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The Effects of Communication on Adolescent Sexual Behavior in Eastern Europe

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The Effects of Communication on Adolescent Sexual Behavior in Eastern Europe

by

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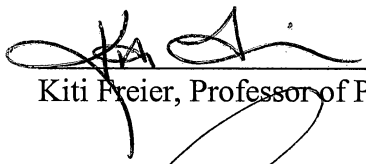
Each person whose signature appears below certifies that this thesis in his/her opinion is adequate, in scope and quality, as a thesis for the degree of Master of Arts.



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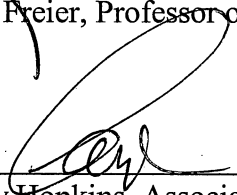

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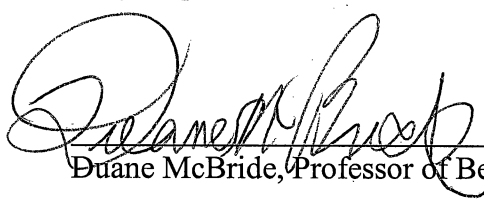

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ABBREVIATIONS

AGFI	Adjusted Goodness of Fit Index
AIDS	Acquired Immune Deficiency Syndrome
ANOVA	Analysis of Variance
CFI	Comparative Fit Index
HIV	Human Immunodeficiency Virus
IDU	Injecting Drug Users
LM	Lagrange Multiplier Test
M	Mean
RMSEA	Root Mean Square Error of Approximation
SD	Standard Deviation
SEM	Structural Equation Modeling
TRA	Theory of Reasoned Action

ABSTRACT OF THE THESIS

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by

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HIV/AIDS rates have continued to rise in Eastern Europe where adolescents are particularly vulnerable. The theory of reasoned action (TRA) has successfully been applied to understanding adolescent sexual risk behavior and provides a theoretical framework for the prevention of HIV/AIDS. According to TRA, attitudes and subjective norms predict behaviors via the mediating role of intentions, and in order to have an impact on behavior, changes must occur at the attitude and subjective norm level. Because parents have been found to influence their children's attitudes, subjective norms, and intentions, the moderating effects of parent communication on sexual risk behavior of adolescents were examined. In addition, the moderating effects of peer communication were also examined using a sample from two Eastern European countries. Using the multiple group procedure for structural equation modeling, parent and peer communication were found to have moderating effects within the model.

Intentions were the best predictor of behavior, and attitude was the strongest predictor of intention. While both parents and peers impacted an adolescent's attitude, peers exhibited the strongest influences in an adolescent's developing attitude. Analyses with quality of parental relationship suggested little to no effects in influencing the components of TRA. Furthermore, no meaningful differences were found between the two countries.

Introduction

The AIDS epidemic has been a significant problem for the last 30 years, with no development of a medical cure or vaccination. In Western Europe, the rates have decreased since the high peaks of the 1980s, but in Central and Eastern Europe the HIV epidemic is more recent with rates rising substantially (Hamers et al., 1997). Currently, more than 1.5 million people are living with HIV in Eastern Europe and Central Asia as compared to 30,000 in 1995 (Pincock, 2004). However after exponential increases in recent years, the number of new HIV cases has declined for the first time from 100,663 in 2001 to 64,222 in 2002 for both Eastern Europe and Central Asia (EuroHIV, 2003, July), though the need for preventive interventions is still great.

An estimated 50% of all new HIV cases are young people between 15-24 (approximately 7,000 adolescents per day), which makes them the most at risk group for contracting HIV (World Health Organization, 2004). Most young people who have contracted the virus are unaware of their infected status nor are they aware of the HIV status of their sexual partners (World Health Organization, 2004). Due to a 5-10 year latency period between HIV transmission and knowledge of infection, it is likely that HIV was contracted during the teenage years (UNAIDS, 2002a; 2002b; 2002c). This evidence signifies the extreme importance of preventative measures during adolescence, particularly because young people (between 15-24) account for 30% of the 40 million individuals living with HIV/AIDS (World Health Organization, 2004). However transmission rates for early adolescence are at the lowest level compared to any other age groups during the life course, which suggests that interventions should target early

adolescence (World Health Organization, 2004). The crucial challenge to any preventative measure for the adolescent population is to prevent them from partaking in risky behaviors.

The recent rise in HIV infections in Eastern Europe may be due to considerable social and political changes which have plagued the region since the early 1990s, as well as shifts in the culture towards drug use (Atlani, Carael, Brunet, Fasca, & Chaika, 2000). Due to the rapid changes, Eastern Europeans are vulnerable to HIV (Hamers et al., 1997), particularly because preventions and interventions are often inhibited by the social environments as well as legal and ethical challenges (Atlani, et al., 2000). However, Danziger (1996) in a comparison of Central and Eastern European countries, found that these regions are more different than they are similar in transmission rates and factors contributing to the HIV epidemic, which underscores the importance of prevention that is culture specific.

Despite the medical developments since the AIDS epidemic began, no vaccine or cure has been found, which underscores the importance of behavioral interventions that should be used to prevent risky behaviors (DiClemente & Peterson, 1994). These risky behaviors are difficult to change due to the social, psychological, and cultural factors that influence the individual's interpersonal relationships, and it is within the context of these relationships where HIV risk behavior occurs (DiClemente et al., 1994). In order to develop effective interventions, it is necessary to understand the relationships between social, psychological and cultural factors as well as the complexity of their interactions (DiClemente et al., 1994).

The theory of reasoned action (TRA) has been successfully applied to understanding sexual behavior in adolescents from the United States (Albarracín, Fishbein, & Muellerleile, 2001; Basen-Engquist & Parcel, 1992; Basen-Engquist, Tortolero, & Parcel, 1997; Koniak-Griffin, Lesser, Uman, Nyamathi, 2003; & Serovich & Greene, 1997). Through this model, the mechanisms for predicting behavior include cognitive processes such as consideration of attitudes, which are personal beliefs about sex and how these beliefs lead to particular outcomes, and subjective norms, which are the adolescent's perceptions of what other's beliefs are about sex, such as parents or peers, and what the adolescent thinks that these others would like the adolescent to do (Fishbein, Middlestadt, & Hitchcock, 1994). The effects of attitudes and subjective norms on sexual behavior is through intention, thus attitudes and norms indirectly affect sexual behavior (Fishbein, et al., 1994). Further, parental communication has been identified as a variable that may moderate adolescent attitudes and subjective norms and may indirectly have an impact on the behavior of the adolescent (Fishbein, et al., 1994; Holtzman & Rubinson, 1995) that results in lowered risky behavior. In contrast to this, adolescents who have communication with their peers may exhibit greater levels of risky sexual behavior. Although communication has been identified as having an indirect influence on behavior, the moderating effects of communication have not been applied to the TRA model. The theory of reasoned action has also been successfully applied cross-culturally (Basen-Engquist, Tortolero, & Parcel, 1997; Koniak-Griffin, et al., 2003) where cultural differences have been identified. However the TRA model has not been applied to Eastern European countries, so the relationships between attitudes, subjective norms, intentions and behaviors are unknown for these populations. The purpose of the

current study is to determine the effects of parent and peer communication on the TRA model as well as the effect of the quality of the parental relationship. Additionally, any differences due to national identity in adolescents from Ukraine and Romania will be identified with the goal of detecting important information that will be useful in developing culturally specific interventions in order to prevent the spread of HIV/AIDS.

Eastern Europe

While the primary reason for global transmission of HIV is heterosexual sex, most HIV infections occur through injecting drug users (IDUs); however IDUs have indirectly influenced the spread of HIV to heterosexual non-IDU adolescents (Hamers et al., 1997), as IDUs often engage in high levels of unprotected sex (Atlani, Carael, Brunet, Fasca, & Chaika, 2000). Increasing levels of prostitution, many of which are children or adolescents, have also contributed to the "bridging" effects between IDUs and non-IDUs (Atlani et al., 2000; Dehne, Grund, Khodakevich, & Koyshcha, 1999). Although the number of new HIV cases due to unprotected heterosexual intercourse is substantially lower (11% of all reported cases) than IDUs, the rates have steadily increased by 32% between 2001 and 2002 and are attributable to the "bridging" effects (EuroHIV, 2003, July). Thus, as noted above, because no medical cures or vaccinations have been discovered, interventions are necessary to prevent the threat of HIV/AIDS, particularly among adolescents and IDUs.

Of note, Ukraine has experienced exponential rates of reported HIV infections since 1995, mainly due to IDUs (Hamers et al., 1997; UNAIDS, 2002c) and has the highest rates of increase in transmission of HIV of all the Eastern Europe countries where

one out of every 100 individuals is infected (UN: HIV growth rates, 2004). Dehne et al. (1999) attributes Ukraine's rising HIV rates to the social and political changes which occurred after the fall of the Soviet Union. This resulted in the region's severe economic decline and overall decrease in quality of life. Also contributing to the HIV epidemic in Ukraine is the geographic location, which is located directly in the drug transport and supply routes from Asia to Europe (Dehne et al., 1999). Because of the collapse of what was once strict governmental control, cultural values and social norms concerning both sexuality and drug use have become more liberal, especially for younger generations (Dehne et al., 1999). UNAIDS (2002c) reported that over 38% of HIV/AIDS cases in Ukraine are between the ages of 20-29, which suggests that adolescents within this region are particularly at risk.

Romania differs from most European countries because most of their HIV infections affect child populations (Danziger, 1996; UNAIDS, 2002b). According to Danziger (1996), the former Ceausescu government defined AIDS as a 'capitalist disease' which would not infect Romania and resulted in an omission of HIV testing. In addition, the Ceausescu government banned contraception, abortion, and sex education with the purpose of expanding the Romanian population. As a result, orphanages became overcrowded, and it became common practice to transfuse unscreened blood to malnourished children in order to stimulate their weakened immune systems. Another contributing factor to the epidemic was the use of unsterilized needles, which nurses used to administer drugs. After the fall of the Ceausescu government in 1990, AIDS testing began and 1100 cases were identified of which over 900 children below age 13 were diagnosed (Danziger, 1996), and most recent reports show that 73% of the total HIV

cases reported in Romania are children below age 15 (UNAIDS, 2002b). Currently the most common form of HIV transmission is through heterosexual contact (Danziger, 1996), and it has been found that an estimated 30% of young people (ages 15-24) engaging in sexual behavior do not use any type of contraception (UNAIDS, 2000). In a comparison of Central European countries, which included Romania, Poland, and Slovenia, results from June 2003 show that Romania accounted for 27% (5580) of newly diagnosed HIV infections (EuroHIV, 2003, December). Because of the alarmingly high rates of HIV/AIDS for the younger generations, preventative interventions are necessary for adolescents in Romania.

Thus, as discussed above, the severe social, political, and economical changes in Eastern Europe, the region has witnessed a loosening of social values and norms about sexual behavior and use of drugs (Dehne et al., 1999), which has contributed to the rising HIV/AIDS rates. Adolescents are particularly vulnerable to becoming infected, which indicates a great need for preventative interventions because no medical cures or vaccinations have been discovered. Because sexual behaviors are difficult to change, prevention must begin before the behaviors even occur. Understanding the mechanisms which influence sexual behavior as proposed by the theory of reasoned action is the key to developing cultural specific interventions.

Theory of Reasoned Action

Several theories such as the Health Belief Model (Abraham & Sheeran, 1994), the Theory of Reasoned Action (TRA) (Serovich et al., 1997), and the Theory of Perceived Behavioral Control (Albarracín, Johnson, Fishbein, & Muellerleile, 2001; Serovich &

Greene, 1997) have been developed and have been applied to understanding the determinants of risky behavior with the purpose that interventions may be developed to modify the precursors of behavior and lead to a reduction of risky behavior. "Interventions must be based on an understanding of the determinants and motivations for sexual behavior, apart from just the physical drive or details of the sexual act" (O'Reilly, Msiska, Mouli, & Islam, 1999, p. 140-141). Because sexual behavior is difficult to change, it is important to understand the mechanisms that cause the act and to identify the precursors of the risky behavior which are more easily influenced than the actual behavior.

The health belief model is considered a cost/benefit model and includes five predictors of health behavior, which are perceived susceptibility and severity of health threat, perceived benefits and barriers of preventive action, and environmental cues (Rosenstock, Strecher, & Becker, 1994). Perceived susceptibility is the individual's perceived behavioral risk for contracting a disease, and perceived severity of health threat refers to the level of concern an individual has for contracting a disease, or if diagnosed with a medical condition, the perceived medical, clinical, and social consequences of leaving the disease untreated. Perceived benefits involve the beliefs about the effectiveness of lowering the threat of disease whereas perceived barriers are the negative outcomes for specific health behaviors and has been found to be the most predictive of the variables for behavior. Environmental cues that lead to action, although included in early forms of the model have not been studied systematically, therefore the impact of cues are unknown at this time. In addition, previous research on the health belief model has not addressed the overall model with all of the variables in order to examine the

predictive utility (Rosenstock et al., 1994). Instead past research has focused on the individual constructs of the health belief model rather than the interactions between the variables (Rosenstock et al., 1994). Although the health belief model has been applied to understanding risky sexual behavior because it allows for a specific set of cognitions that can be targeted by educational intervention, it does not propose the mechanism or process by which beliefs and perceived threats can be transformed into behavior. For this reason it has not been successful in predicting homosexual behavior for example (Abraham et al., 1994). Due to the weaknesses and lack of overall predictiveness of the health belief model for sexual behavior, other models should be considered.

The theory of reasoned action is particularly useful in understanding behavior and has been used to develop interventions for smoking, drinking, contraceptive use, dieting, and exercise as well as a number of other behaviors (Fishbein et al., 1994). Additionally, the usefulness of TRA as a conceptual and theoretical tool for designing AIDS-prevention programs has been supported empirically (Fisher, Fisher, & Rye, 1995). TRA describes the mechanism of how cognitive processes influence behaviors (Albarracín et al., 1994). Understanding behavior from this model implies that behavioral changes are not due to simply providing knowledge or information and converting that into behavior, but rather through recognizing the appropriate types of knowledge that can modify the structural components that make up a given behavior (Fishbein et al., 1994). For example, some behaviors may be heavily influenced by attitudes about the behavior, which are positive or negative beliefs about engaging or not engaging in the behavior, whereas subjective norms, which are social pressure about engaging in a particular behavior, has a weak influence over behaviors. In this example, for behavioral changes

to occur, attitudes must be modified, and interventions which attempt to change subjective norms will not be effective (Fishbein et al., 1994) because subjective norms do not drive behaviors. Identifying the appropriate knowledge that will impact attitudes or subjective norms may lead to alterations in behavior. Communication is one such mechanism where knowledge is transmitted and may lead to changes in the belief system and indirectly result in behavioral changes (Fishbein et al., 1994). In order for modifications in behavior to occur, it is necessary to understand the precursors that lead to behavior. Although knowledge of HIV/AIDS has been found to be unrelated to intention or behavior in adolescents (Serovich et al., 1997), communication and other mechanisms such as parental relationships may still have an impact on behavior. The theory of reasoned action provides the structures leading to behavior through attitudes, subjective norms, and intentions. It is through the understanding of the mechanics of these structures that interventions can be developed to change behavior.

Another model that has been applied to understanding sexual behavior is the theory of perceived behavioral control (Albarracín et al., 2001), which is a modification of the TRA model where some proponents of the social cognitive theory have included self-efficacy to the theory of reasoned action. However, the inclusion of perceived behavioral control has not been well supported empirically (Albarracín et al., 2001) because self-efficacy does not account for much variance above and beyond that of attitudes and subjective norms for predicting intentions or behaviors (Basen-Engquist & Parcel, 1992; Albarracín et al., 2001), where attitudes are the personal beliefs about sex and subjective norms are the perceptions one has about another individual's beliefs about sex. Koniak-Griffin, Lesser, Uman, and Nyamathi (2003) found that perceived

behavioral control had low correlations with intentions and behavior. Further, Albarracín et al. (2001) suggest that the inclusion of perceived behavioral control is only useful to consider if an individual has already made the intent of executing the behavior, and Basen-Engquist et al. (1992) found that self-efficacy was only related to condom use frequency rather than the number of sexual partners in adolescents. Although self-efficacy is a theoretically meaningful variable, the effect size, which ranges from 0.4-6.3% (Basen-Engquist et al., 1992), does not sufficiently warrant the loss of parsimony and the loss of degrees of freedom when understanding adolescent sexual behavior. The inclusion of self-efficacy as an additional variable within the TRA model, contributes additional complexity to the model without improving the practicality of the model. In a meta-analysis by Albarracín et al. (2001) which compared the theory of reasoned action and the theory of planned behavior/perceived behavioral control did not improve the goodness of fit indices above and beyond that of TRA, and in fact, the variables within the TRA model, which are attitudes, subjective norms, and intentions, have been found to demonstrate good predictive validity (30% of the proportion of variance explained) for risky sexual behavior (Albarracín et al., 2001). The model was further strengthened with the inclusion of several psychosocial, behavioral, and demographic factors (Koniak-Griffin, 2003). Thus, the variables of the theory of reasoned action appear to be the most parsimonious and predictive of sexual risk behavior than the theory of perceived behavioral control.

TRA assumes that beliefs and behaviors are causally connected (Fishbein et al., 1994) and is made up of attitudes, subjective norms, intentions, and behavior as depicted below in Figure 1. Attitude about the behavior and the subjective norms predict behavior

through the mediating effects of intention where attitudes and norms are the cognitive structures that influence the overall intention to perform the behavior. According to this model, behavior is ultimately determined by cognitive processes and structures, and in order to change behavior, the cognitive factors must be modified (Fishbein et al., 1994).

