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entitled

An Examination of Emergency Contraception use by Undergraduate College Students in the Midwest using the Integrated Behavioral Model

by

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Submitted to the Graduate Faculty as partial fulfillment of the requirements for the

Doctor of Philosophy Degree in Health Education

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An Abstract of

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The purpose of this study was to determine the factors that influence undergraduate college student use of emergency contraception as well as their level of knowledge and prevalence of using EC. Understanding the factors that influence college student use of emergency contraception will inform development of intervention programs designed to increase its use, which may lead to lower rates of unintended/unplanned pregnancies in this population. Students at the 11 Midwestern institutions of the Mid-American Conference were surveyed with the help of faculty at each school. A total of 1,553 surveys were completed with a response rate of 98.4%.

A small majority of students (63.5%) were female, white (75.3%) and age 18-21 years (80%). Students ranged from freshmen (23.8%) through seniors (13.8%), with sophomores as the largest group (32.6%). The majority were heterosexual (92.1%); not currently in a relationship (44.6%), with 34.1% were in a committed relationship. Participants reported having had sexual intercourse at least once in their lifetime (78.9%) with 8.4% of sexually active students having experienced an unintended/unplanned pregnancy. Students who have used emergency contraception in the last 12 months made up 18.1% of the students who also reported having had sexual intercourse at least once.
Knowledge of emergency contraception was not high in this group. Knowledge was compared to emergency contraceptive use. As knowledge increased, use of EC increased; as use of EC increased. The Integrated Behavioral Model was used to investigate intention to use emergency contraception and predicted 50% of the variance in intention to use emergency contraceptives. Each construct contributed a portion of variance and could be used in any future interventions to increase its use and decrease unintended/unplanned pregnancies for college students.
This dissertation is dedicated to my late sister, Donna Kruse Tischer, who would have whole-heartedly approved my topic; and my late father, Richard H. Kruse, who would have been pleased that his daughter worked for her doctoral degree.
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Special thanks go to the faculty at each of the 10 Mid-American Conference schools who made it possible for me to collect my survey data.

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List of Abbreviations

DPN ......................Descriptive Norm
EA ......................Experiential Attitude
EC ......................Emergency Contraception
I .........................Intention
IA ......................Instrumental Attitude
IBM ......................Integrated Behavioral Model
IPN ......................Injunctive Norm
MAC ......................Mid-American Conference
PC ......................Perceived Control
SE ......................Self-Efficacy
List of Symbols

$\chi^2$ ...... Chi Square
$\bar{x}$ ...... sample mean
s ...... standard deviation
Chapter One

Introduction to Emergency Contraception

Chapter one provides an introduction to the topic of emergency contraception (EC) and why college students should avail themselves of this mechanism for preventing unintended/unplanned pregnancies. A brief discussion of sexual activity in and birth control practices of college age men and women in the United States will begin the chapter. This discussion is followed by a review of unintentional/unplanned pregnancies in the United States, and college-age women in particular, with prevalence rates of emergency contraceptive use by college students. An introduction to emergency contraception is presented and will include its mechanism of action and the criteria for its use. This chapter concludes with a Statement of the Problem, Purpose of the Study, Research Questions and Hypotheses, Definition of Terms, Delimitations of the Study, and Limitations of the Study.

Unintended/Unplanned Prenancies in the United States and in College Women in the United States

The majority of unintended/unplanned pregnancies in the United States occur in women 29 years old or younger (The National Campaign to Prevent Teen and Unplanned Pregnancy, 2006). Approximately three million pregnancies each year are not planned, with non-married women comprising one third of these (The National Campaign to Prevent Teen and Unplanned Pregnancy, 2006). The American College Health Association (ACHA) reports that 1.5% ($n=1,436$) of the 95,712 students who completed the National College Health Assessment survey in 2010 had experienced an unintentional/unplanned pregnancy (either they or their partner got pregnant) within the
past 12 months (American College Health Association, 2010). The 2009 ACHA report, which surveyed 34,208 students, revealed that 4% \((n=1,368)\) of students who were sexually active in the past year had either become pregnant themselves or gotten their partner pregnant (American College Health Association, 2009). The most recent ACHA/NCHA report reveals a slight increase from 1.5% to 1.8% of the 27,774 students surveyed reporting an unintended/unplanned pregnancy in 2011 (American College Health Association, 2012b).

**Consequences of Unintended/Unplanned Births in College-Age Women in the United States**

One of the issues with unintended/unplanned pregnancies in this age group is that 50% end in abortion (The National Campaign to Prevent Teen and Unplanned Pregnancy, n.d.). Fifty-percent means approximately 250 terminated pregnancies occurred in the group of students who completed the National College Health Assessment survey in 2011. It also means that of the students attending the Mid-American Conference schools being surveyed for this study, approximately 2,000 pregnancies were terminated each year. Many of these pregnancies could have been avoided if emergency contraceptives had been utilized. For the students who choose to continue their pregnancies, the young mothers and fathers are more likely to experience depression, live in poverty, and are less likely to complete their college educations or pursue their careers (The National Campaign to Prevent Teen and Unplanned Pregnancy, n.d.). The fathers of these unintended/unplanned children are likely to be absent from their lives; and the children are more likely to experience health and school problems (The National Campaign to Prevent Teen and Unplanned Pregnancy, n.d.).
Sexual Activity and Birth Control Practices in College Age Men and Women in the United States

A 2009 national survey by the American College Health Association (ACHA) reveals that 46.5% of college students reported having had vaginal intercourse in the past 30 days (American College Health Association, 2009). Of these sexually active students, 51.6% reported using a barrier method or condom when engaging in vaginal intercourse. A total of 52.4% of students disclosed using some form of contraception during the last occurrence of vaginal intercourse (American College Health Association, 2009). The three most frequently noted forms of contraception were male condoms at 61.8%, followed by birth control pills at 58.7% and withdrawal at 26.1% (American College Health Association, 2009), indicating that some students use more than one form of contraception. The most recent ACHA/NCHA survey indicates a slight decrease in vaginal intercourse (44.9%), a slight increase in a barrier form of protection (52.8%), and a slight decrease in the use of some method of birth control (51.8%) in 2011 (American College Health Association, 2012b). This slight decrease in the use of birth control could be accounted for by the belief by many college students that condoms are not a form of birth control; consequently they would not report using birth control. The top three forms of birth control have remained the same, with a slight increase in use during 2011, with male condoms at 63.2%, birth control pills at 61.8% and withdrawal method at 29% (American College Health Association, 2012b). Although slightly more than half of the sexually active students report using some type of birth control, clearly a large percentage of sexually active students (48.2%) are not using contraception at all.
Emergency Contraceptive (EC) Utilization by College-Age Women and Men in the United States

In 2010 the American College Health Association (ACHA) reported that 11.3% of the 99,170 male and female students who completed the National College Health Assessment survey had used emergency contraception (American College Health Association, 2010). In 2009, 13.4% of male and female students reported using emergency contraception (American College Health Association, 2009). Within this group of students, 11,206 possible pregnancies were averted because students used an alternative to regular birth control, i.e., emergency contraceptives. By 2011, emergency contraception use in college students had increased to 16.3% (American College Health Association, 2012b). An additional 31.1% had no need to use emergency contraception at the time the survey was completed because they had not had vaginal intercourse in the last 12 months (American College Health Association, 2010). The percentage of students reporting never having vaginal intercourse increased to 36.3% in 2011 (American College Health Association, 2012b). Nevertheless, abstinence prior to taking this survey does not guarantee these students will not become sexually active and need emergency contraceptives in the future.

Introduction to Emergency Contraception

Emergency contraception (EC) is the use of medication to prevent pregnancy after an episode of sexual intercourse when no contraception was used or the chosen method of contraception failed (American College Health Association, 2010; Haynes, 2007; Schein, 1999). In 1997 the Federal Food and Drug Administration (FDA) declared that combinations of oral contraceptives could be used to prevent pregnancy after intercourse
had already occurred (Barot, 2010). Several months later, the Office of Population Affairs (OPA), part of the Department of Health and Human Services, released recommendations that Title X Family Planning programs should make emergency contraception available (Barot, 2010). By 1999, the FDA approved Plan B® for use in the United States (The Henry J Kaiser Family Foundation, 2010). Plan B® became available over-the-counter in 2006 (AHC Media LLC, 2007).

Emergency contraception may be necessary when a couple does not take the appropriate steps prior to intercourse to prevent pregnancy. Emergency contraception may be required when contraception is not available at the time intercourse occurs, or if a couple was not planning beforehand to have intercourse. EC may be warranted if either partner was under the influence of alcohol or other substance that impaired his or her ability to make a rational decision to use contraception. If a chosen method of birth control fails, such as condom breakage or the woman forgets to take her birth control pill appropriately, or takes it at the wrong time (The American College of Obstetricians and Gynecologists, 2010) then EC may be necessary to prevent an unintended/unplanned pregnancy. When a woman is sexually assaulted and she is not using birth control or the perpetrator did not use a condom, this situation would be an appropriate time to use EC.

Mechanism of Action of Emergency Contraception

A majority of male and female students surveyed at a university in the southern United States (87.6%) reported confusion about EC related to RU-486 or abortion pills (Corbett, Mitchell, Taylor, & Kemppainen, 2006). It is important to clarify the differences between these two types of medication to reduce the misconceptions held by women who want to prevent pregnancy. Mifepristone (or RU-486) is the abortion pill; it
is not the emergency contraception pill. It works by terminating a pregnancy that already exists.

Emergency contraception, sometimes referred to as the morning after pill (Demers, 1971), or Plan B®, Ella®, or NextChoice®, works by preventing pregnancy from occurring in the same way that current birth control pills work (Breckenridge & Gould, 2003; Grimes & Raymond, 2002). More specifically, two mechanisms of action have been shown to lead to pregnancy prevention with EC. These are inhibition of ovulation and interference with the ability of the ovum to become fertilized, if ovulation has already occurred (American College Health Association, 2010; Breckenridge & Gould, 2003; Croxatto, 2003; Grimes & Raymond, 2002; V. W. Y. Leung, Levine, & Soon, 2010; Robinson, 2010; Trussell, 2010; Trussell & Guthrie, 2007). Prevention of implantation of a fertilized egg has been considered a possible mechanism of action, but has not been shown to occur (Grimes & Raymond, 2002; Robinson, 2010; Trussell, 2010). A study by Palomino and colleagues (2010) revealed that a 1.5 mg dose of levonorgestrel did not alter the biomarkers that facilitate implantation of a fertilized egg. Biochemist, Susan Wood, indicates that changes to the endometrium that would prevent implantation of a fertilized egg takes time, which would not occur with a one or two dose emergency contraceptive pill. Emergency contraceptive pills also do not cause abortion (Grimes & Raymond, 2002; Trussell, 2010); nor are they classified as or considered abortifacients (Breckenridge & Gould, 2003; Grimes & Raymond, 2002). Emergency contraception has been shown to be ineffective once pregnancy has occurred (American College Health Association, 2010; Belluck, 2012; Grimes & Raymond, 2002; Trussell, 2010; Trussell & Guthrie, 2007).
Criteria for Utilizing Emergency Contraception

Emergency contraception should be employed any time birth control has not been used or it has not been used appropriately, e.g. missing birth control pills, and the couple does not wish to initiate a pregnancy. It should also be taken advantage of after contraceptive failure, e.g. condom breakage, or a diaphragm becoming displaced during use (Farrar, Yenari, & Gherman, 2003). When sexual intercourse occurs without protection against unintended/unplanned pregnancy, a woman has three emergency contraceptive choices. She may take two doses of Plan B® within 12 hours of each other, or she may use one-dose NextChoice® – both work best if taken within 72 hours (Fine, 2011b), although the higher one-dose of levonorgestrel has been shown to be effective for up to 120 hours (Prine, 2007). Ella® may be used within five days of unprotected sexual intercourse (Fine, 2011b).

Using the Integrated Behavioral Model

Health behavior theories are used by health educators to inform decisions on the best ways to address specific health problems. Theory increases the validity of the data collected, consequently raising the inferences that can be made using that data (DeBarr, 2004). Theory also works to improve reliability of the instrument or survey that is constructed (DeBarr, 2004). By using the Integrated Behavioral Model, determinants of emergency contraceptive use or non-use by college students can be identified in order to elicit intention to use EC (Jaccard, 2002).

The Integrated Behavioral Model is used to investigate intention to perform a behavior and combines constructs from the theory of reasoned action/theory of planned behavior and other theories (Montano & Kasprzyk, 2008) such as the Social Cognitive
Theory (U.S. Department of Health and Human Services, 2005). It utilizes three categories of constructs: attitude, perceived norm, and personal agency, which are further divided into experiential attitude, instrumental attitude, injunctive norm, descriptive norm, perceived control and self-efficacy (Montano & Kasprzyk, 2008). This theory also recognizes that behaviors cannot be changed without the target audience having the requisite knowledge to make those changes or the skills to perform the desired behaviors (Montano & Kasprzyk, 2008). Furthermore, it takes into account that behaviors cannot be adopted if life’s circumstances hinder its adoption or if the behavior is not important to the individual (Montano & Kasprzyk, 2008).

To-date research using this theoretical model to study emergency contraceptive use in undergraduate college students has not been identified. Because the Integrated Behavioral Model incorporates constructs from several different models, it should more easily reveal the reasons sexually active undergraduate college students do not use emergency contraception when it would be most appropriate and they risk an unplanned/unintentional pregnancy. Given its ease of use (a pill taken by mouth), accessibility (no prescription needed) and up to five days after unprotected intercourse to obtain and use EC, it is necessary to understand why undergraduate college students are not taking advantage of it in order to design effective health communication messages and interventions that could decrease the number of unplanned/unintended pregnancies as well as the number of subsequent abortions.

**Emergency Contraception’s Impact on Healthy Campus 2020 Goals**

Identifying factors that interfere with students’ ability or choices to prevent unintended/unplanned pregnancy are important in promoting a healthy college
environment. This issue can be tied to both the mission of Healthy Campus 2020 as well as the overarching goals. The mission includes the identification of health improvements on college campuses; increasing both understanding and awareness in the college environment of health issues. Overarching goals include the promotion of health by ensuring appropriate physical and social environments, as well as advocating and promoting appropriate health behaviors. Improving education about and awareness of emergency contraception as an alternative to unintended/unplanned pregnancy clearly falls into the Health Campus 2020 mission and goals.

**Statement of the Problem**

Forty or fifty years ago few choices existed for preventing unintended/unplanned pregnancy. Today, various formulations of birth control pills are available, an intrauterine device can be inserted, both male and female condoms can be used; all are choices that can and should be made by couples not just women. While birth control methods are more effective than they were years ago and couples have more choices, these methods are not without problems. For example, condoms can break, or couples may not be expecting or intending to have intercourse and fail to use prophylactics. Women may forget to take their birth control pill, or forget to take it on time. Some prescription medications affect the efficacy of the pill and other methods of contraception should be used to prevent pregnancy (Back et al., 1988; Bauer & Wolf, 2005; Dickinson, Altmann, Nielsen, & Sterline, 2001; Masters & Carr, 2009; Summers, 2008). In addition, women do not always consent to having intercourse and sexual assault occurs; or they are inebriated and do not have the capacity to consent. Contraception may not have been used at those times. In spite of possible contraceptive failure, couples are no longer
limited to choosing between experiencing an unintended/unplanned pregnancy or having an abortion. Couples may now choose to use emergency contraception up to five days after a birth control failure or non-use. Based on the unintended/unplanned pregnancy rate among undergraduate college students, emergency contraception is not being utilized as often as needed.

**Purpose of the Study**

The purpose of this study is to determine the factors that influence undergraduate college student use of emergency contraception as well as their level of knowledge and prevalence of using EC. The information garnered during focus group meetings as well as the constructs of the Integrated Behavioral Model were used to formulate survey questions designed to elicit this information. By using this model, students’ attitudes, perceived norms and perceived control as well as self-efficacy related to their use of emergency contraception were revealed. Understanding the factors that influence college student use of emergency contraception will inform development of intervention programs designed to increase its use, which may lead to lower rates of unintended/unplanned pregnancies in this population. One way of identifying these factors is to survey undergraduate college students to elicit the salient circumstances and reveal the elements that increase intention to use emergency contraception when it is needed.

**Research Questions and Hypotheses**

*Research Question #1*

What do undergraduate college students know about emergency contraception?
Research Question #2
What is the prevalence of emergency contraception use among undergraduate college students in the Midwest?

Research Question #3
What experiential attitudes do undergraduate college students have about emergency contraceptive use?

Research Question #4
What instrumental attitudes do undergraduate college students have about emergency contraceptive use?

Research Question #5
What are undergraduate college students’ beliefs about whether important others approve or disapprove of using emergency contraception?

Research Question #6
Do undergraduate college students believe their peers use emergency contraception?

Research Question #7
Do undergraduate college students think they have control over the decision to use emergency contraception?

Research Question #8
How confident do undergraduate college students feel in utilizing emergency contraception?

Research Question #9
Do differences exist in use of emergency contraception based on age, gender, sexual experience and year in school?
H$_0$: Hypothesis 9.1 – There is no difference in emergency contraceptive use based on age of student.

H$_0$: Hypothesis 9.2 – There is no difference in emergency contraceptive use based on gender of student.

H$_0$: Hypothesis 9.3 – There is no difference in emergency contraceptive use based on sexual experience of student.

H$_0$: Hypothesis 9.4 – There is no difference in emergency contraceptive use based on student’s year in school.

Research Question #10

Which constructs within the Integrated Behavioral Model are most predictive of undergraduate college students’ intention to use emergency contraception?

H$_0$: Hypothesis 10.1 – Path coefficients for the constructs within the Integrated Behavioral Model and undergraduate college students’ intention to use emergency contraception do not depict the constructs' relative contribution to the model.

Research Question #11

How much variance does the Integrated Behavioral Model explain in undergraduate college students’ intention to use emergency contraception?

H$_0$: Hypothesis 11.1 – The variance in undergraduate college students’ intention to use emergency contraception explained by the Integrated Behavioral Model is not statistically significant.
Definition of Terms

Abortion
The termination of a pregnancy before the fetus is considered viable or able to
live outside the womb (Roe, 1989).

Abortion Pill
A drug that, when taken by someone who is pregnant, leads to the termination of
the pregnancy prior to viability of the fetus (Breckenridge & Gould, 2003).

Birth Control
See contraception.

Contraception
Any method, natural or contrived, mechanical or chemical, used to prevent
pregnancy from occurring (MedicineNet.com, 2011a).

Descriptive Norm
The behavior a person thinks his or her peers are doing (Kitts & Yen-Sheng,
2008; Low, 2011; Montano & Kasprzyk, 2008).

Emergency Contraception
The use of medication to prevent pregnancy after an episode of sexual intercourse
when no contraception was used or the chosen method of contraception failed
(The American College of Obstetricians and Gynecologists, 2010; Trussell,
Koenig, Ellertson, & Stewart, 1997)

Environmental constraints
Environmental conditions that would make it more difficult to perform the desired
behavior (Montano & Kasprzyk, 2008).
Experiential Attitude
A person’s visceral or emotional response to the thought of performing a specific behavior (Montano & Kasprzyk, 2008; Smith-Doughty & MacDonald, 2012).

Fertilization
The process of sperm fusing with an egg resulting in production of a zygote (Robinson, 2010).

Fertilized Egg
See fertilization.

Implantation
The process of a fertilized egg (or zygote) attaching to the uterine wall (Robinson, 2010).

Inhibition of Ovulation
The prevention of an egg from maturing and being released from the ovary (Robinson, 2010).

Injunctive Norm
The behaviors that a person thinks his or her peers think he or she should be doing (Kitts & Yen-Sheng, 2008; Low, 2011; Montano & Kasprzyk, 2008).

Instrumental Attitude
A person’s intellectual response to the thought of performing a specific behavior (Montano & Kasprzyk, 2008; Smith-Doughty & MacDonald, 2012).
Mechanism of Action

The pharmacological means of producing a biochemical reaction (Datasegment.com, 2011).

Ovulation

The occurrence, during a woman’s menstrual cycle, when a mature egg is released from the ovary and travels down the fallopian tube for possible fertilization after intercourse has occurred (Robinson, 2010).

Perceived Control

A person’s belief in his or her ability to perform the specific behavior, including the concept of outside influences that would make it more difficult or easy to perform (Montano & Kasprzyk, 2008; Smith-Doughty & MacDonald, 2012).

Pregnancy

The period of time after a fertilized egg implants into the uterine lining and begins maturating into a developing fetus in a woman’s body (MedicineNet.com, 2011b).

Prevention of Implantation

The act of hindering a fertilized egg from attaching to the uterine lining (Robinson, 2010).

Rhythm Method

A contraceptive method based on avoiding sexual activity around the time of ovulation (Dictionary.com, 2011).

Self-Efficacy

A person’s internal assurance that he or she is capable of performing the desired behavior (Montano & Kasprzyk, 2008; Smith-Doughty & MacDonald, 2012).
Unintended/Unplanned Pregnancy

Becoming pregnant without making the deliberate choice at the time sexual intercourse occurred (Centers for Disease Control and Prevention (CDC), 2010).

Delimitations of the Study

1. The study was delimited to undergraduate college students attending general education classes in the Midwestern most colleges of the Mid-American Conference schools. Consequently the information may not represent the beliefs of all college-age students.

2. The study was delimited to students attending college or university in the Midwest. The information gathered may not represent the beliefs of all undergraduate college students in the United States or in other countries.

3. The study was delimited to those students willing to complete a paper and pencil survey. The beliefs of students who are not willing to complete surveys may not be represented.

4. The survey was composed of closed-ended questions and demographic information.

Limitations of the Study

Focus groups were conducted to elicit ideas and views of undergraduate college students on the issue of emergency contraception. Once saturation of ideas was reached, the information was used to compose survey questions that would elicit data that was both valid and reliable for making inferences about emergency contraception in this population. It is possible that not all beliefs and ideas were captured in the process. In addition, some focus group participants may not have felt comfortable discussing the
issue of emergency contraception with strangers and they may have given socially acceptable answers. This discomfort on the part of the participants may lead to the information gathered and the way in which it was gathered becoming limitations to this study.

Using self-reports by college students is an accurate way to gather information (Pace, 1985; Pike, 2011), although, it is possible that an anonymous/confidential survey, may cause students to give socially acceptable answers. The possibility that participants gave socially acceptable answers is a limitation to the validity of the inferences made using the data collected.

Using only undergraduate college students may limit the inferences that can be made about the use or non-use of emergency contraception in general, as undergraduate college student beliefs may not reflect the beliefs of all college students or all young people who would use or not use EC. Likewise, the students who were willing to participate in this study may differ in some way from those students who were not willing to participate, which may not be accounted for by the analysis of the data. If participants differ from non-participants, the ability to generalize the findings would be further limited. In addition, the relative homogeneity of the Mid-American Conference of schools may make it difficult to generalize the results to other schools across the country.

Finally, it is possible that using the constructs of the Integrated Behavioral Model and formatting the questions to align with those constructs may affect the information gathered. The use of specific constructs could limit the usefulness of the findings of this study, decreasing its validity and the inferences that can be made.
Summary

Chapter one introduced the topic of emergency contraception (EC). Many college students regularly engage in sexual activity. By the time they reach college they are expected to be responsible for their behaviors. This chapter explains why college students should avail themselves of emergency contraceptives as a means of preventing unintended/unplanned pregnancies, detailing sexual activity and birth control practices of college age men and women in the United States. A brief review of unintentional/unplanned pregnancies in the United States, and college-age women in particular, with prevalence rates on emergency contraceptive use by college students was given. Specifics on emergency contraception, including its mechanism of action and the criteria for its use were also presented.

It would be incumbent upon parents, college administrators, residence hall directors and peers to encourage students to also be conscientious about minimizing the negative consequences of their own sexual practices. Knowing why students use or do not use emergency contraception is the first step in helping them become accountable for their reproductive health as well.

This chapter concludes with a detailed statement of the problem of unintended/unplanned pregnancies, the purpose of the study to examine reasons why undergraduate college students do or do not utilize emergency contraception as needed, the Research Questions and Hypotheses, a Definition of Terms, the Delimitations and Limitations of the Study.
Chapter Two

Literature Review

This chapter investigates emergency contraception (EC), describes it, and explains the mechanism of action, how and when it is used, and how it differs from the abortion pill. The literature review examines the legal and ethical struggles that have occurred over several years, along with problems of awareness and accessibility, and the convenience of advanced provision of emergency contraception. It explores health care providers’ knowledge, attitudes and beliefs, and their practices. Differences in populations and their use, knowledge and attitudes about emergency contraception is discussed in addition to EC use by adolescents/teenagers and college students. This information is followed by a description of the Integrated Behavioral Model and its relevance to emergency contraceptive use in college students. The chapter will end with the summary.

Emergency Contraception Specifics

The topic of emergency contraception is not without its controversies, misunderstandings, and misleading information. The following sections explain emergency contraception, how it works, and when it should be used. A contrast between EC (also known as the morning after pill) (Demers, 1971) and the abortion pill (RU-286) is made to clarify the differences between these two products. How these two medications became synonymous is explained as well as how this error led to contention, confusion, and deception between factions who were against the use of emergency contraception in this country and those who were in favor of its use.
Emergency Contraception Explained. Emergency contraception (EC) is the use of medication to prevent pregnancy after an episode of sexual intercourse when no contraception was used or the chosen method of contraception failed (Grimes & Raymond, 2002; Schein, 1999; The American College of Obstetricians and Gynecologists, 2010) and pregnancy is not desired. The need for EC can occur when a couple fails to take the necessary steps prior to intercourse to prevent pregnancy. This failure to take the necessary steps can arise when contraception is not available at the time intercourse occurs, or if the couple was not planning ahead of time to have intercourse. EC may also be warranted if either partner was under the influence of alcohol or other substance that impaired his or her ability to make a decision to use contraception. Furthermore, EC may also be required if the chosen method of birth control fails, such as a condom breaking, the woman forgetting to take her birth control pills, or the woman taking the pill at the wrong time (Grimes & Raymond, 2002; The American College of Obstetricians and Gynecologists, 2010). Emergency contraceptives are also appropriate after rape, sexual assault or non-consensual intercourse has occurred (Greenberg, Bruess, & Conklin, 2011; Grimes & Raymond, 2002; Patel, Miller, & Dowd, 2010).

The typical emergency contraceptive medication uses a combination of estrogens and progestin, which are the hormones found in most birth control pills (Breckenridge & Gould, 2003; Grimes & Raymond, 2002; Trussell et al., 1997). There are several other types of pills, some of which contain only progestin (levonorgestrel) (Prine, 2007), which can be taken either in a one-dose or a two-dose regimen (The American College of Obstetricians and Gynecologists, 2010). Levonorgestrel has been marketed in the United
States under the brand name, Plan B® (Snow, Melillo, & Jarvis, 2011). Others pills contain only progesterone (ulipristal acetate) (Snow et al., 2011) to prevent pregnancy. Ulipristal acetate, marketed as EllaOne®, is a more recent addition to the emergency contraceptive arsenal in the United States (Mansour, 2009).

