhen	10	2.41
Xiamen & Fuzhou	21	5.06
Shanghai	18	4.34
Other	75	18.07
Xian	16	3.86
Total	415	100.0

Table AC.2 Frequency Distribution of the Age of Respondents

	Frequency	Percent
Below 20	14	3.37
21-30	182	43.86
31-40	115	27.71
41-50	75	18.07
Above 51	29	6.99
Total	415	100.0

Table AC.3 Frequency Distribution of the Gender of Respondents

	Frequency	Percent
Male	140	33.73
Female	275	66.27
Total	415	100.00

Table AC.4 Frequency Distribution of the Baptism of Respondents

	Frequency	Percent
Adult Baptized	15	3.61
Infant Baptized	345	83.13
N/A	55	13.25
Total	415	100.00

Table AC.5 Frequency Distribution of the Christian Member Status of Respondents

	Frequency	Percent
Full time workers	76	18.31
Deacons, Elders	44	10.60
Laity	295	71.09
Total	415	100.00

Table AC.6 Frequency Distribution of the Personal Savior History of Respondents

Personal savior	Frequency	Percent
N/A	6	1.4
Below 3 yrs	82	19.8
3-6 yrs	83	20.0
7-9 yrs	86	20.7
Above 10 yrs	158	38.1
Total	415	100.0

Table AC.7 Frequency Distribution of the Ethical Teaching in Churches of Respondents

Ethical Teaching	Frequency	Percent
Once per week	94	22.65
Once per month	64	15.42
Two or three times per month	28	6.75
Several times per year	73	17.59
Less than once per month	41	9.88
Once a year or less than once	115	27.71
Total	415	100.00

Table AC.8 Frequency Distribution of the participation in Churches of Respondents

	Frequency	Percent
N/A	116	27.95
One service	186	44.82
Two services	90	21.69
Three and above services	23	5.54
Total	415	100.00