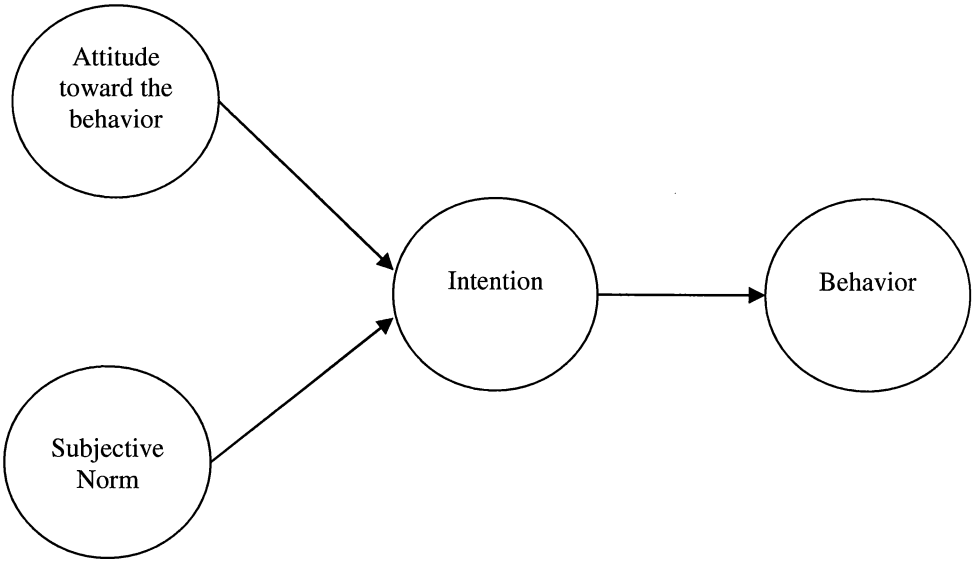

Figure 1. A theory of reasoned action: Factors determining a person's behavior. Arrows show the direction of causality between the factors (adapted from Fishbein et al., 1994).

Attitudes are defined as the individual's beliefs about a particular behavior, which can be either positive or negative and how these beliefs are associated with specific outcomes (Fishbein et al., 1994). For example, sexual attitudes include the belief of whether it is right or wrong to engage in sexual behavior. Conservative attitudes are beliefs that consider it wrong to engage in sexual behavior during adolescence; whereas liberal attitudes are the beliefs that it is acceptable to have sex during adolescence (Basen-Engquist & Parcel, 1992; Basen-Engquist, Tortolero, & Parcel, 1997; DiIorio,

Kelley, & Hockenberry-Eaton, 1999). Subjective norms are the social pressures that one feels about engaging or not engaging in certain behaviors and are a function of the beliefs of important others outside of the individual and what these others think about whether the individual should or should not engage in particular behaviors. The motivation of the individual to follow these outside norms is also considered when understanding the impact of subjective norms on behavior (Fishbein et al., 1994). Identifying the cognitive precursors to behavior such as attitudes and subjective norms and understanding how the relationship with behaviors is necessary for implementing interventions in order to reduce or change risky sexual behavior in adolescents.

According to the theory of reasoned action, intention mediates the relationship between attitudes/subjective norms and behavior. In order to effectively influence behavior, intentions must be modified (Fishbein et al., 1994; Serovich et al., 1997), particularly because intentions have been found to be the best predictor for sexual risk behavior, especially that of condom use (Albarracín et al., 2001). Albarracín et al. (2001) found that intentions were related with both past and future behaviors, which suggests that manipulating intentions may be the key to changing future behaviors. Albarracín et al. (2001) also found that past behaviors do not have a large direct relationship with future behaviors and suggested that past intentions and retrospective inferences may both influence intentions about future behaviors. However altering past behavior is not practical or possible. Instead interventions should focus on the structures of the TRA model which are changeable (Albarracín et al., 2001). Treating the cognitions (attitudes and subjective norms) may be the most useful approach to transforming intentions

(Fishbein, et al., 1994), particularly because attempting to modify only intentions is rarely effective and difficult to execute.

Behavior is difficult to predict and is strongly influenced by context and time as proposed by Fishbein et al. (1994). This means that behaviors may appear inconsistent because behaviors are determined by specific environments and social cues as well as certain points in time. For example, condom use may be utilized more consistently with a new sexual partner but used with less consistency with a long-term partner. Consequently behavior is determined by a number of unique factors and may require a different set of interventions for each context and time period (Fishbein et al., 1994). Additionally, behavior is usually measured in the context of past or previous behavior where future behaviors are unknown. This is because few studies assessing the theory of reasoned action utilize a longitudinal design. In order to be most effective behaviors are best prevented and understood by the intention to engage or not engage in the behavior.

In general, individuals with a positive sexual attitude and healthy subjective norms that promote safe behaviors rather than risky sexual behaviors, results in a greater intent to perform the safe behavior and avoid the risky behaviors (Fishbein et al., 1994). However, for some behaviors, attitude about the behavior has greater influence over intent than subjective norms. For example some behaviors are driven more by attitudes than by subjective norms, and in order for change to occur interventions must be developed that impact attitudes. Similarly, other behaviors are heavily influenced by subjective norms or social pressures more so than attitudes, and interventions must be developed that impact the development of the subjective norms. When behaviors are driven by subjective norms, interventions which attempt to change attitudes will not be

effective in producing altered behaviors (Fishbein et al., 1994). In order to understand behavior, the cognitive processes of the individual must be considered to determine which pathway, either subjective norms or attitudes, is driving the intentions to engage in the behavior. Furthermore, for change to occur there must be a transformation of the underlying attitudes and/or normative beliefs of the individual (Fishbein et al., 1994), which are driving the intentions and the behavior. Therefore in reducing risky sexual behavior as a means of lowering the risk of contracting HIV/AIDS, it is necessary to alter attitudes and norms, depending on which is driving the behavior, into forms that are healthy and will lead to safe practices and behaviors.

Attitude Pathway to Behavioral Changes

According to the theory of reasoned action, attitudes are a function of expectancy and evaluation. For example, an individual who expects or believes that engaging in a particular behavior will lead to positive outcomes is more likely to endorse an attitude that is accepting of the behavior. However, if an individual expects negative outcomes to result from performing the behavior, then the attitudes about the behavior will be more negative (Fishbein et al., 1994). For example, a man may expect that using condoms will reduce the level of sexual pleasure he experiences, and this may lead to a negative evaluation about condom use and to an overall negative attitude about condoms. Ultimately a change in attitude can cause a change in the intent to perform a behavior.

Attitude has been found to be the best predictor of intention for adolescents above and beyond subjective norms based on studies that have used meta-analysis procedures (Albarracín et al., 2001) as well as with studies that have evaluated adolescents in the

United States (Basen-Engquist et al., 1992). Serovich and Green (1997) applied the theory of reasoned action to predicting adolescent sexual behavior, and in support of the model, intention was found to be the most predictive of behavior. The authors also considered several factors including knowledge about HIV/AIDS, salience, and adolescent egocentrism, all of which may influence an individual's intention. Attitudes were defined as beliefs about risk behavior, and subjective norms were defined as the expectations of others and the actual motivation to follow these expectations. Salience was defined as the level of concern that adolescents feel about becoming infected with HIV/AIDS. Adolescent egocentrism was measured by personal fable and imaginary audience, where personal fable is the belief that one is so unique that other people are unable to understand their experiences or problems, and imaginary audience is the false beliefs that adolescents have that others are thinking about the adolescent. Serovich and Green found that attitude about risk behavior was the most strongly related to intent to engage in the behavior across high school and college students, though the effect was greater for the college students. Similarly, Miller, Norton, Fan, and Christopherson (1998) found that adolescents who valued sexual abstinence had significantly lower intentions to engage in sexual behavior. The effect of attitude was found to exist for both males and females but was stronger for adolescents who endorsed the attitude at a younger age rather than an older age. Essentially, adolescents who have more liberal attitudes about sexual behavior are associated with greater risk behavior, whereas more "conventional" or conservative attitudes are related to lower levels of sexual risk-taking behavior (Kotchick, Shaffer, Forehand, & Miller, 2001). The type of attitude an

adolescent has, whether it be conservative or liberal, will affect the intention to engage in the behavior.

Subjective Norm Pathway to Behavioral Changes: Effects of Parents and Peers

Family interactions and environments are the primary role of socialization for adolescents where they gain information and form their subjective norms, which are the social pressures one feels about engaging or not engaging in particular behaviors (Kotchick, et al., 2001). Subjective norms are made up of the individual's beliefs about others who are important, such as parents or friends, and the expectations these individuals have over the types of behaviors the adolescent should or should not engage in. The adolescent's motivation to follow the external expectations also is a necessary component for subjective norms to have an impact on intentions. For example, an individual who is motivated to follow important others expectations or norms to engage in the behavior, may feel social pressure to comply. On the other hand, an individual who is motivated to adhere to what salient others think they should not do will feel pressure from their subjective norm to avoid the behavior (Fishbein, et al., 1994). Jaccard, Dittus, and Gordon (2000) found that the more parents talk about sex with their child, the greater the impact of the parents' disapproval of sex behavior is for the adolescent, which may influence the adolescent's subjective norms and motivation to adhere to the norms.

Effects of Communication

Communication has been identified as an important variable that indirectly influences behavior (Whitaker & Miller, 2000). Holtzman and Rubinson (1995) found that adolescents who had HIV discussions with their parents were significantly less likely to have multiple sex partners than their peers who did not engage in HIV discussions. Although Holtzman and Rubinson did not address the mechanism through which communication influences behavior, Fishbein et al. (1994) proposed that communication can influence the structures of TRA and hypothesized that communication impacts attitude which indirectly effects behavior. According to Fishbein et al. (1994), the recipient of the communication makes a conscious decision to accept or reject the information shared, whereby a possible change or strengthening of the individual's attitude is made. This change in attitude may cause a change of intention which has a direct relationship with behavior. In support of Fishbein et al.'s hypothesis and the TRA model, Miller, Norton et al. (1998) and Fisher (1986a) found that parent-adolescent communication had no direct effect on adolescent sexual behavior. However, Miller, Norton et al. (1998) modeled communication as indirectly impacting behaviors through the mediating effects of intention, whereas Fisher (1986a) considered communication as a moderator that affects the attitudes. Thus it appears that communication, acting as either a moderator or mediator, may be a target that preventive interventions can focus on for promoting safe sexual behaviors.

The important influence of parental communication on adolescent sexual behavior is essential because socialization between parents and their children leads to the transmission of parental standards and expectations for behavior to their children and

occurs through both parental practices as well as through their behavior and is observable by their children (Kotchick et al., 2001). However most of the research on parent-adolescent communication has focused on mother and adolescent interactions, because adolescents report having most discussions with their mothers (DiIorio, Kelley, & Hockenberry-Eaton, 1999; Fisher, 1987; Miller, Kotchick, Dorsey, Forehand, & Ham, 1998). DiIorio et al. (1999) and Miller, Kotchick, et al. (1998) found that female adolescents felt most comfortable talking with their mothers over their fathers. However, males reported feeling the most comfortable speaking with their fathers about sex related topics than with their mothers. Conversations with the mother for both males and females was related to more conservative sexual attitudes, which suggests that mothers may be the primary agent of sexual socialization in families. Hovell et al. (1994) also found the same gender effects where females were more comfortable discussing sexual issues with their mothers and males were more comfortable with their fathers for both Latino and Caucasian adolescents. Leftkowitz, Kahlbaugh, Au, and Sigman (1998) report that mothers in particular may be more influential in AIDS education and interventions because adolescents feel closer and spend more time with their mothers. The role of the father in adolescent communication has been largely ignored and little information is known how fathers may influence adolescent sexual risk behavior.

Because consistency between parental and adolescent attitudes has been demonstrated and has been shown to impact sexual risk behavior, it is through communication that parents transmit their attitudes to their adolescents. It appears that when parents do communicate with their children about sexual topics, the message conveyed is attitudinal and value based rather than factual (Fisher, 1986b). Fisher

(1986b) found that when communication was high, there was a greater correlation between parent and adolescent attitudes. When communication was low there was no relationship between parent and adolescent attitudes. Furthermore, Fisher (1987) found that when communication between parents and adolescents was more open and sexual topics were discussed, there was greater consistency between parent and adolescent attitudes. In addition, the effect of communication on attitudes was stronger for older and younger adolescents than those who were in the middle range (ages 15-17). Fisher (1986a) suggests that adolescents within this range may be more influenced by peers than parents, and it is interesting to note that this age range corresponds to the time when many adolescents engage in sexual intercourse for the first time (Abraham & Sheeran, 1994). Thus it seems that communication acts as a moderator rather than a mediator between parent attitudes, which is a key component of subjective norms and adolescent attitudes where little or no communication results in incongruence between parent and adolescent attitudes that may not protect adolescents from performing risky sexual behavior.

Other studies have examined the relationship between parental attitudes and their children's attitudes. Fisher (1987) assessed both college students' and their parents' self-reported attitudes and found that the college students had more similar attitudes with their mother than with their father. However, males had more attitudinal consistency with both parents than did females. In fact within their obtained sample, the female students had very little consistency with their fathers' attitudes. Fisher attributed this finding to less meaningful communication between fathers and daughters which would be a weaker influence over the daughter's sexual attitudes. However, in an earlier study, Fisher

(1986a) found results that showed the opposite finding between males and females, where females had more similar attitudes with parents than did males. In spite of the contradictory evidence associated with the gender of the adolescent and parental attitudes, parents have been shown to influence their adolescent children's attitudes.

Although the relationship with the parent is the most influential factor in an adolescent's life, peers also play an important role in shaping adolescents' subjective norms (Perrino, González-Soldevilla, Pantin, & Szapocznik, 2000). Whitaker and Miller (2000) found that communication between parents and adolescents moderates the relationship between adhering to peer norms and risky sexual behavior. They found that when communication between parents and their children about sex or condom use is poor or nonexistent, then the relationship between perceived peer norms and sexual risk behavior becomes stronger. This suggests that when parents have poor communication, their ability to influence their adolescent's subjective norms decreases or the motivation of the adolescent to follow what their parents think they should do diminishes. When there is a failure in communication between parents and their children, adolescents turn to their peers for answers (Whitaker & Miller, 2000), and those adolescents who speak more with their peers than their parents tend to have more liberal attitudes about sex (DiIorio, Kelley, & Hockenberry-Eaton, 1999).

Holtzman and Rubinson (1995) found that adolescents who have more discussions with their peers rather than with their parents were associated with multiple sexual partners and were more likely to have unprotected sex. Thus, it appears that peer communication has the opposite effect of parent communication. Males in particular seemed to be more sensitive to peer influences than females. DiIorio et al. (1999) found

evidence that males reported feeling most comfortable talking with their friends than with parents but did feel more comfortable discussing sexual topics with their fathers than with mothers. These findings have strong implications for maintaining healthy communication between parents and their children, because discussions with parents have been found to be related to less risky sexual behavior and less reliance on peers (DiIorio et al., 1999; Holtzman & Rubinson, 1995; Whitaker et al., 2000). The evidence appears to support the protective influence that parents have over their children (Kotchick et al., 2001), and it seems that communication with parents reduces the impact of peer influences, which tend to be more liberal than parental beliefs on the subjective norms of adolescents. Having subjective norms that are influenced more by parents than peers is likely to lead to less risky sexual behaviors, whereas discussions with peers is associated with greater risky behaviors.

Because communication is typically characterized by the transmission of values (Fisher, 1986b), standards, and expectations (Kotchick et al., 2001), it appears that subjective norms can have not only a direct impact on intention, but on the adolescent's attitude as well. Particularly because when parents communicate with their children, attitudes between the two are more related (Fisher, 1986b; Fisher 1987) and when communication occurs, adolescents are less likely to engage in risky behaviors (Holtzman & Rubinson, 1995; Jaccard et al., 2000). This demonstrates that through communication, parents may shape their adolescent's attitude into something which is more similar to the parent's attitude. In addition, the parent's expectations to behave in a particular manner and the motivation of the adolescent to follow the expectations have an impact on the adolescent's intention to engage in the behavior. Additionally as discussed earlier, the

effect of peers is likely to be opposite that of parent communication, but peer influences via communication is likely to have an effect on both the adolescent's attitude and intention. Therefore, it seems that subjective norms has a relationship and influence on the adolescent's attitude and the intention.

Quality of Parental Relationship

The relationship between an adolescent and parent has been suggested to act as a protective influence for the adolescent from engaging in risky behavior (Aronowitz & Morrison-Beedy, 2004; O'Connor, 1998; Fisher & Feldman, 1998). Fisher and Feldman found that families that have a well defined sense of cohesion offer protection and can predict adolescent risk behavior over time. In fact, McBride, Freier, and Hopkins (2005) found that when parents have a "great" relationship with both parental figures, adolescents reported less risk behaviors. However, for families that are externally focused and less defined, the effect of the family has an opposite influence, where these disconnected families have less of an impact on adolescent behaviors (Fisher & Feldman, 1998).

Although it is recognized that the connectedness between the parent and adolescent offers protection, several parent and family variables contribute to how well the connectedness or cohesion of the family exists such as closeness to the parent, the adolescent's satisfaction with the relationship, social support, and feeling loved. O'Connor (1998) found that family closeness accounted for the most variance of all the family-related variables including shared family activities, parental monitoring, parental school expectations, family history of suicide, and presence of illicit drugs and objects in

the home. Aronowitz and Morrison-Beedy (2004) also found similar findings with adolescent females and their mothers, where closeness between the two was related with fewer risk behaviors. However Aronowitz and Morrison-Beedy noted that family connectedness did not have a direct relationship with behavior. Thus it appears that family connectedness and the adolescent's perception of the quality of the relationship and how close the adolescent feels to the parent is one of the key family variables to target in implementing prevention programs. Though it is noted that Aronowitz and Morrison-Beedy reported that there is not a direct relationship between connectedness and behavior.