**Mechanism of Action.** Two mechanisms of action have been shown to lead to pregnancy prevention with emergency contraception. First, levonorgestrel works by impeding ovulation (Breckenridge & Gould, 2003; Croxatto, 2003; Fine, 2011b; Grimes & Raymond, 2002; Robinson, 2010; The American College of Obstetricians and Gynecologists, 2010; Trussell & Guthrie, 2007); if ovulation does not occur, pregnancy cannot occur. Levonorgestrel also works by disrupting the ability of the sperm to move (Prine, 2007) which makes it more difficult for the egg to be fertilized by the sperm (Breckenridge & Gould, 2003; Croxatto, 2003; Trussell & Guthrie, 2007). There is also the possibility that the thickness of the woman’s cervical mucus may be affected by levonorgestrel (Prine, 2007), although not all studies have been able to confirm this effect (Trussell, 2010). Ulipristal acetate works in a similar way by inhibiting ovulation (Ghatak & Panchal, 2010; Mansour, 2009; Snow et al., 2011; Trussell, 2010).

The controversy arises when determining whether emergency contraceptives, levonorgestrel and ulipristal acetate in particular, disrupt implantation of a fertilized egg into the endometrium. This mechanism of action has generally been refuted (Farrar et al., 2003; Pittrof, Rubenstein, & Sauer, 2010; Robinson, 2010; The American College of Obstetricians and Gynecologists, 2010; Trussell, 2010). Although the issue may never be completely put to rest (Trussell & Guthrie, 2007), Palomino and colleagues (2010) studied the biomarkers that facilitate endometrial readiness for implantation of a fertilized
egg. After administration of 1.5 mg of levonorgestrel, neither endometrial PR (progesterone receptor) nor Gly-A (glycodelin-A) were altered, thus the ability of the fertilized egg to implant into the endometrium was not altered. In addition, because changes in the endometrium take time to occur and emergency contraceptives are taken only once, there is little likelihood that implantation could be disrupted (Belluck, 2012). Research to-date has not found emergency contraceptives to have any effect once fertilization has occurred (Croxatto, 2003; Prine, 2007), including studies on cebus monkeys and rats (Novikova, Weisberg, Stanczyk, Croxatto, & Fraser, 2007). Emergency contraceptives are also ineffective once pregnancy has occurred (The American College of Obstetricians and Gynecologists, 2010).

**When and How to Use Emergency Contraception.** Emergency contraception should be utilized any time sexual intercourse occurs and contraception has not been used to prevent an unwanted pregnancy. It is not intended for use as a routine method of preventing pregnancy (Farrar et al., 2003). If a couple engages in sexual intercourse prior to taking precautions, this failure to use birth control would be an appropriate use of EC. Women occasionally forget to take their birth control pills or do not take them appropriately; they sometimes inadvertently misuse another regular form of birth control, at which time it may be necessary to use emergency contraception (Farrar et al., 2003; Prine, 2007). Emergency contraception should also be used if the usual method of preventing unintended/unplanned pregnancy has failed, such as condom breakage, or a diaphragm slips (Farrar et al., 2003).

The optimal timing for using an emergency contraceptive would be after any of the above occurs and the woman is within the fertile period during her cycle (Croxatto,
Since many women do not accurately predict their most fertile period, an emergency contraceptive needs to be available that can be used whether fertility can be determined or not (Croxatto, 2003). Early during the introduction of emergency contraception, estradiol and estrogen were used in combination allowing for a 72 hour window of opportunity; and women took these pills for five days (Farrar et al., 2003; Fine, 2011a). Shortly thereafter, the Yuzpe method was introduced, which also needed to begin within 72 hours of unprotected sexual intercourse, but this method consisted of two pills, estradiol taken first followed by levonorgestrel (a progestin) 12 hours later (Croxatto, 2003; Farrar et al., 2003). Another regimen consists of two doses of levonorgestrel only, taken 12 hours apart (Farrar et al., 2003; Fine, 2011a; Ghatak & Panchal, 2010). A one-dosage option of a higher dose of levonorgestrel has also been introduced (Fine, 2011a; Ghatak & Panchal, 2010; The American College of Obstetricians and Gynecologists, 2010). Levonorgestrel has been shown to be effective up to 120 hours or five days after sexual intercourse (Prine, 2007), effectively extending the three-day window. The two-dosage levonorgestrel has been marketed as Plan B® in the United States, with a corresponding Plan B One-Step® that uses one dosage (Fine, 2011a, 2011b; Snow et al., 2011). The one-dosage generic formulation of levonorgestrel has been marketed as NextChoice® (Fine, 2011a, 2011b; Snow et al., 2011). Each of these forms of levonorgestrel has been made available without a prescription for both men and women at least 17 years old (Fine, 2011a, 2011b).

The most recent addition to the emergency contraception arsenal is ulipristal acetate, marketed as Ella® (Fine, 2011a; Ghatak & Panchal, 2010) or EllaOne® (Mansour, 2009; Snow et al., 2011). This medication can be used up to five days (120 hours) after
unprotected sexual intercourse, but is available by prescription only (Association of Reproductive Health Professionals, 2011; Fine, 2011a, 2011b; Snow et al., 2011) presumably because they have not applied or received FDA approval for non-prescription status. In 2003, Barr Laboratories applied to have Plan B® labeled as over-the-counter (Wynn & Trussell, 2006); and NextChoice® is also available without a prescription (Association of Reproductive Health Professionals, 2011).

Briefly, current federal regulations state that men and women 17 years and older may purchase Plan B® or NextChoice® without a prescription as long as they show a valid identification (Association of Reproductive Health Professionals, 2011). If government-approved identification cannot be presented, or if insurance is being used to pay for NextChoice® or Plan B®, then women at least 17 years old must have a prescription (Association of Reproductive Health Professionals, 2011). Women 16 years or younger currently require a prescription to obtain EC (Association of Reproductive Health Professionals, 2011). There is no evidence that men age 16 or younger have been given access to emergency contraception.

**Emergency Contraception is not the Abortion Pill**

It is important in any discussion of emergency contraception to distinguish between the abortion pill, mifepristone (RU-486) (Breckenridge & Gould, 2003), and the multiple contraceptives used for emergencies. As stated above, emergency contraceptives consist of estrogens and/or progestin and are available in several formulations using levonorgestrel or ulipristal acetate. These are the pills that prevent pregnancy. Mifepristone (RU-486), is the pill that disrupts an implanted fertilized egg, and terminates a pregnancy that already exists (Breckenridge & Gould, 2003). It is an
abortifacient, leading to the aborting of an established fetus by the use of a medication (Breckenridge & Gould, 2003). Many people do not know the difference between these two medications, including some physicians, and assume emergency contraception is yet another method of abortion (Breckenridge & Gould, 2003). Chuang and colleagues (2005) conducted an intervention with primary care physicians with the intent to increase their knowledge of emergency contraception. The survey they used queried physician knowledge of mifepristone’s mechanism of action (Chuang & Freund, 2005), rather than that of emergency contraception. Instead of addressing this misunderstanding, the authors added to the confusion by classifying the knowledge of mifepristone as equivalent to the understanding of the estrogen and progestin forms of emergency contraception. This type of misinformation makes it more difficult for lay persons to understand and perhaps use emergency contraception when they need it the most.

Patients interviewed at a Pennsylvania clinic indicated nearly half (46%) thought emergency contraception was a type of abortion, while just over half (56%) thought their partners believed the same thing (Whittaker, Armstrong, & Adams, 2008). Another study conducted in North Carolina found that 80% of women surveyed confused EC with RU-486, the abortion pill, which was found to lead to decreased use (Fagan, Boussios, Moore, & Galvin, 2006). Given that even in recent scholarly literature mifepristone (RU-486, the abortion pill) was discussed along with the Yuzpe regimen (emergency contraception using estrogen and progestin) as though they were equivalent (Farrar et al., 2003; Schein, 1999; von Hertzen et al., 2002), it is no surprise that the lay public would be confused about the two drugs. In addition, mifepristone is used as an emergency contraception in countries where abortion does not carry the same stigma as in the United
States (von Hertzen et al., 2002); it appears that this distinction is primarily a concern in the United States.

**Emergency Contraceptives Legalities and Ethics**

Emergency contraception began to be used in the United States in the 1960’s (Demers, 1971) and it has been controversial ever since. It is frequently linked to the abortion pill (Glasier, 2000), which increases the controversy. In 1997 the Federal Food and Drug Administration (FDA) declared that combinations of oral contraceptives could be used to prevent pregnancy after intercourse had already occurred (Barot, 2010). Several months later, the Office of Population Affairs (OPA), part of the Department of Health and Human Services, released recommendations that Title X Family Planning programs should make emergency contraception available (Barot, 2010). By 1999, the FDA approved Plan B® for use in the United States (The Henry J Kaiser Family Foundation, 2010). In August 2006 (Gee, Shacter, Kaufman, & Long, 2008), after much discussion and argument, the FDA made Plan B® from Barr Laboratories, available without a prescription to some groups (AHC Media LLC, 2007; Wynn & Trussell, 2006). This decision did not come easily, nor did it come swiftly. Some groups opposed EC, claiming “playboys and adolescent males” would be the main people who would benefit from its use (Wynn & Trussell, 2006, p. 301). A physician in Pennsylvania claimed Jamaicans were “using it as sweets” (Wynn & Trussell, 2006, p. 301), implying that they would eat them as though they were candy. A woman from Concerned Women for America stated: “Making ECs available would be a welcome tool for adult sexual predators who molest family members, children of friends or students. They could keep a stash in their bedroom drawer or their pocket to give their victims after committing each
rape” (Wynn & Trussell, 2006). Although in 2003 the FDA voted 23 to four to approve non-prescription status, this decision was rescinded in 2004 because of the fear that granting access to adolescents would increase promiscuity (Wynn, Erdman, Foster, & Trussell, 2007). Several applications and delays later, Barr Laboratories was granted non-prescription status in August 2006 (Pritchard, 2006).

Another controversial/ethical issue with emergency contraception has been pharmacist decisions to dispense or not to dispense them. Pharmacists have had the right to use their own conscience in dispensing medications, known as the “pharmacist conscience clause” (Wernow & Grant, 2008, p. 1671) and that right applies to the dispensing of emergency contraceptives as well. Unfortunately, as will become apparent, not all pharmacists understand emergency contraception and its mechanism of action, and it is not unusual for them to make moral and conscientious decisions based on erroneous information and misunderstanding (Evans, Patel, & Stranton, 2007; Richman & Daley, 2009; van Riper & Hellerstedt, 2005).

Use of Emergency Contraception and Possible Problems

If unintended/unplanned pregnancy rates are to decrease, appropriate contraception needs to increase. There are occasions when the primary method of birth control fails or is not used at all. When that occurs, couples need to know they have another option for preventing pregnancy. That alternative is the use of an emergency contraceptive. College students in particular cannot use EC when needed, if they are not aware of it, they need to have access to it; and they need to know they can have it on hand prior to actual need (advanced provision). The Integrated Behavioral Model was
used to examine whether these are issues related to EC use among undergraduate college students.

**Awareness.** Before choosing to use an emergency contraceptive, a person has to know that it exists. A study conducted in California, where over 500,000 births are unplanned and more than 236,000 abortions are performed, emergency contraception is considered a good option (Foster et al., 2004). The authors of this study assessed whether women over the age of 18 and under the age of 44 knew about emergency contraception, as well as other issues related to unintended/unplanned pregnancies (Foster et al., 2004). The results revealed that 47.3% of women age 18-19 and 48.0% of women between the ages of 20 and 24 had no knowledge of emergency contraception. Fitter and colleagues (2011) report that of the women 16-25 years old who were queried at a gynecology clinic in Scotland, 22% did not have correct knowledge about EC while 41% could not correctly identify when it should be used. If women are not aware of this method of contraception, they cannot use it and the rate of unintended/unplanned pregnancies and subsequent abortions will remain high.

Educating women about the use of emergency contraception is an important part of decreasing unintended/unplanned pregnancies as well as lowering the abortion rate. In fact, Trussell and colleagues (2001) analyzed the effects of a multi-media campaign designed to raise knowledge and awareness of emergency contraception that was conducted in Seattle, San Diego, Philadelphia, Miami, Los Angeles and Chicago. The authors report an increase in both awareness and knowledge about EC as a result of messages that reached a wide audience of multiple ethnicities (Trussell et al., 2001).
Perhaps similar interventions can and should be initiated in many more cities across the country.

**Access.** Of equal importance to awareness is the ability to acquire emergency contraception. EC cannot be used if it cannot be obtained or where to procure it is not known. The United States Food and Drug Administration accorded Plan B®, one brand of emergency contraception, non-prescription status in 2006 (AHC Media LLC, 2007; Dries-Daffner, Landau, Maderas, & Taylor-McGhee, 2007; Gee et al., 2008; Wynn et al., 2007). The ability to obtain emergency contraception without a prescription allowed for easier access to EC, but there were stipulations. Anyone under age 18 must have a prescription for EC, while women over the age of 18 may access it without a prescription (Gee et al., 2008). Young men under the age of 18 are restricted from purchasing EC altogether (Dries-Daffner et al., 2007; Wynn et al., 2007). Plan B®, although available without a prescription, cannot be accessed from the shelves, the pharmacist must be asked to provide it (Dries-Daffner et al., 2007). Having to ask someone for the product may prove to be yet another barrier for college students to overcome.

A second issue of accessibility for Plan B®, despite its non-prescription status, is whether a pharmacy will stock the product (Gee et al., 2008). If a pharmacy does not sell Plan B®, the issue of requiring or not requiring a prescription becomes moot. Gee and colleagues (2008) reported 8% of pharmacies did not carry Plan B® in Philadelphia, Boston and Atlanta. A study conducted that same year in New York City reported 6% of pharmacies did not have Plan B® available in-store (AHC Media LLC, 2007). French and Kaunitz (2007) used a “secret shopper” (p. 127) method of determining whether pharmacies had Plan B® available for purchase in Jacksonville, Florida. Plan B® was not
readily available in many of the pharmacies (39%), although 29% were able to obtain it within 24 hours. Some pharmacists admitted that stocking EC was not cost-effective because the demand for the product was not high enough to outlast the expiration dates (French & Kaunitz, 2007). Nevertheless, 53% of female and 40% of male 15 year olds in a study conducted in California indicated they knew where to purchase EC (Urena & Yen, 2009); and participants in the United Kingdom felt they themselves could access it, but others could not (Bayley, Brown, & Wallace, 2009). Although there are free clinics that may make Plan B® available to their patients, there remains the issue of whether these clinics are open during the times emergency contraception is most required (Dries-Daffner et al., 2007).

Men over the age of 18 have the same legal access to Plan B® as women do and many continue to be the primary decision makers (B. T. Nguyen & Zaller, 2009). Nguyen and colleagues (2009) conducted a study in Rhode Island to examine the male perspective of access to EC. The majority of men in this study felt EC use was ultimately a woman’s decision, but thought the restrictions on male purchase should be removed (B. T. Nguyen & Zaller, 2009). The authors surveyed only men over the age of 18, who already have the legal right to purchase Plan B®. It may have been better to also survey young men who were not allowed to purchase the product and perhaps tease out the kind of accessibility issues encountered by younger men as well.

Another issue related to access to emergency contraception is cost. Emergency contraception is not cheap (Gee et al., 2008). If it is not affordable, then it is not accessible. Nelson and Jaime (2009) reported a median price for EC in Los Angeles of $45 with a range from $30-$85. Cost could restrict access for college students and others
who do not have prescription coverage or cannot afford to pay this price. In addition, even though EC has been granted non-prescription status, there are some states that allow pharmacists to charge a fee for a consultation prior to a woman purchasing EC (Dries-Daffner et al., 2007) which further drives up the costs and limits accessibility. In areas where the government picks up the costs for medical care, such as Canada, price may not be an issue, but in the United States, it could be a significant barrier. Leung and colleagues (2008) report EC to be cost-effective even when adding in the costs of campaigns to increase awareness and use. Cost was identified as a limiting factor in EC use by adolescents studied by Johnson and colleagues, (2010) not only for themselves, but for others as well; even in the United Kingdom where medical care is covered (Bayley et al., 2009).

**Advanced Provision.** Although non-prescription status may have helped with access to emergency contraception, there could be other reasons that make timely acquisition difficult. If teenage girls do not feel safe asking for emergency contraception, or they question whether their discussion with pharmacy employees will remain private, they are less likely to purchase it (AHC Media LLC, 2007; Dries-Daffner et al., 2007). Participants in the Johnson and colleagues (2010) study reported intimidation and feelings of discomfort at the thought of approaching adults and/or pharmacy staff for emergency contraceptives. Embarrassment and fears of lost confidentiality were also expressed by participants in a minority, urban study (Mollen et al., 2008) as well as a study conducted in the United Kingdom (Bayley et al., 2009). If women are embarrassed to ask for emergency contraception or they are unable to access it in a timely manner, they are less likely to use it (Polis et al., 2007). Consequently, several
researchers have investigated whether providing emergency contraception in advance of need would increase its availability and use (Whittaker et al., 2008). By providing EC before the need arises, a woman has it available as soon as circumstances require its use (Polis et al., 2007). A problem arises because many times clinic staff take it upon themselves to decide whether a patient should be offered advanced provision of EC, based on their preconceived opinion of the patient; other times patients fall through the cracks as they traverse through a clinic system and advanced provision does not occur (Whittaker et al., 2008). The policies may exist, but the day-to-day operations interfere with fulfilling those policies.

Some patients are offered advanced EC, but will decline it because they are on birth control already (Whittaker et al., 2008) not understanding why EC may be needed. Others will refuse advanced provision because they confuse it with mifepristone, the abortion pill (Whittaker et al., 2008). Other patients who receive advanced emergency contraception do not use it when they should (Stern, 2010). Research indicates that EC use increased with advance provision, and women were able to take EC earlier than women who received it in the usual manner, but pregnancy rates were no different (Stern, 2010). Polis and colleagues (2007) also reported increased use but not decreased pregnancy rates in their review of studies on advanced provision. The fact that they included the use of mifepristone in their review may not have elicited the information they were actually seeking, since using the abortion pill on a study of pregnancy rates would skew the results.

Jackson and colleagues (2003) studied advanced provision of EC to post-partum women, 72% of whom were Latina. The results of this study showed increased use of EC
as well as knowledge of EC. Nevertheless, four women experienced a pregnancy during
the study in spite of EC use, which was accounted for primarily by misuse of the drug. In
addition, only 25% of women who engaged in intercourse without other means of
protection actually used the EC that was provided to them, showing that many women do
not recognize when they are at risk for pregnancy (Jackson, 2003).

Another means of advanced provision of emergency contraception includes
purchasing it over the internet (Wu et al., 2007). Princeton University established a
website specifically for emergency contraception information as well as access to EC
itself (Wu et al., 2007). The researchers in this study conducted telephone surveys
which showed that 33% of the women they spoke to were unable to access EC in
conventional ways (Wu et al., 2007). Although internet access to EC may meet the need
for many women, the authors note that lack of access to technology would decrease the
benefit from this medium because some women could not access the internet (Wu et al.,
2007). Wynn and Trussell (2005) also looked at issues related to advanced provision via
the same internet site. They found that women admitted to not requesting advanced EC
from their primary care providers because they did not want to be judged by them or their
staff (Wynn & Trussell, 2005), as a result the availability of the information they needed
could be accessed in the privacy of their own home by use of the internet site. Albeit,
access to information via the web does not negate the need for health care providers to
increase their willingness to provide advanced EC information to their patients (Wynn &
Trussell, 2005).

Glasier and colleagues (2004) examined whether acquiring EC in advance of
need would lower abortion rates in Scotland. Abortion rates did not go down, although
EC use increased. It was noted that more than half of the women in the study were only given one course of EC, which would have decreased their ability to prevent pregnancy if they had needed it a second or third time (Glasier et al., 2004). In addition, many women did not use the course they were given at an appropriate time, which limited its ability to prevent pregnancy (Glasier et al., 2004).

There is concern among some professionals that women who are given emergency contraception before they actually need it will result in increased risky behaviors and non-use of their usual birth control methods (Ellertson et al., 2001). Women who received advanced EC were compared to women who received only information about EC (Ellertson et al., 2001). Participants were reportedly pleased to have learned about emergency contraception; women who did not receive advanced EC wish they had; but one quarter of the women who were given EC prior to need did not in fact use it (Ellertson et al., 2001). Those women who did use their advance supply used it correctly and most women did not increase the likelihood that they would engage in unprotected intercourse (Ellertson et al., 2001).

**Health Care Providers and Emergency Contraception (physicians, nurses, pharmacists and others)**

What providers know or believe about emergency contraception is of equal importance to what potential users know about it. People who provide emergency contraception include primary care physicians, obstetricians/gynecologists, pharmacists, nurse practitioners and staff of medical facilities and pharmacies. These are the people who represent the first and sometimes only contact for users of emergency contraception.
If they do not have correct information or hold beliefs contrary to EC use, access and availability will decrease.

**Provider Knowledge, Attitudes and Beliefs.** In 2005, pharmacists in South Dakota were surveyed regarding emergency contraception (van Riper & Hellerstedt, 2005). At that time, 37% were not aware that oral contraceptives and emergency contraceptives have the same mechanism of action (van Riper & Hellerstedt, 2005). Of the 501 pharmacists who completed the survey, 42% thought EC led to birth defects and 37% thought its mechanism of action was the same as mifepristone, the abortion pill (van Riper & Hellerstedt, 2005). More than half of pharmacists in Pennsylvania (65%) thought emergency contraception was an abortifacient (Jossi, 2005). This percentage was similar to the 65% of pharmacists in Pittsburgh who answered 50% of questions related to EC knowledge correctly, but the questions themselves were not reported in the article (H. B. Nguyen, 2006), as a result we do not know what was asked. Although 34% of the pharmacists surveyed in South Dakota and an unknown number from Pittsburgh stated they were comfortable giving women advice about emergency contraception (H. B. Nguyen, 2006; van Riper & Hellerstedt, 2005) their own misunderstandings and misinformation about EC may lead to provision of inaccurate information. In addition, one year later, in 2006, EC was given non-prescription status and pharmacists were likely to play a larger role in advising women. If they do not have the proper understanding of the medication, they will not be able to appropriately advise women on its use.

In 2007, pharmacy students in Florida were studied (Richman & Daley, 2009). Although the schools reportedly had courses that included emergency contraceptive
information, many students could not remember whether they had learned about EC and far more remained confused about its mechanism of action (Richman & Daley, 2009). Similar findings were reported by Evans and colleagues (2007) where 32% of pharmacy students did not know that emergency contraception and RU-486 (the abortion pill) were not the same thing. While Richman and Daley (2009) suggest that pharmacy schools need to improve pharmacy student education regarding EC, Evans and colleagues (2007) show that knowledge does increase as pharmacy students move through the curriculum. Both Richman and Daley (2009) and Evans and colleagues (2007) found many students held personal biases and made judgments not based on what they learned. Evans and colleagues (2007) found a correlation between knowledge and attitude, suggesting that the more the students knew about EC, the better their attitude about dispensing it. There appears to be a separation between what pharmacy students should know and whether what they know affects what they believe, although Evans and colleagues (2007) suggest this discrepancy may disappear with better curricula.

In 2009, an increase in the number of pharmacies that carried emergency contraception was found, as was an increase in the availability of someone to speak to at the pharmacy regarding EC, along with an increase in the accuracy of information received from Los Angeles pharmacies (Nelson & Jaime, 2009). Nevertheless, inaccurate information continues to be given at many pharmacies, including telling women there was nothing they could do to prevent pregnancy; and pharmacists telling women that EC terminates a pregnancy (Nelson & Jaime, 2009).

Few studies have looked at the male experience in acquiring emergency contraception. Nguyen and Zaller (2010) conducted a study of pharmacists in Rhode
Island to ascertain male experiences with access to EC. Although many believed that men do not often purchase EC, 63.3% of the pharmacists had sold it to men, while 64.6% believe men should always be allowed to buy EC over-the-counter. Despite the fact that 35.4% of pharmacists disagreed with men being allowed to purchase EC, only 4.6% refused (B. T. Nguyen & Zaller, 2010). Unfortunately, the sampling method of this study was questionable and the wording of the questions may have led to inaccurate responses from the participants and inappropriate analyses of the data.

**Provider Practices.** Staff at a Pennsylvania clinic admitted to using their own professional judgment to decide whether individual women should be allowed to have advanced EC (Whittaker et al., 2008). Some staff members decided if the woman was using regular birth control advanced EC was unnecessary (Whittaker et al., 2008) and would refuse to provide them with an advanced supply of it. Other reasons for not providing EC in advance included personal belief that the patients were not smart enough to use it correctly, were too unreliable, or staff expected patients to prove themselves before dispensing it to them (Whittaker et al., 2008).

Patel and colleagues (2010) examined the practices of pediatric emergency room physicians in Kansas City, Missouri, to determine the ways in which emergency contraception was being dispensed. In this study 87.9% of patients who received EC reported a sexual assault (Patel et al., 2010). The authors suggest that a better understanding of EC and compliance with current laws regarding its dispensing could result in identifying many more adolescent patients for whom emergency contraceptives would appropriately address their presenting complaint (Patel et al., 2010). Although
some states are beginning to pass laws that require emergency room physicians to provide emergency contraception to victims of sexual assault, not all states have done so.

Miller and colleagues (2011) also studied pediatric health care providers, but used focus groups to elicit more in-depth information. In this study, physicians, nurse practitioners and nurses from three urban emergency departments were queried about experiences, knowledge and attitudes pertaining to emergency contraception (M. K. Miller et al., 2011). Nurses in this study tended to have the most negative and judgmental attitudes, making determinations of whether EC should be given or not, based on their opinions of the patients themselves (M. K. Miller et al., 2011). In spite of current attitudes, the authors of a review of EC use in adolescents published in a nursing journal encourages nurses to take a positive stand in providing EC to adolescents in order to decrease unintended/unplanned pregnancies (Haynes, 2007). Nurse practitioners and physicians, were more supportive of EC use than the general nursing staff (M. K. Miller et al., 2011).

The discrepancy in giving EC as needed may be explained by religious-affiliation of the hospital in question. Rubin and colleagues (2006) report providers are more likely to acquiesce to women’s need for EC when they work in non-religious settings. The Kansas City hospital studied by Patel and colleagues (2010) was in the Mercy system, a known Catholic institution. It is possible that the emergency room physicians are unaware of the distinction between EC and the abortion pill. If they themselves are Catholic, they may be unwilling to provide birth control of any form. Unwritten rules may exist that prevent physicians from issuing EC or other birth control to patients who present to this emergency room without personal repercussions from the administration.
One method of meeting the need for provider education to increase understanding and willingness to provide emergency contraception was an e-mail hot-line. This study specifically evaluated the effectiveness of a hot-line in the United Kingdom (Graham, Aung, & Guthrie, 2010). There are similar hotlines available in the United States (U. S. Department of Health and Human Services Office on Women's Health, n.d.). Graham and colleagues (2010) report the e-mail hotline was an effective means of assisting general practitioners with questions on contraceptives and suggested extending its use by allowing other providers such as nurse practitioners to have access. In addition, studies have been conducted to determine if training improves knowledge and understanding about emergency contraception (Chuang & Freund, 2005; Colarossi, Billowitz, & Breitbart, 2010). Colarossi and colleagues (2010) reported increases in knowledge across 10 areas by health educators, health providers and social service workers. Most notably, all three groups showed a significant increase in knowing that “EC will not harm a pregnancy” with health educators moving from 57% to 93%, health providers increasing from 37% to 58% and social service workers improving from 22% to 89% in correctly answering that question (Colarossi et al., 2010). Unlike Chuang and colleagues (2005) who asked primary care providers about the mechanism of action in mifepristone (the abortion pill) and equating it to emergency contraception knowledge, the survey items from Colarossi and colleagues (2010) asked appropriate questions to assess level of knowledge.

**Emergency Contraception and Specific Populations**

Discerning the ways in which different groups learn about, understand, and use emergency contraception may help in recognizing the factors most salient in college
student use of EC. Adolescents are just beginning to understand their own sexuality and may not be able to absorb information about pregnancy prevention or emergency contraceptive use in order to prevent pregnancy. Teenagers frequently have feelings of invincibility and may not believe pregnancy can happen to them (Saltz, Perry, & Cabral, 1994) Known as optimistic bias, teenagers think their peers are more likely than themselves to get pregnant (Whaley, 2000). In contrast, college students should be mature enough to appreciate various aspects of their own sexuality while taking responsibility for preventing unintended/unplanned pregnancies. Investigating the ways in which these three groups view emergency contraception will aid in understanding the determinants of emergency contraceptive use in college students. For the purposes of this review, adolescents and teenagers were grouped together because many research studies have used these terms interchangeably.

**Adolescents and Teenagers.** Focus groups and in-depth interviews were conducted with 15-21 year olds by Johnson and colleagues (2010) to evaluate attitudes and knowledge of emergency contraceptive use. Their goal was to develop a social marketing program to increase access to and knowledge of EC (Johnson et al., 2010). The authors report that of the 75% in this group who had an occurrence where EC would have been useful, all reported there was nothing they could have done at the time to prevent pregnancy (Johnson et al., 2010). Many in this study also confused EC with mifepristone (Johnson et al., 2010) as did 66% of 15 year olds (Urena & Yen, 2009). As would be expected in this age group, not wanting to be pregnant and taking the steps necessary to prevent it are two different issues; as was the ability to determine when EC may be necessary, even after having enough knowledge to make that determination
Johnson et al., 2010). Similar findings were reported by Bayley and colleagues (2009) in the United Kingdom where 13-16 year olds did not think of EC as being particularly important to them. Since these authors used the Theory of Planned Behavior as the basis of their study, they also looked at subjective norms and reported that most of the participants believed their parents would not approve of them using EC before the age of 16 (Bayley et al., 2009). Experiencing feelings of embarrassment, and being seen or judged while purchasing EC are common themes in many of these studies (Bayley et al., 2009; Johnson et al., 2010; Mollen et al., 2008).

Mollen and colleagues (2008) interviewed minority, urban 15-19 year old girls in the United States; 50% of non-sexually active girls knew nothing about emergency contraception, while 94% of those who were sexually active reported knowing about it, but could not answer any further questions. The girls in this study also expressed negative attitudes about who would need to use EC, but most would consider using it if the need arose (Mollen et al., 2008). Clearly, there are misperceptions that abound concerning emergency contraceptive use by young girls.

A study conducted in the Minneapolis, Minnesota area investigated emergency contraception acquisition in the schools in an attempt to improve access to it and decrease unintended/unplanned pregnancies in this group (Sidebottom, Harrison, Amidon, & Finnegan, 2008). The authors report the most often cited reasons for students to request emergency contraception, in order of frequency, were failure to use protection of any kind, condom failure, insufficient coverage by a hormonal contraceptive, worry that the condom would not work, and skipped birth control pills (Sidebottom et al., 2008). Several students requested EC more than once and many students did not follow up after
their initial request (Sidebottom et al., 2008). Analysis of the results led to changes in the schools’ EC protocols, including advanced provision (Sidebottom et al., 2008). By studying the population they served and evaluating what they were currently doing, the administrators of the school system were better able to meet the needs of its young population.

**College Students.** College students represent an important population in the study of emergency contraception. They are likely to have more freedom than they had prior to college, are beginning to make decisions for themselves, continue to be vulnerable to peer pressure to engage in sexual intercourse, and they do not need parental consent to purchase emergency contraceptives. This point is moot if they do not know about EC’s or do not have correct information; it makes it less likely they will use EC to prevent an unintended/unplanned pregnancy. Knowledge of emergency contraceptives in college students has been looked at by many researchers (Corbett et al., 2006; Hickey, 2009; Kang & Moneyham, 2008; L. M. Miller, 2011; Puri, Sehgal, Mangat, & Singh, 2008; Sawyer & Thompson, 2003; Vahratian, Patel, Wolff, & Xu, 2008). A study of college students in Pennsylvania confirmed accurate knowledge in only 23.3% of participants, although nearly 60% thought their level of knowledge was either “some” or “quite a lot” (L. M. Miller, 2011), representing a disconnect between what college students think they know and what they actually know about emergency contraception. Students at a large university on the east coast of the United States indicated low knowledge in 78.6% of respondents, with only 40% of questions being answered correctly (Sawyer & Thompson, 2003). Students at a private college in the mid-Atlantic area of the United States reported confusion between RU-486 (the abortion pill) and
emergency contraception, with 40% being unsure whether the two products were similar and 8% believing that they were in fact the same (Hickey, 2009). A clear majority of the students studied (90%) reported getting their information about EC from the internet (Hickey, 2009), which may explain the confusion between EC and RU-486. A study conducted by researchers at a university on the southern coast of the United States indicates 87.6% of students thought EC and RU-486 were the same and that these students received their information primarily from relatives and friends (Corbett et al., 2006). More than half of the Korean students surveyed about emergency contraception answered knowledge questions incorrectly 60% of the time (Kang & Moneyham, 2008). A study conducted in India, revealed only 7.3% of female students had any knowledge of EC (Puri et al., 2008).

It is apparent from these studies that many students have heard of emergency contraception and many are under the impression that they know what it is and what it does. It is equally clear that college students do not know or understand as much as they think they do, which makes examination of their perceptions and attitudes more complicated due to the limitations associated with self-reported data. Nevertheless, it may be instructive to explore these areas to better understand what college students are thinking and where deficiencies in knowledge can be addressed.

Although Miller (2011) found low levels of knowledge of emergency contraception in college students this lack was compensated for when evaluating student attitudes by the way in which questions were worded. For instance, the author did not merely asked if the students were willing to use EC, but whether they would use it if it prevented ovulation or if it prevented implantation (L. M. Miller, 2011). The distinction
is important because what the students know about EC could determine whether they would use it or not. By asking the question in two ways, based on different mechanisms of action, the author attempted to determine whether students would be opposed to EC use based on how it works. There was little difference in acceptability of using EC on either of these two components, with approximately 50% of students willing to use EC if it prevented ovulation or if it blocked implantation (L. M. Miller, 2011). Sawyer and colleagues (2003) reported similar findings asking similar mechanism of action questions, although more than 65% of the students at this university reported acceptance of either way EC purportedly worked. The results of the study by Hickey (2009) indicated a 57% acceptance of EC, even though the majority of students did not have accurate knowledge. It is likely, that college students do not understand the nuances of ovulation or implantation of a fertilized egg, consequently their answers may not reveal what they truly believe.

Corbett and colleagues (2006) reported on the embarrassment associated with obtaining EC, rather than actual attitudes about EC. Of the students surveyed who were willing to use EC, 29.9% reported a level of embarrassment associated with purchasing the product; and the students who would not purchase EC reported embarrassment and feelings of being judged as key reasons they would not use EC (Corbett et al., 2006). Since a convenience sample of students was utilized, the participants may not represent other students at the university; and a high percentage of this group did not know there was a difference between EC and RU-486, both of which may account for these results. Vahratian and colleagues (2008) examined some knowledge factors in Michigan college students, but also asked about various scenarios of emergency contraceptive use. While
rape was seen by a vast majority of students (93%) as a legitimate reason to use EC, few students accepted its use after failure of contraception (86%) and even fewer considered unprotected sex a legitimate reason to use EC (68%). This study was conducted near the time period when EC was becoming available without a prescription; as a result the authors examined that issue as well. While most students agreed with the government’s decision (60%), 23% disagreed, with an additional 17% undecided on the issue. While 19% of the participants in this study admitted they would not buy EC, 44% would purchase it if they needed it and 33% indicated they would purchase it in advance of need (Vahratian et al., 2008).

Also of importance for college students is their ability to access emergency contraceptives. Brening and colleagues (2003) surveyed students from 139 colleges across the United States to ascertain whether emergency contraceptives were accessible at college health centers in 2001. Several barriers to student access were identified, including health center hours; at the times students are most likely to need EC such as on week-ends, the health centers are not open (Brening, 2003). Hours of operation was also identified by Miller (2006) and Devine (2007) as a significant barrier to college student access. Now that EC has been shown to be effective up to 120 hours after unprotected intercourse, access to health centers during week-ends may no longer be an issue. Staff attitudes and their understanding or lack of understanding about emergency contraception factored into whether they would give prescriptions for EC (Brening, 2003; Devine, 2007). Cost was also seen as a barrier to accessing EC by college students (Brening, 2003); although Miller and colleagues (2006) report costs, which have gone up at college health centers in the last 10 years, are in line with what off-campus pharmacies charge.
Emergency Contraception Counseling

According to a number of medical groups, women of child-bearing age should be routinely counseled about emergency contraception to help prevent unintended/unplanned pregnancies (Kavanaugh, Williams, & Schwarz, 2011). This need for counseling about emergency contraception includes college women. Although some on-campus college health centers will provide emergency contraception to students, there is no indication that they provide any type of counseling to them (Brening, 2003).

Kavanaugh and colleagues (2011) examined the National Survey of Family Growth 2006-2008 responses to a questionnaire. More than 7,000 interviews were analyzed with 3% reporting they had been counseled about emergency contraception in the past 12 months; the majority of counseling came from Planned Parenthood or a family planning clinic (Kavanaugh et al., 2011). Although women continue to lack adequate information to make a decision about emergency contraceptive use, they have more avenues for obtaining that information, including the internet, their family physician, family planning clinics, as well as pharmacists, who are now able to dispense EC without a prescription.

The Integrated Behavioral Model

The Integrated Behavioral Model was used to explore reasons sexually active college students do not use emergency contraception. This model incorporates constructs from several health behavior theories including the Theory of Reasoned Action/Theory of Planned Behavior (Montano & Kasprzyk, 2008) and the Social Cognitive Theory (U.S. Department of Health and Human Services, 2005), including the constructs of self-efficacy and outcome expectations (McAlister, Perry, & Parcel, 2008). This model evolved around 2000 from Fishbein and Ajzen’s Theory of Reasoned Action to include
environmental factors, skills, and knowledge as elements that influence intention to perform a behavior (Yzer, 2012). The Integrated Behavioral Model consists of three sets of constructs, attitude, perceived norm and personal agency as described below (Montano & Kasprzyk, 2008):

- **Attitude** is a person’s assessment of the positive or negative elements of the behavior in question (Montano & Kasprzyk, 2008; Yzer, 2012).
  - **Experiential attitude** is a person’s emotional assessment of the behavior (Montano & Kasprzyk, 2008)
  - **Instrumental attitude** is the intellectual assessment of what will happen if the behavior is performed (Montano & Kasprzyk, 2008)

- **Perceived norm** reflects the outside pressure a person experiences related to performing a behavior (Montano & Kasprzyk, 2008; Yzer, 2012).
  - **Injunctive norm** is a person’s belief that others expect them to behave a certain way and he or she feels compelled to comply (Montano & Kasprzyk, 2008; Yzer, 2012)
  - **Descriptive norm** is what a person recognizes to be the pattern of behavior in others (Montano & Kasprzyk, 2008; Yzer, 2012)

- **Personal agency** consists of two areas in which a person has leverage over his or her actions and environment (Montano & Kasprzyk, 2008).
• Perceived control is a person’s belief that the environment facilitates his or her ability to perform the behavior (Montano & Kasprzyk, 2008)

• Self-efficacy is a person’s belief in his or her ability to perform the behavior (Montano & Kasprzyk, 2008; Yzer, 2012)

The Integrated Behavioral Model is a good fit for this research because it addresses individual behavior (DeBarr, 2004), while at the same time addresses factors that feed into that behavior, such as knowledge, skills, the environment, a person’s habits and what is most important to the individual (Montano & Kasprzyk, 2008). While sexual intercourse is not a solo activity, the choice to protect oneself against consequences such as an unintended/unplanned pregnancy, can be. It is also a good model to use because it seeks to elucidate the factors that most strongly inhibit a college student from making an educated decision. While college students are independent, sometimes their choices are limited by barriers that increase the difficulty of protecting themselves. Other times they just do not have the knowledge, skills, or environmental influences that help facilitate their ability to prevent an unintended/unplanned pregnancy, and they may not even consider using emergency contraception.

**The Integrated Behavioral Model and Contraception**

The Integrated Behavioral Model has been used a number of times to investigate condom use (Kasprzyk & Montano, 1998; Montano, Kasprzyk, von Haeften, & Fishbein, 2001; Reid & Aiken, 2011; von Haeften & Kenski, 2001) as well as to facilitate communication between adolescents and their parents about birth control (Jaccard, 2002).
No studies were located that used the Integrated Behavioral Model to study emergency contraceptive use. In addition, studies have not been identified that use this model to investigate undergraduate college students. Using emergency contraception is an occasional behavior, using a model that incorporates intention should prove useful in eliciting the factors that could increase EC use when it is needed.

**The Integrated Behavioral Model and Intention**

The Integrated Behavioral Model as described by Montano and Kasprzyk (2008) is an extension of the Theory of Planned Behavior (Ajzen, 1991), which shows a high correlation between intention and performance of a behavior. Although about one quarter of the variance in behavior was accounted for in some studies of intention (Schwarzer et al., 2007), other studies have shown intention did not always elicit the intended behavior (Thornton & Calam, 2011). Schwarzer (2008) suggests it takes more than will power to move intention to actual behavior and examined the use of advance preparation, skills, and contingency plans as ways to scaffold intention. The Integrated Behavioral Model incorporates skills, knowledge and motivation to explain intention (Montano & Kasprzyk, 2008) as well as other factors that help explain behavior, including self-efficacy (Schwarzer et al., 2007). Because emergency contraception is an infrequent behavior, intention could be the best way to analyze undergraduate college student use of EC. The Integrated Behavioral Model may prove to be a powerful tool in eliciting this information.

**Summary**

This chapter provided background information on emergency contraception (EC), its mechanism of action, how and when it is used, and how it differs from the abortion
pill. A detailed account of the legal and ethical struggles that have occurred as well as
problems associated with the use of emergency contraception such as lack of awareness
and inaccessibility, along with advanced provision of emergency contraception for
c Convenience were examined. Health care providers’ knowledge, attitudes, beliefs and
practices associated with distributing emergency contraception provided additional
information concerning the scope of the problem. Differences in populations and their
use, knowledge and attitudes about emergency contraception was discussed as was its use
by adolescents/teenagers and college students. This information was followed by a
description of the Integrated Behavioral Model and its relevance to emergency
contraceptive use in college students, how it has been used in studies of other types of
contraception and how it can be used to predict intention to use emergency contraception.
Chapter Three

Methods

Chapter three describes the methods used to execute this study of emergency contraceptive use among undergraduate college students. An explanation of participant selection and instrument development is delineated. Methods for testing reliability and validity of the instrument are elucidated as well as details of the procedures followed in designing the study. Components of the data analysis are explained, followed by the summary.

Participants

Participants in this study were undergraduate college students attending the 11 Midwestern institutions of the Mid-American Conference schools (Table 1). The other two MAC schools (The University of Buffalo and Temple University) were removed for geographic reasons. The students were not thought to be representative of the Midwestern students who were targeted by this study. The schools were chosen on the basis of homogeneity of size and population, as well as being the population of interest.

Contact was made with each school by sending a letter to a faculty member in one of the health education or other related departments for each university (Appendix A), followed by a phone call two to three weeks later. These faculty members acted as liaison between the researcher and their respective institution. For seven of the eleven universities, students were asked by their course instructor to complete a paper and pencil survey during a general education course. The remaining four institutions required the researcher to gather survey data on campus and the same procedures were followed at these schools.
Table 1
Sample Size Requirement

<table>
<thead>
<tr>
<th>Mid-American Conference Schools</th>
<th>Number of Undergraduates</th>
<th>Required Sample Size</th>
<th>Desired Sample Size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>((N=227,567))</td>
<td>((n=384))</td>
<td>((n=770))</td>
</tr>
<tr>
<td>1 Ball State University</td>
<td>22,000</td>
<td>35</td>
<td>70</td>
</tr>
<tr>
<td>2 Bowling Green State University</td>
<td>17,874</td>
<td>35</td>
<td>70</td>
</tr>
<tr>
<td>3 Central Michigan University</td>
<td>28,389</td>
<td>35</td>
<td>70</td>
</tr>
<tr>
<td>4 Eastern Michigan University</td>
<td>18,000</td>
<td>35</td>
<td>70</td>
</tr>
<tr>
<td>5 Kent State University</td>
<td>19,000</td>
<td>35</td>
<td>70</td>
</tr>
<tr>
<td>6 Miami University</td>
<td>14,936</td>
<td>35</td>
<td>70</td>
</tr>
<tr>
<td>7 Northern Illinois University</td>
<td>24,000</td>
<td>35</td>
<td>70</td>
</tr>
<tr>
<td>8 Ohio University</td>
<td>17,212</td>
<td>35</td>
<td>70</td>
</tr>
<tr>
<td>9 University of Akron</td>
<td>25,190</td>
<td>34</td>
<td>70</td>
</tr>
<tr>
<td>10 University of Toledo</td>
<td>21,000</td>
<td>35</td>
<td>70</td>
</tr>
<tr>
<td>11 Western Michigan University</td>
<td>19,966</td>
<td>35</td>
<td>70</td>
</tr>
<tr>
<td>TOTALS</td>
<td>227,567</td>
<td>384</td>
<td>770</td>
</tr>
</tbody>
</table>
A convenience sample of general education courses were cluster sampled for this cross sectional research study. The faculty contact at each school chose up to three general education classes to administer the survey and where necessary asked a colleague to disseminate the survey in his or her class.

**Inclusion and Exclusion Criteria.** All students attending an undergraduate general education course and over the age of 18 were included in this study. Students not enrolled at the institution, or who were under the age of 18 were excluded.

A sample size analysis was conducted using a sample size calculator (Creative Research Systems, 2010) for a 95% confidence interval and a 5% margin of error and population \((N=227,567)\) resulting in a sample size of 384. Response rates for surveys administered to college students fluctuate depending on several variables (Sax, Gilmartin, & Bryant, 2003). For example, response rates have ranged from 95% (Sawyer & Thompson, 2003) for college students who were surveyed on knowledge and attitudes regarding emergency contraception; to a 78% response rate for a survey on college students’ perception of risk for an unplanned pregnancy (Whaley, 2000). For the current study, an a priori response rate of 50% was assumed. Accordingly, surveys from approximately 70 students were requested from each school, for a total sample size of 770 participants across the eleven universities.

Institutional Review Board (IRB) approval from the University of Toledo was received for this study (Appendix B) and individual IRB sanction/approval from each of the remaining 10 schools was obtained (Appendix C). Four schools required the researcher to be on campus to distribute and collect the data while the remaining seven schools’ IRBs approved the use of a faculty member from their own school.
Instrument

A survey instrument was designed specifically for this study. Studies that address the research questions in this study are limited; consequently several methods were used to develop a new instrument. The constructs of the Integrated Behavioral Model (Montano & Kasprzyk, 2008) and the research questions in Chapter One were used as the basis for survey design. Because emergency contraception has not been studied in undergraduate college students using the Integrated Behavioral Model, focus groups were conducted at the University of Toledo to elicit information directly from members of the target audience. After Institutional Review Board (IRB) approval was granted for conducting focus group sessions (Appendix D), participants were recruited by approaching instructors of 18 health, recreation, English, educational psychology and political science courses and asking for volunteers from their classes. In addition, to ensure enough participants for the focus group sessions, flyers, approved by the IRB (Appendix E), were placed on 20 bulletin boards in the Student Union. Volunteers in the classes were asked to put their name, e-mail address and phone numbers on a sign-up sheet for which only the researcher had access. The flyers listed an e-mail address and a phone number to call if someone was interested in participating in a focus group discussion. No participants were enrolled via flyers at the Student Union.

Group sessions were designed to include 6-12 students each, consisting of the same gender. Six sessions were planned, three with female students and three with male students. Ultimately, eight sessions were held with a total of 20 males; and five sessions were held with a total of 24 females. Incentives for agreeing to take part in this portion of the study included pizza and beverages during the sessions as well as free t-shirts. At
the beginning of each meeting, all students were given an Adult Research Subject – Informed Consent Form (Appendix F) to sign, including agreement for the sessions to be audio-taped. The original signed copy was kept by the moderator. The audio-taped focus group sessions were subsequently transcribed and analyzed for use in refining survey questions (Appendix G).

The purpose of the focus group sessions was to elicit college student input on knowledge and use of emergency contraception. Students were asked whether they felt susceptible to pregnancy, how pregnancy would impact their lives as undergraduate college students, and what the potential barriers and benefits are for using emergency contraceptives. They were also asked for suggestions on what would remind them to use emergency contraception and whether they felt they could use it if or when it may be needed. Focus group questions were determined prior to commencement based on an extensive literature review (Appendix H).

Using the information acquired from the analysis of the focus group sessions (Appendix G), the constructs of the Integrated Behavioral Model, the research questions for this study, as well as the information from a comprehensive literature review, questions for the survey instrument were developed. The instrument, divided into sections, included questions about knowledge, behavior, attitude, perceived norms, personal agency and demographics. The last page contained the demographic information to help maximize response rates (King, Pealer, & Bernard, 2001). Length of the instrument was kept to four pages and printed on blue paper, also to increase response rates (King et al., 2001).
Readability of the survey instrument was analyzed using the Microsoft Word grammar tool, Flesch-Kincaid. Reading level was assessed to be at a grade level of 8.6 with a standard readability score. Several other readability formulas were utilized and reading level was found to be between grade 8.5 (Automated Reliability Index) to 12.6 (Gunning Fog) (ReadabilityFormulas.com, n.d.). While the participants for this study were undergraduate college students, they were first year students and their reading abilities may not have reached college level. Ensuring the survey instrument is easy to read and understand increases response rates (King et al., 2001). SMOG Readability Calculator (Trottier, 2009) was also used to estimate the number of years of schooling the participants would need to understand the health-related questions on the survey (McLaughlin, n.d.). SMOG grade level was calculated to be approximately 10th grade.

A yes/no response may not elicit the depth of responses required for analyses; consequently a four-response Likert-scale with closed-ended questions including a neutral category was used for most sections of the survey. Although eliminating the middle or neutral answer would force students to think about their beliefs before answering and avoid the temptation to satisfice by choosing the mid-point answer (Weems & Onwuegbuzie, 2001), knowledge and use of emergency contraception is thought to be extremely low in this targeted audience. Thus a forced choice would be meaningless. Response options for knowledge questions assumed a true/false, yes/no format.

**Construct Variables and Measurement**

The Integrated Behavioral Model utilizes three categories of constructs consisting of two separate items (Montano & Kasprzyk, 2008). These include Attitude, subdivided
into experiential attitude and instrumental attitude; perceived norm, which includes injunctive norm and descriptive norm; and personal agency, consisting of perceived control and self-efficacy (Montano & Kasprzyk, 2008). The survey consisted of sections containing questions to elicit responses specific to each construct. These six constructs assist in determining intention to use emergency contraception. Tables 10-15 provide details of the items from each construct, as well as the score range and composite mean with standard deviation. Composite scores were obtained for each of the six constructs and were used in analysis of the data.

**Experiential Attitude.** This construct was assessed using dichotomous semantic scales (bad/good, embarrassed/confident, negatively judged/positively judged, ashamed/proud, and worried/relieved). Each word group was given five choices of response which were numbered from 1-5. Score ranged from 1-25; the higher the score the more positive the feelings for using emergency contraception.

**Instrumental Attitude.** This section was assessed using the dichotomous semantic scales (immoral/moral, irresponsible/responsible, unjustifiable/justifiable, unhealthy/healthy, and difficult/easy). Each group included 5 response choices numbered 1-5. Score ranged from 1-25; the higher the score the more positive the thoughts about using emergency contraception.

**Injunctive Norm.** This item was assessed using a 5-point Likert scale of strongly disapprove, disapprove, neither approve nor disapprove, approve and strongly approve, scored from 1-5, respectively. Each of seven questions were answered with one of the above responses for a score range of 1-35; the higher the score the stronger the approval of others for the respondents’ use of emergency contraception.
**Descriptive Norm.** This construct was measured using a 5-point Likert scale with very unlikely, unlikely, not sure, likely and very likely as response choices, scored from 1-5, respectively. Responses to three questions used one of the above choices with a score range of 1-15; the higher the score the stronger the likelihood that respondents thought others were using emergency contraception.

**Perceived Control.** Perceived control was measured using a 5-point Likert scale with responses including not at all under my control, slightly under my control, somewhat under my control, mostly under my control and totally under my control. Responses were scored from 1-5 for each of four questions. Score range was 1-20; the higher the score the higher the perception of control for issues related to use of emergency contraception.

**Self-Efficacy.** This item was measured using a 5-point Likert scale with responses that included not at all confident, not very confident, somewhat confident, very confident, and extremely confident. Each of five questions were scored from 1-5. Score range was 1-25; the higher the score the more confident the respondent felt in his or her abilities related to the use of emergency contraception.

**Instrument Testing**

Six expert reviewers were contacted and asked to establish face, construct, and content validity for this survey, including accuracy of content, appropriateness of questions specific to the Integrated Behavioral Model and appropriate survey composition. Several of these reviewers forwarded the survey to their colleagues for additional review, for a total of 10 expert reviewers (Appendix I). All reviewers were sent via e-mail a copy of the survey instrument and a cover letter and asked to review the
instrument. The survey was also forwarded via e-mail to the faculty at the Mid-American Conference schools who agreed to assist with survey dissemination at their schools, several of whom provided additional suggestions. Based on feedback from the reviewers changes were made to wording, style, and content of the instrument.

The survey was then pilot tested with undergraduate college students \( n=30 \) at The University of Toledo, who were observed completing the survey. They were asked to make note of their opinions directly on the survey related to the ease of completion, and the clarity of the instructions and questions (Creswell, 2008). The survey was subsequently revised based on the results of the pilot testing, and sent to the Institutional Review Board for approval (Appendix J and K).