Ethnicity

Fishbein (2000) suggests the inclusion of several external variables such as demographics, cultural factors, personality traits, and other individual differences such as varying levels of parental communication to the TRA model. Each of these external variables may impact the attitude or subjective norms of the individual. Fishbein argues that TRA can be applied cross culturally because each culture uniquely varies in the level of importance of each of the predictors. However, each of the variables whether it is external, such as communication, or internal, such as the cognitive processes, exists universally across cultures, which indicates that it is necessary to understand the norms and attitudes that are specific to each culture. Understanding how the components of TRA apply to various cultures can show how to develop interventions that are culturally specific because one size fits all interventions are ineffective. Koniak-Griffin et al. (2003) used a sample with a high percentage of ethnic minority females, which was 77%

Latina, 18% African-American, and 5% Caucasian, Asian or other and found that the model was able to predict sexual risk behavior especially when demographic, psychosocial, and behavioral factors were included although age and ethnicity were not related with condom use.

Other studies have also researched the effects of ethnicity and sexual behavior. Basen-Engquist, Tortolero, and Parcel (1997) combined factors from social cognitive theory, the health belief model, and theory of reasoned action to predict intention with Hispanic and Non-Hispanic samples. The results indicated that attitude about sex was related to sexual intentions for both ethnic groups. Similarly attitudes about condom use were also predictive of intentions to use condoms regardless of the ethnicity of the individual. However, the predictiveness of sexual intentions to behavior was stronger for Hispanics than Non-Hispanics. These findings suggest that TRA is applicable cross-culturally and is able to show structural differences due to cultural factors within the model. However these studies considered adolescents from the United States, and it is unknown whether attitudes are predictive of intentions and whether sexual intention relates to behavior for adolescents from Eastern Europe.

Although the underlying structures may exist universally across cultures, the effects of culture may moderate the strengths of the relations between the factors in the TRA model and communication. Holtzman et al. (1995) found ethnic differences between the effects of communication and sexual risk behavior. Holtzman et al.'s results showed that the impact of peer discussions about sexual behavior differed between ethnic groups. For Caucasian and African-American adolescents, the more discussions adolescents had with their peers were related to greater numbers of sexual partners.

Further, peer communication did not have an influence on the number of sexual partners for Hispanics whereas it did for Caucasian and African-American adolescents. It appears that depending on the culture, the effects of parental and peer communication may have opposite effects on sexual behavior (Holtzman et al., 1995). Thus, understanding the differences that exist between cultures is important in developing culturally specific interventions, which are more effective than universal approaches to prevention particularly because each culture may differ in the strengths of the predictors (attitudes, subjective norms, and intentions) in the TRA model (Fishbein, 2000).

Miller, Kotchick et al. (1998) and Kotchick et al. (1999) compared a group of adolescents and their mothers who were from Alabama, New York City, and Puerto Rico and found several cultural differences. Miller, Kotchick, et al. (1998) specifically found ethnic differences between adolescent communication with the mother or father; however the actual content of the sexual discussions were similar for both African-Americans and Hispanics from Puerto Rico. This shows that although some aspects of communication and parental relationships appear to be universal, strong cultural influences still exist and influence parent-adolescent interactions which need to be understood in order for culture specific interventions to be developed. Kotchick et al. (1999) found that maternal attitudes about sex had varying effects on their adolescent's sexual risk-taking behavior, which the authors attribute to differences in culture. Specifically Kotchick et al. found that the effect of maternal attitudes on sexual risk behavior was significant only for adolescents from Puerto Rico. Maternal attitude was not a significant predictor for sexual behavior for adolescents from Alabama and New York. Thus culture appears to have an impact on the relationship between parental attitudes and sexual behaviors, and as

Fishbein et al. (1994) points out some behaviors are more influenced by attitudes instead of subjective norms, whereas other behaviors are determined by subjective norms rather than attitudes. It may be that cultural factors account for whether or not a behavior is determined by attitudes or subjective norms.

There is a lack of research studies that examine parental influences over adolescent behavior which may be generalizeable to Eastern European adolescents. However, Realo and Goodwin (2003) examined the influences of family, peers, and society on sexual behavior using a sample from Central and Eastern Europe. Although the age range of the sample was between 18-57 years of age, which is beyond that of adolescence, Realo and Goodwin found a significant relationship between sexual risk behavior and familism, which is the elevation of familial interests above personal aspirations and the dedication of one's life to the devotion of the family. Individuals who were high in familism were associated with fewer sexual partners. They also found that those who reported a sexually transmitted disease (STD) tended to score lower on familism. These results indicate that family variables may offer a protective influence for individuals from engaging in risky sexual behavior for Central and Eastern Europeans.

Statement of the Problem

Due to the alarmingly high rates of HIV/AIDS found in adolescents in Eastern Europe and no development of a vaccine or cure, the need to understand sexual behavior in adolescents is necessary in order to establish effective interventions which are culture specific. The theory of reasoned action is a valid model to use as a means of understanding adolescent sexual behavior and has been effectively applied cross-

culturally in the United States. The model identifies cognitive structures that can be targeted to change risky behavior (see Figure 1; p. 11), which is particularly useful because attempts to change only behavior are not as effective as interventions which challenge and modify the precursors to behavior. However, TRA has not been applied to Eastern European adolescents. In addition to developing a theoretical model appropriate for Eastern Europe, understanding the effects of parent and peer communication on adolescent sexual behavior is likely to provide additional information for developing effective interventions because communication has been identified as a way of influencing adolescent risk behavior. Parents have the most important role in shaping their adolescent's behavior by influencing attitudes and subjective norms through communication (Perrino et al., 2001). Therefore the objective of this study is to apply the effects of parent and peer communication to the components of TRA in order to understand adolescent sexual risk behavior. In addition, the effects of the quality of relationship between the parent and adolescent will also be evaluated.

Hypothesis 1

Perceived parent communication was hypothesized to act as a moderator within the TRA model. Specifically, it was hypothesized that the relationship between subjective norms and adolescent attitude would be moderated as previous research has indicated that when communication is high, adolescent attitudes are more similar to parent attitudes (Fisher, 1986a; 1986b; 1987). This occurs because parents communicate not only their attitudes but their expectations and standards about sex as well (Kotchick et al., 2001). Thus, it was hypothesized that parental communication would act as a

moderator and impact intentions and behaviors (see Figure 2; p. 28). However, because the effects of parental communication have not specifically been applied to the TRA model, the effects of parental communication on the variables within the TRA model were explored.

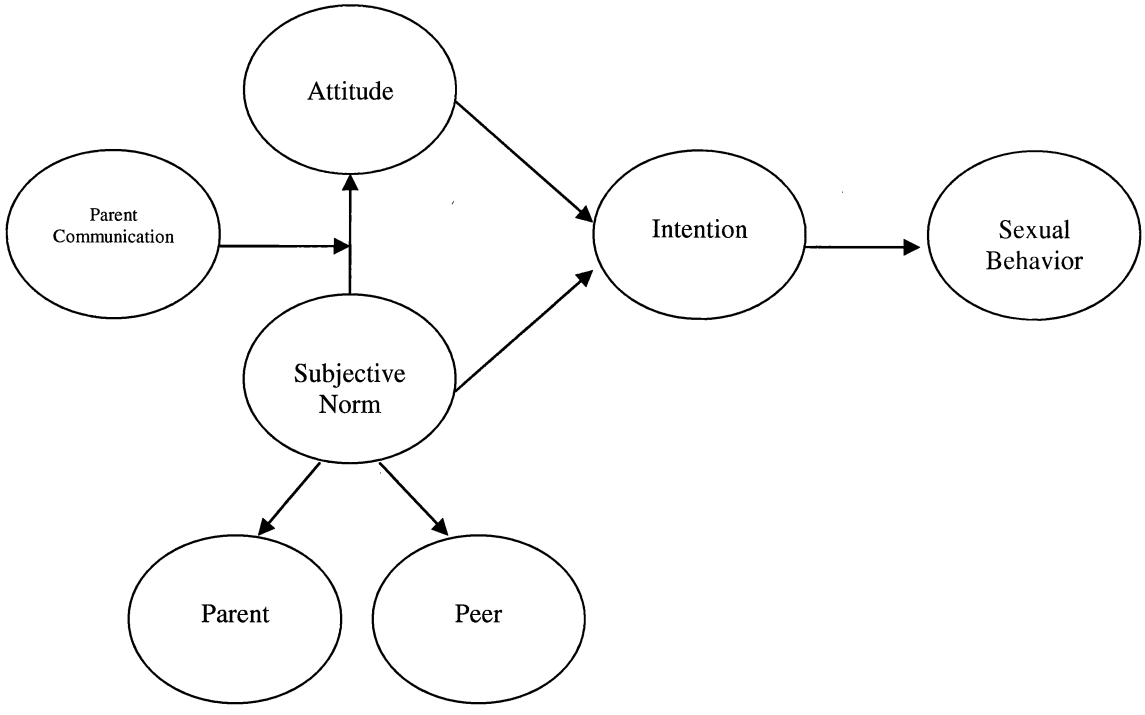

Figure 2. Hypothesized structural equation: Moderating effects of parent communication.

Hypothesis 2

In addition to perceived parent communication, the moderating effects of perceived peer communication were also examined where perceived peer communication replaced perceived parent communication from Figure 2. Perceived peer communication was hypothesized to act as moderator with effects different than that of parental communication (see Figure 3; p. 29). Specifically, peer communication was

hypothesized to have negative effects in the model, which results in adolescents exhibiting greater levels of sexual intent and increased risky sexual behavior (DiIorio et al., 1999; Holtzman & Rubinson, 1995; Whitaker et al., 2000) because adolescents who talk to their peers tend to have more liberal attitudes and engage in greater risk behavior (see Figure 3). Instead of offering protection against performing sexual behaviors as observed with parent communication (Kotchick et al., 2001), communication with peers was hypothesized to act as a moderator would impact the relationships within the proposed model.

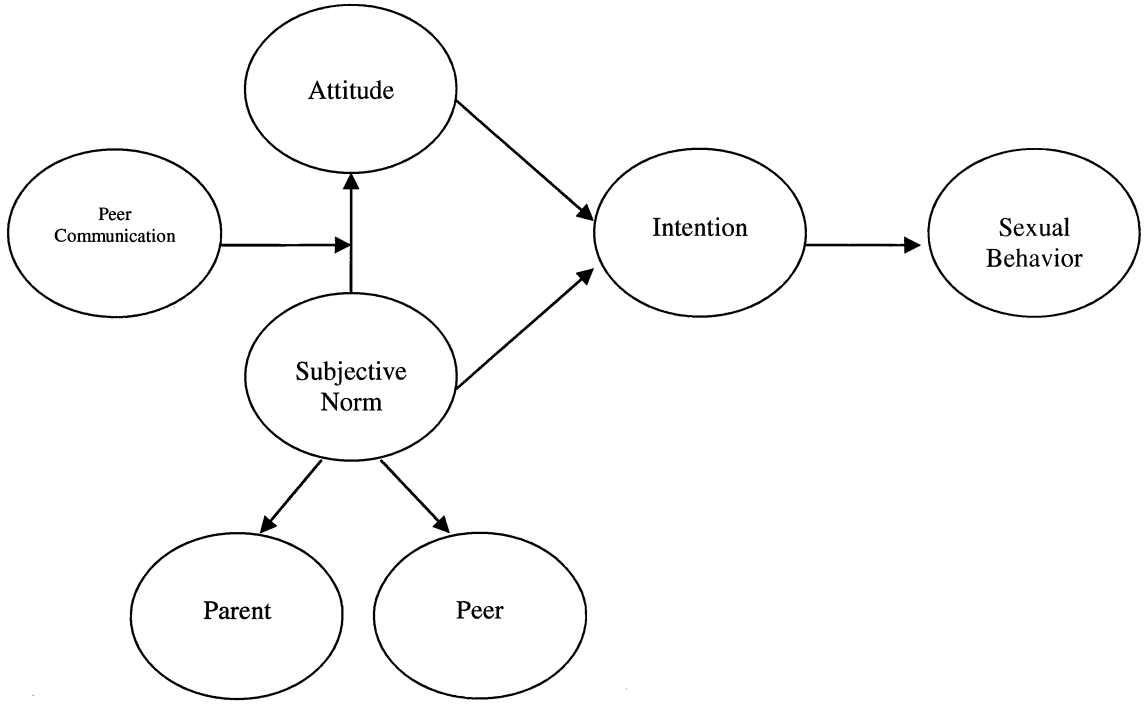

Figure 3. Hypothesized structural equation: Moderating effects of peer communication.

Hypothesis 3

The adolescent's perception of the quality of the relationship with either mother or father has been found to offer protection (Aronowitz & Morrison-Beedy, 2004; Fisher & Feldman, 1998; O'Connor, 1998), although it is unknown if the quality of the relationship accounts for variance above and beyond that of parent and peer communication. Because parent communication has been related to fewer sexual behaviors, it was hypothesized that when the quality of the relationship was controlled, parent communication would account for additional variance and would be related to reduced sexual intention and behavior. However for peer communication, which has been found to be related to greater risk behavior, when the quality of the parent relationship was controlled, the effects of peer communication was hypothesized to diminish and would not account for additional variance.

Hypothesis 4

The effects of national identity were also explored. However, because no research was located that sampled from Eastern European adolescents and specifically applied the components of TRA to understanding sexual behaviors to this population, little information is known about what drives the precursors of sexual behavior. Consequently, exploratory analyses were conducted in order to evaluate if there are meaningful differences which exist between Ukraine and Romania within TRA.

Methods

Participants

Data used in the study was archival data gathered from a separate project assessing adolescent risk behavior. Participants were secondary school students recruited from Romania and Ukraine. A total of 2,105 students participated, and ages ranged from 11 to 25 years (M=16, SD=1.46) with 603 students from Ukraine and 1,502 from Romania. Participants in Ukraine tended to be younger (M=14.85, SD=1.35) than students in Romania (M=16.56, SD=1.2). More females (n=1,291) participated than males (n=803) for both Ukraine (55.2% female) and Romania (68.1% female). Power analysis indicated that a sample size of 682 was necessary for power to be equal to .80[1] and was adequately met by the number of participants included in the study.

Romania

Participants from Romania were recruited from 20 different secondary schools in Romania. Data was collected in Cluj, Craiova, and Bucharest from December 2001 to January 2002. Students between the ages of 13 to 25 who received parental consent were included in the study. All participants completed the survey in Romanian.

Ukraine

Participants from Ukraine were recruited from secondary schools in the Darnitsa region of Kiev, Ukraine from May 2001 to May 2002. Only those participants who

received parental consent were allowed to participate in the study. All participants completed the survey in Ukrainian.

Measures

A self-report questionnaire was designed for this study and was successfully used in other countries including Armenia (Babikian et al., 2004) and the Caribbean (McBride, Freier, & Hopkins, 2005). The questionnaire was written first in English, then translated into Ukrainian, Russian, and Romanian, then back translated into English in order to fully capture the cultural connotations and linguistics. In order to ensure anonymity, no identifying information was included on the questionnaire. Several demographic variables were measured from each sample, which were gender[2], age[3], and national identity. Variables measured by the questionnaire include the adolescent's personal attitudes about sex, the adolescent's perceptions of parent and peer attitudes, intentions, sexual behaviors, and parent and peer communication. Items addressing prevalence of health risk behaviors on the measure were developed from the Centers for Disease Control and Prevention's Youth Risk Behavior Survey (YRBS), which is included in the test battery for the Youth Risk Behavior Surveillance System (YRBSS) (Centers for Disease Control and Prevention, 2004). The survey in its entirety measured variables which were not used in this study. Items for variables of interest were chosen based on content, face validity, and reliability measures such that the maximum Cronbach's alpha was achieved. As such, the total number of items included in the study resulted in an overall Cronbach's alpha equal to .92 which suggested adequate reliability. Each of the variables measured will be discussed in further detail.

Adolescent Attitude

Adolescent sexual attitude was defined as the personal beliefs that the individual has about sex and how these beliefs will lead to particular outcomes. Sexual attitude includes the belief of whether it is right or wrong to engage in sexual behavior at the adolescent's age, and the risks involved in sexual activity. Four items assessed adolescent attitudes. An example of an item included on the scale is "I believe that it is OK for people my age to have sex." The items on the scale appeared to have adequate face validity as several other researchers have measured adolescent attitudes in similar manners (Basen-Engquist & Parcel, 1992; Basen-Engquist et al., 1997; DiIorio et al., 1999; Miller et al., 1998). However, validity beyond that of face validity is unknown. Other studies who have measured attitudes with similar items have found reliabilities that range from Cronbach's alpha=.70 (Basen-Engquist & Parcel, 1992) to alpha=.80 (DiIorio et al., 1999), and alpha=.85 (Miller et al., 1998), which all indicate adequate levels of reliability. Reliability for the adolescent attitude scale used in this study also demonstrated adequate reliability (alpha=.81). Each item response was measured on a 5-point Likert-type scale from 1= "definitely disagree" to 5= "definitely agree." High scores indicated liberal attitudes about sex, whereas low scores were indicative of conservative sexual attitudes. Several studies have measured sexual attitudes on similar scales that range from conservative to liberal, where conservative attitudes are those that believe it is wrong to engage in sexual behavior during adolescence, and liberal attitudes are the belief that it is acceptable to have sex during adolescence (Basen-Engquist & Parcel, 1992; Basen-Engquist et al., 1997; DiIorio et al., 1999).

Perceived Parent and Peer Sexual Attitude

Perceived parent and peer sexual attitudes were assessed with items that were written the same, each with several sub-level items which mirror the items that measured the adolescent's personal sexual attitudes. An example of an item on this scale is "My parents (friends) believe that it is OK for people my age to have sex," which is measured on a 5-point Likert-type scale where 1= "definitely disagree" to 5= "definitely agree." As with adolescent attitudes, high scores indicated liberal attitudes and low scores represented conservative attitudes for both parents and peers.