Test-retest reliability was conducted during the summer by asking undergraduate students \( n=41 \) in three general education classes at The University of Toledo, to complete the survey twice, 10 days to two weeks apart. Kappa Statistic using SPSS version 20 and Weighted Kappa Statistic using SAS were used to analyze the data. The purpose of using the Kappa Statistic is to measure the agreement between the first and second set of survey answers (Viera & Garrett, 2005). Weighted Kappa elicits a more precise indication of how close or how distant answers are, giving more weight to answers that were more closely related (Viera & Garrett, 2005). For instance, students who rated an experiential attitude question as “very bad” on the first test and “bad” on the second test would be considered more agreement than students who answered one survey as “very bad” and the second survey as “very good.” Table 2 illustrates that most results yielded a moderate to substantial agreement (0.41 to 0.78), with perceived control
Table 2

Stability Reliability (Test/Retest) Scores for Survey Instrument

<table>
<thead>
<tr>
<th>Construct</th>
<th># of Items</th>
<th>Weighted Kappa Statistic Range*</th>
<th>Interpretation**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge</td>
<td>10</td>
<td>0.35-0.78</td>
<td>Fair to substantial</td>
</tr>
<tr>
<td>Experiential Attitude</td>
<td>5</td>
<td>0.54-0.77</td>
<td>Moderate to substantial</td>
</tr>
<tr>
<td>Instrumental Attitude</td>
<td>5</td>
<td>0.41-0.78</td>
<td>Moderate to substantial</td>
</tr>
<tr>
<td>Injunctive Norm</td>
<td>7</td>
<td>0.46-0.62</td>
<td>Moderate to substantial</td>
</tr>
<tr>
<td>Self-Efficacy</td>
<td>5</td>
<td>0.50-0.61</td>
<td>Moderate to substantial</td>
</tr>
<tr>
<td>Perceived Control</td>
<td>4</td>
<td>0.38-0.57</td>
<td>Fair to moderate</td>
</tr>
<tr>
<td>Descriptive Norm</td>
<td>3</td>
<td>0.57-0.67</td>
<td>Moderate to substantial</td>
</tr>
<tr>
<td>Intention</td>
<td>7</td>
<td>0.36-0.77</td>
<td>Fair to substantial</td>
</tr>
</tbody>
</table>

\( n = 41 \)

* Weighted Kappa Statistic using SAS

** (Viera & Garrett, 2005)
results at fair to moderate agreement (0.38-0.57) and intention and knowledge results at fair to substantial (0.35-0.78) agreement (Viera & Garrett, 2005).

Internal consistency of the instrument was measured using Cronbach alpha in SPSS version 20. Survey items were analyzed in groups based on the constructs of the Integrated Behavioral Model. Alpha coefficients for each construct can be found in Table 3. Values for the constructs ranged from 0.87 for experiential attitude to 0.70 for perceived control. These are considered moderate to excellent coefficients (Portney & Watkins, 2009).

Construct validity was assessed using Principal Components Analysis on SPSS version 20 with Varimax Rotation utilizing a cut-off of 0.35 (Table 4). Results revealed double-loading on several variables. Two questions within the instrumental attitude construct loaded on both experiential attitude and instrumental attitude. The instrumental attitude questions ask how the respondent thinks about using emergency contraception, and the experiential attitude asks how he or she would feel about using emergency contraception. The difference was quite small for both questions, with “unhealthy” vs. “healthy” loading highest on the instrumental attitude construct, a difference of 0.008, and “difficult” vs. “easy”, a difference of 0.018. The unhealthy/healthy question remained in the instrumental attitude construct because the loading was higher, which is a viable option that can be made when making a decision about whether to keep, move or delete an item (DiIorio, 2005). A difference of 0.018 for the question of difficult/easy (instrumental attitude) is not high enough to change the theoretical underpinnings of the survey and the question remained in instrumental attitude (DiIorio, 2005).
Table 3

Internal Consistency Scores for Survey Instrument

<table>
<thead>
<tr>
<th>Construct</th>
<th># of Items</th>
<th>Cronbach Alpha</th>
<th>Interpretation**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge</td>
<td>10</td>
<td>0.73</td>
<td>Moderate</td>
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<tr>
<td>Experiential Attitude</td>
<td>5</td>
<td>0.87</td>
<td>Good</td>
</tr>
<tr>
<td>Instrumental Attitude</td>
<td>5</td>
<td>0.85</td>
<td>Good</td>
</tr>
<tr>
<td>Injunctive Norm</td>
<td>7</td>
<td>0.85</td>
<td>Good</td>
</tr>
<tr>
<td>Self-Efficacy</td>
<td>5</td>
<td>0.83</td>
<td>Good</td>
</tr>
<tr>
<td>Perceived Control</td>
<td>4</td>
<td>0.70</td>
<td>Moderate</td>
</tr>
<tr>
<td>Descriptive Norm</td>
<td>3</td>
<td>0.74</td>
<td>Moderate</td>
</tr>
<tr>
<td>Intention</td>
<td>7</td>
<td>0.89</td>
<td>Good</td>
</tr>
</tbody>
</table>

n=1,553

** (Portney & Watkins, 2009)
<table>
<thead>
<tr>
<th></th>
<th>Component 1</th>
<th>Component 2</th>
<th>Component 3</th>
<th>Component 4</th>
<th>Component 5</th>
<th>Component 6</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Experiential Attitude - If I (or my partner) used emergency contraception I would feel:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bad to Good</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Embarrassed to Confident</td>
<td>.777</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Negative Judged to Positively Judged</td>
<td>.766</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Ashamed to Proud</td>
<td>.803</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Worried to Relieved</td>
<td>.684</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Instrumental Attitude: I think using emergency contraception is:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Immoral to Moral</td>
<td>-</td>
<td>.699</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Irresponsible to Responsible</td>
<td>-</td>
<td>.697</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Unjustifiable to Justifiable</td>
<td>-</td>
<td>.741</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Unhealthy to Healthy</td>
<td>.474</td>
<td>.482</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Difficult to Easy</td>
<td>.395</td>
<td>.367</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Injunctive Norm: When it comes to me (or my partner) using emergency contraception:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My partner would:</td>
<td>-</td>
<td>.592</td>
<td>-</td>
<td>.374</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>My friends would:</td>
<td>-</td>
<td>.508</td>
<td>-</td>
<td>.467</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>My doctor would:</td>
<td>-</td>
<td>.389</td>
<td>-</td>
<td>.659</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Pharmacy staff would:</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>.714</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Most college students would:</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>.676</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Most people would:</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>.764</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
### Table 4 (continued)

**Principal Components Analysis/Rotated Component Matrix**

<table>
<thead>
<tr>
<th>Component</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Self-Efficacy:</strong> If you (or your partner) wanted to use emergency contraception, how confident are you in your ability:</td>
<td></td>
<td></td>
<td></td>
<td>.752</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To obtain emergency contraception.</td>
<td>-</td>
<td>-</td>
<td>.752</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Ask pharmacy staff for emergency contraception.</td>
<td>-</td>
<td>-</td>
<td>.822</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Use emergency contraception correctly.</td>
<td>-</td>
<td>-</td>
<td>.745</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Buy emergency contraception on-line.</td>
<td>-</td>
<td>-</td>
<td>.383</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Overcome any feelings of embarrassment in order to purchase emergency contraception.</td>
<td>-</td>
<td>-</td>
<td>.676</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Perceived Control:</strong> If you (or your partner) wanted to use emergency contraception, how much control would you have over each of the following?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.735</td>
<td></td>
</tr>
<tr>
<td>Buying it at a nearby pharmacy is:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.735</td>
</tr>
<tr>
<td>Obtaining money to pay for it is:</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>.715</td>
<td>-</td>
</tr>
<tr>
<td>Buying it on campus is:</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>.702</td>
<td>-</td>
</tr>
<tr>
<td>Whether I (or my partner) use it is:</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>.624</td>
<td>-</td>
</tr>
<tr>
<td><strong>Descriptive Norm:</strong> How likely is it that:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.790</td>
</tr>
<tr>
<td>At least one of my classmates has used emergency contraception.</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>.790</td>
</tr>
<tr>
<td>At least one of my friends has used emergency contraception.</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>.819</td>
</tr>
<tr>
<td>At least one of my family members has used emergency contraception.</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>.683</td>
</tr>
</tbody>
</table>

\(n = 1,553\)
Three of the seven questions for the injunctive norm loaded on both injunctive norm and instrumental attitude. One question, “my doctor would approve of my using EC” loaded higher by 0.27 for injunctive norm and the decision to keep it within the original construct was made based on higher score (DiLorio, 2005). The two remaining questions of “my partner” and “my friends,” which loaded at 0.22 and 0.04 higher for instrumental attitude than injunctive norm, were kept intact based on theoretical and conceptual principles (DiLorio, 2005) as well as the two constructs being measured on different scales.

**Procedures**

This study utilized a cross-sectional survey research design in which each cluster sample was surveyed at one time. The survey instrument was designed to elicit participants’ attitude, perceived norms and personal agency (constructs of the Integrated Behavioral Model) as well as knowledge, and behavior prevalence, which should help determine students’ intention to use emergency contraception.

Paper surveys were chosen as the method of data collection for this study. In 2003, paper surveys were reported to generate higher response rates than internet-based surveys (Sax et al., 2003). Eight years later, Wyrick and Bond (2011) report that adolescents completing web-based surveys were more likely to skip items on the survey than those who completed paper-and-pencil surveys. Faculty at each MAC school were contacted and asked for assistance in administering the survey. Once IRB approval was received from the University of Toledo (Appendix A), the paperwork was forwarded to the remaining 10 MAC schools for subsequent approval/acceptance by that institution’s IRB (Appendix B). Individual consent was implied by the completion of the survey,
although an information sheet with the elements of informed consent was distributed to each student (Appendix L).

The paper and pencil survey was distributed in general education classes by the researcher at four institutions (per IRB requirements) by the faculty contact or an assistant at the remaining seven schools. The faculty contacts were given a description of the study and an advanced copy of the survey for feedback prior to its dissemination. The liaisons were given a $100 cash incentive for their assistance. Instructors who allowed the researcher into his or her class were given a $10 Starbucks gift card.

The surveys were distributed to all students in the class and the students were given the choice to complete the survey or not. If the student chose not to complete the survey, he or she was asked to turn the survey over and answer the first four demographic questions at the end; 25 students (1.6%) opted to answer demographic questions only. The non-respondents were compared to respondents on demographic variables. Students were asked not to put identifying information on the survey, such as their name, social security number of school identifier. They were then asked to place the completed survey into an envelope.

**Data Analysis**

SPSS version 20 was used for most statistical analyses. Descriptive statistics were calculated for all variables and include frequencies, percentages, means, standard deviations and range for composite construct scores. Path analysis was conducted using SAS. A variety of statistical tests were utilized to analyze each research question as follows:
Research Question #1

What do undergraduate college students know about emergency contraception?

Descriptive statistics, including frequencies and percentages of correct and incorrect answers were calculated.

Research Question #2

What is the prevalence of emergency contraception use among undergraduate college students in the Midwest?

Descriptive statistics including frequencies and percentages of students who use emergency contraception were calculated.

Research Question #3

What experiential attitudes do undergraduate college students have about emergency contraceptive use?

Descriptive statistics, including frequencies and percentages were used to describe student experiential attitudes. A composite score for experiential attitude was calculated as well as mean, standard deviation and score range.

Research Question #4

What instrumental attitudes do undergraduate college students have about emergency contraceptive use?

Descriptive statistics, including frequencies and percentages were used to describe student instrumental attitude. A composite score for instrumental attitude was calculated including mean, standard deviation and score range.
Research Question #5
What are undergraduate college students’ beliefs about whether important others approve or disapprove of using emergency contraception?

Descriptive statistics, including frequencies and percentages were used to describe student injunctive norm. A composite score for injunctive norm was calculated as well as mean, standard deviation and score range.

Research Question #6
Do undergraduate college students believe their peers use emergency contraception?

Descriptive statistics, including frequencies and percentages were used to describe student perceived descriptive norm. A composite score for descriptive norm was calculated including mean, standard deviation and score range.

Research Question #7
Do undergraduate college students think they have control over the decision to use emergency contraception?

Descriptive statistics, including frequencies and percentages were used to describe student perceived control. A composite score for perceived control was calculated as well as mean, standard deviation and score range.

Research Question #8
How confident do undergraduate college students feel in utilizing emergency contraception?

Descriptive statistics, including frequencies and percentages were used to describe student self-efficacy. A composite score for self-efficacy was calculated including mean, standard deviation and score range.
Research Question #9
Do differences exist in use of emergency contraception based on age, gender, sexual experience and year in school?

Descriptive statistics, including frequencies and percentages were used to describe differences in EC use as well as t-tests, Chi-square and ANOVA.

Research Question #10
Which constructs within the Integrated Behavioral Model are most predictive of undergraduate college students’ intention to use emergency contraception?

Path analysis conducted to determine path correlations.

Research Question #11
How much variance does the Integrated Behavioral Model explain in undergraduate college students’ intention to use emergency contraception?

Path analysis conducted to determine variance.

Summary
This chapter provides details of the methods used to conduct this study on perceptions and attitudes concerning emergency contraception among Midwestern college students. It begins with a description of the participants of the study and the selection process, followed by an explanation of the survey instrument and how it was tested to ensure validity and reliability. Study procedures, including research design and data analysis complete the methods section.
Chapter Four

Results

This chapter describes the results of the self-reported survey data collected from the 11 Midwestern schools of the Mid-American Conference. Sections include: Participant Selection and Response Rate, Participant Demographic Information, Sexual Education and Religious Beliefs of Participants, Student Knowledge about Emergency Contraception, as well as Sexual Experiences and Emergency Contraceptive Use. This chapter also includes analyses of the data for each of the constructs of the Integrated Behavioral Model and the analyses needed to answer each research question and hypothesis.

Participant Selection and Response Rate

Surveys, an information sheet, and proctor instructions were mailed to the schools with a self-addressed, stamped, Priority Mail® envelope for the return of the surveys. Of the 11 Mid-American conference schools selected, each of them agreed to participate in the study, for an institution response rate of 100%. One survey was discarded because the participant did not meet the inclusion criteria. A total of 1,553 useable surveys were obtained, which is more than enough required to achieve a 95% confidence interval and a 5% margin of error in the population (N=227,567).

Students who chose not to complete the survey were asked to turn the survey over and complete the demographics section. Of the 25 students who chose not to complete the survey, all completed demographics only, for a student response rate of 98.4%. See Table 5 for frequencies and percentages of demographic variables.
Table 5

Participant Demographics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Respondents $n = 1,553$</th>
<th>Non-Respondents $n = 25$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$n$</td>
<td>%</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>986</td>
<td>63.5</td>
</tr>
<tr>
<td>Male</td>
<td>542</td>
<td>34.9</td>
</tr>
<tr>
<td>Transgender</td>
<td>2</td>
<td>0.1</td>
</tr>
<tr>
<td>Missing Information</td>
<td>23</td>
<td>1.5</td>
</tr>
<tr>
<td>Race/Ethnicity</td>
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<td></td>
</tr>
<tr>
<td>White (not Hispanic)</td>
<td>1,170</td>
<td>75.3</td>
</tr>
<tr>
<td>Black (not Hispanic)</td>
<td>188</td>
<td>12.1</td>
</tr>
<tr>
<td>Hispanic or Latino/a</td>
<td>54</td>
<td>3.5</td>
</tr>
<tr>
<td>Biracial or Multiracial</td>
<td>51</td>
<td>3.3</td>
</tr>
<tr>
<td>Asian or Pacific Islander</td>
<td>37</td>
<td>2.4</td>
</tr>
<tr>
<td>Other, including Arabic, Indian, Middle Eastern, Serbian, White Hispanic</td>
<td>10</td>
<td>0.6</td>
</tr>
<tr>
<td>American Indian, Alaskan</td>
<td>7</td>
<td>0.5</td>
</tr>
<tr>
<td>Missing Information</td>
<td>33</td>
<td>2.1</td>
</tr>
<tr>
<td>Age</td>
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<tr>
<td>18</td>
<td>242</td>
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</tr>
<tr>
<td>19</td>
<td>417</td>
<td>26.9</td>
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<tr>
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<td>355</td>
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</tr>
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<td>21</td>
<td>228</td>
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</tr>
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<td>22</td>
<td>120</td>
<td>7.7</td>
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<tr>
<td>25</td>
<td>10</td>
<td>0.6</td>
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<tr>
<td>26</td>
<td>10</td>
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<td>27</td>
<td>11</td>
<td>0.7</td>
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<td>28-35</td>
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<td>36-48</td>
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<td>1.5</td>
</tr>
<tr>
<td>51-63</td>
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<td>0.4</td>
</tr>
<tr>
<td>Missing Information</td>
<td>30</td>
<td>1.9</td>
</tr>
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</table>
Table 5 (continued)

Participant Demographics

<table>
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<tr>
<th>Characteristic</th>
<th>Respondents</th>
<th></th>
<th>Non-Respondents</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n = 1,553</td>
<td>n</td>
<td>%</td>
<td>n</td>
</tr>
<tr>
<td>Year in School</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freshman</td>
<td>369</td>
<td>23.8</td>
<td>6</td>
<td>24.0</td>
</tr>
<tr>
<td>Sophomore</td>
<td>506</td>
<td>32.6</td>
<td>12</td>
<td>48.0</td>
</tr>
<tr>
<td>Junior</td>
<td>402</td>
<td>25.9</td>
<td>3</td>
<td>12.0</td>
</tr>
<tr>
<td>Senior</td>
<td>214</td>
<td>13.8</td>
<td>3</td>
<td>12.0</td>
</tr>
<tr>
<td>Other</td>
<td>34</td>
<td>2.2</td>
<td>1</td>
<td>4.0</td>
</tr>
<tr>
<td>Missing Information</td>
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<td>1.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relationship Status</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not currently in a relationship</td>
<td>692</td>
<td>44.6</td>
<td>16</td>
<td>64.0</td>
</tr>
<tr>
<td>Committed relationship</td>
<td>529</td>
<td>34.1</td>
<td>5</td>
<td>20.0</td>
</tr>
<tr>
<td>Casual relationship</td>
<td>167</td>
<td>10.8</td>
<td>1</td>
<td>4.0</td>
</tr>
<tr>
<td>New relationship</td>
<td>70</td>
<td>4.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engaged</td>
<td>39</td>
<td>2.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>21</td>
<td>1.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Divorced</td>
<td>3</td>
<td>0.2</td>
<td>1</td>
<td>4.0</td>
</tr>
<tr>
<td>Widowed</td>
<td>1</td>
<td>0.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Missing Information</td>
<td>31</td>
<td>2.0</td>
<td>2</td>
<td>8.0</td>
</tr>
<tr>
<td>Sexual Orientation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heterosexual</td>
<td>1,430</td>
<td>92.1</td>
<td></td>
<td>88.0</td>
</tr>
<tr>
<td>Bisexual</td>
<td>37</td>
<td>2.4</td>
<td></td>
<td>4.0</td>
</tr>
<tr>
<td>Homosexual</td>
<td>25</td>
<td>1.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unsure</td>
<td>24</td>
<td>1.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Missing Information</td>
<td>37</td>
<td>2.4</td>
<td></td>
<td>8.0</td>
</tr>
</tbody>
</table>

n = 1,553
Participant Demographic Information

Table 5 includes information on participant demographics. The sample reflected the overall population demographics among college students from the Mid-American Conference, with the slight exception of females who represented 63.5% of the sample data compared to 53.4% of the college population. Racial trends elicited remarkable consistency with 75.3% and 75.8% of the students indicating they were white from the sample and overall population, respectively. All participants who marked more than one race/ethnicity were categorized as biracial or multiracial. Mean age for the present study was 20.6 years, which was similar to the sampled schools where the mean ranged from 20-22. Participants were undergraduates distributed predominantly between freshmen (23.8%) and juniors (25.9%) with sophomores comprising the largest group (32.6%).

Many participants reported not currently being in a relationship (44.6%), followed by having a committed relationship (34.1%). The preponderance of students described themselves as heterosexual (92.1%), with 2.4% reporting being bisexual. Students who were unsure of their sexual orientation (1.5%) numbered nearly as many as those who identified themselves as homosexual (1.6%).

Sexual Education and Religious Beliefs of Participants

The survey did not include religious preference specifically, but rather approached sexual beliefs from a religion-oriented perspective (Table 6). A substantial percentage of participants believed sex before marriage was against their religion (45.6%) and a slightly higher percentage reported abortion was against their religion (49.2%). More than half of the students did not consider the use of birth control to prevent pregnancy against their religion (60.1%). Participants were also asked when life
### Table 6

**Sexual Education and Religious Beliefs of Participants**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$n$</td>
</tr>
<tr>
<td><strong>Have you ever taken a human sexuality course?</strong></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>1,280</td>
</tr>
<tr>
<td>Yes</td>
<td>255</td>
</tr>
<tr>
<td>N/A</td>
<td>3</td>
</tr>
<tr>
<td>Missing Information</td>
<td>15</td>
</tr>
<tr>
<td><strong>Is sex before marriage against your religion?</strong></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>708</td>
</tr>
<tr>
<td>No</td>
<td>670</td>
</tr>
<tr>
<td>N/A</td>
<td>156</td>
</tr>
<tr>
<td>Missing Information</td>
<td>19</td>
</tr>
<tr>
<td><strong>Is abortion against your religion?</strong></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>764</td>
</tr>
<tr>
<td>No</td>
<td>531</td>
</tr>
<tr>
<td>N/A</td>
<td>240</td>
</tr>
<tr>
<td>Missing Information</td>
<td>18</td>
</tr>
<tr>
<td><strong>Is using birth control to prevent pregnancy against your religion?</strong></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>934</td>
</tr>
<tr>
<td>Yes</td>
<td>308</td>
</tr>
<tr>
<td>N/A</td>
<td>293</td>
</tr>
<tr>
<td>Missing Information</td>
<td>18</td>
</tr>
<tr>
<td><strong>In your opinion, when does life begin?</strong></td>
<td></td>
</tr>
<tr>
<td>When sperm and egg join (fertilization)</td>
<td>565</td>
</tr>
<tr>
<td>When you can hear the baby’s first heart beats</td>
<td>386</td>
</tr>
<tr>
<td>When fertilized egg embeds into the uterine lining (implantation)</td>
<td>221</td>
</tr>
<tr>
<td>At birth</td>
<td>167</td>
</tr>
<tr>
<td>Don’t know/not sure</td>
<td>158</td>
</tr>
<tr>
<td>Missing Information</td>
<td>56</td>
</tr>
</tbody>
</table>

$n = 1,553$
begins and 36.4% believed when sperm and egg join, while 24.9% thought it was when you can hear the baby’s first heart beats. Most students had not taken a human sexuality course (82.4%) at the time they completed the survey.

**Student Knowledge about Emergency Contraception**

**Research Question #1**

What do undergraduate college students know about emergency contraception?

Overall knowledge about emergency contraception was poor with 36.5% of students failing to answer five or more of the 10 knowledge-based items correctly (Table 7). Table 8 shows that over half of the sample incorrectly answered the following four items (percentage wrong are shown in parentheses): Emergency contraception flushes everything out of the woman’s uterus (65.8%), Using emergency contraception affects a woman’s fertility in the future (69.2%), Women cannot repeatedly use emergency contraception due to its physical effects (86.1%) and Men can buy emergency contraception if they are 17 or older (54.9%). At the beginning of the survey emergency contraception was described as “a pill that is taken to keep from getting pregnant…” and 25.9% of respondents incorrectly answered the question: Emergency contraception is designed to prevent pregnancy.

The relationship between knowledge of emergency contraception and EC use was explored using a t-test. Mean EC use differed significantly from mean knowledge scores according to the t-test, t(332.14) = -8.71, p = 0.00. Students who have not used EC (\(\bar{x} = 5.66, s = 2.12\)) scored lower than students who have used EC (\(\bar{x} = 6.81, s = 1.70\)). The 95% confidence interval of the difference is -1.41 to -0.89. Figure 1 reveals emergency
Table 7
Overall Knowledge Results of Participants

<table>
<thead>
<tr>
<th>Questions Answered Correctly</th>
<th>Responses</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Missing Information</td>
<td>103</td>
<td></td>
<td>6.6</td>
</tr>
<tr>
<td>7-9 answers correct</td>
<td>551</td>
<td></td>
<td>35.5</td>
</tr>
<tr>
<td>4-6 answers correct</td>
<td>678</td>
<td></td>
<td>43.7</td>
</tr>
<tr>
<td>1-3 answers correct</td>
<td>163</td>
<td></td>
<td>10.5</td>
</tr>
<tr>
<td>No answers correct</td>
<td>30</td>
<td></td>
<td>1.9</td>
</tr>
<tr>
<td>Knowledge Composite Score</td>
<td></td>
<td>(\bar{x} = 5.81)</td>
<td>(s = 2.12)</td>
</tr>
<tr>
<td>Score Range: 0-10</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(n = 1,553\)
Table 8
Specific Knowledge Results of Participants

<table>
<thead>
<tr>
<th>Questions</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
</tr>
<tr>
<td>Emergency contraception is designed to prevent pregnancy.</td>
<td>Incorrect</td>
</tr>
<tr>
<td></td>
<td>Correct</td>
</tr>
<tr>
<td></td>
<td>Missing Information</td>
</tr>
<tr>
<td>Plan B One-Step® is a type of emergency contraception.</td>
<td>Incorrect</td>
</tr>
<tr>
<td></td>
<td>Correct</td>
</tr>
<tr>
<td></td>
<td>Missing Information</td>
</tr>
<tr>
<td>The morning after pill and emergency contraception are the same thing.</td>
<td>Incorrect</td>
</tr>
<tr>
<td></td>
<td>Correct</td>
</tr>
<tr>
<td></td>
<td>Missing Information</td>
</tr>
<tr>
<td>Emergency contraception flushes everything out of the woman’s uterus.</td>
<td>Incorrect</td>
</tr>
<tr>
<td></td>
<td>Correct</td>
</tr>
<tr>
<td></td>
<td>Missing Information</td>
</tr>
<tr>
<td>Emergency contraception is the same thing as an abortion.</td>
<td>Incorrect</td>
</tr>
<tr>
<td></td>
<td>Correct</td>
</tr>
<tr>
<td></td>
<td>Missing Information</td>
</tr>
<tr>
<td>Emergency contraception can be used after birth control has failed</td>
<td>Incorrect</td>
</tr>
<tr>
<td>(condom breaks, forgot to take a birth control pill).</td>
<td>Correct</td>
</tr>
<tr>
<td></td>
<td>Missing Information</td>
</tr>
</tbody>
</table>
### Table 8 (continued)

**Specific Knowledge Results of Participants**

<table>
<thead>
<tr>
<th>Questions</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$n$</td>
</tr>
<tr>
<td>Using emergency contraception affects a woman’s fertility in the future.</td>
<td>Incorrect 1,074</td>
</tr>
<tr>
<td></td>
<td>Correct    449</td>
</tr>
<tr>
<td></td>
<td>Missing Information 30</td>
</tr>
<tr>
<td>Women cannot repeatedly use emergency contraception due to its physical effects.</td>
<td>Incorrect 1,337</td>
</tr>
<tr>
<td></td>
<td>Correct    191</td>
</tr>
<tr>
<td></td>
<td>Missing Information 25</td>
</tr>
<tr>
<td>Men can buy emergency contraception if they are 17 or older.</td>
<td>Incorrect 853</td>
</tr>
<tr>
<td></td>
<td>Correct    690</td>
</tr>
<tr>
<td></td>
<td>Missing Information 10</td>
</tr>
<tr>
<td>For best results, emergency contraception should be used within 72 hours.</td>
<td>Incorrect 340</td>
</tr>
<tr>
<td></td>
<td>Correct    1,205</td>
</tr>
<tr>
<td></td>
<td>Missing Information 8</td>
</tr>
</tbody>
</table>

$n = 1,553$
Figure 1

Exploratory Graph of Emergency Contraceptive Use and Level of Knowledge
contraceptive use was closely related to students’ knowledge about it; as knowledge increased, so did EC use.

**Sexual Experiences and Emergency Contraceptive Use**

Table 9 summarizes sexual experiences and contraceptive use. The majority of participants (78.9%) reported having had sexual intercourse at least once in their lifetime, while 57.2% engaged in vaginal intercourse within the last 30 days. The majority of sexually active students disclosed use of at least one method to prevent pregnancy (63.4%).