The items assessing perceived parent attitudes appeared to have adequate face validity as several studies have also measured parental attitudes with similar items (Jaccard et al., 2000; Kotchick et al., 1999). Unfortunately validity beyond that of face validity is unknown. Other researchers measuring parent attitudes with similar items have found Cronbach's alpha to range from alpha=.55 with 3 items (Kotchick et al., 1999) to alpha=.75 with 5 items (Jaccard et al., 2000). In terms of measuring perceived peer attitudes, the items included on the scale in this study also appear to adequate face validity as Whitaker and Miller (2000) measured peer attitudes in a similar manner. Although it is noted that Whitaker and Miller labeled the scale peer norms rather than peer attitudes. Other reported scale reliabilities using similar item content is unknown. The obtained reliability for both the perceived parent (alpha=.80) and peer (alpha=.80) attitude scales used in this study was adequate.

Subjective Norms

Parent and peer attitudes were used to measure the adolescent's subjective norm, which is a higher-ordered latent variable. Subjective norms was calculated through the combined effects of both parent and peer attitudes and is experienced by the adolescent as social pressure. Several studies have also measured attitudes and have also applied the term subjective norms to the items (Basen-Engquist & Parcel, 1992; Basen-Engquist et al., 1997; Whitaker & Miller, 2000). Thus it appeared that the subjective norm scale had adequate face validity; however other forms of validity are unknown. Eight items measured subjective norms where low scores were indicative of more conservative subjective norms, and high scores suggested liberal subjective norms. Other studies have measured subjective norms with similar items but with a fewer number of items, which have yielded adequate reliability. Serovich and Greene (1997) reported alpha=.77, and Basen-Engquist and Parcel (1992) reported a reliability equal to .67; however this was measured with only 1 item.

Parent and Peer Communication

Communication was limited to whether or not the adolescent discussed sexual topics or sexually transmitted diseases with either parents or peers. Parent and peer communication was measured by two items which were worded essentially the same and asked "Have either of your parents (friends) ever talked to you about (d) sex or (f) STIs? (STIs refer to Sexually Transmitted Infections)." Affirmative responses for either item were coded as communication occurring between parent and adolescent. Responses

marked as "no" for both items were measured as no communication having occurred between parent and adolescent. Peer communication was derived in the same manner.

Quality of Relationship

The perceived quality of the relationship with parents was assessed by two items. The relationship was measured from the perceived relationship with the mother and father separately. Responses were measured on a 3-point Likert-type scale where 1= "Great" to 3= "Not good." Due to the categorical nature of this variable, the item responses were dummy coded for further analyses.

Sexual Intention

Sexual intention was defined as the planning of future sexual behaviors and was measured by three items. Responses were measured on a 5-point Likert-type scale from 1= "definitely disagree" to 5= "definitely agree." A sample item is "I plan to have sex at my age." Intent items paralleled the attitude items (of self, parent, and peers) in order to predict intention from attitude and subjective norms. High scores on the intention scale indicated a strong intention to engage in sexual behaviors, and low scores suggested minimal intent to participate in sexual behaviors. The items have been similarly measured by Basen-Engquist and Parcel (1992), Basen-Engquist et al. (1997), Borawski, Ievers-Landis, Lovegreen, and Trapl (2003), and Miller et al. (1998). However the listed studies evaluated intention for sexual behavior in a specified time frame of either the next three months or within the next year. Intention on the scale used in this study did not specify a time period for intentions, but despite this difference, the sexual intention scale

appeared to have adequate face validity. More sophisticated validities for this scale are unknown. Basen-Engquist and Parcel (1992) report reliabilities for sexual intention to be low (alpha=.58), whereas condom use intention reliability to be acceptable. However intention was assessed with only one item each, therefore the reliability of their intention scale is expected to be low. Reliability for the intention scale used in this study was alpha=.68.

Sexual Behavior

The items measuring sexual behavior included only oral and/or genital sex, and does not include touching, kissing, or holding hands. Sexual behavior was measured by five items and included asking if sexual intercourse has occurred, length of dating time before engaging in sex, age of first sexual experience, number of partners within the past three months, and frequency of condom use. Although validity beyond that of face validity is unknown for this scale, Donenberg et al. (2002) reported Cronbach's alpha=.79 for a similar composite measure of sexual behavior, which suggests adequate reliability. Reliability for the sexual behavior scale used in this study was adequate (alpha=.81).

Design

The following research design was cross-sectional and correlational. Measures were taken from a self-reported survey. Although self-reports are problematic (Fisher, 1987), precautions to maintain the participants anonymity were taken. No identifying

information was present on the survey in order to reassure participants that their identity would not be known.

Procedures

The archival data from Romania and Ukraine was combined into one database for analysis and testing of the proposed hypotheses. The following describes how the data was collected in each country in the parent study.

Romania

The protocol, survey, and consent form was previously reviewed and approved by the Insititutional Review Board (IRB) of Loma Linda University as part of a larger study (OSR# 51257, Appendix A). Gily Ionescu, MD, Director of the Adventist Health and Temperance Association, and Mioara Predescu, MD, of the Institute of Health Services Management, served as the Romanian co-investigators and reviewed and edited the survey, consent forms, and all documents included for cultural sensitivity issues. Drs. Ionescu and Predescu approached the designated classrooms from the selected school and distributed the parental passive consent forms written in Romanian describing the nature, purpose, and importance of the study (Appendix B). The consent letter also informed parents that they would need to actively notify the school if they did not want their child to participate. Students were instructed to take the letter home to their parents.

Those students who did not have parental objection to participate were permitted to be included in the study. In addition to parental consent, students were asked to sign an assent form to personally agree to participate in the study. The students who chose to

participate were reminded that their questionnaires would remain anonymous and were asked to respond honestly. Students were also reminded that no actions would be made to identify them, regardless of their responses. Students were encouraged to skip any questions that they found uncomfortable. In order to avoid any potential negative stigmatization from either participating or not, students who had not received parental consent were given an alternate task (i.e. neutral questionnaire) to complete while their classmates completed the study survey. Upon completion of the questionnaire, the students were given a debriefing form, which was created to reduce discomfort and anxiety caused by the nature of the items on the questionnaire. Contact information for resources in the community was also included should a need for assistance or any problems and questions arise.

The completed questionnaires have been stored at the Institute of Health Services Management in Bucharest, where trained research assistants have entered the data into SPSS. Copies of the signed student assent forms and signed parental consent forms from parents who did not give permission for their child to participate have been sent to LLU. An electronic format of the data was sent to LLU for analysis.

Ukraine

The protocol, survey, and consent form was previously reviewed and approved by the Institutional Review Board (IRB) of Loma Linda University as part of a larger study (OSR# 51102, Appendix C). Raisa T. Bevz, MD, Director of Adolescent Health Department A.B., Professor of Health at the Kiev Medical Institute, and Maya Baranova, MD, Professor of Health at the Kiev Medical Institute, served as the co-investigators who

reviewed and edited the survey, consent forms, and all other documents for cultural sensitivity. Drs. Bevz and Baranova approached designated classrooms from selected schools and distributed parental consent forms (Appendix D) that state the nature, purpose, and importance of the study written in both Ukrainian and Russian. Students were instructed to take the consent form to their parents and to return the form if they had obtained their parents' permission and parental signature on the form.

Only those students who have received parental consent were included in the study. In addition to parental consent, students were asked to agree to participate in the study and to sign an assent form (Appendix E). The participating students were reminded of the importance of the study and to answer honestly. Students were informed that no identifying information would be included. They were also reminded that all information would remain anonymous and no attempts would be made to identify them, regardless of their responses to items on the survey. The students were also told to skip any items that they did not feel comfortable in answering. In order to avoid any potential negative stigmatization from either participating or not because all students will meet in their regular classroom, students who had not received parental consent were given an alternate task (i.e. neutral questionnaire) to complete while their classmates completed the study survey. Upon completion of the survey, the students were given a debriefing form, which was created to reduce discomfort and anxiety caused by the nature of the items on the questionnaire. Contact information for resources in the community was also included should a need for assistance or any problems or questions arise.

The original questionnaires were returned to LLU and were entered by trained research assistants into SPSS for analysis. In addition, copies of the signed consent forms were also returned to LLU.

Results

Initial Data Screening & Analysis

Missing Data Analysis

In order to test the proposed hypotheses data was screened by viewing histograms for each item and variable. Histograms indicated the data was positively skewed, particularly for the items which measured sexual behavior. Specifically, most participants reported little to no sexual behaviors. The data was highly skewed at both the univariate and the multivariate levels. Mardia's coefficient, which measures multivariate kurtosis was calculated in order to assess multivariate skewness as SEM is not robust to violations of normality (Hoyle & Panter, 1995; McDonald & Ho, 2002). Mardia's coefficient ranged from 115.51 to 213.58 indicating highly skewed data.

Further inspection of the data indicated that 32.6% (n=686) of participants had missing data due to omitted responses on the questionnaire. Missing data for the items measuring sexual behavior was replaced using an intuitive method based on previously answered items. For example, if the item, "Have you ever had sexual intercourse?" was answered "no," and subsequent items were missing responses, it was assumed that the following three responses should be coded as "I don't have sex." One hundred thirteen data points were coded based on this process, although 30.2% (n=576) of participants were still missing data.

Analysis of variance (ANOVA) was used to determine if differences existed between the participants with no missing data and those who had omitted items from the

questionnaire. Given the large sample size, meaningful rather than statistically significant differences were considered as the means for each group were compared. ANOVA results indicated that no meaningful differences existed between the two groups by age as well as by items measuring attitude, perceived parent and peer attitude in addition to intention. However, a greater percentage (59%) of missing data were females, although this was likely related to the over-representation of females in the sample. Additionally, it appeared that participants with missing data reported greater sexual risk behavior than participants with no missing data. Specifically, the missing data group reported more risky responses on items measuring if they had ever had sex, dating time before sex, age at first sexual intercourse, and condom use. However, the number of partners within the last three months did not suggest differences between the two groups. Consequently, the pattern of reported higher engagement in risk behaviors for the missing data group suggests the data used in this study was not missing at random and is a limitation within the study.

Given the high degree of missing data, expectation maximization (EM) was used to estimate omitted data. This procedure has advantages over other missing data options as impossible matrices are avoided, and the level of overfitting the replaced data is reduced. Consequently, the EM procedure replaces missing data with more realistic estimates than do other missing data options (Tabachnick & Fidell, 2001). Unfortunately, missing data for categorical variables was not estimated, which is a disadvantage in the EM procedure. Consequently, 49 participants were excluded from the final analyses as EQS 6.1 does not include cases in which data is missing.

Outliers

Data was further screened for outliers at the univariate and multivariate levels. At the univariate level, data points which were greater than 3.5 standard deviations from the mean were considered outliers, and 19 participants were omitted. In order to screen for multivariate outliers, Mahalanobis' distance was used (Mertler & Vannatta, 2002), which identified an additional 118 participants that were considered outliers. Multivariate screening using the EQS multivariate screening procedure revealed that removal of additional outliers only minimally improved or decreased the overall fit indices of the model (on average all the reported fit indices provided by EQS improved .03; however 300 outliers were removed, and as a result, fit indices were reduced as much as .15) as new multivariate outliers were created with the deletion of previously identified outliers. Consequently, outliers identified in EQS were not omitted, and a total of 1,958 participants were included in further analyses.

Covariates

Gender, age, and quality of parental relationship were included as covariates in the study. As such, in order to explore the effects of the covariates on the hypothesized variables, exploratory hierarchical multiple regressions were performed and changes in R-Square values were considered as statistical significance is impacted by sample size.

Table 1

Effect Size of Quality of Parental Relationship in Attitude, Perceived Parent and Peer Attitudes, Intention, and Sexual Behavior

Variable	R-Square
Attitude: I believe that -	
44a. it is OK for people my age to have sex.	.002
44b. it is OK for people my age to have sex with someone they dated a long time.	.005
44c. it is OK for people my age to have sex with someone they don't know well.	.004
44g. it is OK for people my age to say "No" to having sex.	.001
Perceived Parent Attitude: My parents believe that -	
45a. it is OK for people my age to have sex.	.005
45b. it is OK for people my age to have sex with someone they dated a long time.	.006
45c. it is OK for people my age to have sex with someone they don't know well.	.004
45g. it is OK for people my age to say "No" to having sex.	.005
Perceived Peer Attitude: My friends believe that -	
46a. it is OK for people my age to have sex.	.011
46b. it is OK for people my age to have sex with someone they dated a long time.	.009
46c. it is OK for people my age to have sex with someone they don't know well.	.007
46g. it is OK for people my age to say "No" to having sex.	.008
Intention	
49a. I plan to have sex.	.002
49b. I plan to have sex at my age only if I have dated my partner for a long time.	.003
49c. I plan to have sex with someone even if we do not know each other very well.	.002
Sexual Behavior	
50. Have you ever had sex?	.003
52. How long would you date someone before having sex?	.005
53. How old were you when you had sex for the first time?	.001
55. During the past 3 months, with how many people have you had sex?	.003
57. How often do you use condoms when you have sex?	.001

Quality of parental relationship. Dummy codes were created because the item measuring quality of parental relationship was a categorical variable. Using hierarchical multiple regression, each intention variable was entered in Block 1, and the dummy coded quality of parental relationships variables were entered in Block 2. Sexual behavior items were used as dependent variables, and this process was completed for the five items measuring sexual behavior. Given the large sample size, changes in R-Square were used to determine if quality of parental relationship accounted for additional

variance explained above and beyond intentions. Results indicated that quality of parental relationship accounted for less than 1% of the variance explained (see Table 1, p. 45) indicating that quality of parental relationship failed to account for additional variance beyond that of intentions.

To further explore possible effects of quality of parental relationship, the procedure described above was used to determine if quality of parental relationship accounted for additional variance above and beyond that of attitudes and items measuring subjective norms (which is made up of perceived parent and peer attitudes) in predicting intentions. Hierarchical multiple regression was performed in which attitude as well as perceived parent and peer attitude items were entered in Block 1, and quality of parental relationship was entered in Block 2. The items measuring intention were considered as dependent variables. Similar to the items measuring sexual behavior, quality of parental relationship accounted for minimal variance above and beyond that of attitudes and perceived parent and peer attitudes. The effect sizes for quality of parental relationship were less than 1% indicating that attitudes and subjective norms (made up by perceived parent and peer attitude) accounted for nearly all of the variance in predicting quality of parental relationship.

Because it was hypothesized that subjective norms would predict attitude, the procedure described was replicated where the items measuring attitude were considered as dependent variables. Subjective norm items, which are made up of perceived parent and peer attitudes, were entered in Block 1, and quality of parental relationship was entered in Block 2. Results indicated that quality of parental relationship accounted for less than 1% of the variance explained, which is a minimal effect size. Consequently,

quality of relationship failed to account for additional variance above and beyond that of subjective norms in predicting adolescent attitude regarding sex.

Lastly, multiple regressions were performed in order to determine if quality of parental relationship predicted either perceived parent or peer attitude. With quality of parental relationship as the predictor, the effect sizes for perceived parent attitude was minimal at less than 1%. For perceived peer attitude, the effect size was very small with only 1% of the variance being accounted for.

Thus, the results indicate that the variables included within the hypothesized model, which make up the TRA model, accounted for nearly all of the variance explained. Quality of parental relationship did not add meaningful nor significant improvement to the model as the effect size for this variable was minimal. Based on the obtained R-Squares, it was determined that the inclusion of the quality of parental relationship variable to the hypothesized model would reduce parsimony. Consequently, the inclusion of quality of parental relationship as a covariate in the hypothesized model was omitted.

Gender. Similar to the procedure described above for quality of parental relationship, the effects of gender was also evaluated using hierarchical multiple regression. In order to determine if gender predicted sexual behavior above and beyond that of intention, the items measuring intention were entered in Block 1 whereas gender was entered in Block 2. Like quality of parental relationship, gender accounted for minimal variance beyond that of intention with a very small effect size of less than 1% (see Table 2, p. 49).

In order to determine the effects of gender in predicting intention, the items measuring subjective norms (made up of perceived parent and peer attitude) were entered in Block 1, and gender was entered on Block 2. Changes in R-Squares indicated that gender had a small effect at 2% of variance explained. Hierarchical regressions were also used to determine if gender predicted attitude above that of the items measuring subjective norms. As such, perceived parent and peer attitudes were entered in Block 1 while gender was entered in Block 2. The resulting effect size was minimal as only 1% of the variance was explained.

Lastly, multiple regressions were used in order to determine if gender predicted either perceived parent or peer attitudes. Unlike previous results, gender had a medium to medium-large effect size in predicting perceived parental attitudes with between 8 to 13% of the variance explained. For perceived peer attitude, gender also had a small to medium effect size with up to 11% of the variance explained. However, there was considerable range in the obtained R-Square values.

Thus, based on resulting effect sizes, gender appeared to explain additional variance above and beyond the hypothesized variables. Specifically gender minimally predicted intention and had a greater impact in predicting perceived parent and peer attitudes. As such, these relationships were included in the hypothesized models.