**Research Question #2**

What is the prevalence of emergency contraception use among undergraduate college students in the Midwest?

Table 9 reveals use of emergency contraceptives for all students in this sample (14.6%) and for sexually active students only (18.1%). Participants also reported ever experiencing an unintended/unplanned pregnancy (7.3%) for all students and 8.4% for sexually active students only.

**Analyses of Integrated Behavioral Model Constructs**

**Research Question #3**

What experiential attitudes do undergraduate college students have about emergency contraceptive use?

Approximately one-third of respondents chose neither one extreme nor another for the experiential attitude questions with the exception of feeling worried or relieved about using emergency contraception (Table 10). Slightly more than one-quarter of students (29.0%) chose “very worried” to describe their feelings about using EC, while
Table 9
Sexual Experiences and Emergency Contraceptive Use of Participants

<table>
<thead>
<tr>
<th>Questions</th>
<th>Responses</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Have you had sexual intercourse at least once in your lifetime?</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>1,226</td>
<td>78.9</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>283</td>
<td>18.2</td>
<td></td>
</tr>
<tr>
<td>N/A</td>
<td>18</td>
<td>1.2</td>
<td></td>
</tr>
<tr>
<td>Missing Information</td>
<td>26</td>
<td>1.7</td>
<td></td>
</tr>
<tr>
<td><strong>Within the last 12 months, have you or your partner(s) used emergency</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>contraception?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Sexually active students only:</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>207</td>
<td>18.1</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>909</td>
<td>79.4</td>
<td></td>
</tr>
<tr>
<td>N/A</td>
<td>28</td>
<td>2.4</td>
<td></td>
</tr>
<tr>
<td>Missing Information</td>
<td>1</td>
<td>0.1</td>
<td></td>
</tr>
<tr>
<td><strong>Have you or your partner(s) ever experienced an unintended/unplanned</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pregnancy?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Sexually active students only:</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>96</td>
<td>8.4</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>1,032</td>
<td>90.1</td>
<td></td>
</tr>
<tr>
<td>N/A</td>
<td>16</td>
<td>1.4</td>
<td></td>
</tr>
<tr>
<td>Missing Information</td>
<td>1</td>
<td>0.1</td>
<td></td>
</tr>
<tr>
<td><strong>Would you use the Internet to purchase emergency contraception if</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>needed?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>261</td>
<td>16.8</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>1,148</td>
<td>73.9</td>
<td></td>
</tr>
<tr>
<td>N/A</td>
<td>112</td>
<td>7.2</td>
<td></td>
</tr>
<tr>
<td>Missing Information</td>
<td>32</td>
<td>2.1</td>
<td></td>
</tr>
<tr>
<td><strong>Within the last 30 days, did you have vaginal intercourse?</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>889</td>
<td>57.2</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>576</td>
<td>37.1</td>
<td></td>
</tr>
<tr>
<td>N/A</td>
<td>59</td>
<td>3.8</td>
<td></td>
</tr>
<tr>
<td>Missing Information</td>
<td>29</td>
<td>1.9</td>
<td></td>
</tr>
<tr>
<td><strong>Did you or your partner(s) use a method to prevent pregnancy the last</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>time you had vaginal intercourse?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>985</td>
<td>63.4</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>319</td>
<td>20.5</td>
<td></td>
</tr>
<tr>
<td>N/A</td>
<td>220</td>
<td>14.2</td>
<td></td>
</tr>
<tr>
<td>Missing Information</td>
<td>29</td>
<td>1.9</td>
<td></td>
</tr>
</tbody>
</table>
Table 9 (continued)

Sexual Experiences and Emergency Contraceptive Use of Participants

<table>
<thead>
<tr>
<th>Questions</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>How frequently do you or your current partner(s) use a condom or other form of birth control during vaginal intercourse?</td>
<td></td>
</tr>
<tr>
<td>I have never had sex</td>
<td>282 18.2</td>
</tr>
<tr>
<td>Never</td>
<td>89  5.7</td>
</tr>
<tr>
<td>1-25%</td>
<td>84  5.4</td>
</tr>
<tr>
<td>26-50%</td>
<td>66  4.2</td>
</tr>
<tr>
<td>51-75%</td>
<td>94  6.1</td>
</tr>
<tr>
<td>76-100%</td>
<td>887 57.1</td>
</tr>
<tr>
<td>Missing Information</td>
<td>51  3.3</td>
</tr>
</tbody>
</table>

Within your lifetime, with how many partners have you had vaginal intercourse?

- Before controlling for outliers \( \bar{x} = 5.90 \), \( s = 42.26 \)
- After controlling for outliers \( \bar{x} = 4.30 \), \( s = 7.84 \)

\( n = 1,553 \)
Table 10
Experiential Attitudes of Respondents Toward Using Emergency Contraceptives

<table>
<thead>
<tr>
<th>Questions</th>
<th>Responses</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experiential Attitude Composite</td>
<td>n = 13.52</td>
<td>s= 5.06</td>
<td></td>
</tr>
<tr>
<td>If I (or my partner) used emergency contraception I would feel:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very Bad</td>
<td>288</td>
<td>18.5</td>
<td></td>
</tr>
<tr>
<td>Bad</td>
<td>235</td>
<td>15.1</td>
<td></td>
</tr>
<tr>
<td>Neither Bad nor Good</td>
<td>485</td>
<td>31.2</td>
<td></td>
</tr>
<tr>
<td>Good</td>
<td>198</td>
<td>12.7</td>
<td></td>
</tr>
<tr>
<td>Very Good</td>
<td>260</td>
<td>16.7</td>
<td></td>
</tr>
<tr>
<td>Missing Information</td>
<td>87</td>
<td>5.6</td>
<td></td>
</tr>
<tr>
<td>Very Embarrassed</td>
<td>278</td>
<td>17.9</td>
<td></td>
</tr>
<tr>
<td>Embarrassed</td>
<td>306</td>
<td>19.7</td>
<td></td>
</tr>
<tr>
<td>Neither Embarrassed nor Confident</td>
<td>497</td>
<td>32.0</td>
<td></td>
</tr>
<tr>
<td>Confident</td>
<td>189</td>
<td>12.2</td>
<td></td>
</tr>
<tr>
<td>Very Confident</td>
<td>177</td>
<td>11.4</td>
<td></td>
</tr>
<tr>
<td>Missing Information</td>
<td>106</td>
<td>6.8</td>
<td></td>
</tr>
<tr>
<td>Very Negatively Judged</td>
<td>311</td>
<td>20.0</td>
<td></td>
</tr>
<tr>
<td>Negatively Judged</td>
<td>303</td>
<td>19.5</td>
<td></td>
</tr>
<tr>
<td>Neither Negative Judged nor Positively Judged</td>
<td>655</td>
<td>42.2</td>
<td></td>
</tr>
<tr>
<td>Positively Judged</td>
<td>89</td>
<td>5.7</td>
<td></td>
</tr>
<tr>
<td>Very Positively Judged</td>
<td>78</td>
<td>5.0</td>
<td></td>
</tr>
<tr>
<td>Missing Information</td>
<td>117</td>
<td>7.5</td>
<td></td>
</tr>
<tr>
<td>Very Ashamed</td>
<td>319</td>
<td>20.5</td>
<td></td>
</tr>
<tr>
<td>Ashamed</td>
<td>355</td>
<td>22.9</td>
<td></td>
</tr>
<tr>
<td>Neither Ashamed nor Proud</td>
<td>612</td>
<td>39.4</td>
<td></td>
</tr>
<tr>
<td>Proud</td>
<td>79</td>
<td>5.1</td>
<td></td>
</tr>
<tr>
<td>Very Proud</td>
<td>78</td>
<td>5.0</td>
<td></td>
</tr>
<tr>
<td>Missing Information</td>
<td>110</td>
<td>7.1</td>
<td></td>
</tr>
</tbody>
</table>
Table 10 (continued)

Experiential Attitudes of Respondents Toward Using Emergency Contraceptives

<table>
<thead>
<tr>
<th>Questions</th>
<th>Responses</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Worried</td>
<td>451</td>
<td>29.0</td>
<td></td>
</tr>
<tr>
<td>Worried</td>
<td>251</td>
<td>16.2</td>
<td></td>
</tr>
<tr>
<td>Neither Worried nor Relieved</td>
<td>281</td>
<td>18.1</td>
<td></td>
</tr>
<tr>
<td>Relieved</td>
<td>193</td>
<td>12.4</td>
<td></td>
</tr>
<tr>
<td>Very Relieved</td>
<td>316</td>
<td>20.3</td>
<td></td>
</tr>
<tr>
<td>Missing Information</td>
<td>61</td>
<td>3.9</td>
<td></td>
</tr>
</tbody>
</table>

\[ n = 1,553 \]
less than one-quarter (20.3%) chose “very relieved.” The experiential attitude composite score did not deviate significantly from a normal distribution.

**Research Question #4**

What instrumental attitudes do undergraduate college students have about emergency contraceptive use?

Results were mixed for participants’ instrumental attitude towards using emergency contraception (Table 11). When asked about their thoughts on using EC, 39.7% reported it was neither immoral nor moral, 32.3% believed it was very responsible, 33.1% considered it to be very justifiable. In addition, 42.3% reported thinking it was neither unhealthy nor healthy and 33.9% felt it was neither difficult nor easy to use. The instrumental attitude composite score did not deviate significantly from a normal distribution.

**Research Question #5**

What are undergraduate college students’ beliefs about whether important others approve or disapprove of using emergency contraception?

To assess injunctive norm students were asked to consider whether important people in their lives would approve or disapprove of their using emergency contraception (Table 12). Students report their partner (34.1%), friends (38.2%), and most college students (47.7%) would approve of their using EC. However, they reported that their parents (23.5%), doctor (44.1%), pharmacy staff (51.1%), and most people (37.9%) would neither disapprove nor approve of their using emergency contraception. The injunctive norm composite score did not deviate significantly from a normal distribution.
Table 11
Instrumental Attitudes of Respondents Toward Using Emergency Contraceptives

<table>
<thead>
<tr>
<th>Question</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score Range: 5-25</td>
<td></td>
</tr>
<tr>
<td>Instrumental Attitude Composite</td>
<td>$\bar{x} = 16.79$ $s=4.70$</td>
</tr>
</tbody>
</table>

I think using emergency contraception is:

<table>
<thead>
<tr>
<th>Response</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Immoral</td>
<td>118</td>
<td>7.6</td>
</tr>
<tr>
<td>Immoral</td>
<td>146</td>
<td>9.4</td>
</tr>
<tr>
<td>Neither Immoral nor Moral</td>
<td>617</td>
<td>39.7</td>
</tr>
<tr>
<td>Moral</td>
<td>225</td>
<td>14.5</td>
</tr>
<tr>
<td>Very Moral</td>
<td>349</td>
<td>22.5</td>
</tr>
<tr>
<td>Missing Information</td>
<td>98</td>
<td>6.3</td>
</tr>
<tr>
<td>Very Irresponsible</td>
<td>161</td>
<td>10.4</td>
</tr>
<tr>
<td>Irresponsible</td>
<td>158</td>
<td>10.2</td>
</tr>
<tr>
<td>Neither Irresponsible nor Responsible</td>
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<td>22.4</td>
</tr>
<tr>
<td>Responsible</td>
<td>316</td>
<td>20.3</td>
</tr>
<tr>
<td>Very Responsible</td>
<td>501</td>
<td>32.3</td>
</tr>
<tr>
<td>Missing Information</td>
<td>69</td>
<td>4.4</td>
</tr>
<tr>
<td>Very Unjustifiable</td>
<td>91</td>
<td>5.9</td>
</tr>
<tr>
<td>Unjustifiable</td>
<td>89</td>
<td>5.7</td>
</tr>
<tr>
<td>Neither Unjustifiable nor Justifiable</td>
<td>441</td>
<td>28.4</td>
</tr>
<tr>
<td>Justifiable</td>
<td>330</td>
<td>21.2</td>
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<tr>
<td>Very Justifiable</td>
<td>514</td>
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<tr>
<td>Missing Information</td>
<td>88</td>
<td>5.7</td>
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<tr>
<td>Very Unhealthy</td>
<td>249</td>
<td>16.0</td>
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<td>Unhealthy</td>
<td>305</td>
<td>19.6</td>
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<tr>
<td>Neither Unhealthy nor Healthy</td>
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<td>Healthy</td>
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<tr>
<td>Very Healthy</td>
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<tr>
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<td>97</td>
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Table 11 (continued)

Instrumental Attitudes of Respondents Toward Using Emergency Contraceptives

<table>
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<th>Question</th>
<th>Responses</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Difficult</td>
<td>140</td>
<td>9.0</td>
<td></td>
</tr>
<tr>
<td>Difficult</td>
<td>161</td>
<td>10.4</td>
<td></td>
</tr>
<tr>
<td>Neither Difficult nor Easy</td>
<td>526</td>
<td>33.9</td>
<td></td>
</tr>
<tr>
<td>Easy</td>
<td>265</td>
<td>17.1</td>
<td></td>
</tr>
<tr>
<td>Very Easy</td>
<td>365</td>
<td>23.5</td>
<td></td>
</tr>
<tr>
<td>Missing Information</td>
<td>96</td>
<td>6.2</td>
<td></td>
</tr>
</tbody>
</table>

$n = 1,553$
Table 12

Injunctive Norm of Important Others

<table>
<thead>
<tr>
<th>Question</th>
<th>Responses</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
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<td>Score Range: 7-35</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Injunctive Norm Composite  $\bar{x} = 23.85$  $s=5.24$</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>When it comes to me (or my partner) using emergency contraception:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My partner would:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strongly Disapprove</td>
<td>92</td>
<td>5.9</td>
<td></td>
</tr>
<tr>
<td>Disapprove</td>
<td>118</td>
<td>7.6</td>
<td></td>
</tr>
<tr>
<td>Neither Disapprove/Approve</td>
<td>422</td>
<td>27.2</td>
<td></td>
</tr>
<tr>
<td>Approve</td>
<td>530</td>
<td>34.1</td>
<td></td>
</tr>
<tr>
<td>Strongly Approve</td>
<td>362</td>
<td>23.3</td>
<td></td>
</tr>
<tr>
<td>Missing Information</td>
<td>29</td>
<td>1.9</td>
<td></td>
</tr>
<tr>
<td>My friends would:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strongly Disapprove</td>
<td>64</td>
<td>4.1</td>
<td></td>
</tr>
<tr>
<td>Disapprove</td>
<td>118</td>
<td>7.6</td>
<td></td>
</tr>
<tr>
<td>Neither Disapprove/Approve</td>
<td>454</td>
<td>29.2</td>
<td></td>
</tr>
<tr>
<td>Approve</td>
<td>594</td>
<td>38.2</td>
<td></td>
</tr>
<tr>
<td>Strongly Approve</td>
<td>299</td>
<td>19.3</td>
<td></td>
</tr>
<tr>
<td>Missing Information</td>
<td>24</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>My parents would:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strongly Disapprove</td>
<td>276</td>
<td>17.8</td>
<td></td>
</tr>
<tr>
<td>Disapprove</td>
<td>282</td>
<td>18.2</td>
<td></td>
</tr>
<tr>
<td>Neither Disapprove/Approve</td>
<td>365</td>
<td>23.5</td>
<td></td>
</tr>
<tr>
<td>Approve</td>
<td>354</td>
<td>22.8</td>
<td></td>
</tr>
<tr>
<td>Strongly Approve</td>
<td>248</td>
<td>16.0</td>
<td></td>
</tr>
<tr>
<td>Missing Information</td>
<td>28</td>
<td>1.8</td>
<td></td>
</tr>
<tr>
<td>My doctor would:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strongly Disapprove</td>
<td>115</td>
<td>7.4</td>
<td></td>
</tr>
<tr>
<td>Disapprove</td>
<td>207</td>
<td>13.3</td>
<td></td>
</tr>
<tr>
<td>Neither Disapprove/Approve</td>
<td>685</td>
<td>44.1</td>
<td></td>
</tr>
<tr>
<td>Approve</td>
<td>354</td>
<td>22.8</td>
<td></td>
</tr>
<tr>
<td>Strongly Approve</td>
<td>157</td>
<td>10.1</td>
<td></td>
</tr>
<tr>
<td>Missing Information</td>
<td>35</td>
<td>2.3</td>
<td></td>
</tr>
</tbody>
</table>
### Table 12 (continued)

**Injunctive Norm of Important Others**

<table>
<thead>
<tr>
<th>Question</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( n )</td>
</tr>
<tr>
<td>Pharmacy staff would:</td>
<td></td>
</tr>
<tr>
<td>Strongly Disapprove</td>
<td>57</td>
</tr>
<tr>
<td>Disapprove</td>
<td>157</td>
</tr>
<tr>
<td>Neither Disapprove/Approve</td>
<td>794</td>
</tr>
<tr>
<td>Approve</td>
<td>370</td>
</tr>
<tr>
<td>Strongly Approve</td>
<td>143</td>
</tr>
<tr>
<td>Missing Information</td>
<td>32</td>
</tr>
<tr>
<td>Most college students would:</td>
<td></td>
</tr>
<tr>
<td>Strongly Disapprove</td>
<td>16</td>
</tr>
<tr>
<td>Disapprove</td>
<td>42</td>
</tr>
<tr>
<td>Neither Disapprove/Approve</td>
<td>361</td>
</tr>
<tr>
<td>Approve</td>
<td>741</td>
</tr>
<tr>
<td>Strongly Approve</td>
<td>360</td>
</tr>
<tr>
<td>Missing Information</td>
<td>33</td>
</tr>
<tr>
<td>Most people would:</td>
<td></td>
</tr>
<tr>
<td>Strongly Disapprove</td>
<td>41</td>
</tr>
<tr>
<td>Disapprove</td>
<td>273</td>
</tr>
<tr>
<td>Neither Disapprove/Approve</td>
<td>588</td>
</tr>
<tr>
<td>Approve</td>
<td>495</td>
</tr>
<tr>
<td>Strongly Approve</td>
<td>128</td>
</tr>
<tr>
<td>Missing Information</td>
<td>28</td>
</tr>
</tbody>
</table>

\( n = 1,553 \)
Research Question #6

Do undergraduate college students believe their peers use emergency contraception?

The descriptive norm construct was evaluated by asking participants how likely it is that people they know have used emergency contraception (Table 13). Students reported it was very likely that at least one of their classmates had used EC (44.8%) and very likely that one of their friends had used EC (44.6%). They were not sure whether at least one of their family members (44.1%) had used emergency contraception. The descriptive norm composite score did not deviate significantly from a normal distribution.

Research Question #7

Do undergraduate college students think they have control over the decision to use emergency contraception?

Perceived control was measured by asking students the following question: If you (or your partner) wanted to use emergency contraception, how much control would you have over each of the following? (Table 14). Participants reported that buying EC at a nearby pharmacy was mostly or totally under their own control (70.8%), as was obtaining money to pay for it (73.3%), and whether they or their partner use it (60%). Buying EC on campus was thought to be somewhat under their control (29.7%). The perceived control composite score did not deviate significantly from a normal distribution.

Research Question #8

How confident do undergraduate college students feel in utilizing emergency contraception?

To assess self-efficacy, participants were asked how confident they felt in their ability to obtain, use, buy and ask for emergency contraception (Table 15). Some
Table 13

Descriptive Norm of Other People having Used Emergency Contraception

<table>
<thead>
<tr>
<th>Questions</th>
<th>Responses</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score Range: 3-15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Descriptive Norm Composite</td>
<td></td>
<td>$\bar{x}$ = 11.22</td>
<td>s = 2.80</td>
</tr>
<tr>
<td>How likely is it that:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>At least one of my classmates has used emergency contraception.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very Unlikely</td>
<td>23</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>Unlikely</td>
<td>25</td>
<td>1.6</td>
<td></td>
</tr>
<tr>
<td>Not Sure</td>
<td>368</td>
<td>23.7</td>
<td></td>
</tr>
<tr>
<td>Likely</td>
<td>416</td>
<td>26.8</td>
<td></td>
</tr>
<tr>
<td>Very Likely</td>
<td>696</td>
<td>44.8</td>
<td></td>
</tr>
<tr>
<td>Missing Information</td>
<td>25</td>
<td>1.6</td>
<td></td>
</tr>
<tr>
<td>At least one of my friends has used emergency contraception.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very Unlikely</td>
<td>99</td>
<td>6.4</td>
<td></td>
</tr>
<tr>
<td>Unlikely</td>
<td>123</td>
<td>7.9</td>
<td></td>
</tr>
<tr>
<td>Not Sure</td>
<td>311</td>
<td>20.0</td>
<td></td>
</tr>
<tr>
<td>Likely</td>
<td>301</td>
<td>19.4</td>
<td></td>
</tr>
<tr>
<td>Very Likely</td>
<td>693</td>
<td>44.6</td>
<td></td>
</tr>
<tr>
<td>Missing Information</td>
<td>26</td>
<td>1.7</td>
<td></td>
</tr>
<tr>
<td>At least one of my family members has used emergency contraception.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very Unlikely</td>
<td>183</td>
<td>11.8</td>
<td></td>
</tr>
<tr>
<td>Unlikely</td>
<td>182</td>
<td>11.7</td>
<td></td>
</tr>
<tr>
<td>Not Sure</td>
<td>638</td>
<td>41.1</td>
<td></td>
</tr>
<tr>
<td>Likely</td>
<td>213</td>
<td>13.7</td>
<td></td>
</tr>
<tr>
<td>Very Likely</td>
<td>310</td>
<td>20.0</td>
<td></td>
</tr>
<tr>
<td>Missing Information</td>
<td>27</td>
<td>1.7</td>
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</tbody>
</table>

$n = 1,553$
### Table 14

Perceived Control Regarding Emergency Contraception

<table>
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<tr>
<th>Questions</th>
<th>Responses</th>
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<td>Score Range: 4-20</td>
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</tr>
<tr>
<td>Perceived Control Composite $\bar{x} = 15.23$</td>
<td>$s=3.37$</td>
</tr>
<tr>
<td><strong>If you (or your partner) wanted to use emergency contraception, how much control would you have over each of the following?</strong></td>
<td></td>
</tr>
<tr>
<td>Buying it at a nearby pharmacy is:</td>
<td></td>
</tr>
<tr>
<td>Not at all Under my Control</td>
<td>37 2.4</td>
</tr>
<tr>
<td>Slightly Under my Control</td>
<td>85 5.5</td>
</tr>
<tr>
<td>Somewhat Under my Control</td>
<td>299 19.3</td>
</tr>
<tr>
<td>Mostly Under my Control</td>
<td>462 29.7</td>
</tr>
<tr>
<td>Totally Under my Control</td>
<td>639 41.1</td>
</tr>
<tr>
<td>Missing Information</td>
<td>31 2.0</td>
</tr>
<tr>
<td>Obtaining money to pay for it is:</td>
<td></td>
</tr>
<tr>
<td>Not at all Under my Control</td>
<td>41 2.6</td>
</tr>
<tr>
<td>Slightly Under my Control</td>
<td>81 5.2</td>
</tr>
<tr>
<td>Somewhat Under my Control</td>
<td>261 16.8</td>
</tr>
<tr>
<td>Mostly Under my Control</td>
<td>460 29.6</td>
</tr>
<tr>
<td>Totally Under my Control</td>
<td>679 43.7</td>
</tr>
<tr>
<td>Missing Information</td>
<td>31 2.0</td>
</tr>
<tr>
<td>Buying it on campus:</td>
<td></td>
</tr>
<tr>
<td>Not at all Under my Control</td>
<td>191 12.3</td>
</tr>
<tr>
<td>Slightly Under my Control</td>
<td>188 12.1</td>
</tr>
<tr>
<td>Somewhat Under my Control</td>
<td>462 29.7</td>
</tr>
<tr>
<td>Mostly Under my Control</td>
<td>310 20.0</td>
</tr>
<tr>
<td>Totally Under my Control</td>
<td>360 23.2</td>
</tr>
<tr>
<td>Missing Information</td>
<td>42 2.7</td>
</tr>
<tr>
<td>Whether I (or my partner) use it:</td>
<td></td>
</tr>
<tr>
<td>Not at all Under my Control</td>
<td>112 7.2</td>
</tr>
<tr>
<td>Slightly Under my Control</td>
<td>115 7.4</td>
</tr>
<tr>
<td>Somewhat Under my Control</td>
<td>362 23.3</td>
</tr>
<tr>
<td>Mostly Under my Control</td>
<td>303 19.5</td>
</tr>
<tr>
<td>Totally Under my Control</td>
<td>629 40.5</td>
</tr>
<tr>
<td>Missing Information</td>
<td>32 2.1</td>
</tr>
</tbody>
</table>

$n = 1,553$

92
<table>
<thead>
<tr>
<th>Questions</th>
<th>Responses</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
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<td></td>
</tr>
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<td>Self-Efficacy Composite</td>
<td>$\bar{x} = 16.01$</td>
<td>$s=4.57$</td>
<td></td>
</tr>
<tr>
<td>If you (or your partner) wanted to use emergency contraception, how confident are you in your ability to:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obtain emergency contraception:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not at all Confident</td>
<td>99</td>
<td>6.4</td>
<td></td>
</tr>
<tr>
<td>Not Very Confident</td>
<td>171</td>
<td>11.0</td>
<td></td>
</tr>
<tr>
<td>Somewhat Confident</td>
<td>433</td>
<td>27.9</td>
<td></td>
</tr>
<tr>
<td>Very Confident</td>
<td>430</td>
<td>27.7</td>
<td></td>
</tr>
<tr>
<td>Extremely Confident</td>
<td>397</td>
<td>25.6</td>
<td></td>
</tr>
<tr>
<td>Missing Information</td>
<td>23</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>Ask pharmacy staff for EC:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not at all Confident</td>
<td>92</td>
<td>5.9</td>
<td></td>
</tr>
<tr>
<td>Not Very Confident</td>
<td>242</td>
<td>15.6</td>
<td></td>
</tr>
<tr>
<td>Somewhat Confident</td>
<td>405</td>
<td>26.1</td>
<td></td>
</tr>
<tr>
<td>Very Confident</td>
<td>447</td>
<td>28.8</td>
<td></td>
</tr>
<tr>
<td>Extremely Confident</td>
<td>342</td>
<td>22.0</td>
<td></td>
</tr>
<tr>
<td>Missing Information</td>
<td>25</td>
<td>1.6</td>
<td></td>
</tr>
<tr>
<td>Use emergency contraception correctly:</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Not at all Confident</td>
<td>104</td>
<td>6.7</td>
<td></td>
</tr>
<tr>
<td>Not Very Confident</td>
<td>192</td>
<td>12.4</td>
<td></td>
</tr>
<tr>
<td>Somewhat Confident</td>
<td>427</td>
<td>27.5</td>
<td></td>
</tr>
<tr>
<td>Very Confident</td>
<td>434</td>
<td>27.9</td>
<td></td>
</tr>
<tr>
<td>Extremely Confident</td>
<td>368</td>
<td>23.7</td>
<td></td>
</tr>
<tr>
<td>Missing Information</td>
<td>28</td>
<td>1.8</td>
<td></td>
</tr>
<tr>
<td>Buy emergency contraception on-line:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not at all Confident</td>
<td>522</td>
<td>33.6</td>
<td></td>
</tr>
<tr>
<td>Not Very Confident</td>
<td>448</td>
<td>28.8</td>
<td></td>
</tr>
<tr>
<td>Somewhat Confident</td>
<td>331</td>
<td>21.3</td>
<td></td>
</tr>
<tr>
<td>Very Confident</td>
<td>135</td>
<td>8.7</td>
<td></td>
</tr>
<tr>
<td>Extremely Confident</td>
<td>88</td>
<td>5.7</td>
<td></td>
</tr>
<tr>
<td>Missing Information</td>
<td>29</td>
<td>1.9</td>
<td></td>
</tr>
</tbody>
</table>
Table 15 (continued)

Self-Efficacy Regarding Emergency Contraception

<table>
<thead>
<tr>
<th>Questions</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$n$</td>
</tr>
<tr>
<td>Overcome any feelings of embarrassment in order to purchase EC:</td>
<td></td>
</tr>
<tr>
<td>Not at all Confident</td>
<td>162</td>
</tr>
<tr>
<td>Not Very Confident</td>
<td>227</td>
</tr>
<tr>
<td>Somewhat Confident</td>
<td>473</td>
</tr>
<tr>
<td>Very Confident</td>
<td>367</td>
</tr>
<tr>
<td>Extremely Confident</td>
<td>300</td>
</tr>
<tr>
<td>Missing Information</td>
<td>24</td>
</tr>
</tbody>
</table>

$n = 1,553$
students (27.9%) reported being somewhat confident in their ability to obtain emergency contraception, and 53.3% revealed they were very or extremely confident in doing so. Approximately half the sample (51.6%) indicated that they were very or extremely confident in their ability to use EC correctly. Nearly two-third (62.4%) of participants revealed they were not very or not at all confident in their ability to purchase EC online and only a third (30.5%) indicated that they were somewhat confident in their ability to overcome feelings of embarrassment in order to purchase emergency contraception. The self-efficacy composite score did not deviate significantly from a normal distribution.