Table 2

Effect Size of Gender in Predicting Attitude, Perceived Parent and Peer Attitudes, Intention, and Sexual Behavior

Variable	R-Square
Attitude: I believe that -	
44a. it is OK for people my age to have sex.	.004
44b. it is OK for people my age to have sex with someone they dated a long time.	.001
44c. it is OK for people my age to have sex with someone they don't know well.	.010
44g. it is OK for people my age to say "No" to having sex.	.004
Perceived Parent Attitude: My parents believe that -	
45a. it is OK for people my age to have sex.	.135
45b. it is OK for people my age to have sex with someone they dated a long time.	.092
45c. it is OK for people my age to have sex with someone they don't know well.	.122
45g. it is OK for people my age to say "No" to having sex.	.085
Perceived Peer Attitude: My friends believe that -	
46a. it is OK for people my age to have sex.	.018
46b. it is OK for people my age to have sex with someone they dated a long time.	.009
46c. it is OK for people my age to have sex with someone they don't know well.	.118
46g. it is OK for people my age to say "No" to having sex.	.008
Intention	
49a. I plan to have sex.	.020
49b. I plan to have sex at my age only if I have dated my partner for a long time.	.001
49c. I plan to have sex with someone even if we do not know each other very well.	.010
Sexual Behavior	
50. Have you ever had sex?	.000
52. How long would you date someone before having sex?	.001
53. How old were you when you had sex for the first time?	.003
55. During the past 3 months, with how many people have you had sex?	.001
57. How often do you use condoms when you have sex?	.000

Age. The relationship of age with the hypothesized variables was also evaluated using the above procedure. Additionally, because age may moderate certain relationships, a variable representing the interaction between age and the variables was included in the hierarchical multiple regression analysis. The interaction variable was calculated by transforming the variables of interest into Z-scores, then multiplying the Z-score of age by the Z-score of the dependent variable. The product was then entered into Block 3 of the hierarchical regression. In evaluating the effects of age on sexual

behavior, intention items were entered in Block 1, age in Block 2, and the age*interaction variable was entered in Block 3. Results indicated that age had a small effect size in predicting sexual behavior with 1 to 3% of the variance explained (see Table 3, p. 51). The interaction between age and the sexual behavior items was minimal and accounted for less than 1% of the variance.

The relationship between age and intention was also evaluated. In Block 1, items measuring subjective norms (made up of perceived parent and peer attitudes) and adolescent attitude were entered, age was placed in Block 2, and the age*interaction variable with intention items was entered in Block 3. Age accounted for very minimal variance explained beyond that of the items entered in Block 1 with an effect size of less than 1%. The interaction variable also accounted for minimal variance beyond Blocks 1 and 2 with an effect size of less than 1%.

In terms of the relationship between age and attitude, subjective norm items (made up of perceived parent and peer attitudes) were placed in Block 1, age was placed in Block 2, and the age*interaction variable was placed in Block 3. Age as well as the age*interaction variables had minimal effect sizes, and both accounted for less than 1% of the variance explained. The effects of age in predicting perceived parent and peer attitude were also considered. For perceived parent attitude, age was entered in Block 1, and the age*interaction variable was placed in Block 2. Age had greater effects than did the age*interaction variable with effect sizes in the small-medium range. The effect of age on perceived peer attitude was similar to that of perceived parent attitude with age accounting for more variance than the age*interaction variable. Specifically, age accounted for 2 to nearly 8% of the variance which is a small to medium effect size.

Table 3

Effect Size of Age and Age as a Moderator in Predicting Attitude, Perceived Parent and Peer Attitudes, Intention, and Sexual Behavior

	R-Square	
Variable	Age	Age*Interaction
Attitude: I believe that -		
44a. it is OK for people my age to have sex.	.004	.002
44b. it is OK for people my age to have sex with someone they dated a long time.	.001	.004
44c. it is OK for people my age to have sex with someone they don't know well.	.000	.000
44g. it is OK for people my age to say "No" to having sex.	.003	.000
Perceived Parent Attitude: My parents believe that -		
45a. it is OK for people my age to have sex.	.038	.022
45b. it is OK for people my age to have sex with someone they dated a long time.	.041	.012
45c. it is OK for people my age to have sex with someone they don't know well.	.003	.007
45g. it is OK for people my age to say "No" to having sex.	.009	.001
Perceived Peer Attitude: My friends believe that -		
46a. it is OK for people my age to have sex.	.071	.014
46b. it is OK for people my age to have sex with someone they dated a long time.	.079	.026
46c. it is OK for people my age to have sex with someone they don't know well.	.026	.005
46g. it is OK for people my age to say "No" to having sex.	.066	.000
Intention		
49a. I plan to have sex.	.001	.000
49b. I plan to have sex at my age only if I have dated my partner for a long time.	.000	.001
49c. I plan to have sex with someone even if we do not know each other very well.	.001	.003
Sexual Behavior		
50. Have you ever had sex?	.029	.011
52. How long would you date someone before having sex?	.024	.009
53. How old were you when you had sex for the first time?	.015	.007
55. During the past 3 months, with how many people have you had sex?	.030	.009
57. How often do you use condoms when you have sex?	.013	.006

Note. Age as moderator represented as Age*Interaction.

Consequently, age appears to account for additional variance in predicting sexual behavior above and beyond that of intentions. Age further predicts perceived parent and peer attitudes. However, the inclusion of age as a moderator through the age*interaction variable failed to account for a significant level of variance explained which would justify reducing parsimony. As such, age as a moderator was omitted from further analyses and was not included in the hypothesized models. The relationships between

age as well as the perceived parent and peer attitudes were included in the hypothesized model.

Strategy of Analyses

Using the EQS 6.1 statistical computer package, structural equation modeling (SEM) was used in order to evaluate hypothesis 1 and 2. SEM is a statistical procedure that determines how well the hypothesized models fit the data. An important caution in SEM is that causality cannot be inferred because SEM provides evidence and support for hypotheses that imply causality (Ullman, 2001). Only through research design can causality be determined with certainty. Advantages to using SEM over other statistical procedures include the ability to simultaneous test multidimensional and complex relationships as well as the removal of error from the proposed model. The removal of error leaves behind only common variance in the results for interpretation. This advantage of SEM was particularly useful and necessary as common measurement error was a substantial problem within the model and required controlling and accounting for common error variance between the items measuring adolescent attitude as well as perceived parent and peer attitudes. Common error variance was evidenced by high standardized errors between similarly worded items.

The maximum likelihood (ML) estimation procedure was used as ML is fairly robust to violations of normality and small sample sizes (Hoyle & Panter, 1995). However, because histograms as well as high Mardia's coefficient results suggested skewed data, the Robust ML estimation procedure was used, which is more appropriate when violations to normality occur. Each model tested was over-identified as there was a

remainder of degrees of freedom after accounting for pieces of information in the variance/covariance matrix and parameters estimated (Ullman, 2001).

In order to evaluate the overall fit of each hypothesized model, several fit indices are reported. The χ^2 fit index was used to measure the absolute fit of the hypothesized models (because Robust ML estimation was used, the Sattora-Bentler Scaled χ^2 was used). This index is appropriate as it performs best with medium to large sample sizes and is widely used when evaluating model fit (Ullman, 2001). Optimal fit with χ^2 results in values that are at or near zero and considered nonsignificant (Hoyle & Panter, 1995). However, because sample size influences χ^2 statistical significance levels, the index was evaluated using the "rule of thumb" for χ^2 values and the degrees of freedom which ideally are less than a 2:1 ratio for good fit (Ullman, 2001).

Two comparative fit indices, which compare hypothetical models with the actual model, were also used in order to evaluate each hypothesized model fit. The comparative fit index (CFI), which ranges from 0 to 1, is reported rather than the nonnormed fit index (NNFI), which may exceed values of 1.0 with large samples (Bentler, 1990). As such, CFI is the more appropriate comparative fit index. The CFI is useful as it compares the independence model, which is the null model, with the estimated model using the noncentral χ^2 distribution and the noncentrality parameters. As a "rule of thumb", CFI values that are greater than .90 are considered acceptable (McDonald & Ho, 2002), and values .95 and greater, signify good-fitting models (Ullman, 2001). The root mean square error of estimation (RMSEA), which compares the perfect model with the hypothesized model, is also reported and is more appropriate with larger sample sizes. Low scores, preferably less than .06 reflect good-fitting models with respect to the

degrees of freedom. RMSEA values which are greater than .10 reflect too much error within the model and suggest a poor-fitting model (Ullman, 2001).

The final index reported considers the proportion of variance accounted for and is similar to the R-Square in multiple regression. The adjusted goodness of fit index (AGFI) is calculated by the number of estimated parameters and the number of data points where good fitting models contain parameters which account for a high proportion of variance explained. AGFI values may range from 0 to 1, with high values suggesting good-fitting models (Ullman, 2001).

The Lagrange multiplier tests (LM) and Wald tests were evaluated in order to assess model fit. The LM test evaluates whether parameters in the model should be added in order to improve the fit. The LM test compares nested models similar to comparative fit indices but with only one model estimated through a process similar to stepwise regression. The Wald test, in contrast, determines which parameters should be deleted to improve model fit. The Wald test is similar to backward deletion of stepwise regression by fixing parameters to zero to determine if the model fit improves (Ullman, 2001). Only those parameters proposed by the LM and Wald tests which were supported by theory were considered.

Multiple group SEM was used in order to test hypotheses 1 and 2 and to specifically evaluate the moderating effects of parent and peer communication. As described by Ullman (2001), each group (i.e. Group 1=Parent communication; Group 2=No parent communication) was tested separately and an adequate fitting model was achieved for each group. Once each model achieved appropriate fit, the two models were compared post hoc to determine causal differences between the pathways. Based on

these identified differences as well as the hypothesized moderated pathways, the moderated model was determined. It is noted, however, that past research and theory was also considered in the development of the moderated model.

The next step, as suggested by Byrne (1994), included constraining the model to be equal across all groups, which represents the null hypothesis and is referred to as the fully constrained model. Subsequent to this, the moderated or hypothesized model was tested. Lastly, the χ^2 difference test, which compares the χ^2 values and degrees of freedom of each model, was used to determine if the hypothesized model better fit the data (Ullman, 2001). This process assures that if there is equivalency in the parameters then moderation does not exist (Baron & Kenny, 1986).

Hypothesis 1: Parent Communication

It was hypothesized that parent communication would moderate the relationships within the theory of reasoned action. Specifically, the pathway between subjective norms and the adolescent's attitude was hypothesized to be moderated by parental communication, which in turn, could impact the other structural pathways within the model. In order to test this hypothesis, the sample was divided into two separate groups. Group 1 consisted of those participants who had communicated with their parents, whereas group 2 consisted of participants in which responses reflected that they had not communicated with their parents. The latent factor of subjective norms, which was originally hypothesized to be a higher-ordered factor consisting of perceived parent and peer attitudes, was omitted from the final model because subjective norms was found to be linearly dependent (see Figure 2, p. 28). Because past research has found that parents

and peers frequently have different relationships affecting adolescent behavior, perceived parent and peer attitudes were included in the model as separate latent factors. Thus, the latent variable of subjective norms was replaced by the two latent factors of perceived parent attitude and perceived peer attitude.

Independent Parent Communication Model

1,288 participants were included in the parent communication group. 24.9% (n=321) were from Ukraine, and 75.1% (n=967) were from Romania. 35.5% (n=457) were males, and 64.5% (n=830) were females. Ages ranged from 11 to 25 years with a M=16.16 years and SD=1.43. The resulting model for the independent parent communication group required 10 iterations for the model to converge. Results from the Wald test indicated that the pathway from perceived peer attitude to intention was contributing to misspecification and was thus dropped from the model. The LM test suggested the addition of several pathways; however, these pathways violated theory and no additional pathways were included. The final model (see Figure 4, p. 56) fit the data adequately, although misspecifications were found within the model. Specifically, Satorra-Bentler Scaled χ^2 (191, N=1288) 1583.45, $p<.001$ suggested misspecification as the ratio between the χ^2 value and the degrees of freedom was greater than 2:1, although the χ^2 test is influenced by sample size. AGFI=.848 and CFI=.929, which suggested adequate fit. The robust RMSEA=.076, which although greater than .06, signified acceptable fit within the model. Means and standard deviations for each manifest variable are presented in Table 4 (p. 58) and indicate that peers were perceived as having

more liberal attitudes than parents and the reporting adolescent. Adolescents perceived their parents as having the most conservative beliefs regarding sex.

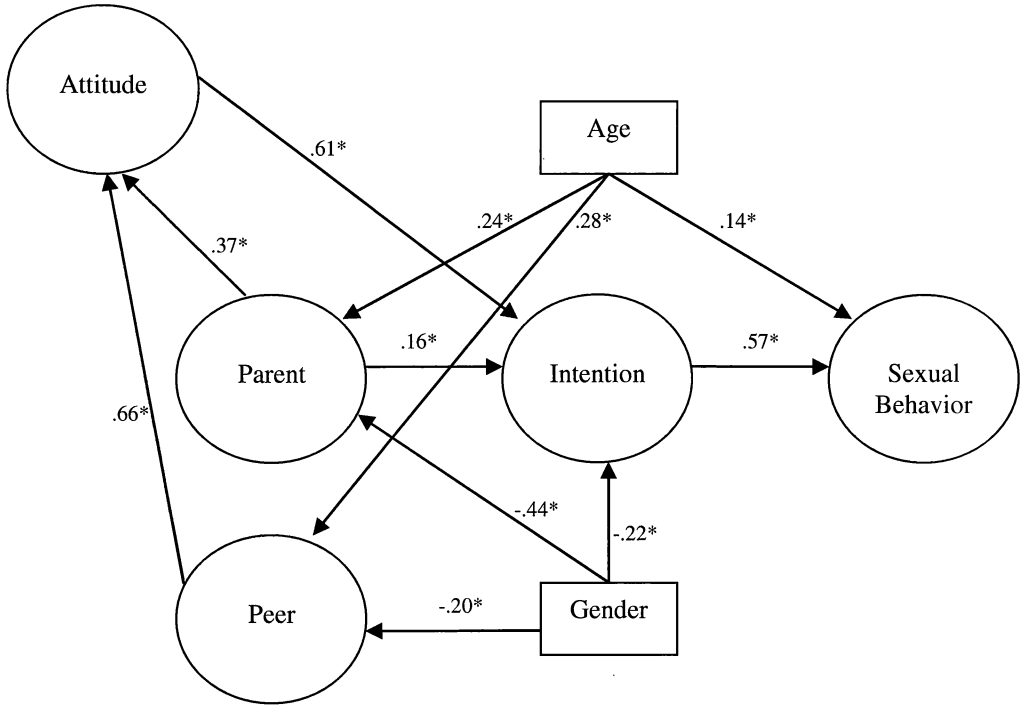

Figure 4. Independent parent communication best fitting measurement model with standardized estimates reported.
*$p<.05$

Table 4

Means and Standard Deviations among Major Variables for Parent Communication

Variable	Mean	SD
Attitude: I believe that -		
44a. it is OK for people my age to have sex.	3.33	1.27
44b. it is OK for people my age to have sex with someone they dated a long time.	3.56	1.22
44c. it is OK for people my age to have sex with someone they don't know well.	2.18	1.20
44g. it is OK for people my age to say "No" to having sex.	3.05	1.34
Perceived Parent Attitude: My parents believe that -		
45a. it is OK for people my age to have sex.	2.27	1.25
45b. it is OK for people my age to have sex with someone they dated a long time.	2.57	1.29
45c. it is OK for people my age to have sex with someone they don't know well.	1.73	.98
45g. it is OK for people my age to say "No" to having sex.	2.40	1.30
Perceived Peer Attitude: My friends believe that -		
46a. it is OK for people my age to have sex.	3.76	1.20
46b. it is OK for people my age to have sex with someone they dated a long time.	3.86	1.16
46c. it is OK for people my age to have sex with someone they don't know well.	2.70	1.29
46g. it is OK for people my age to say "No" to having sex.	3.31	1.34
Intention		
49a. I plan to have sex.	2.72	1.38
49b. I plan to have sex at my age only if I have dated my partner for a long time.	3.09	1.38
49c. I plan to have sex with someone even if we do not know each other very well.	1.92	1.13
Sexual Behavior		
50. Have you ever had sex?	.23	.45
52. How long would you date someone before having sex?	.78	1.05
53. How old were you when you had sex for the first time?	1.10	1.86
55. During the past 3 months, with how many people have you had sex?	.21	.45
57. How often do you use condoms when you have sex?	.57	1.05

Independent No Parent Communication Model

584 participants were included in the independent no parent communication analyses with 35.3% (n=206) from Ukraine and 64.7% (n=378) from Romania. Of these participants, 39.2% (n=228) were male, 60.8% (n=353) were female, and ages ranged from 11 to 19 years, with a M=15.91 years and SD=1.49. The resulting no parent communication model required 11 iterations for the model to converge. Unlike the previous model, the pathway from perceived peer attitude to intentions was maintained in the model as the Wald test indicated no pathways should be dropped. On the other hand,

the LM test identified a number of pathways to add, although these suggested pathways were unaligned with theory. As a result, no new pathways were added. The final model is presented in Figure 5 with fit indices suggesting adequate fit, although misspecifications were observed in the model. The Sattora-Bentler χ^2 (190, N=584) 860.04, $p<.001$ suggested misspecification as did AGFI=.839. However, CFI=.925 indicated adequate fit, and the robust RMSEA=.074, which although greater than .06, signified acceptable fit within the model. Means and standard deviation for each manifest variable in the no parent communication group are presented in Table 5 (p. 60). Similar to the previous group, adolescents perceived their peers as having the most liberal attitudes, whereas parents were perceived as being more conservative.

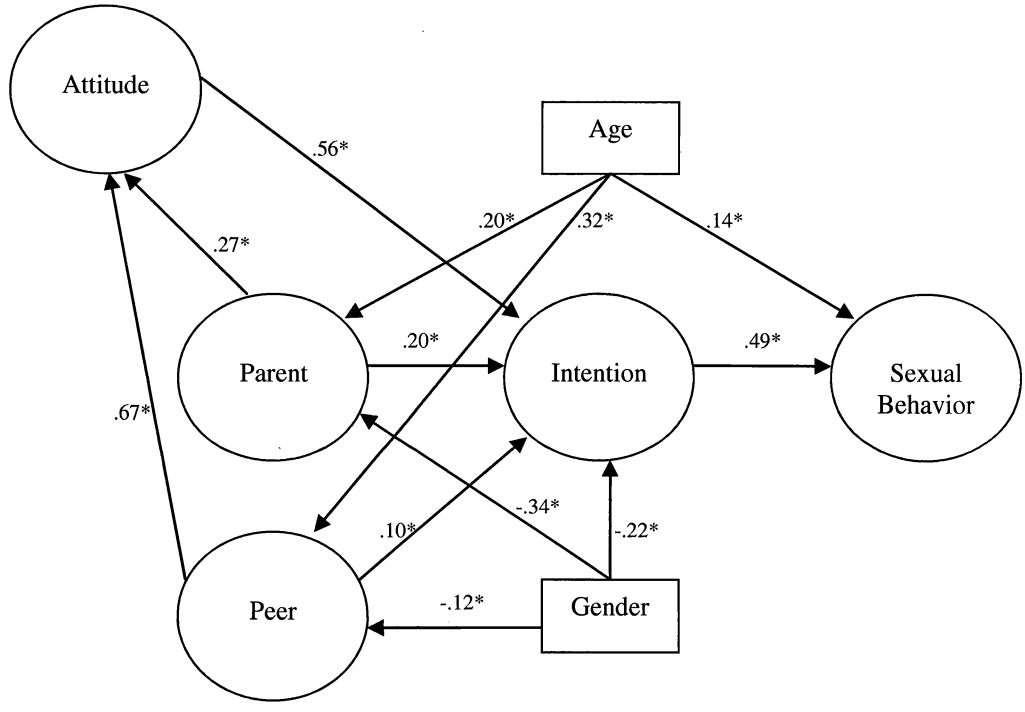

Figure 5. Independent no parent communication best fitting measurement model with standardized estimates reported.
*$p<.05$

Table 5

Means and Standard Deviations among Major Variables for No Parent Communication

Variable	Mean	SD
Attitude: I believe that		
44a. it is OK for people my age to have sex.	3.19	1.28
44b. it is OK for people my age to have sex with someone they dated a long time.	3.42	1.22
44c. it is OK for people my age to have sex with someone they don't know well.	2.12	1.12
44g. it is OK for people my age to say "No" to having sex.	2.81	1.24
Perceived Parent Attitude: My parents believe that -		
45a. it is OK for people my age to have sex.	2.15	1.11
45b. it is OK for people my age to have sex with someone they dated a long time.	2.39	1.17
45c. it is OK for people my age to have sex with someone they don't know well.	1.80	.98
45g. it is OK for people my age to say "No" to having sex.	2.30	1.19
Perceived Peer Attitude: My friends believe that -		
46a. it is OK for people my age to have sex.	3.52	1.23
46b. it is OK for people my age to have sex with someone they dated a long time.	3.64	1.18
46c. it is OK for people my age to have sex with someone they don't know well.	2.59	1.21
46g. it is OK for people my age to say "No" to having sex.	2.99	1.24
Intention		
49a. I plan to have sex.	2.68	1.28
49b. I plan to have sex at my age only if I have dated my partner for a long time.	3.04	1.33
49c. I plan to have sex with someone even if we do not know each other very well.	1.97	1.14
Sexual Behavior		
50. Have you ever had sex?	.16	.37
52. How long would you date someone before having sex?	.58	.96
53. How old were you when you had sex for the first time?	.71	1.61
55. During the past 3 months, with how many people have you had sex?	.14	.40
57. How often do you use condoms when you have sex?	.48	1.05

Moderated Parent Communication Model

The two best fitting measurement models for parent communication were compared in order to determine the moderated model, which was tested against the fully constrained model or the null. In the fully constrained model, all errors, disturbances, latent factor structures, which were considered equivalent, were constrained as were each of the causal pathways. The fully constrained model required 10 iterations, and the data fit the data, although fit indices suggested misfit as the Sattora-Bentler χ^2 (413, N=1958) 2415.24, $p<.001$ and the AGFI=.852. Additional fit indices, however, indicated

acceptable fit, although misspecification existed within the model (Robust CFI=.927; Robust RMSEA=.071).

The moderated model was tested by releasing the pathways which were hypothesized and determined post hoc (the released pathways are illustrated by dotted lines in Figure 6, p. 62). Overall, the moderated model was acceptable, but there was misspecification (Sattora-Bentler χ^2 (408, N=1958) 2387.38, p<.001; AGFI=.852; Robust CFI=.928; Robust RMSEA=.071). 10 iterations were required for the model to converge. The χ^2 difference test indicated the moderated model was significantly more improved than the fully constrained model (χ^2_{Diff} (5) = 27.86, p<.001). However, a comparison of the fit indices between the fully constrained and the moderated models reflect little to no improvement in the fit. It is likely that the large sample size contributed to the significant results obtained from the χ^2 difference test.

The LM test indicated several constraints to release which would improve fit. However, these identified constraints were errors and disturbances which only minimally improved fit. The LM test also identified a number of pathways which if added, would improve fit. However, these pathways were not in accordance with theory, and consequently, no pathways were added. Figure 6 (p. 62) illustrates the moderated structural model and includes only standardized estimates.

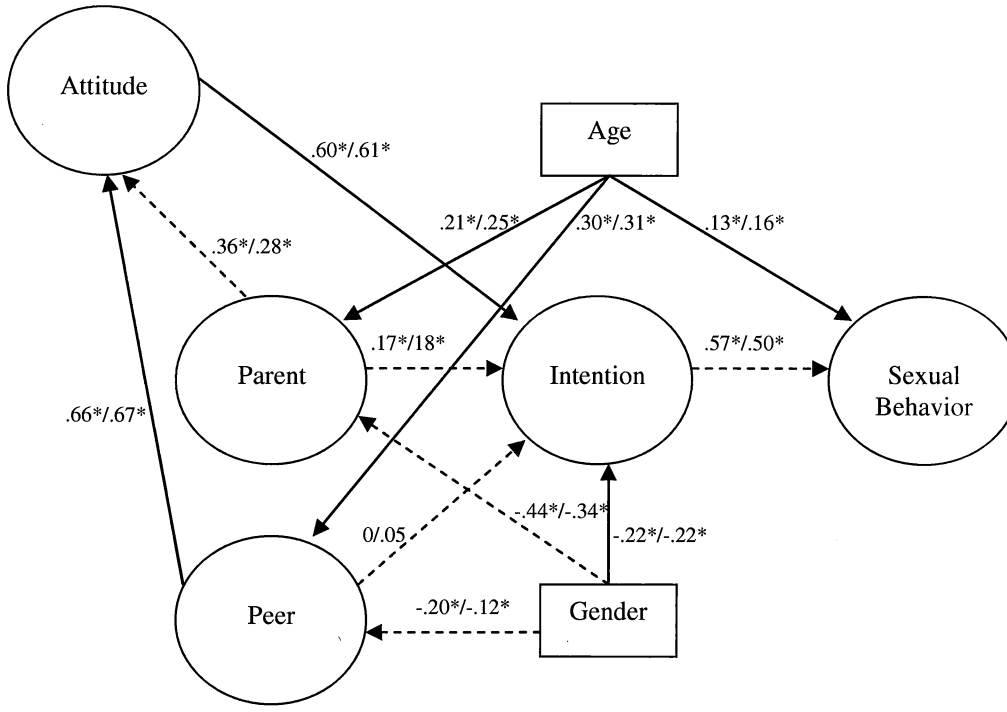

Figure 6. Moderated model of parent communication. Parent communication is the first standardized estimate shown. No parent communication is the second estimate shown. *$p<.05$

All pathways in the moderated model were statistically significant with the exception of the pathway from perceived peer attitude to intention, which did not achieve significance for either parental communication group. Rather, the effects of peers within the model appear to impact the adolescent's personal attitudes. A comparison of the standardized estimates indicated there was a high level of similarities across groups in the pathways, although the pathways from parent to attitude reflected differences between the two groups. Further, the pathways from gender to parent and gender to peer indicated that there was moderation between the two parental communication groups. All standard

errors and disturbances were statistically significant. Effects sizes are reported in Table 6 with intention and attitudes accounting for the most variance in the model.

Table 6

Effect Sizes for Parent Communication and No Parent Communication Group

	R-Square	
Variable	Parent Communication	No Parent Communication
Attitude	.64	.57
Parent	.24	.18
Peer	.13	.11
Intention	.64	.65
Behavior	.37	.31

Consequently, the hypothesis that parent communication acts as a moderator is partially supported. Although the moderated model was statistically significant over that of the null model, the differences were minimal. However, it does appear that when parents communicate with their adolescent children, the impact that parents have in shaping their child's personal attitude is greater. There were no differences in the intentions between the groups, although there were statistically significant differences between the two groups in terms of behavior with the parent communication group engaging in greater sexual behaviors (see Table 7, p. 64). Thus, the hypothesis that communication with parents would be associated with less risky behaviors was not supported.

Table 7

Independent t-test Comparisons of Intention and Behavior for the Parent Communication Groups

Variable	*df*	*t*	Mean difference
Intention			
49a. I plan to have sex.	1870	.63	.04
49b. I plan to have sex at my age only if I have dated my partner for a long time.	1870	.69	.05
49c. I plan to have sex with someone even if we do not know each other very well.	1870	.64	-.04
Sexual Behavior			
50. Have you ever had sex?	1830	5.59***	.12
52. How long would you date someone before having sex?	1870	3.59***	.18
53. How old were you when you had sex for the first time?	1870	4.61***	.41
55. During the past 3 months, with how many people have you had sex?	1870	3.29***	.07
57. How often do you use condoms when you have sex?	1870	1.91	.09

***$p<.001$

Hypothesis 2: Peer Communication

It was hypothesized that peer communication would moderate the relationships within the theory of reasoned action. Specifically, it was hypothesized that the pathway between subjective norms and the adolescent's attitude would be moderated by peer communication, which would in turn affect the subsequent pathways in the hypothesized model. This hypothesis was tested in a similar procedure as hypothesis 1 as the sample was divided into two separate groups. Group 1 consisted of those participants who had communicated with their peers, whereas group 2 consisted of those participants who reported having no communication with peers. Similar to the previous hypothesis, the higher-ordered latent factor of subjective norms was omitted from the model due to linear dependency problems. Consequently, perceived parent and peer attitudes were included as separate latent factors.

Independent Peer Communication Model

1,672 participants were included in the peer communication. 26.7% (n=446) were from Ukraine, and 73.3% (n=1226) were from Romania. 34.5% (n=576) were males, and 65.5% (n=1093) were females. Ages ranged from 12 to 25 years with a M=16.17 years and SD=1.42. The resulting model for the independent peer communication group required 10 iterations for the model to converge. Similar to the parent communication group, results from the Wald test indicated that the pathway from perceived peer attitude to intention was contributing to misspecification and was consequently dropped from the model. The LM test identified several pathways to add in order to improve model fit; however, these pathways went against theory. As such, no new pathways were added. The final model (see Figure 7, p. 66) fit the data adequately, although misspecifications were found within the model. The Satorra-Bentler Scaled χ^2 (191, N=1672) 2004.32, $p<.001$ suggested misspecification as the ratio was greater than 2:1, and AGFI=.850 further indicating misfit. However, the robust RMSEA=.076 and CFI=.925 suggesting adequate fit. All standardized estimates were statistically significant. Means and standard deviations for each manifest variable are presented in Table 8 (p. 67) and indicate that parents were perceived as having the most conservative attitudes whereas peers were perceived as having the most liberal attitudes.

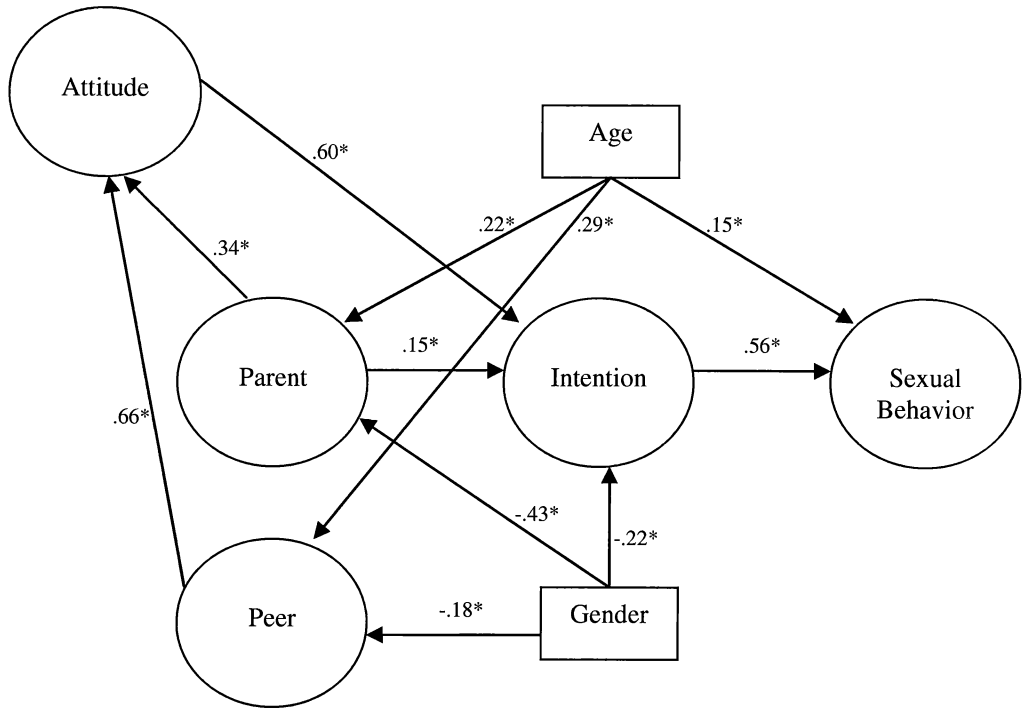

Figure 7. Independent peer communication best fitting measurement model with standardized estimates reported.
*$p<.05$

Table 8

Means and Standard Deviations among Major Variables for Peer Communication

Variable	Mean	SD
Attitude: I believe that -		
44a. it is OK for people my age to have sex.	3.39	1.24
44b. it is OK for people my age to have sex with someone they dated a long time.	3.63	1.16
44c. it is OK for people my age to have sex with someone they don't know well.	2.20	1.18
44g. it is OK for people my age to say "No" to having sex.	3.05	1.31
Perceived Parent Attitude: My parents believe that -		
45a. it is OK for people my age to have sex.	2.28	1.22
45b. it is OK for people my age to have sex with someone they dated a long time.	2.57	1.27
45c. it is OK for people my age to have sex with someone they don't know well.	1.75	.98
45g. it is OK for people my age to say "No" to having sex.	2.38	1.27
Perceived Peer Attitude: My friends believe that -		
46a. it is OK for people my age to have sex.	3.79	1.16
46b. it is OK for people my age to have sex with someone they dated a long time.	3.90	1.10
46c. it is OK for people my age to have sex with someone they don't know well.	2.72	1.27
46g. it is OK for people my age to say "No" to having sex.	3.30	1.31
Intention		
49a. I plan to have sex.	2.79	1.34
49b. I plan to have sex at my age only if I have dated my partner for a long time.	3.16	1.34
49c. I plan to have sex with someone even if we do not know each other very well.	1.95	1.14
Sexual Behavior		
50. Have you ever had sex?	.26	.44
52. How long would you date someone before having sex?	.76	1.04
53. How old were you when you had sex for the first time?	1.04	1.82
55. During the past 3 months, with how many people have you had sex?	.20	.45
57. How often do you use condoms when you have sex?	.57	1.06

Independent No Peer Communication Model

215 participants were included in the independent no peer communication analyses, which is substantially less than the comparison group of peer communication. 38.6% (n=83) participants were from Ukraine and 61.4% (n=132) from Romania. There was an equal number of males (n=107) and females (n=107), and ages ranged from 11 to 22 years with a M=15.56 and SD=1.60. Similar to the peer communication group, the pathway from perceived peer attitude to intention was eliminated as identified by the Wald test. Furthermore, the Wald test indicated that the removal of the pathway from

age to behavior would improve fit. The LM test identified a number of pathways which if added would improve fit; however, each pathway violated theory, and no pathways were added. The best fitting no peer communication model required 10 iterations to converge, and the final model is presented in Figure 8. Fit indices suggested adequate fit (Robust CFI = .931; Robust RMSEA = .067) although there was misspecification (Satorra-Bentler Scaled χ^2 (192, N=215) 425.52, p<.001; AGFI = .817). All pathways were statistically significant. Means and standard deviations for each manifest variable in the no peer communication group are presented in Table 9 (p. 69). As in the peer communication group, adolescents perceived their peers as having the most liberal attitudes while parents were perceived as having the most conservative attitudes.