Research Question #9

Do differences exist in use of emergency contraception based on age, gender, sexual experience and year in school?

H₀: Hypothesis 9.1 – There is no difference in emergency contraceptive use based on age of student.

Frequencies and percentages were calculated for age of students, with the majority of students (92.9%) below the age of 25 (Table 5). Use of emergency contraception was not statistically significantly different by age \( \chi^2 (27, N=1,497) = 17.75, p = 0.91 \). The evidence fails to reject the null hypothesis of no difference in use of emergency contraceptive use based on age.

H₀: Hypothesis 9.2 – There is no difference in emergency contraceptive use based on gender of student.

Frequencies and percentages were calculated for students (or their partners’) use of emergency contraception and revealed that 14.6% of all students surveyed had used emergency contraception within the last 12 months and 18.1% of sexually active students
only report having used EC during the past year (Table 9). Females were more likely to have reported using emergency contraception, but a t-test failed to reveal a statistically significant difference between mean number of uses of emergency contraception by females ($\bar{x} = 0.16, s = 0.370$) and males (reporting their partner’s use) ($\bar{x} = 0.13, s = 0.33$), $t(1,503) = 1.93, p = 0.05$. The evidence fails to reject the null hypothesis of no difference in EC use based on gender of student.

$H_0$: Hypothesis 9.3 – There is no difference in emergency contraceptive use based on sexual experience of student.

Frequencies and percentages were computed and revealed that 78.9% of participants had sexual intercourse at least once in their lifetime. Number of sexual partners was examined to determine if there was a relationship to use of emergency contraception. Overall mean for number of lifetime partners is reported in Table 9.

Number of sexual partners was grouped into six categories based on Mosher et al. (2005). The higher the number of sexual partners, the more likely emergency contraception was used $\chi^2 (5, N=1,432) = 73.28, p = 0.00$. Gender was examined separately for this question and the higher the number of sexual partners for females, the more likely EC was utilized $\chi^2 (5, N=927) = 60.01, p = 0.00$; and for males $\chi^2 (5, N=491) = 22.92, p = 0.00$. The null hypothesis of no difference in emergency contraceptive use based on sexual experience was rejected.

$H_0$: Hypothesis 9.4 – There is no difference in emergency contraceptive use based on student’s year in school.

Frequencies and percentages of students’ year in school were calculated (Table 5) revealing an even distribution between first through fourth year students.  Chi-Square
was not statistically significant for students’ year in school with $\chi^2 (3, N=1,468) = 0.97$, $p = 0.81$. The evidence fails to reject the null hypothesis of no difference in emergency contraceptive use.

Research Question #10

Which constructs within the Integrated Behavioral Model are most predictive of undergraduate college students’ intention to use emergency contraception?

$H_0$: Hypothesis 10.1 – Path coefficients for the constructs within the Integrated Behavioral Model and undergraduate college students’ intention to use emergency contraception do not depict the constructs' relative contribution to the model.

Using path analysis to assess Intention to use emergency contraception for each construct, the determinant with the largest causal effect was instrumental attitude was (0.31). The remaining determinants of intention to use emergency contraception, as indicated by total causal effects were injunctive norm (0.20), descriptive norm (0.18), self-efficacy (0.14) and perceived control (0.07). Experiential attitude was not statistically significant in the model (0.02, $p>0.05$). The null hypothesis of no significant association between each of the constructs of the Integrated Behavioral Model and undergraduate college students’ intention to use emergency contraception was rejected.

Research Question #11

How much variance does the Integrated Behavioral Model explain in undergraduate college students’ intention to use emergency contraception?

$H_0$: Hypothesis 11.1 – The variance in undergraduate college students’ intention to use emergency contraception explained by the Integrated Behavioral Model is not statistically significant.
Table 16 contains the correlations for the Integrated Behavioral Model. Intention is highly correlated with all six constructs as well as knowledge with correlation coefficients ranging between 0.37 and 0.62. Experiential attitude yielded the lowest correlations with two constructs, descriptive norm (0.24) and perceived control (0.20); knowledge generated a correlation of 0.40. All remaining correlations are >0.30.

A path analysis was conducted to confirm the relationships between the constructs of the Integrated Behavioral Model, experiential attitude, instrumental attitude, injunctive norm, descriptive norm, perceived control, and self-efficacy, Intention to use emergency contraception, and knowledge. The outcome of primary interest was intention to use emergency contraception. All path coefficients were statistically significant (p<0.05) except experiential attitude. The determinant with the largest total effect was instrumental attitude (0.32). The effects of the remaining determinants were injunctive norm (0.20), descriptive norm (0.18), self-efficacy (0.14), perceived control (0.07) and experiential attitude (0.02, p>0.05). Overall fit for Model 1 using the intention composite score and use of emergency contraception as the behavior was $R^2 = 0.495$, indicating 50% variance in intention to use emergency contraception.

Fit Summary statistics (Table 17) include: Goodness of Fit Index (GFI) = 0.99, is less than 1, indicating an adequate but not a great fit of $\leq 0.95$ (Schreiber, Stage, King, Nora, & Barlow, 2006); Bentler-Bonett NFI =0.98 indicating a good fit at $>0.90$ (Starkweather, 2012); and Root Mean Square Residual = 0.03, also indicates good fit when close to 0 (Schreiber et al., 2006). Starkweather and colleagues (2012) indicate that $\chi^2$ becomes inconsequential when sample size is large, which it is with this study of 1,553 participants; $\chi^2 = 70.93$, p<0.00 is not important for interpretation of this path
Table 16

Correlations for the Integrated Behavioral Model Constructs

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
<th>I</th>
<th>EA</th>
<th>IA</th>
<th>IN</th>
<th>DN</th>
<th>PC</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>K</td>
<td>5.81</td>
<td>2.12</td>
<td>.40*</td>
<td>.16*</td>
<td>.37*</td>
<td>.32*</td>
<td>.31*</td>
<td>.31*</td>
<td>.38*</td>
</tr>
<tr>
<td>I</td>
<td>25.14</td>
<td>6.56</td>
<td></td>
<td>.45’</td>
<td>.62’</td>
<td>.57’</td>
<td>.45’</td>
<td>.37’</td>
<td>.52’</td>
</tr>
<tr>
<td>EA</td>
<td>13.52</td>
<td>5.06</td>
<td></td>
<td></td>
<td>.65’</td>
<td>.53’</td>
<td>.24’</td>
<td>.20’</td>
<td>.45’</td>
</tr>
<tr>
<td>IA</td>
<td>16.79</td>
<td>4.70</td>
<td></td>
<td></td>
<td></td>
<td>.65’</td>
<td>.35’</td>
<td>.34’</td>
<td>.54’</td>
</tr>
<tr>
<td>IN</td>
<td>23.85</td>
<td>5.24</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.36’</td>
<td>.34’</td>
<td>.51’</td>
</tr>
<tr>
<td>DN</td>
<td>11.22</td>
<td>2.80</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.31’</td>
<td>.43’</td>
</tr>
<tr>
<td>PC</td>
<td>15.23</td>
<td>3.37</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.45’</td>
</tr>
<tr>
<td>SE</td>
<td>16.01</td>
<td>4.57</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

I=Intention, K=Knowledge, EA=Experiential Attitude, IA=Instrumental Attitude, IN=Injunctive Norm, DN=Descriptive Norm, PC=Perceived Control, SE=Self-Efficacy
Table 17

Goodness of Fit Estimates for Path Analysis Model

<table>
<thead>
<tr>
<th>Model</th>
<th>$\chi^2$</th>
<th>GFI*</th>
<th>BB NFI**</th>
<th>RMSR***</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td>70.93, $p&lt;0.00$</td>
<td>0.99</td>
<td>0.98</td>
<td>0.03</td>
</tr>
</tbody>
</table>

Model 1: Intention Composite

* GFI = Goodness of Fit Index
** BB NFI = Bentler-Bonett NFI
*** RMSR = Root Mean Square Residual
analysis Model 1 The six constructs’ coefficient scores ranged from 0.024 to 0.31; knowledge coefficient was 0.13, and behavior was 0.17. Model 1 includes the intention composite score (Figure 2). The hypothesis that the Integrated Behavioral Model is not statistically significant was rejected.

**Summary**

The results of this study revealed that 78.9% of students attending institutions of the Mid-American conference report having had sexual intercourse at least once in their lifetime, 8.4% of sexually active students experienced an unintended/unplanned pregnancy. Students who report using emergency contraception in the last 12 months represent 18.1% of sexually active students only. Analysis also revealed that as knowledge of emergency contraception increased, use of EC also increased. Constructs of the Integrated Behavioral Model were able to explain 50% of the variance in emergency contraceptive use.
Figure 2
Path Analysis Model 1– Intention Composite

Experiential Attitude

Instrumental Attitude

0.31*

0.24

Perceived Norm

Injunctive Norm

0.20*

Descriptive Norm

0.18*

Personal Agency

Perceived Control

0.14*

Self-Efficacy

0.07*

Intention to use Emergency Contraception Composite

$R^2 = 0.50$

$p < 0.05$
Chapter Five

Conclusions

This chapter concludes the dissertation on the examination of emergency contraceptive use by undergraduate college students in the Midwest using the Integrated Behavioral Model. It includes a summary of the study, the accepted hypotheses and rejected hypotheses, discussion and limitations. This chapter ends with the implications and suggestions for further research.

Summary

Approximately 1.8% of undergraduate college students experienced an unintended/unplanned pregnancy in 2011 (American College Health Association, 2012b). The 50% of students who chose to continue the pregnancy are less likely to complete their college education and more likely to live in poverty and suffer from depression (The National Campaign to Prevent Teen and Unplanned Pregnancy, n.d.). Some of these unintended/unplanned pregnancies could be avoided if students were aware of and used emergency contraception (EC). This medication is used to prevent pregnancy after an episode of sexual intercourse when no contraception was used or the chosen method of contraception failed (American College Health Association, 2010; Haynes, 2007; Schein, 1999).

The Integrated Behavioral Model was used in this study to identify the determinants of emergency contraceptive use or non-use by college students in order to elicit intention to use EC (Jaccard, 2002). This model combines constructs from the Theory of Reasoned Action/Theory of Planned Behavior as well as other theories (Montano & Kasprzyk, 2008) such as the Social Cognitive Theory (U.S. Department of
Health and Human Services, 2005). The theory postulates that behaviors cannot be changed without the target audience having the requisite knowledge to make those changes or the skills to perform the desired behaviors (Montano & Kasprzyk, 2008).

The purpose of this study was to determine the factors that influence undergraduate college student use of emergency contraception as well as their level of knowledge and prevalence of using EC. Surveys were administered at the 11 Midwestern institutions of the Mid-American Conference. These surveys were designed to answer the following research questions:

1. What do undergraduate college students know about emergency contraception?
2. What is the prevalence of emergency contraception use among undergraduate college students in the Midwest?
3. What experiential attitudes do undergraduate college students have about emergency contraceptive use?
4. What instrumental attitudes do undergraduate college students have about emergency contraceptive use?
5. What are undergraduate college students’ beliefs about whether important others approve or disapprove of using emergency contraception?
6. Do undergraduate college students believe their peers use emergency contraception?
7. Do undergraduate college students think they have control over the decision about using emergency contraception?
8. How confident do undergraduate college students feel in utilizing emergency contraception?
9. Do differences exist in use of emergency contraception based on age, gender, sexual experience and year in school?

10. Which constructs within the Integrated Behavioral Model are most predictive of undergraduate college students’ intention to use emergency contraception?

11. How much variance does the Integrated Behavioral Model explain in undergraduate college students’ intention to use emergency contraception?

This study employed a cross-sectional research design with convenience sampling at 11 universities. A faculty member at each university was identified, a letter sent introducing him or her to the study purpose; and his or her participation in the dissemination of the survey was elicited. The letter was followed by a phone call, verbal agreement was elicited, and e-mail confirmation was obtained. Proctor instructions were sent to each participating faculty member to read to the students who would be taking the surveys, and the surveys were subsequently placed in an envelope by each student, who was then given an information sheet with the elements of an informed consent form.

The survey was designed based on the constructs of the Integrated Behavioral Model with sections for experiential and instrumental attitude, injunctive and descriptive norm and perceived control and self-efficacy. After focus groups were conducted to elicit information from the target audience, questions were refined and behavior and knowledge questions as well as demographics were added to the survey. A scenario was included on the survey so that participants could place themselves in a hypothetical situation where they may need to use emergency contraception. Assessing a large group of students near the time of experiencing the need for EC, which has been shown to be the better predictor of intention (Gorn, 2007) would not be practical, therefore a scenario
was presented for them. The instrument was then sent for expert review to establish face, construct, and content validity, including accuracy of content, appropriateness of questions specific to the Integrated Behavioral Model and appropriate survey composition. The survey was modified based on feedback from the reviewers and was subsequently pilot tested with members of the target audience. The final survey consisted of 66 questions on a four-page folded format and printed on blue paper. The survey was found to be valid and reliable based on Weighted Kappa, Cronbach alpha and Principal Components Analysis with Varimax rotation.

A total of 1,553 useable surveys were collected for a response rate of 98.4%. Participants were 63.5% female (compared to 53.4% in the population), 75.3% white (compared to 75.8% in the population), mean age of 20.6 years (compared to 20-22 for those schools for which this information was available) and a fairly even distribution among freshmen through juniors. Overall, demographics of participants matched those of the 11 schools except for percent of females, which was larger in this study. Students were asked if they had ever had sexual intercourse, 78.9% reported they had; 57% report having had vaginal intercourse within the last 30 days compared to the national average of 45% (American College Health Association, 2012b).

When asked if they had ever experienced an unintended/unplanned pregnancy 8.4% of those who reported being sexually active admitted ever experiencing a pregnancy. In a related national study students were asked if they had experienced an unintentional pregnancy in the past year and 1.8% revealed that they had (American College Health Association, 2012b). The difference in percentages can be attributed to
one group being asked about the past year and the participants in this study being asked about lifetime occurrence.

The results of this study are remarkably consisted with the literature. In this study, 18.1% of sexually active students reporting using emergency contraception during the past 12 months for sexually active students, compared to 16.3% of sexually active students in the national study conducted by the American College Health Association (2012b). The results from the national assessment on this topic included more than 27,000 students; the current study surveyed approximately 1,500.

Overall student knowledge about emergency contraception in this study was poor. Participants who answered all knowledge questions incorrectly (1.9%) is, however, considerably lower than Foster and colleagues (2004) who indicate that 47.3% of 18-19 year old women and 48.0% of 20-24 year old women had no knowledge of emergency contraception.

**Failed to Be Rejected Hypotheses**

The following three hypotheses out of the original six were accepted (50%).

\( H_0: \text{Hypothesis 9.1} \) – There is no difference in emergency contraceptive use based on age of student.

\( H_0: \text{Hypothesis 9.2} \) – There is no difference in emergency contraceptive use based on gender of student.

\( H_0: \text{Hypothesis 9.4} \) – There is no difference in emergency contraceptive use based on student’s year in school.

**Rejected Hypotheses**

The following three hypotheses out of the original six were rejected (50%).
H₀: **Hypothesis 9.3** – There is no difference in emergency contraceptive use based on sexual experience of student.

H₀: **Hypothesis 10.1** – Path coefficients for the constructs within the Integrated Behavioral Model and undergraduate college students’ intention to use emergency contraception do not depict the constructs' relative contribution to the model.

H₀: **Hypothesis 11.1** – The variance in undergraduate college students’ intention to use emergency contraception explained by the Integrated Behavioral Model is not statistically significant.

**Discussion**

The Integrated Behavioral Model (IBM) elicits information, based on the constructs of the model, to identify reasons why someone intends or does not intend to perform a recommended behavior (Gorn, 2007). Equally important, skills and knowledge are necessary to implement the behavior and are essential in building intentions to perform (Montano & Kasprzyk, 2008). After conducting focus groups at the beginning of the study, knowledge was considered a necessary component in determining whether students used emergency contraception and a section on knowledge was included in the survey.

**Knowledge about Emergency Contraception.** During survey development when focus groups were being conducted at the beginning of this study it was revealed that many college students do not know about nor do they understand what emergency contraception is or does. This is consistent with Westley and Glasier’s (2010) assessment that knowledge of EC is low and misinformation is disseminated in multiple ways, including television and the Internet.
One question, “Emergency contraception is designed to prevent pregnancy,” was considered by some reviewers to be unnecessary because a very brief explanation of emergency contraception directly preceded the knowledge section to give participants some idea of what the survey questions meant. The question was retained in the survey and in spite of having the information, 25.9% of the students answered the question incorrectly. This result could be explained by participants not reading the explanation or not comprehending what they read. It could also be that they did not believe what was written.

The question that stated emergency contraception and abortion were the same thing was also answered incorrectly by more than 25% of the students. Fagan and colleagues (2006) asked women in rural North Carolina a similar question which they answered incorrectly about 80% of the time. This is consistent with the belief that the two products accomplish the same thing – no pregnancy.

Respondents recognized that Plan B One-Step® and emergency contraception are two names for the same pill, but fewer students recognized that the morning after pill and EC represent identical products. Emergency contraception is known by several different terms. It is likely that the participants in this sample simply reflect the confusion that lay persons who lack education on the subject also experience. This is a good indication that commercial jargon should be avoided when discussing this topic.

Three questions concerning emergency contraceptives’ effects on a woman’s body were answered incorrectly by more than two thirds of the students. These include, “Emergency contraception flushes everything out of the woman’s uterus,” “Using emergency contraception affects a woman’s fertility in the future,” and “Women cannot
repeatedly use emergency contraception due to its physical effects.” It is possible that misconceptions about these three issues would decrease the likelihood that students would use emergency contraception. This type of misinformation permeates all forms of media (Westley & Glasier, 2010) and because it tends to be sensationalized it is more easily remembered than accurate information (Ecker, Lewandowsky, & Tang, 2010). Tackling the myriad of inaccurate information disseminated about emergency contraception is an important key to increasing its use. It is possible that as Ecker and colleagues (2010) suggest giving warnings may reduce the longevity of misinformation in the minds of potential users of emergency contraception.

Results of an analysis of knowledge of and use of emergency contraceptive reveal a strong association. Where knowledge increased, emergency contraceptive use also increased. Perhaps those participants who used emergency contraception in the past were more knowledgeable about the subject because they learned about it before using the medicine. It could also be that students who were knowledgeable about emergency contraceptives were more likely to use it. A strong relationship exists between knowledge and use, which merits consideration in designing interventions to prevent unintended/unplanned pregnancies.

**Experiential Attitudes toward Emergency Contraceptive Use.** Experiential attitude examines the way participants would feel (Montano & Kasprzyk, 2008) if they used emergency contraception when they needed it – based on a short scenario that was presented to help them imagine themselves in a hypothetical situation. Participants frequently took the neutral position when answering these questions, with the exception of being worried or relieved where 45.2% reported being worried or very worried and
32.7% suggest they would feel relieved or very relieved. With a large majority (66-86%) of students believing that emergency contraception has deleterious effects on a woman’s body; it is not surprising that they may feel worried about using it. Addressing the misconceptions about its harmful effects may alleviate worry about using it.

Many more students reported feeling ashamed or very ashamed (43.4%) than proud or very proud (10.1%) for using emergency contraception. It is possible that students who equate use of emergency contraception with abortion may also feel ashamed for using it, particularly since nearly half of the participants reported abortion to be against their religion. It is not likely that addressing a person’s religious beliefs about emergency contraception would address this issue. Increasing knowledge about EC and the fact that it does not cause abortion, nor does it prevent a fertilized egg from implanting, may help to change these feelings. The experiential attitude construct was not statistically significant in the path analysis model which may be due to the high number of students choosing the neutral responses.

**Instrumental Attitudes toward Emergency Contraceptive Use.** Instrumental attitude addresses respondents’ thoughts about using emergency contraception (Montano & Kasprzyk, 2008). Students took a neutral stance for three of the five questions in this section. Slightly more than half (52.6% and 54.3%, respectively) of the participants reported thinking use of EC was both justifiable and responsible. Many students revealed they do not think emergency contraception is the same thing as abortion, nor that abortion or use of birth control is against their religion, and three-quarters correctly answered that EC is designed to prevent pregnancy. It is possible that the combination of these factors has led them to equate EC use with responsible behavior and that it is justifiable.
Students were quite divided over the issue of EC’s effects on health. While 42% used the neutral response, more than one third felt it is unhealthy or very unhealthy, while only 16% think it is healthy. This result is consistent with the answers to the knowledge questions about emergency contraception’s deleterious effects on a woman’s body. Any intervention to increase knowledge and decrease shame and worry should include information that addresses EC’s effects on the body.

**Injunctive Norm Related to Emergency Contraceptive Use.** Injunctive norm investigates the approval of important people on one’s decision to do something (Montano & Kasprzyk, 2008). It is interesting to note that all seven persons listed in the question, partner, friends, parents, doctor, pharmacy staff, most college students and most people, were thought to approve or strongly approve (33-71%) of the respondents’ use of emergency contraception. Participants reported that most college students and “my friends” were the most likely to approve of their use of emergency contraception (71% and 58%, respectively). This result contradicts participants’ mostly negative feelings concerning use of EC, but it is consistent with students’ thoughts about EC use being moral, responsible and justifiable.

Students indicated the most uncertainty about doctors and pharmacy staff approving of their use of EC. This may be due to their beliefs that doctors and pharmacy staff should be neutral on the issue or, as reported in the literature search these two groups do not understand the mechanism of action for emergency contraception. Pharmacy staff and doctors may be a good target for an educational intervention to increase their understanding of this form of contraception. If these two important groups
can be effectively educated, perhaps students will be able to use them as resources when they have contraceptive needs.

**Descriptive Norm Related to Emergency Contraceptive Use.** Descriptive norm describes the influence of what a person believes others are actually doing (Montano & Kasprzyk, 2008). The majority of participants thought other people who are important to them were likely to have used emergency contraception, including classmates and friends. They were less certain about family members with 41% making the neutral choice. Given the low knowledge level of the students it is somewhat surprising that so many of them thought significant people in their lives were likely or very likely to use emergency contraception. This result is inconsistent with students’ own beliefs about emergency contraception, but not unlikely that they perceive others to be using it more than they actually have.

**Perceived Control Related to Emergency Contraceptive Use.** Perceived control describes the amount of control one has over the decision and ability to perform a given behavior in spite of any environmental constraints that would make it difficult to do (Montano & Kasprzyk, 2008). Students felt they had good control over this area, except for buying EC on campus for which one third of the students chose the neutral response. Increasing students’ ability to purchase EC on campus or making them aware that it is available on campus may be an important area for improving its use.

**Self-Efficacy Related to Emergency Contraceptive Use.** Self-efficacy is the personal assessment of one’s ability to carry out the behavior (Montano & Kasprzyk, 2008). Participants chose the neutral category 21-30% of the time for this question, with four of the five questions being answered as somewhat confident or very confident. The
only issue students were not confident about was buying emergency contraception on-line. This could be because students already knew where to purchase it nearby. Alternatively, students may understand “the morning after pill” in a literal sense as having to be taken the morning after an incident of sexual intercourse without contraception or failed contraception and believe that if it was purchased on-line it would not reach them in time. Respondents may not think about purchasing EC in advance of need. A campaign could include advance provision to make this issue known.

**The Integrated Behavioral Model and Predicting Intention.** The Integrated Behavioral Model is the most recent iteration to the Theory of Planned Behavior and Theory of Reasoned Action (Montano & Kasprzyk, 2008). It is used to predict intention to perform a specific behavior. The model explained 50% of the variance in intention to use emergency contraception. Each construct on its own indicated a significant path coefficient related to intention to use emergency contraception. Instrumental attitude accounted for the largest path coefficient (0.31) among the IBM constructs. This finding suggests that students’ use of emergency contraception is highly dependent on the way they think about it. If students believe that emergency contraceptives will harm them physically they are less likely to use this product. An intervention to dispel this myth may increase students’ intention to use emergency contraception.

Injunctive norm elicited a path coefficient of 0.20 for intention to use emergency contraception. It is apparent from this data that students are influenced by what the people who are important to them think about what they do. Interventions to decrease unintended/unplanned pregnancy by increasing use of emergency contraceptive should attempt to reach the people who influence the students. Since participants reported that
physicians and pharmacy staff were the least likely to approve of their using EC, it may be a most effective to develop an intervention that increases knowledge of its mechanism of action for physicians and pharmacy staff.

All six constructs together predict 50% of the variance in emergency contraceptive use with one construct, experiential attitude, not statistically significant. Some of the Goodness of Fit statistics for the Path analysis indicated a better model fit than others. The Integrated Behavioral Model appears to be a good model to use for examining emergency contraceptive use in college students. It is possible that the low level of knowledge in this sample of students influenced their feelings about using emergency contraception, even with the scenario provided for them. If students do not know about or understand or if they have misconceptions about emergency contraception, it may be very difficult for them to overcome negative feelings associated with using EC, which may account for the lack of statistical significance with experiential attitude.

**Limitations**

Several limitations exist in this present study. It is possible that the views of the participants are not representative of all students who attend universities in the Midwest. External validity may be compromised if the students who attend the Mid-American conference schools are not representative of other students who attend colleges in the Midwest or college students in general. While the sample population was close to overall population in demographic make-up there were slightly more females.

It is also possible that the 21.1% of students who reported they were not sexually active may have responded to the questions in an atypical fashion. However, the survey included a scenario for students to picture themselves in a situation where they may need
emergency contraception and then answer the questions. Behavior was not being measured, rather intention to use emergency contraception when the situation warranted was the primary outcome variable.

Response bias may exist if students who have grown weary of completing surveys, choose to satisfice rather than cognitively choose the most appropriate answers (Barge & Gehlbach, 2011). Satisficing can include students choosing the middle answer rather than making an honest choice, or answering all sections with the same response, leading to false answers. Satisficing can lead to invalid inferences about the data. In addition, the possibility that participants provided socially acceptable answers is a limitation to the validity of the inferences made using the data collected. Nevertheless, the use of self-reports by college students has been found to be an accurate way to gather information (Pace, 1985; Pike, 2011).

The cross-sectional research design with convenience sampling does not allow for determination of causation. This may lower the ability to make inferences about the data. In addition, the closed format of the survey may have led to a loss of important information in determining college student use of emergency contraception.

Convenience sampling rather than random sampling was used to identify faculty members at each institution and they used convenience sampling of general education classes to disseminate the surveys. Generalizations should be interpreted with caution as the views of the students in the sampled classes may not be representative of the students at the universities. The sample, however, closely matched the population in gender and race and a large sample size was obtained.
Procedures for conducting focus group discussions were not followed precisely for the Integrated Behavioral Model. The original intent was to use the Health Belief Model and the questions were based on the constructs of that theory. It became evident during the first few focus group discussions that the HBM would be inadequate for this study and the theory was changed to the IBM. Elicitation interviews, as suggested by Fishbein and Ajzen would normally be conducted with 50% of participants who admit to having used or planning to use emergency contraception and 50% who have not used EC (Montano & Kasprzyk, 2008). Recruiting students for elicitation interviews, who willingly admit to using EC or who are not embarrassed to admit doing so was not realistic for this study. Not following the focus group protocol for the IBM may have resulted in missing important information that would have changed the wording of the items on the survey.

Principal Components Analysis revealed double loading on several variables as described in Chapter 3. When double loading occurs, Dilorio (2005) reports one of four choices can be made: delete the question altogether, rewrite the question, place the question with the highest loading factor or, keep the question with the original construct based on theoretical and conceptual principles. It is possible that by following this protocol the questions that double-loaded may have resulted in inappropriate assumptions about the data.

Implications

The current study examined emergency contraceptive use among college students to help explain why an available back-up medication to prevent pregnancy is not being utilized by this population. Each construct explains some variance in Intention to use
emergency contraception; and the IBM itself explains 50% of the variance in Intention to use EC, with experiential attitude not being statistically significant in the model. It is possible that lack of knowledge or experience with EC by the respondents, in spite of a scenario in which they needed to imagine themselves, was not real enough to evoke strong emotion to assess experiential attitude. The respondents may have been able to imagine themselves in the scenario but not imagine how they would feel. Addressing any or all constructs of the IBM when designing an intervention may be useful in decreasing unintended/unplanned pregnancies by increasing EC use.

One of the areas addressed by Healthy Campus 2020 (American College Health Association, 2012a) is to: “Increase campus community awareness and understanding of determinants of health…” Pregnancy prevention on college campuses can help address this concern by instituting interventions that not only increases awareness of emergency contraception, but ties it to determinants of health. This can be accomplished by using the constructs of the model that were found to be most influential in emergency contraceptive use, instrumental attitude and injunctive norm.

To accomplish an intervention plan, a second area of Healthy Campus 2020 (American College Health Association, 2012a) could be approached: “Engage multiple stakeholders to take actions that are driven by the best available evidence and knowledge to strengthen policies, improve practices, and empower behavior change…” Emergency contraception is currently a very controversial subject. The bulk of the controversy seems to be driven by misconceptions and misunderstanding about it. To engage stakeholders, focus could be placed on the fallacies that are so quickly spread through the Internet and the news media using information from this study and concentrating on
improving knowledge of what EC is and how it works. By dispelling inaccurate information during first year orientation and follow-up in-service trainings, physicians and pharmacy staff identified by the injunctive norm construct, may help improve and strengthen policies and practices related to emergency contraceptive availability and use.

Next, one way to improve instrumental attitude could be by improving the information students hear and see concerning EC. If students know that emergency contraception will not harm them physically, they may decrease their belief that using it is unhealthy. Injunctive norm could be influenced by addressing the third area of Healthy Campus 2020 (American College Health Association, 2012a), “Create social and physical environments that promote good health for all.” By targeting people who are important to the students to increase their acceptance of EC as a back-up contraceptive, the normative pressure not to use EC when needed could be relieved. If parents, pharmacy staff and doctors understand EC better, they may be more accepting of its use. If they are more accepting of its use, then college students may be more likely to use it. Residence hall directors and resident assistants should be trained to educate, inform, and assist students in preventing unintended/unplanned pregnancies.

A well planned intervention to increase emergency contraceptive use and decrease unintended/unplanned pregnancies in college students can also help fulfill three other areas of the of Healthy Campus 2020 (American College Health Association, 2012a). These are: “… Support efforts to increase academic success, productivity…, Attain high-quality, longer lives free of preventable disease, disability, injury, and premature death,” and “Promote quality of life, healthy development and positive health behaviors.” Students who continue an unintended/unplanned pregnancy are less likely to complete
their college education and more likely to live in poverty and suffer from depression (The National Campaign to Prevent Teen and Unplanned Pregnancy, n.d.). Academic success is less likely available and quality of life may decrease when students experience unintended/unplanned pregnancies.

An intervention to help students take responsibility for their sexual health by using emergency contraception in situations where it is most needed will help to increase academic success and quality of life. This could be accomplished by making EC available on-campus, at the student health centers. Other avenues to consider are group discussions in residence halls, or making sexual health classes mandatory and increasing the amount of time spent in those classes on teaching about EC. Educational brochures and posters could be designed to address each construct of the IBM and placed in strategic places on campus where students spend their free time. In addition, schools should make access to emergency contraception easier. Many times college health centers are located in difficult areas to reach on campus or they are closed on week-ends when students are most likely to find themselves in need of it. Changing accessibility could increase EC use and decrease unintended pregnancies.

The student health center should be encouraged to subsidize the cost of EC to make it more affordable for students on a tight budget. If campuses are unwilling to provide emergency contraception to students at low cost, perhaps they could inform them of local pharmacies that carry EC and where to go when they need it. A portion of student health fees could be set aside to cover contraceptive services, including emergency contraception. Perhaps pharmaceutical companies could be asked to decrease the cost for adolescents and young adults.
Future Research

The topic of emergency contraception is wide open for research. Because it has been and remains a controversial topic it may not be easy to conduct research, but it is important in helping reduce unplanned/unintended pregnancy with anyone of child-bearing age, but particularly college students. Areas for possible research include, but are not limited to:

- Design a survey study using randomly selected students to increase the ability to make inferences about the data. Alternatively or additionally, the survey could be administered only to students who have used emergency contraception in the past; or they could be distributed at clinic sites, physician offices, or restricted to OB/GYN offices.

- A qualitative study using focus groups could be conducted with women of child-bearing age or EC users to get a more complete picture of their needs, opinions, and beliefs. This could guide future interventions to decrease unintended/unplanned pregnancies. Or one-one-one interviews could be conducted to decrease embarrassment over discussing a private subject and increasing the robustness of information collected.

- An intervention could be designed with a control group receiving the usual sexual health class information and the intervention group receiving education specific to emergency contraception: what it is, how it is used, its mechanism of action, and/or safety concerns.
A longitudinal study of college students beginning as freshman through senior year could be conducted investigating sexual activity as well as emergency contraceptive use could be conducted.

Studies could be conducted investigating different education modes to determine how much education is required to elicit behavior change. Are brochures and posters helpful? Can the media be used to disseminate accurate information to women of child-bearing age? How much exposure is needed to dispel misconceptions about EC? Do on-line classes increase knowledge and change behavior? Are presentations better than television commercials? Are face to face interventions better than group interventions?

Investigate using a different theoretical model, such as Social Cognitive Theory to see if the constructs are better at determining why college students use or do not use EC.

Summary

This chapter summarized the key findings of the current study and discussed the significance of the constructs of the model used to examine emergency contraceptive use among college students. In addition, limitations of the study were discussed, as were implications of the findings and future research possibilities.
References


von Haeften, I., & Kenski, K. (2001). Multi-partnered heterosexuals' condom use for vaginal sex with their main partner as a function of attitude, subjective norm, partner norm, perceived behavioural control and weighted control beliefs. Psychology, Health & Medicine, 6(2), 165-177. doi:10.1080/13548500120035427.


Appendix A

Initial Contact Letter to Faculty
February 15, 2012

Judi Brookins-Fisher, Ph.D., CPHS
Central Michigan University
School of Health Sciences Community Health Division
2207 Health Professions Building
Mount Pleasant, MI 48859

Dear Dr. Brookins-Fisher,

My name is Jennifer Wohlwend and I am a doctoral candidate in Health Education at the University of Toledo (UT). I am writing to request your assistance with my dissertation survey research on emergency contraceptive use among college students. I was given your name by one of the faculty members in the Health and Recreation Department. You may recognize some of my highly esteemed professors, Dr. Susan Telljohann, Dr. James Price, Dr. Amy Thompson or Dr. Joseph Dake.

I anticipate having The University of Toledo IRB approval to administer my survey by April 2012 and will need access to approximately 60 students on your campus. I am offering $100 cash as an incentive to help me with this project.

I will call you within the next week to discuss whether you are interested in this project, how best to access students, and to answer any questions you may have. I can be reached at 419-345-8545 should you wish to contact me.

Sincerely,

Jennifer J. Wohlwend, MPH
Doctoral Candidate, Health Education

Dissertation Committee Members: Dr. Tavis Glassman
Dr. Timothy Jordan
Dr. Sanford Kimmel
Dr. Jiunn-Jye Sheu
Appendix B

Institutional Review Board Approval for Study
To: Tavis Glassman, Ph.D. and Jennifer Wohlwend  
Department of Health and Recreation Professions

From: Barbara K. Chesney, Ph.D., Chair  
Kamala London, Ph.D., Vice Chair  
Walter Edinger, Ph.D., Chair Designee

Signed: B. K. Chesney  
Date: 05/23/12

Subject: IRB #107861  
Protocol Title: An Examination of Emergency Contraceptive use in College Students in the Midwest using the Integrated Behavioral Model

On 05/09/12, the Protocol listed below was reviewed by the Chair Designee of the University of Toledo (UT) Social Behavioral & Educational Institutional Review Board (IRB) via the expedited process. Modifications were requested and approved by the Chair on 05/23/12. The Chair and Chair Designee noted that a waiver of written consent has been granted. This action will be reported to the committee at its next scheduled meeting.

Items Reviewed:
• IRB Application Requesting Expedited Review  
• Current IRB Approved Survey(s) (version date 05/23/12)  
• Current IRB Approved Information Sheet (version date 05/23/12)

This protocol approval is in effect until the expiration date listed below, unless the IRB notifies you otherwise.

Approval Date: 05/23/12  
Expiration Date: 05/22/13  
Number of Subjects Approved: 1,500

Please read the following attachment detailing Principal Investigator responsibilities.
Appendix C

Institutional Review Board Approval/Acceptance for 10 Non-University of Toledo Schools
RE: Survey with Dr. Khubchandani

Mangelli, Christopher [cmmangelli@bsu.edu]

To: Wohlwend, Jennifer

Thursday, August 09, 2012 11:22 AM

You replied on 8/9/2012 12:13 PM.

Jennifer

Hi there. Strictly speaking if that is the full extent of his involvement, then no this is not
needed. We had been under the impression that he would be doing more than that. This is also
operating the presumption that he is not involved in the informed consent process.

Under the regulations there is a section for "engagement in research" which helps establish the
threshold of when an individual or institution becomes engaged in the research process. This is
likely why the other institutions have requested that you come and handle the survey process. In
order for Ball State to avoid an engagement in research one of two things need to happen:

1. Like at the other institutions, you come and handle the process yourself; or
2. Dr. Khubchandani hands out the survey; he leaves the room and has the students place them
   into an envelope when done and then the last person seals it. He then mails it back to you. He
   also cannot have any involvement in the informed consent process other than to say if X has
   any questions then they are to contact you. This option keeps him out of the process and keeps it
   clean on your end.

If the case outlined below is the full extent of his involvement and either of the above options are
viable to you, then no, the agreement will not be necessary.

Thanks for offering. When you have a chance could you please forward a copy of your approval
letter and survey for our records (and if anyone should inquire, I have something to refer to.)

I hope this helps. If you have any other questions, please let me know.

Chris M.
given their okay under these conditions, without need of further paperwork. Others have asked that I come and hand out and collect the surveys myself. If this works better for you and for Ball State (that I visit campus and hand them out and collect them myself) I am most certainly willing to do so. Just let me know. My intention isn't to add to anyone's burden of paperwork or any other kind of work for that matter - and I'm willing to do what is required/necessary.

Just a thought I wanted to run past you. Thank you for your time and attention to this issue.

By the way, I can send you the UT IRB approval and survey if that would be helpful.

Jennifer J. Wohlwend, MPH, CHES
Health Education Doctoral Candidate
University of Toledo
jennifer.wohlwend@rockets.utoledo.edu
419-345-8545
Hi Jennifer,

Please see the response from HSRB. We should be good to go.

Dr. Yingling

From: Office of Research Compliance
Sent: Tuesday, June 12, 2012 12:55 PM
To: Faith Ann Yingling
Subject: RE:

Faith,
Since you are only helping to recruit, we are not considered to be engaged in the research and the BGSU HSRB does not have to formally approve the work. Based upon the information provided by the PI, the approval from UT is sufficient.

Hillary

Hillary Harms, Ph.D.
Research Compliance Officer
Office of Research Compliance
309A University Hall
Bowling Green State University
Bowling Green, OH 43403
Phone: (419) 372-7716
Fax: (419) 372-6916
http://www.bgsu.edu/offices/orc
Dear Dr. Brookins-Fisher,

Hope this email finds you well. If I recall our conversation correctly, your role in this project is to administer the survey instrument to CMU students then you don't need to submit a separate CMU IRB application. If your role is different or has changed, please update me.

Best wishes,

Roop Jayaraman, Ph.D.
Institutional Review Board Coordinator
Office of Research and Sponsored Programs
Central Michigan University
Foust 251
Mount Pleasant, MI 48859
Office (989) 774-6401
Fax (989) 774-3439
r.jayaraman@cmich.edu

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From: "<Brookins Fisher">, Jodi
<fishe1jb@cmich.edu><mailto:fishe1jb@cmich.edu>>
Date: Friday, June 8, 2012 12:09 PM
To: "Wohlwend, Jennifer"
<jennifer.wohlwend@rockets.utoledo.edu><mailto:jennifer.wohlwend@rockets.utoledo.edu>>
Cc: Roop Jayaraman
<jayar1rc@cmich.edu><mailto:jayar1rc@cmich.edu>>

Subject: RE: Wohlwend survey research

Per previous conversations with our IRB Director, Dr. Roop Jayaraman, I believe we are covered by the U of Toledo’s IRB approval process. Dr. Jayaraman, can you confirm? Jodi
KENT STATE UNIVERSITY

RE: Wohlwend survey research

KERR, DIANNE [dkerr@kent.edu]
To: Wohlwend, Jennifer
Monday, June 18, 2012 12:51 PM

Yes Jennifer. I just have to have your IRB approval, which I already do according to Paulette. I will have to ask those teaching a few of our classes to do this but don’t think there will be a problem. Thanks.

Dianne L. Kerr, PhD, MCHES
Associate Professor
Health Education & Promotion
Kent State University
PO Box 5190, 134 Nixson Hall
Kent, OH 44242
(330)672-0677
Dkerr@Kent.edu

From: Wohlwend, Jennifer [jennifer.wohlwend@rockets.utoledo.edu]
Sent: Monday, June 18, 2012 11:32 AM
To: KERR, DIANNE
Subject: RE: Wohlwend survey research

Good Morning, Dr. Kerr:

I am touching base with everyone to see what progress has been made with IRB requirements. Last we communicated, you were going to contact Paulette about administering paper surveys to general education courses in your department. Have you heard from her yet?

Jennifer J. Wohlwend, MPH, CHES
Health Education Doctoral Candidate
University of Toledo
jennifer.wohlwend@rockets.utoledo.edu
419-346-8545

From: KERR, DIANNE [dkerr@kent.edu]
Sent: Friday, June 08, 2012 4:15 PM
To: Wohlwend, Jennifer
Subject: RE: Wohlwend survey research

Yes. We could administer to Personal Health or Human Sexuality electives. Let me check with Paulette about this.

Dianne L. Kerr, PhD, MCHES
Associate Professor
Health Education & Promotion
Kent State University
PO Box 5190, 134 Nixson Hall
Kent, OH 44242
(330)672-0677
Dkerr@Kent.edu
MIAMI UNIVERSITY

FW: Wohlwend research from UT
Ward, Rose Marie Dr. [wardrm1@muohio.edu]
In response to the message from Wohlwend, Jennifer, 6/18/2012

To: Bush, Kevin R. Dr. [bushkr@muohio.edu]
Cc: Wohlwend, Jennifer
Attachments:
(4) Download all attachments
IRB Amendment Approval 060~1.pdf (666 KB)[Open in Browser]; IRB approval for study 060~1.pdf (1 MB)[Open in Browser]; IRB Amendment 060412.doc (820 KB)[Open in Browser]; IRB SBE_Protocol_Applicati~1.doc (299 KB)[Open in Browser]
Dissertation on EC

Tuesday, June 19, 2012 10:18 AM

You replied on 6/19/2012 11:12 AM.

Kevin,

Thanks for the approval. Here are the materials.

Rose Marie

To: Sullivan, Neal H. Dr. [sullivnh@muohio.edu]
Cc: Glassman, Tavis; wardrm1@muohio.edu
Sent items
Monday, June 18, 2012 4:20 PM

Thank you for the quick turn-around, Dr. Sullivan. I will not be analyzing my survey data by school, but rather as one group, which is how I determined the number of participants needed; nor will the classes visited be mentioned. This will help to keep all information anonymous and confidential to protect the participants.

Again, thank you for your time and your attention.

Jennifer J. Wohlwend, MPH, CHES
Health Education Doctoral Candidate
University of Toledo
jennifer.wohlwend@rockets.utoledo.edu
419-345-8545

RE: Wohlwend research from UT
Sullivan, Neal H. Dr. [sullivnh@muohio.edu]

To: Wohlwend, Jennifer
Monday, June 18, 2012 1:09 PM
Dissertation on EC

You replied on 6/18/2012 4:20 PM.
Hi Jennifer,

I have saved the files you sent along with your email message. When you seek permission to conduct research on campus, you may refer those persons to me as a Miami source of information relating to human subjects protections. Since you are asking for demographic information that among a couple of hundred subjects, some individuals would be linked to the data, we ask that you be careful about how you present information (ideally, not naming Miami at all). For example, reporting results including personal information by the ethnic group “Native American at Miami” with only one native American in a class might compromise that individual's identity.

Also, I noticed on the Toledo application a passage akin to what I was talking about this morning regarding listing Rose Marie Ward on your approved protocol:

“Anyone who is “engaged in research” must be listed below. This includes all study personnel who, for research purposes, interact or intervene with subjects, have access to subjects’ identifiable private information or obtain informed consent of subjects.”

Where “below” is the list of personnel.

Good luck with your project.

Neal

____________________________________________________________________

Neal H. Sullivan, PhD
Research Compliance Officer
Office for the Advancement of Research and Scholarship
102E Roudebush Hall
Miami University
Oxford, OH 45056
neal.sullivan@muohio.edu
(513) 529-2488

From: Wohlwend, Jennifer [mailto:jennifer.wohlwend@rockets.utoledo.edu]
Sent: Monday, June 18, 2012 11:20 AM
To: Sullivan, Neal H. Dr.
Cc: Ward, Rose Marie Dr.; Glassman, Tavis
Subject: Wohlwend research from UT

Thank you for taking the time to speak with me this morning and for clarifying Miami University's IRB protocol.

As we discussed, I will be working with Dr. Rose Marie Ward in the Department of Kinesiology & Health. Dr. Ward's role will be to locate general education classes for me.
to administer my survey. I will contact her to get the appropriate department approvals for my presence on campus.

I have attached several files (not necessarily in this order):

1. University of Toledo (UT) IRB application
2. UT IRB approval for this study (which includes the original survey)
3. UT IRB amendment application
4. UT IRB amendment approval (which includes the amended/approved survey)

If you should need additional information or if I have forgotten anything we discussed this morning, please do not hesitate to contact me by telephone or e-mail.
And, again, thank you for giving me the information I will need in order to conduct my survey on your campus.

Jennifer J. Wohlwend, MPH, CHES
Health Education Doctoral Candidate
University of Toledo
jennifer.wohlwend@rockets.utoledo.edu
419-345-8545
Jennifer Wohlwend does not need to have IRB approval from NIU to recruit subjects from our student population as long as no NIU personnel/students are involved in the project in any way other than as research subjects or in passing her recruitment and survey material along to students.

Jeanette Gommel
Research Compliance Coordinator
Office of Research Compliance
jgommel@niu.edu
815-753-8588

Hello Jeanette,

Donna Munroe is my colleague in the School of Nursing and Health Studies and suggested that I inquire about Jennifer's questions with you. I would appreciate it if you could reply to both of us since I am teaching summer session and quite busy these first few days. I want Jennifer to know that I have not overlooked her request; I am just not sure how to answer. I would like to help her with her dissertation research by allowing her to survey students in our public health and health education (PHHE) gen ed courses. I also have a combination grad and undergrad class in sexuality education that could be included. Of course participation would be entirely voluntary on the part of the students.

Thanks in advance for your help.

Sincerely,
Sally Conklin
Jennifer,

Thank you for this clarification. If Mr. Koons’ only involvement is to allow you access to his students in his classroom and if Mr. Koons will not be doing the consenting process nor administering the study to the students, then indeed, he does not need to get IRB approval at Ohio University. I’m glad you called to explain the process you intend to follow. Your IRB approval at your own institution should suffice. You may keep this email correspondence as your documentation.

Regards,
Robin

Mrs. Robin Stack, CIP
Human Subjects Research Coordinator
Office of Research Compliance
Ohio University
117 RTEC
Athens, OH 45701
Phone: 740.597.1289
Fax: 740.593.9838

Good Morning, Mrs. Stack:

Thank you so much for speaking with me this morning. I called Mr. Koons and we have worked out the details.

Mr. Koons teaches a general education health class with 150 students on Tuesdays and Thursdays, beginning the week of August 27th (when Ohio University begins). I will arrive on campus to administer my surveys to the Thursday class (August 30th).

In brief, Mr. Koons will allow me into his class and I will administer and collect the surveys. All information gathered will be anonymous as no identifying information is being requested. Everything will remain confidential because completed surveys will remain in my possession only.

If you need additional information, please do not hesitate to contact me.
Thank you for your time and attention to this matter.

Jennifer J. Wohlwend, MPH, CHES  
Health Education Doctoral Candidate  
University of Toledo  
jennifer.wohlwend@rockets.utoledo.edu  
419-345-8545

UNIVERSITY OF AKRON

RE: University of Toledo survey

Glotzer,Richard S [glotzer@uakron.edu]  
To: Wohlwend, Jennifer  
Sent: Thursday, August 23, 2012 12:29 PM

The University of Akron does **not** require any IRB process (or a copy of your IRB) since I am simply distributing the questionnaire and am not involved in the research. If you are asked, my answer came from Ms. Sharon McWhorter, Associate Director, Research Services and Sponsored Programs. You are ready to roll.
Date: August 22, 2012

To: Tavis Glassman, Principal Investigator
   Jennifer Wohlwend, Student Investigator for dissertation
   Carol Weideman, WMU Contact

From: Amy Naugle, Ph.D., Chair

Re: HSIRB Project - 2012 University of Toledo - Glassman

This letter will serve as confirmation that your research project titled “Emergency Contraceptive Use among College Students” has been approved for data collection at Western Michigan University under the expedited category of review by the Human Subjects Institutional Review Board. The conditions and duration of this approval are specified in the Policies of Western Michigan University. You may now begin to implement the research as described in the application.

Please note that you may only conduct this research exactly in the form it was approved. You must seek specific board approval for any changes in this project. You must also seek reapproval if the project extends beyond the termination date noted below. In addition if there are any unanticipated adverse reactions or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the HSIRB for consultation.

The Board wishes you success in the pursuit of your research goals.

Approval Termination: August 22, 2013
Appendix D

Institutional Review Board Approval for Focus Groups
To: Tavis Glassman, Ph.D. and Jennifer Wohlwend, MPH  
Department of Health and Recreation Professions

From: Barbara K. Chesney, Ph.D., Chair  
Kamala London, Ph.D., Vice Chair  
Walter Edinger, Ph.D., Chair Designee

Signed: ___________________________  Date: 12/01/11

Subject: IRB # 107609  
Protocol Title: Focus Groups: Using the Health Belief Model to Examine Emergency Contraceptive Use among College Students in the Midwest

The above research was reviewed by the University of Toledo Social Behavioral & Educational Institutional Review Board (IRB) at its meeting on 11/17/11. The requested modifications were reviewed and approved by the Chair on 12/01/11. The Chair noted that enrollment at the approved site(s) may begin on 12/01/11 and that signed and dated consent is required prior to an individual taking part in this research.

Items Reviewed:
- IRB Application Requesting Convened Review
- Consent/Authorization Form(s) (version date 12/01/11)
- Focus Group Questions (version date 12/01/11)
- Flyer (version date 12/01/11)

This research approval is in effect until the expiration date listed below, unless the IRB notifies you otherwise.

Only the most recent IRB approved document(s) and Consent form listed above may be used when enrolling participants in this research project.

Approval Date: 12/01/11  Expiration Date: 11/16/12

Number of Subjects Approved: 150

Please read the following attachment detailing Principal Investigator responsibilities.
Appendix E

Flyers Used for Focus Group Recruitment
Let's Talk

about emergency contraception

Male Focus Groups

Female Focus Groups

Free pizza and pop

- Opinions
- Thoughts
- Beliefs
- Ideas
- Concerns

6-12 people
60-90 minutes

Interested?

contact Jennifer

@ 419-345-8545 or

jennifer.wohlwend@urockets.utoledo.edu

No names will be collected. You will be able to read about and consent to discussion prior to the meeting. No personal or private information will be requested. Researchers want your opinions.
Appendix F

Informed Consent Form with Approval for Use of Audio-Taping Focus Group Sessions
ADULT RESEARCH SUBJECT - INFORMED CONSENT FORM
Emergency Contraceptive Use Among College Students

Principal Investigators:
Tavis Glassman, PhD, MPH, CHES, Assistant Professor of Health Education, 419-530-2770
Jennifer Wohlwend, MPH, Doctoral Graduate Assistant, 419-345-8545

Purpose: You are invited to join a focus group session for a research project entitled, Using the Health Belief Model to Examine Emergency Contraceptive Use Among College Students in the Midwest. A focus group is a gathering of 6-12 people who come together to discuss a specific topic for a short period of time. Emergency contraception is the use of medication to prevent pregnancy after an episode of sexual intercourse when no contraception was used or the chosen method of contraception failed. This study is being conducted at the University of Toledo by Jennifer Wohlwend, under the direction of Tavis Glassman. The purpose of this study is to gain knowledge about college student use or non-use of emergency contraceptives. The researchers will be recruiting only general University of Toledo students.