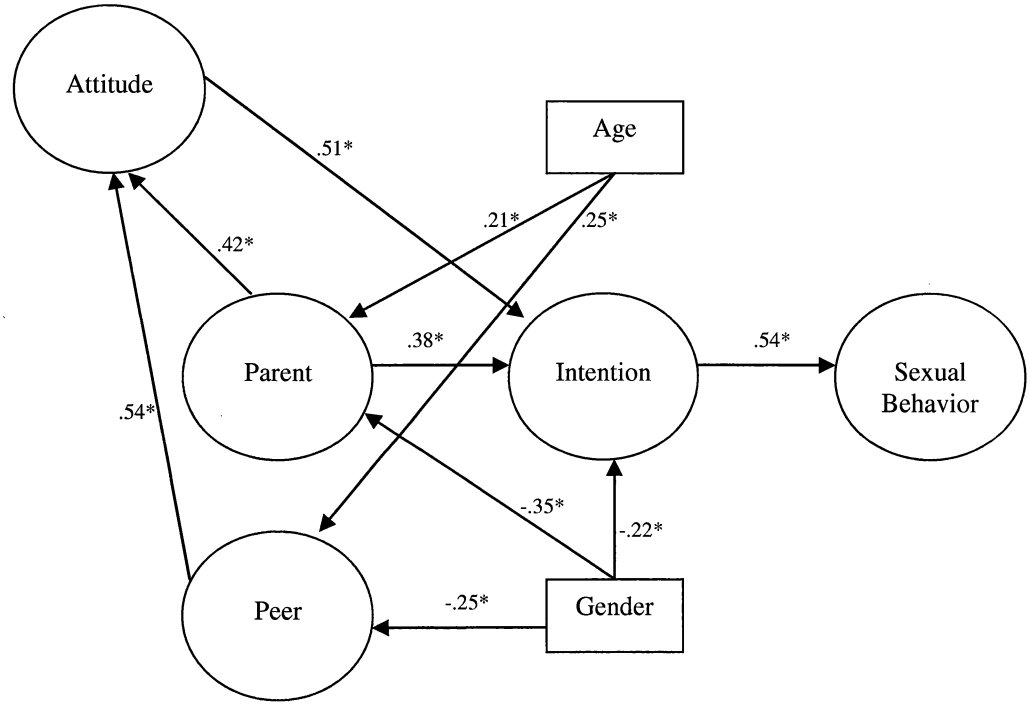

Figure 8. Independent no peer communication best fitting measurement model with standardized estimates reported.
*p<.05

Table 9

Means and Standard Deviations among Major Variables for No Peer Communication

Variable	Mean	SD
Attitude: I believe that -		
44a. it is OK for people my age to have sex.	2.62	1.32
44b. it is OK for people my age to have sex with someone they dated a long time.	2.78	1.31
44c. it is OK for people my age to have sex with someone they don't know well.	1.89	1.05
44g. it is OK for people my age to say "No" to having sex.	2.47	1.26
Perceived Parent Attitude: My parents believe that -		
45a. it is OK for people my age to have sex.	1.92	1.07
45b. it is OK for people my age to have sex with someone they dated a long time.	2.15	1.13
45c. it is OK for people my age to have sex with someone they don't know well.	1.76	.98
45g. it is OK for people my age to say "No" to having sex.	2.27	1.23
Perceived Peer Attitude: My friends believe that -		
46a. it is OK for people my age to have sex.	2.99	1.33
46b. it is OK for people my age to have sex with someone they dated a long time.	3.10	1.32
46c. it is OK for people my age to have sex with someone they don't know well.	2.29	1.17
46g. it is OK for people my age to say "No" to having sex.	2.62	1.23
Intention		
49a. I plan to have sex.	2.19	1.28
49b. I plan to have sex at my age only if I have dated my partner for a long time.	2.52	1.38
49c. I plan to have sex with someone even if we do not know each other very well.	1.80	1.06
Sexual Behavior		
50. Have you ever had sex?	.11	.32
52. How long would you date someone before having sex?	.41	.89
53. How old were you when you had sex for the first time?	.56	1.49
55. During the past 3 months, with how many people have you had sex?	.07	.27
57. How often do you use condoms when you have sex?	.38	.96

Moderated Peer Communication Model

Similar to the first hypothesis, the two best fitting measurement models for peer communication were compared in order to determine the moderated model. The moderated model was compared against the fully constrained model, otherwise known as the null model. All errors, disturbances, and latent factor structures which were considered equivalent were constrained as were all causal pathways. The fully constrained model fit required 10 iterations for the model to converge and demonstrated

adequate fit though there was misspecification (Satorra-Bentler Scaled χ^2 (413, N=1887) 2568.61, p<.001; Robust CFI=.920; Robust RMSEA=.074; AGFI=.849).

As with parent communication, the moderated model for peer communication was evaluated by releasing the pathways which were both hypothesized and determined post hoc by comparing the pathways of the two independent models for the pathways which discrepant. The released pathways are illustrated by dotted lines in Figure 9 (p. 71). Overall, the moderated peer communication model was acceptable, although there were misspecifications (Satorra-Bentler Scaled χ^2 (406, N=1887) 2512.40, p<.001; AGFI=.847; Robust CFI=.922; Robust RMSEA=.074). The χ^2 difference test indicated the moderated model was significantly more improved than the fully constrained model (χ^2_{Diff} (7) = 56.21, p<.001). However, in comparing the fit indices between the two models, there was minimal improvement with the moderated model. As with the parent communication, it is likely that the large sample size contributed to the significant results from the χ^2 difference test. The LM test identified a number of constraints to be released, and an analysis of these restraints identified several errors and pathways suggesting misspecification in the factor structure of perceived peer attitude. However, these pathways were not released. The LM test further identified pathways to add, although the pathways were not in accordance with theory. Consequently, no additional pathways were included. Figure 9 (p. 71) illustrates the moderated structural model and includes only standardized estimates.

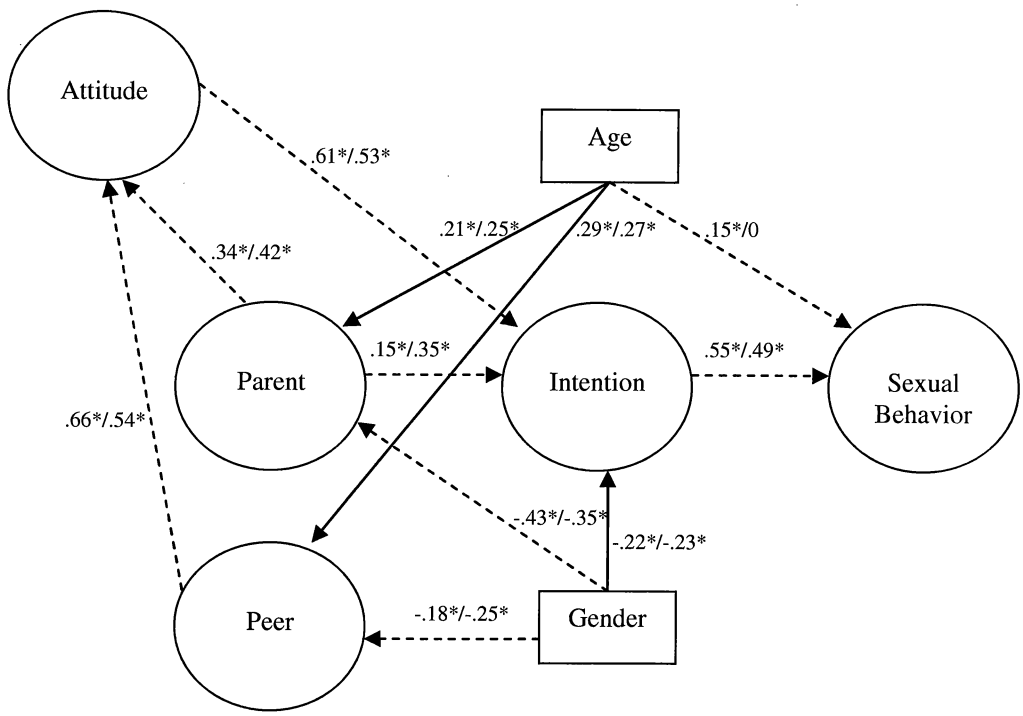

Figure 9. Moderated model of peer communication. Peer communication is the first standardized estimate shown. No peer communication is the second estimate shown. *$p<.05$

All pathways in the moderated model were statistically significant with the exception of the pathway from age to behavior for the no peer communication group. The pathways which were identified as moderated pathways reflected different standardized estimates for the group and suggests that peer communication is acting as a moderator. All standard errors and disturbances were statistically significant. Effect sizes are reported in Table 10 (p. 72). Similar to parent communication, intentions and attitudes accounted for the most variance within the model.

Table 10

Effect Sizes for Peer Communication and No Peer Communication Group

	R-Square	
Variable	Peer Communication	No Peer Communication
Attitude	.62	.54
Parent	.23	.19
Peer	.12	.14
Intention	.62	.77
Behavior	.36	.24

Overall, the hypothesis that peer communication acts as a moderator within the TRA model is supported, although there was little improvement in several of the fit indices. A comparison of the standardized estimates further supported that peer communication moderates the relationships in the TRA model as a number of pathways differed depending on the level of peer communication. Specifically, the pathways from peer to attitude, parent to attitude, attitude to intention, parent to intention, and ultimately intention to behavior suggested moderation. Additionally, the pathway in which age predicted behavior and the pathways of gender predicting parent and peer reflected moderation. Furthermore, hypothesis 2 was further supported as the peer communication group reported significantly more risky intentions and behaviors than did the group who reported having had no communication with peers (see Table 11, p. 73).

Table 11

Independent t-test Comparisons of Intention and Behavior for the Peer Communication Groups

Variable	*df*	*t*	Mean difference
Intention			
49a. I plan to have sex.	1885	6.09***	.58
49b. I plan to have sex at my age only if I have dated my partner for a long time.	1885	6.06***	.58
49c. I plan to have sex with someone even if we do not know each other very well.	1885	2.53*	.20
Sexual Behavior			
50. Have you ever had sex?	1846	5.40***	.17
52. How long would you date someone before having sex?	1885	4.74***	.35
53. How old were you when you had sex for the first time?	1885	4.57***	.58
55. During the past 3 months, with how many people have you had sex?	1885	4.40***	.14
57. How often do you use condoms when you have sex?	1885	2.88**	.22

*$p<.05$, **$p<.01$, ***$p<.001$

Hypothesis 3: Quality of Parental Relationship

The hypothesis that the quality of the parental relationship would contribute to additional variance within the model was not supported. As indicated earlier, the variable measuring quality of parental relationship failed to account for variance above and beyond attitude as well as parent and peer norms when tested using hierarchical multiple regression (see Table 1, p. 45).

Hypothesis 4: National Identity

Hypothesis 4, which was an exploratory analysis of the effects of national identity, was not supported as very few meaningful differences were found between adolescents from Romania and Ukraine. ANOVAs were used to identify potentially meaningful differences between the countries for each test variable, and results are reported in Table 12 (p. 75). Although differences in national identity were found to be statistically significant on a number of variables, effect sizes were nonexistent to

minimal. However, two meaningful differences were found that differentiated adolescents based on national identity. Specifically, adolescents from Romania tended to agree more strongly that it is ok to say "no" to sex ($Mean_{Ukraine} = 2.39$; $Mean_{Romania} = 3.18$). Furthermore, adolescents from Romania also perceived that their peers more strongly agreed with this same statement than did adolescents from Ukraine ($Mean_{Ukraine} = 2.60$; $Mean_{Romania} = 3.43$). The second meaningful difference suggested that adolescents from Ukraine tended to report longer periods of dating someone before having sex ($Mean_{Ukraine} = .38$; $Mean_{Romania} = .84$ (item reverse scored)). However, these meaningful differences are considered as small effect sizes.

Table 12

Summary of Analysis of Variance Analysis in Comparing Participants from Ukraine and Romania

Variable	df	MS	F	η^2
Attitude: I believe that -				
44a. it is OK for people my age to have sex.	1	35.29	22.07***	.01
44b. it is OK for people my age to have sex with someone they dated a long time.	1	10.31	7.08	.00
44c. it is OK for people my age to have sex with someone they don't know well.	1	3.37	2.49	.00
44g. it is OK for people my age to say "No" to having sex.	1	248.34	156.89***	.07
Perceived Parent Attitude: My parents believe that -				
45a. it is OK for people my age to have sex.	1	.60	.42	.00
45b. it is OK for people my age to have sex with someone they dated a long time.	1	1.36	.87	.00
45c. it is OK for people my age to have sex with someone they don't know well.	1	7.18	7.63**	.00
45g. it is OK for people my age to say "No" to having sex.	1	15.20	9.62**	.00
Perceived Peer Attitude: My friends believe that -				
46a. it is OK for people my age to have sex.	1	29.83	20.53***	.01
46b. it is OK for people my age to have sex with someone they dated a long time.	1	28.93	21.65***	.01
46c. it is OK for people my age to have sex with someone they don't know well.	1	10.66	6.76**	.00
46g. it is OK for people my age to say "No" to having sex.	1	270.22	171.89***	.08
Intention				
49a. I plan to have sex.	1	1.63	.91	.00
49b. I plan to have sex at my age only if I have dated my partner for a long time.	1	8.17	4.51*	.00
49c. I plan to have sex with someone even if we do not know each other very well.	1	.14	.11	.00
Sexual Behavior				
50. Have you ever had sex?	1	.49	2.71	.00
52. How long would you date someone before having sex?	1	83.45	84.53***	.04
53. How old were you when you had sex for the first time?	1	3.82	1.22	.00
55. During the past 3 months, with how many people have you had sex?	1	1.61	8.85**	.01
57. How often do you use condoms when you have sex?	1	.32	.30	.00

*$p<.05$, **$p<.01$, ***$p<.001$

Discussion

Due to the increasing rates of HIV/AIDS in Eastern Europe, there is a pressing need for to understand risk behaviors as a means of developing interventions, particularly for adolescents. Unfortunately, limited research has been conducted that may be generalizeable to this region of the world. Adolescent sexual behavior is particularly difficult to predict as it is diverse and is influenced by a number of both internal and external factors. The theory of reasoned action is one model which has been widely used in the literature to understand the internal factors driving behaviors such as smoking, drinking, contraceptive use, dieting as well as exercise (Fishbein et al., 1994). In TRA, behaviors are causally predicted by beliefs. Specifically, behaviors are predicted by attitudes and subjective norms through the mediating effects of intentions. Although TRA has been used extensively, it has primarily been applied to study the behaviors of adolescents as well as adults from the United States. As such, the relationships within TRA and the applicability of the model in predicting sexual behavior for adolescents in Eastern Europe are largely unknown. Furthermore, the moderating effects of parent and peer communication within the TRA model has been examined minimally. Unlike most studies evaluating the TRA model, this study examined the effects of perceived parent and peer attitudes separately, whereas other studies have examined these effects under the umbrella of subjective norms, which may fail to discriminate between these frequently opposing factors. By examining parents and peers as separate variables, differences in how parents and peers may influence an adolescent's attitude, intention, and behavior were examined. This study provided a unique opportunity to examine a population of

adolescents from Eastern Europe for which there is limited data in order to determine the moderating effects of parent and peer communication within the TRA model to specifically predict sexual behavior.

Parent Communication

The first objective of this study was to determine whether parent communication regarding sex acted as a moderator within the TRA model. Results from this study did indeed suggest that parental communication has moderating effects that ultimately do impact behavior; however, while the effects were subtle they were clinically meaningful. Specifically, results indicated that when parents communicate with their adolescent children, the impact that they have in shaping their child's personal attitudes is stronger than those parents who have not communicated with their children. This is particularly important, given that an adolescent's attitude was found to be the best predictor of intentions. Furthermore, peers seem to have the strongest influence in the development of the adolescent's attitude, which is particularly concerning, given that adolescents in this sample perceived their peers as having the most liberal attitudes. Further, the finding that peer attitudes tend to be more liberal has been replicated across a number of studies. Thus, although parent communication regarding sex was found to have subtle effects, for this sample, it seems that communication with parents may act as a protective buffer against liberal peer attitudes as parents can directly impact their child's personal attitude.

Results further indicated that parents were also found to directly influence their child's intentions, unlike peer influences which did not have a direct relationship with intentions. Consequently, parents who do communicate with their children about sex

may be able to better buffer their children against the influence of peers because parents, as reflected in this model, can impact not only their child's attitudes but, via this communication, their intentions as well. As such, parents have an important opportunity to influence their child's attitudes about sexual behaviors.

It was further hypothesized that parental communication would be associated with reduced sexual intentions and behaviors. However, the results showed that regardless of whether or not there was parental communication, adolescents did not differ in their intentions. On the other hand, those who had communicated with their parents regarding sex reported more risky behaviors, which was a surprising finding. However, it is possible that parents communicated with their children when they learned that their child had engaged in risky behaviors or were in situations or with peers that parents felt were more risky. Additionally, it may be that if there is no suspicion of sexual risk behaviors, parents in Eastern Europe may speak minimally with their children regarding sex. In other words, rather than have proactive sexual discussions with their children, parents may be responding reactively to their children's behavior. Unfortunately, future behaviors were not identified or measured as this study was cross-sectional rather than longitudinal. Consequently, the impact that parental communication regarding sex may have on future behaviors is unknown, although it is speculated that parental influences may reduce risk behaviors as previous studies have found evidence to support (Holtzman & Rubinsons, 1995; Jaccard et al., 2000), particularly when communication is both open and receptive (Kotchick et al., 1999).

Peer Communication

The second objective of this study was to determine if peer communication regarding sex acted as a moderator similar to that of parent communication. However, it was hypothesized that peer communication would have different effects than that of parent communication and would be related with increased sexual intention and risk behavior. Results obtained suggest that the hypothesis was supported as peer communication was also found to have subtle moderating effects, although the moderation resulted in more substantial changes within the model than did parent communication. Specifically, when adolescents reported that they had communication with their peers about sex, the impact peers had over the adolescent's personal attitudes was the strongest predictor over that of parental influences. Parent influences, however, were weakened when there was peer communication, which is worrisome considering that peers were reported as having more liberal attitudes than parents. Unfortunately, the result of communicating with peers about sex seems to suggest that adolescents have both greater intentions and actual engagement in risky sexual behavior.

In contrast, when adolescents reported a lack of communication with peers regarding sex, the influence of parents was strengthened whereas peer influences decreased. Although, it is noted that peers continued to be the strongest predictor of adolescent attitude. However, when there was no peer communication, the relationship between attitudes and intentions was reduced, while parental influence over intention and attitude was strengthened. Furthermore, as hypothesized, absent peer communication regarding sex was associated with less risky behaviors and lowered intention to engage in sexual behaviors. Consequently, the findings from the study provide evidence which

suggests that peer communication regarding sex is related to more risky behaviors as peers are likely to share their more liberal attitudes about sex.

Interestingly, regardless of whether or not adolescents communicated with their peers or parents, peers were not found to directly impact the adolescent's intention. Rather, peers were found to have the greatest influence over the adolescent's attitude, which served as a mediator in predicting intentions. In contrast, parents were found to directly predict the adolescent's intention and to also influence attitude. Consequently, both parents and peers seem to affect adolescent intentions and ultimately behaviors, albeit in different manners. It may be that when there is peer communication, the adolescent is more likely to share the same attitude as the peer. Additionally, the purpose for communication with a peer may differ from the purpose of talking with a parent. For example, Heisler (2005) reported that adolescents tend to rely primarily on their peers for information regarding sex above and beyond that of parents. However, Fisher (1986b) found that parental communication was based more on values rather than facts. Further, parental standards and expectations have also been linked to parent adolescent discussions (Kotchick et al., 2001). As such, parent communication seems to influence an adolescent in a manner different than does peer communication particularly for adolescents in Eastern Europe as it seems that parents communicate reactively rather than proactively.