Description of Procedures: This research study will take place in the conference room of the Department of Health and Recreation Professions (Health and Human Services Building, Room #1218). The sessions will take about 60-90 minutes during which you and a few other students will be asked to talk about emergency contraception. These discussions will be audio-recorded and transcribed by the researchers at a later time. Each focus group will be made up of either all female students or all male students to make discussions easier.

Permission to Record: Will you permit the researcher to audio-record during this research group discussion?

YES Initial Here NO Initial Here

At the end of your participation, the research team will debrief you about the discussion and answer any questions you may have about the research.

Potential Risks: There are minimal risks to participation in this study. You have the right to speak as much or as little as you like. You may also leave at any time if you feel uncomfortable, upset, or anxious. You will not be asked for any personal information. You may choose a fake name if you want other group members to speak to you directly. Other students may talk with their friends or other group members after the focus group session has ended, but the researchers will not.
Potential Benefits: The only direct benefit to you if you join in this focus group may be that you will learn about focus groups and the topic of emergency contraceptives. Others may benefit by learning about the results of the research once the study is completed.

Confidentiality: The researchers will make every effort to prevent anyone who is not on the research team from knowing that you provided information or what information you provided. The consent forms with signatures will be kept separate from the transcribed audio-recordings, which will not include names and which will be presented to others only when combined with other responses. Although we will make every effort to protect your confidentiality, there is a low risk that this might be breached. Because this is a focus group with discussion between several people, anonymity cannot be guaranteed. We urge you not to tell others about anything you hear during the meetings.

Voluntary Participation: No penalty or loss of benefits to will occur if you choose not to participate in this study. Your decision to join or not to join will not affect your relationship with The University of Toledo, any of your classes, or your relationship with any university faculty or staff. You are free to leave the conference room at any time during the discussion, without penalty or loss of benefits.

Contact Information: Before you decide to take part in this study, you may ask questions. If you have any questions before, during or after you join the session, or you notice any physical or psychological discomfort as a result of the discussions, you should contact a member of the research team – Tavis Glassman (419-530-2770) or Jennifer Wohlwend (419-345-8545).

If you have questions that were not answered by the research team or about your rights as a research subject or research-related injuries, the Chairperson of the SBE Institutional Review Board may be contacted through the Office of Research on the main campus at 419-530-2844.

Before you sign this form, please ask any questions on any aspect of this study that is unclear to you. You may take as much time as necessary to think it over.

SIGNATURE SECTION – Please read carefully

You are making a decision whether or not to participate in this research study. Your signature indicates that you have read the information provided above, you have had all your questions answered, and you have decided to take part in this research.

The date you sign this document to enroll in this study, that is, today's date must fall between the dates indicated at the bottom of the page.

Name of Subject (please print)  Signature  Date

Name of Person Obtaining Consent  Signature  Date

Adult Informed Consent  Revised 11.05.10  Page 2 of 3
This Adult Research Informed Consent document has been reviewed and approved by the University of Toledo Social, Behavioral and Educational IRB for the period of time specified in the box below.

Approved Number of Subjects: 150
Appendix G

Qualitative Analysis of Focus Group Sessions
Emergency Contraception

Focus Group Analysis

When you hear the term emergency contraception, what do you think of? What comes to your mind?

Morning after pill/day after pill/Plan B/pink pill/a pill/the commercials about Plan B -- 26

Sex without condoms the night before/a mistake the night before/an emergency – 8

Abortion – 6

Condom/another form of birth control - 2

Describe what you learned about emergency contraception in high school sex ed classes.

Nothing/don’t remember/minimal - 37

Only talked about condoms/STD’s - 6

Morning after pill - 1

What have you learned about emergency contraception since high school?

Side effects/how to get it/how to use it/where to get it/price/how available it is/should be easier to get/3 days/30 hours/70 hours/ Plan B/morning after pill/Take it after being drunk/it works -33

Not much/nothing/too shy to discuss - 23

Discussed with people/friends/parents/info from internet or news/ Saw a commercial/discussed the commercial -21

Friend used it/we discussed it/used it myself/partner used it – 14

Learned about birth control/using condoms/STD’s/anatomy - 7

Learned about misconceptions/flushes everything out/talked about abortion - 6
How it works/higher dose of birth control pills - 6

How you’d feel if you had to take it/moral issues - 3

Explain to me what you know about how emergency contraception works.

Doesn’t allow sperm and egg to fertilize/keeps egg from releasing/prevents ovulation/prevents fertilized egg from attaching/Prevents pregnancy/fertilization - 20

Nothing/ How to put on condom, insert diaphragm, etc. - 14

Gives off chemicals/keeps everything that’s inside of you that’s trying to live/doesn’t let it stick/sheds lining of the uterus/makes them have their period again and the endometrium falls out/ends cycle of the birth process - 8

Take it 72 hours after having sex/the earlier you take it the better - 2

Describe to me when emergency contraception should be used. [and why]

Condom broke/diaphragm not in properly/forgot the pill/no condom/other contraception fails/didn’t pull out - 21

The day after intercourse/within 72 hours/3 days after/as soon as you realize something went wrong - 18

Physical or sexual assault/rape/coercion - 16

Not ready to be parents/don’t want to have a kid/to prevent pregnancy/negative consequences/can’t afford it/no options for adoption/no physical means to raise the child/not really the time/ can’t take care of the child/lacking mental skills/one partner doesn’t want to have the child/to prevent birth defects- 12

Drinking/can’t remember what happened/make up for accident that happened - 9
What if another form of birth control did something wrong acts of irresponsibility/fear - 6
Don’t know - 1

Compare what you understand about emergency contraception to what you know about the abortion pill.
Don’t know - 27
Abortion pill – already pregnant/have it removed/use it after those days/kills the baby - 18
Emergency contraception – not yet pregnant/keeps it from implanting/prevent having child/doesn’t kill the baby - 16
No difference between them/they’re the same - 12
They are different - 2
One’s $50, the other’s $300/price difference - 2

What do you think is the likelihood of you or your partner getting pregnant if you never use birth control?
High chance/very high chance/100%/very likely/twice as likely/almost guaranteed - 33
There are periods where you could have sex/depends - 8
Eventually/pretty likely/always a chance - 6
Unlikely - 1

What if you used birth control sometimes? What’s the likelihood of getting pregnant?
High/extremely likely/still pretty risky/only takes one time - 32
Double the chances/always a chance/50%/15% - 7
Unusual response/it’s complicated - 4
Not very good/low odds - 3

What is the likelihood of you or your partner getting pregnant if you always use birth control?
Low/Still a chance - 40
Not likely at all/unlikely - 4
Still high - 2

If your condom breaks during intercourse, how would you attempt to prevent getting pregnant?
Morning after pill/Plan B/emergency contraception - 21
Do nothing and accept risk/wait and see/pray - 9
Get another condom/put on another condom - 7
Freak out/you can’t - 5
Pull-out method - 3
Just stop at that point - 3
No more sex - 2
Have girl lay on back, drink fluids, urinate - 2

What if you or your partner was taking the pill and you forgot to take it for one or two days. What would you do to prevent pregnancy?
Use condoms for the rest of the month/use condoms/use as much options as possible/female condom - 17
Get Plan B/morning after pill - 5
Wait until birth control is regulated again/just not do it/abstinence - 6
Other protection/diaphragm/another form - 6
Take pill right away - 3
Hope and pray - 1
Don’t know - 1

If you were not anticipating having sexual intercourse and you had no birth control with you, how would you attempt to prevent getting pregnant?

Not have sex/do other things like watch TV/oral sex - 21
Pull-out method/coitus interruptus/not vaginal - 12
Go get condoms/another form of contraception - 9
Emergency contraception/Plan B - 5
Hope for the best/woman goes to the bathroom - 2
Pray - 2
Plastic bag/Saran Wrap - 2
Nothing you can do - 1

If you or your partner were to experience pregnancy at this point in your life, what impact would that have on your life goals? [or completing your college degree]

It would be complicated/difficult/it would stop everything/big impact/change everything/destroy my goals/shatter them/catastrophic impact - 38
Drop out of school/defer school - 21
Personal goals would change/priorities would change/what you do would change/put goals on hold - /19
Would still finish degree/take on-line courses - 17
No money/little money - 10
Based on what you currently know about emergency contraception, talk about the benefits of using emergency contraception.

Not having a kid/baby/dodged a bullet/not being pregnant/not having a child before you’re ready - 20

Big psychological relief/peace of mind - 8

It’s a back-up(option - 7

Cheaper than having a baby/economics/not being a low income family - 4

Don’t have to put your life on hold/mess up your life goals - 4

Choose a different form of birth control - 3

Not worry about what your family thinks - 2

Using it in a date-rape situation - 2

Finishing school - 2

Not have to put a kid up for adoption -1

Makes you feel better/no cramps - 1
Not risking your life - 1

Why do you think college students do not use emergency contraception?

Not gonna happen to me/think they don’t need it - 20

They don’t know about it/don’t know enough about it/don’t think of it/misconception or stigma - 18

Money/cost/couldn’t afford it/think it’s a waste of money - 12

Intoxicated or other reason they didn’t know they needed it - 4

Embarrassed/misconception or stigma/morals - 8

Don’t know where to get it - 1

Don’t know if it will work - 1

Parents wouldn’t allow it - 1

Where can you obtain emergency contraception?

Drug store/pharmacy (some named specific stores) - 28

Doctor’s office/medical center/public health building - 4

Not sure/no idea - 4

Planned Parenthood - 3

Anywhere - 3

Gas station - 2

Vending machines - 1

What’s the best time to use emergency contraception? Is there a window of opportunity?

1-3 days/72 hours/3 days/within a certain time after intercourse/day or two - 21

As soon as you think of it/right away/morning after/day after/before, during and after/the sooner the better - 16
Don’t think there is something like that/don’t know - 6
When you’re scare or something/unsure - 4
When you know condom breaks/haven’t taken birth control pills/failure of birth control method - 2

Talk to me about possible feelings of embarrassment to go in to the pharmacy and ask for emergency contraception.

I would feel embarrassed/awkward/shameful/people know what you were doing last night/wouldn’t want others seeing me/if I knew the pharmacist/privacy boundaries are breached/I would feel irresponsible - 34
None/don’t care what others think/I need this/pharmacist sees people every day - 21
Feeling judged/others misinterpret/others think it’s irresponsible/what others think - 15

Some people are shy/don’t want to talk about it - 3
More when you’re younger/would depend on personality - 2
More embarrassing if you were the parent - 2
More embarrassed if people found out I was pregnant/Rather be embarrassed for 10 minutes than be pregnant - 2
I think it’s like abortion - 1
More embarrassed if parents, family, friends knew about it - 1
I’d feel uneducated - 1

What would be some negatives associated with use of emergency contraception?

Possible side effects/fertility issues/hormone imbalance/not healthy for the female - 15
Religion/moral beliefs/culture 9

Emotional thing/toll/psychological effects/guilt/strain relationship - 8

Expensive/cost - 7

Can still get pregnant/may not work - 6

It’s abortion/associated with abortion/killing the baby - 3

Family opinion - 2

Being judged by others - 2

People don’t know enough about it - 1

Misusing it - 2

What kinds of things would help you to remember or encourage you or remind you to use emergency contraception if you needed it?

Knowing about it/more information/spreading knowledge/differentiating it from abortion - 32

Self/thinking ahead/being in situation you don’t want to be in - 12

Teaching it in schools (freshman orientation type thing as well)- 10

Posters - 8

Public service announcements/the commercial - 4

Nothing would - 4

Look at how your future would change if you had a kid - 3

Advertising/marketing - 1

Friends - 1

Create an app - 1

Warning on box of condoms – 1
Other people’s kids - 1
Lack of money, look at your bank account, you can’t afford a kid - 1
Mommy - 1

How confident do you feel in using emergency contraception if the need would present itself?

Would be confident (I know enough) - 22
Would not be confident (I don’t know enough)/would feel scared - 20
Side effects would hinder - 6
No idea/nothing - 5
Safety net for possible pregnancy - 4
Having an abortion would stop me - 1
Low confidence - 1
High confidence - 1
Would depend on the stability of the relationship - 1

Knowing this information, would you change your answers to any of the questions that I asked earlier? [students were given information about emergency contraception at this point and then asked this questions]

No - 5
Maybe/don’t know - 2
Personal feelings/morals - 2
Would feel more comfortable using it - 2
Knowing it’s not abortion helps - 3
It’s helpful to have more information - 2
Do you feel that your fellow college students, even your male friends, should know about emergency contraception?

Yes - 22
Appendix H

Questions Approved for use During Focus Group Sessions
FOCUS GROUP QUESTIONS

A: general conversation-opening questions

1. When you hear the term emergency contraception, what do you think of, what comes to your mind?
2. Describe what you learned about emergency contraception in high school sex ed classes? What kinds of conversations did you have outside of class?
3. Explain what you have learned about emergency contraception since high school? Where did this information come from? Explain what you know about how emergency contraception works?
4. Describe when EC should be used? Explain why someone would use EC?
5. Compare what you understand about emergency contraception to what you know about the abortion pill? How are they the same? How are they different?

B: perceived susceptibility

1. What do you think is the likelihood of you or your partner getting pregnant if you never use birth control? What if you and/or your partner use birth control sometimes? What if you and/or your partner always use it?
2. If your condom breaks during intercourse, how would you (or your partner) attempt to prevent getting pregnant?
3. If you or your partner forgot to take a birth control pill or two, how would you (or your partner) attempt to prevent getting pregnant?
4. If you were not anticipating having sexual intercourse and had no birth control with you, how would you (or your partner) attempt to prevent getting pregnant?

C: perceived severity

1. If you or your partner were to experience a pregnancy at this point in your life, what impact would it have on your life goals?
2. What impact would a pregnancy have on your ability to complete your college degree? Explain/elaborate.

D: perceived benefits

1. Based on what you currently know, talk about the benefits of emergency contraception?

E: perceived barriers

1. Why don’t college students use emergency contraception?
2. Where can you obtain emergency contraception?
3. Discuss what the best time to use emergency contraception would be? Is there a “window of opportunity” for using emergency contraception?
FOCUS GROUP QUESTIONS

4. Talk to me about possible feelings of embarrassment you might experience in purchasing emergency contraception?
5. What could be some negatives for using emergency contraceptives?

F: cues to action

1. What kinds of things would help you to remember, or encourage you or remind you to use emergency contraception when needed?

G: self-efficacy

1. How confident do you feel in utilizing EC should the situation present itself?
2. What would increase your confidence?
3. What would hinder your confidence?

H: end of session

Emergency contraception is the use of medication to prevent pregnancy after an episode of sexual intercourse when no contraception was used or the chosen method of contraception failed. It is similar to taking a higher dose of birth control pills. EC works by impeding ovulation if ovulation has not already occurred. It also works by disrupting the ability of the sperm to move, which makes it more difficult for the egg to be fertilized by the sperm. EC does not disrupt an already existing pregnancy. Research has not been able to show that EC disrupts implantation of a fertilized egg into the endometrium, although many groups believe otherwise.

1. Knowing the above information, would you change the way you answered any of the previous questions?
Appendix I

List of Expert Reviewers for Assessment of Validity
Expert Reviewers for Validity Assessment

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Appendix J

Institutional Review Board Approval for Revised Survey
To: Tavis Glassman, Ph.D. and Jennifer Wohlwend
Department of Health and Recreation Professions

From: Barbara K. Chesney, Ph.D., Chair
Kamala London, Ph.D., Vice Chair
Walter Edinger, Ph.D., Chair Designee

Signed: [Signature]
Date: 06/07/12

Subject: IRB # 107861
Protocol Title: An Examination of Emergency Contraceptive use in College Students in the Midwest using the Integrated Behavioral Model

On 06/07/12, the Amendment listed below was reviewed and approved by the Chair and Chair Designee of the University of Toledo Social Behavioral & Educational Institutional Review Board (IRB) via the expedited process. The Chair and Chair Designee noted that enrollment continues at the approved sites. This action will be reported to the committee at its next scheduled meeting.

Items Reviewed:
- IRB Application Requesting Expedited Review of Amendment (UT Reference #8119)
  - Modify the survey
  - Increase number of participants to 3,500

This Amendment approval is in effect until the expiration date listed below, unless the IRB notifies you otherwise.

Amendment Approval Date: 06/07/12   Expiration Date: 05/22/13

Number of Subjects Approved: 3,500

Please read the following attachment detailing Principal Investigator responsibilities.
Appendix K

Final Survey
Emergency Contraception Survey

Directions: You must be at least 18 years old to complete this survey. Do not put your name on the survey. If you choose not to complete the survey, please turn to the last page and complete the “Demographics” section only. When you are finished, place the survey in the brown envelope.

Emergency contraception is a pill that is taken to keep from getting pregnant when birth control has not been used or the method that was used has failed (e.g. condom broke, forgot a few pills).

Answer the following questions by placing an “X” in the appropriate box.

<table>
<thead>
<tr>
<th></th>
<th>True</th>
<th>False</th>
<th>Don’t Know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency contraception is designed to prevent pregnancy.</td>
<td></td>
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</tr>
<tr>
<td>Plan B One-Step® is a type of emergency contraception.</td>
<td></td>
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</tr>
<tr>
<td>The morning after pill and emergency contraception are the same thing.</td>
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<td></td>
</tr>
<tr>
<td>Emergency contraception flushes everything out of the woman’s uterus.</td>
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</tr>
<tr>
<td>Emergency contraception is the same thing as an abortion.</td>
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</tr>
<tr>
<td>Emergency contraception can be used after birth control has failed (condom breaks, forgot to take a birth control pill).</td>
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</tr>
<tr>
<td>Using emergency contraception affects a woman’s fertility in the future.</td>
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<td></td>
</tr>
<tr>
<td>Women cannot repeatedly use emergency contraception due to its physical effects.</td>
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</tr>
<tr>
<td>Men can buy emergency contraception if they are 17 or older.</td>
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<tr>
<td>For best results, emergency contraception should be used within 72 hours.</td>
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</tbody>
</table>

The researchers recognize that not all students are sexually active or participate in heterosexual activities. Nevertheless, please complete the survey based on the following hypothetical circumstances, regardless of your current activity. Suppose you had consensual penile/vaginal sex within the past 24 hours. You did not use birth control or something went wrong with your usual method (e.g. condom broke, forgot to take a few pills, etc.). Assume you (or your partner) do not currently want to get pregnant.

Based on the scenario above, place an “X” in each of the spaces that best match your opinion.

A. If I (or my partner) used emergency contraception I would feel:

   Bad : __ : __ : __ : __ : __ :
   Embarrassed : __ : __ : __ : __ : __ :
   Negatively Judged : __ : __ : __ : __ : __ :
   Ashamed : __ : __ : __ : __ : __ :
   Worried : __ : __ : __ : __ : __ :
   Good
   Confident
   Positively Judged
   Proud
   Relieved

B. I think using emergency contraception is:

   Immoral : __ : __ : __ : __ : __ :
   Irresponsible : __ : __ : __ : __ : __ :
   Unjustifiable : __ : __ : __ : __ : __ :
   Unhealthy : __ : __ : __ : __ : __ :
   Difficult : __ : __ : __ : __ : __ :
   Moral
   Responsible
   Justifiable
   Healthy
   Easy
# Emergency Contraception Survey

Based on the scenario on page 1, place an “X” in the column that best indicates your level of approval of the following statements:

<table>
<thead>
<tr>
<th>When it comes to me (or my partner) using emergency contraception:</th>
<th>Strongly Disapprove</th>
<th>Disapprove</th>
<th>Neither Approve nor Disapprove</th>
<th>Approve</th>
<th>Strongly Approve</th>
</tr>
</thead>
<tbody>
<tr>
<td>My partner would:</td>
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<tr>
<td>My friends would:</td>
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<tr>
<td>My parents would:</td>
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<tr>
<td>My doctor would:</td>
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</tr>
<tr>
<td>Pharmacy staff would:</td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Most college students would:</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Most people would:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Based on the scenario on page 1, place an “X” in the column that best indicates your level of confidence to do each of the following:

<table>
<thead>
<tr>
<th>If you (or your partner) wanted to use emergency contraception, how confident are you in your ability:</th>
<th>Not at All Confident</th>
<th>Not Very Confident</th>
<th>Somewhat Confident</th>
<th>Very Confident</th>
<th>Extremely Confident</th>
</tr>
</thead>
<tbody>
<tr>
<td>To obtain emergency contraception.</td>
<td></td>
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</tr>
<tr>
<td>Ask pharmacy staff for emergency contraception.</td>
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</tr>
<tr>
<td>Use emergency contraception correctly.</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Buy emergency contraception on-line.</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Overcome any feelings of embarrassment in order to purchase emergency contraception.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Based on the scenario on page 1, place an “X” in the column that best indicates your degree of control over each of the following:

<table>
<thead>
<tr>
<th>If you (or your partner) wanted to use emergency contraception, how much control would you have over each of the following?</th>
<th>Not At All Under My Control</th>
<th>Slightly Under My Control</th>
<th>Somewhat Under My Control</th>
<th>Mostly Under My Control</th>
<th>Totally Under My Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buying it at a nearby pharmacy is:</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Obtaining money to pay for it is:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buying it on campus is:</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Whether I (or my partner) use it is:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Place an “X” in the column that best matches your opinion.

<table>
<thead>
<tr>
<th>How likely is it that:</th>
<th>Very Unlikely</th>
<th>Unlikely</th>
<th>Not Sure</th>
<th>Likely</th>
<th>Very Likely</th>
</tr>
</thead>
<tbody>
<tr>
<td>At least one of my classmates has used emergency contraception.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>At least one of my friends has used emergency contraception.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>At least one of my family members has used emergency contraception.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Please turn page and complete survey*
Place an “X” in the column that best describes your intention:

<table>
<thead>
<tr>
<th>How likely is it that you would purchase and/or use emergency contraception under the following conditions?</th>
<th>Very Unlikely</th>
<th>Unlikely</th>
<th>Not Sure</th>
<th>Likely</th>
<th>Very Likely</th>
</tr>
</thead>
<tbody>
<tr>
<td>Based on the scenario on page one, I (or my partner) would use emergency contraception.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If the condom broke during intercourse, I (or my partner) would use emergency contraception.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If I (or my partner) forgot to take a few birth control pills I (or my partner) would use emergency contraception.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If I (or my partner) did not use birth control during sex, I (or my partner) would use emergency contraception.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If I (or my partner) were sexually assaulted I (or my partner) would use emergency contraception.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If a friend asked you to purchase emergency contraception for her.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If you wanted an advance supply in the event of an unforeseen circumstance.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Place an “X” in the column to the right of each statement that best matches your situation.

<table>
<thead>
<tr>
<th>Have you had sexual intercourse at least once in your lifetime?</th>
<th>Yes</th>
<th>No</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Within the last 12 months, have you or your partner(s) used emergency contraception (“morning after pill”)?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have you or your partner(s) ever experienced an unintended/unplanned pregnancy?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Would you use the Internet to purchase emergency contraception if needed?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Within the last 30 days, did you have vaginal intercourse?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did you or your partner(s) use a method to prevent pregnancy the last time you had vaginal intercourse?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Place an “X” next to your answer.

A. Within your lifetime, with how many partners have you had vaginal intercourse?
   ____ Partner(s) (fill in the blank with a number) ____ I have never had vaginal intercourse

B. How frequently do you or your current partner(s) use a condom or other form of birth control during vaginal intercourse?
   ____ Never ____ 1-25% ____ 26-50% ____ 51-75% ____ 76-100% ____ I have never had sex

C. In your opinion, when does life begin?
   ____ When sperm and egg join (fertilization)
   ____ When fertilized egg embeds into the uterine lining (implantation)
   ____ When you can hear the fetus/baby’s first heartbeats
   ____ At birth
   ____ Don’t know/not sure

*Please turn page and complete survey*
Emergency Contraception Survey

D. Have you ever taken a college human sexuality course? ___ Yes ___ No
E. Is sex before marriage against your religion? ___ Yes ___ No ___ N/A
F. Is abortion against your religion? ___ Yes ___ No ___ N/A
G. Is using birth control to prevent pregnancy against your religion? ___ Yes ___ No ___ N/A

Place an “X” to the left of the answer.

What method of birth control do you or your partner typically use to prevent pregnancy when you have vaginal intercourse: (check all that apply)

___ never had sexual intercourse ___ female condom
___ birth control pills ___ diaphragm or cervical cap
___ birth control shots ___ contraceptive sponge
___ birth control implants ___ spermicide
___ birth control patch ___ fertility awareness (calendar, mucus, body temperature)
___ vaginal ring ___ withdrawal (or pull out) method
___ intrauterine device (IUD) ___ sterilization (hysterectomy, tubes tied, vasectomy)
___ male condom ___ other method (please specify)

Demographics and Background Information

Gender: ___ Female ___ Male ___ Transgender

Year Born: 19___

Year in School: ___ Freshman ___ Sophomore ___ Junior ___ Senior ___ Other

Race/Ethnicity (check only one):
___ American Indian, Alaskan ___ White (not Hispanic)
___ Asian or Pacific Islander ___ Native or Native Hawaiian
___ Black (not Hispanic) ___ Hispanic or Latino/a
___ Biracial or Multiracial ___ Other (please specify)

What is your relationship status? (check only one) ___ Not currently in a relationship ___ New relationship ___ Casual relationship ___ Committed relationship ___ Engaged ___ Married ___ Divorced

How do you identify your sexual orientation? (check only one)
___ Heterosexual ___ Homosexual ___ Bisexual ___ Unsure

Do you have any comments you would like to share related to this topic?:

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

Thank you for your participation.
Appendix L

Adult Research Subject - Information Form
ADULT RESEARCH SUBJECT – INFORMATION FORM
Emergency Contraceptive Use Among College Students

Principal Investigators:
Tavis Glassman, PhD, MPH, CHES, Assistant Professor of Health Education, 419-530-2770
Jennifer Wohlwend, MPH, Doctoral Candidate, 419-345-8545

Purpose: You have been asked to complete a survey about emergency contraception for a study entitled, “An Examination of Emergency Contraception use by Undergraduate College Students in the Midwest Using the Integrated Behavioral Model. This study is being conducted at the University of Toledo by Jennifer Wohlwend, under the direction of Tavis Glassman. The purpose of this study is to gain knowledge about college student use or non-use of emergency contraceptives.

Description of Procedures: The survey asks questions about your knowledge, attitudes, beliefs, and perceptions related to emergency contraception, as well as sexual behaviors and demographics.

Potential Risks: There are minimal risks to participation in this study, although some questions may cause you to be embarrassed or uncomfortable.

Potential Benefits: There is no direct benefit to you for completing the survey, however, others may benefit by learning about the results of the research once the study is completed.

Confidentiality: An envelope has been provided to you to place your completed survey. This will ensure that no-one but the researchers will see your answers. Since you have not been asked to put your name on the survey, your information will also be anonymous.

Voluntary Participation: No penalty or loss of benefits will occur if you choose not to participate in this study. Your decision to participate or not to participate will not affect your relationship with your university, any of your classes, or your relationship with any university faculty or staff. You are free to not complete the survey.

Contact Information: If you have any questions before, during or after you join the session, or you notice any physical or psychological discomfort as a result of completing the survey, you may contact a member of the research team – Tavis Glassman (419-530-2770) or Jennifer Wohlwend (419-345-8545).

If you have questions that were not answered by your instructor or about your rights as a research subject or research-related injuries, the Chairperson of the University of Toledo SBE Institutional Review Board may be contacted through the Office of Research on the main campus at 419-530-2844.