One important to consider regarding these results is the manner that communication was measured, which included only whether the adolescent had had sexual discussions with parents and peers. Consequently, the content and nature of the sexual communication are unknown, and it is possible that adolescents had discussions

concerning sex because they were already at high risk for engaging behaviors. As indicated earlier, it appears that parents are engaging in communication reactively rather than proactively. However, the timing of such discussions was not measured and is unknown in this study.

Quality of Parental Relationship

While the relationship with the parent was hypothesized to have protective effects within the hypothesized models, quality of parental relationship failed to account for variance above and beyond that of the variables within the TRA model. It is speculated, however, that the relationship with the parent does indeed have meaningful effects within the model. Unfortunately, the manner in which quality of relationship was measured likely failed to adequately capture the variable of quality of relationship. It is believed that a more comprehensive measure with higher construct validity would have resulted in significant and meaningful results. For example, O'Connor (1998) measured the parent-adolescent relationship through the closeness the adolescent felt with the parent, the satisfaction experienced from the relationship, as well as feelings of love and inclusion, although O'Connor used the term family connectedness. Additionally, Aronowitz and Morrison-Beedy (2004) measured connectedness with the mother as a latent variable for SEM with manifest variables measuring maternal caring, mother-daughter activities, and maternal presence. Future studies measuring the quality of parent-adolescent relationship or connectedness would likely be strengthened by changing the method of measuring the quality of the parental relationship.

Gender and Age

Although no hypotheses were speculated based on gender, via exploratory analyses, gender differences were found to impact the hypothesized models. Specifically, regardless of communication, gender predicted intentions with males reporting greater intent than females, although gender did not directly predict behavior. Furthermore, gender was found to predict both perceived parent and peer attitudes with males tending to perceive both their parents and peers as having more liberal attitudes. Adolescent males and females, however, did not differ in their personal attitudes.

Interestingly, both parent and peer communication moderated the relationship between gender and parents as well as gender and peers. In terms of gender predicting parent influences, for both parent and peer communication, gender differences were more pronounced with males tending to report more liberal perceptions regardless of whether or not there was communication. However, when parent or peer communication was absent, gender differences were reduced, although males continued to have more liberal perceptions regarding their parents. This finding may be related to differences in the expectations that parents may have in their children depending on gender, which parents communicate when they talk to their children.

In terms of gender predicting peer influences, males continued to have more liberal perceptions of their peers than did females. Further, when there was parent communication, gender differences were stronger, yet with no parent communication, gender differences were weakened. This finding may be a reflection of varying societal and cultural expectations depending on gender. In contrast, peer communication had opposite effects when gender predicted peer influences. Specifically, when there was a

lack of communication with peers, gender differences were more pronounced than when adolescents reported having peer communication, although males reported more liberal perceptions than females. This may occur because parental influences are strengthened when peer communication is absent, and parents may have varying expectations depending on gender. However, when adolescents do communicate with each other, gender expectations seem to be weakened, although it is noted that gender effects continue to be found as males continue to perceive that their peers have more liberal attitudes than do females. As such, it appears that power differentials exist between males and females in Eastern Europe, which is clearly influencing adolescents as they negotiate and develop their attitudes, values, and intentions that shape behavior.

Age was also found to have significant effects within the model. Although no specific hypotheses were formulated, age was included in the model as previous research has identified age as a predictor of behavior. In this study, age significantly predicted the adolescent's perceptions of both their parents and peers with older adolescents reporting more liberal perceptions than younger adolescents. This relationship did not differ based on the presence or absence of parent or peer communication. Past research has specifically found a positive relationship between age and behavior with risk increasing as adolescents become older (Jaccard et al., 2000; Li, Stanton et al., 2000; Miller, Norton et al., 1998). Age also acted as a predictor for behavior in this study, although the relationship did not exist for adolescents who did not communicate with their peers. This finding is consistent with frequency results which showed that participants who endorsed that they had not communicated with peers reported engaging in low levels of sexual risk

behavior as a group. Thus, it seems that adolescents, regardless of their age, have low engagement in sexual behavior when they do not discuss sex with their peers.

Implications

This study has important implications given the lack of research that currently exists for adolescents from Eastern Europe in predicting sexual risk behavior. Of import no previous research was found which specifically evaluated parent and peer communication in these countries within the TRA framework, and the current study adds to the existing literature for a population that has great needs but limited research. Further, this study further provides important information which may assist in developing appropriate and culturally sensitive interventions and prevention programs, particularly interventions which target adolescent attitude as attitude and intentions had the largest effects. This study also separately examined parents and peers rather than through the umbrella of subjective norms. This is particularly important as parent and peer attitudes had different relationships within the model, and this information may have missed identification had subjective norms been measured as a higher-ordered factor made up of parent and peer attitudes.

In addition, this study can inform efforts that target parent and peers as results from this study suggest that both parent and peer communication have subtle, yet significant moderating effects that do indeed impact adolescent attitudes, intentions, and ultimately behavior. Parent communication and influences were particularly important and results suggest that parents can serve and act as safeguards particularly because parents were found to play an influencing role regardless of whether or not

communication was occurring. Parents have a powerful opportunity to make a difference in their children's lives as they can shape sexual attitude. However, based on this sample, parents in Eastern Europe should be encouraged to take a more proactive approach when speaking with their children rather than the more reactive approach that seems to be occurring within this region. Interventions may need to be developed in order to encourage and teach parents how to communicate in an effective and proactive manner.

This study further identified peer communication regarding sex as a risk factor that is associated with more unhealthy outcomes suggesting important areas that are in need of intervention. It is possible that parent communication is competing with peer communication further signifying the important role of parents as parents were found to consistently have an impact. However, parents need to be present and involved in order to have an impact on adolescent behavior. As such, parental influences are of particular importance as parents can balance the more negative influence of peers. Interventions should focus on training peer leaders in how to talk with adolescents about sex from a "healthy" perspective, which may weaken negative peer associations. Further, interventions should teach both parent and peer leaders how to effectively and appropriately connect and share with adolescents in a manner that is open and receptive.

Lastly, this study supports that attitudes are the strongest predictors of intentions, although the influence of parents and peers play a strong role in the development of the adolescent's attitude. This study further implies that age and gender are important to consider when developing culturally sensitive interventions. Gender specifically was found to have significant influences and further suggests that adolescents in Eastern Europe are impacted by varying gender expectations such that it is more socially

acceptable for males to engage in sexual risk behavior than parents. This gender expectation is echoed by both adolescent males and females and their parents. As such, interventions should seek to minimize these gender biases as both adolescent males and females are at significant risk. Similar to gender, age also had strong influences with younger adolescents differing from older adolescents. Consequently, interventions must be developed age-appropriately such that prevention is the emphasis for younger adolescents, while older adolescent interventions must consider that older adolescents are likely to endorse more liberal attitudes, intentions, and behaviors.

Limitations

Several limitations reduce the generalizability of this study and require the use of caution in the interpretation. The primary limitation was the high degree of missing data, although a substantial portion was estimated. It was suggested by our collaborators in Eastern Europe that adolescents from Romania and Ukraine may be less familiar with the multiple choice and fill-in-the-blank methods used in the questionnaire, resulting in more unanswered questions. Thus, although researchers were given standardized directions to verbally convey and participants had written instructions on the questionnaire, many items were omitted. Another limitation was the cross-sectional design. Past behaviors were assumed to predict future behaviors; however, only through a longitudinal design would future behaviors be measured to support causation. As such, these limitations identify directions in which future studies should consider. Another limitation of this study was the manner in which communication was measured. Specifically, the various forms and facets of communication, such as parenting style of communication, topics of

discussion, as well as timing and frequency, were not measured within this study. Rather this study only considered whether or not communication had taken place, and further research is needed that will consider the nature and characteristics of communication regarding sex. Additionally, future research investigating communication should measure the various facets of communication particularly the quality of the parent-adolescent communication, which has been related to reduced sexual behavior (Wilson & Donenberg, 2004). The manner in which the quality of the parent relationship was measured is another limitation. As such, future studies that measure the relationship or connectedness the adolescent perceives to have with the parent or family should include items which measure closeness, feelings of love, inclusion, and parental presence.

Future Directions

Future directions for this area of research should further explore peer communication, particularly because communication with peers was associated with risky intentions and behaviors. On the other hand, absent peer communication was associated with reduced risk. Unfortunately, most adolescents have some form of communication regarding sex with their peers, which was the case for adolescents in this study. As such, future study and intervention efforts should focus on how to protect adolescents from peer influences as isolation from friends and social groups is an unrealistic expectation. In addition, while this study only measured whether or not communication occurred, the nature of the communication is unknown. As such, communication with peers regarding sex may act as a positive influence, and further exploration and research is necessary. Thus, prevention efforts should focus on training

peer leaders in how to talk with adolescents about sex from a 'healthy' or decreased risk perspective. This is particularly important because when peer leaders do not know how to connect and share, the communication which does occur may often be ineffective. Further, non-family adults such as teachers may also have an impact and future research regarding this potential impact is necessary. Parent communication as well as the quality of the parent-adolescent relationship are likely to be areas which can buffer against the effects of negative peers and further research is needed as recent studies have shown that when parents have a "great" relationship with their children, sexual risk behavior is reduced (McBride, Freier, & Hopkins, 2005). Thus, future studies should conceptualize the effects of peer and parent communication within one model rather than as separate variables in order to develop appropriate interventions. Lastly, although meaningful differences were not found between Ukraine and Romania, interventions should continue to address the potential impact of cultural milieu.

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Footnotes

[1]The proportion of variance explained for the overall TRA model has been found to range from 30% (Basen-Engquist et al., 1992; Basen-Engquist et al., 1997; Koniak-Griffin et al., 2003) to around 58% (Albarracín et al., 2001), which is considered a medium effect size according to Cohen (1992). Power analysis for six predictors (parent/peer communication, self attitude, perceived parent and peer attitude, and intention) when the zero-order correlations are medium shows that the sample size of 543 is necessary for power to equal .80 (Maxwell, 2000).

[2]Gender was considered as a possible covariate, particularly because several studies have examined the effects of gender in sexual risk taking behavior and the results have been inconsistent because some evidence supports differences (Jaccard, Dittus, & Gordon, 2000; Li, Feigelman, & Stanton, 2000; Li, Stanton, & Feigelman, 2000; Rodgers, 1999), while others finds consistency between male and female adolescents (Huebner & Howell, 2003; Miller, Norton et al., 1998).

[3]Age was also considered as a covariate because most studies have found that sexual behavior increases with age (Jaccard et al., 2000; Li, Stanton et al., 2000; Miller, Norton et al., 1998); however Huebner and Howell (2003) failed to find a direct relationship between age and sexual risk behavior.

Appendix A:

Romania IRB Approval

INSTITUTIONAL REVIEW BOARD

OSR# 51257

Approval Notice

11/26/2001

OFFICE OF SPONSORED RESEARCH • 11188 Anderson Street • Loma Linda, CA 92350
(909) 558-4531 (voice) • (909) 558-0131 (fax)

To: **Kiti Freier, PhD**
Department: **Psychology**
Protocol: *An assessment of HIV/AIDS risk and protective factors of adolescents in Romania: an application theory based behavioral model.*
Date: November 26, 2001

The protocol and consent form for this study were reviewed and approved by the IRB at a regularly scheduled meeting on **10/24/2001.** This decision included the following determinations:

1. Risk to research subjects: **Risk - Minimal**
2. Approval period is effective through **10/23/2002.**
3. Conditions of approval are: **Letters from participating schools stating a willingness to collaborate in the study can be obtained as the team enters each individual school to begin its research.**

Consent Form

The attached consent form has been specifically approved by the IRB, as indicated by the affixed IRB approval stamp. This now becomes your official consent form for the dates specified and should be used as a master for making the necessary copies.

Adverse Events / Protocol Changes

The IRB should be notified in writing of any modifications to the approved research protocol. All adverse effects, anticipated or not, should be reported to the IRB: serious events should be reported within seven days; all others within 15 days.

Protocol Review

Your protocol is tentatively scheduled for review and renewal at the meeting of the IRB in **October 2002.** To assure uninterrupted approval of this project, you will be sent a status report form to complete and return prior to this date. In addition to reporting the number of subjects enrolled, you may close the study or request renewal at this time.

Records

All records relating to this project, including signed consent forms, must be kept on file for three years following completion of the study.

Please note the PI's name and the OSR number assigned to this IRB protocol (as indicated above) on any future communications with the IRB. Direct all communications to the IRB c/o the Office of Sponsored Research.

Thank you for your cooperation in LLU's shared responsibility for the ethical use of human subjects in research.

Signature of IRB Chair/Acting Chair: _____ Date: 11/26/01

Chair:
illiam Saukel, M.D.
rtment of Pathology
558-4794 Gsaukel@ahs.llumc.edu

IRB Administrator:
Linda G. Halstead, M.A., Assoc. Director
Office of Sponsored Research
Ext. 43570, FAX 80131, lhalstead@univ.llu.edu

IRB Specialist:
Brooke McKnight, MBA, DrPH
Office of Sponsored Research
Ext. 87130, FAX 80131, bmcknight@univ.llu.edu

Appendix B:

Romania Consent Form

[Institute for Health Services Management letterhead]

Dear Parent:

Your son or daughter is invited to participate in a research study to learn more about the attitudes of young people regarding behaviors that might potentially be harmful to their health. It is very important to understand the attitudes of adolescents regarding behaviors that may put them at risk for psychological or health problems so that we can develop ways to help prevent such risks. This study will be conducted with the collaborative efforts of the Institute for Health Services Management, the Health and Temperance Association, the Ministry of Education, all in Romania, in addition to Loma Linda University and Andrews University from the USA.

Your son or daughter will be given a questionnaire, approved by the school board of education, during class asking his or her opinions on sexual activity, drug use, alcohol consumption, and condom use. Participation in the study will take about an hour. The types of questions your son or daughter will be asked are sensitive and may cause some discomfort. However, your son or daughter may stop at any time. Participation is completely voluntary and has no impact on academic performance in school.

The benefits to your son or daughter are that they will become aware of the potential danger of some behaviors. Furthermore, the data gathered from this study will be used to understand the needs of adolescents in Romania and may be used to develop prevention and education programs. No attempts will ever be made to identify anyone's responses by the researchers or their teachers. No one will be asked any identifiable information. The results will be summarized so that no one can be personally identified. No one will ever know what your son or daughter reports on the survey.

If you wish to contact an impartial third party not associated with this study regarding any complaint you may have about the study, you may reach Dr. Dana Farcasanu, Ministerul Sanatatii, Str. Academiei nr. 34, Bucuresti, Sector 1, Tel. 315386.

Please read the following and sign below and return this portion of the form to the school ONLY if you do NOT want your son or daughter to participate in this study. If you do not sign and return this form, your child will be permitted to participate in the study.

"I have read the contents of this form. My questions concerning this study have been answered to my satisfaction. It is assumed that my child will participate in this study unless I sign and return this form to my child's school prior to the administration of the survey, which will take place on [date to be inserted by each school]. My son or daughter's participation does not waive my rights and nor does it release the investigators, institutions or sponsors of this project from their responsibilities. I may call [name and phone number of contact from the Institute of Health Services Management will be inserted] if I have additional questions or concerns."

Signature of Parent or Guardian _____ Date _____ Name of Child _____

[Antetul Institutului de Management al Serviciilor de Sănătate]

Stimate părinte:

Fiul/fiica dvs. a fost invitat/ă să participe la un studiu care investighează atitudinile tinerilor referitoare la unele comportamente care pot fi primejdioase pentru sanatatea lor. Este foarte important să înţelegem atitudinile adolescenţilor cu privire la comportamente care îi pot expune riscului de a suferi pe plan psihologic sau al sănătăţii, pentru că astfel putem concepe modalităţi eficiente prin care să eliminăm aceste riscuri. Acest studiu va fi efectuat în parteneriat de Institutul de Management al Serviciilor de Sănătate, Asociaţia Sănătate şi Temperanţă, Ministerul Educaţiei Naţionale, toate din România, în colaborare cu Universităţile Loma Linda şi Andrews din SUA.

Fiul/fiica dvs. va primi un chestionar, aprobat în prealabil de conducerea şcolii, pe care îl va completa în interval de aproximativ o oră, prin care i se solicită opiniile cu privire la activitatea sexuală, utilizarea de droguri, consumul de alcool şi folosirea prezervativului. Întrebările la care fiul/fiica dvs. va trebui să răspundă sunt de natură mai delicată şi pot provoca o oarecare stare de disconfort. Cu toate acestea, fiul sau fiica dvs. se poate opri în orice moment. Participarea este în întregime voluntară şi nu are nici o influenţă asupra performanţei şcolare.

Beneficiile pentru fiul/fiica dvs. sunt că vor deveni mai conştienţi de pericolul potenţial al unor comprtamente. În plus, datele culese cu ocazia acestui studiu vor fi folosite pentru a înţelege nevoile adolescenţilor din România şi pot fi folosite pentru a concepe programe de prevenire şi educaţie. Nu se va face niciodată nici o încercare din partea cercetătorilor sau profesorilor de a identifica răspunsurile cuiva. Nimănui nu i se va solicita informaţii prin care ar putea fi identificat. Rezultatele vor fi sumarizate, astfel că nimeni nu va putea fi identificat personal. Nimeni nu va şti niciodată că fiul sau fiica dvs. a făcut parte din acest studiu.

Dacă doriţi să contactaţi o parte neutră, care nu este direct implicată în acest studiu, căreia să îi adresaţi orice plângere referitoare la acest studiu, puteţi contacta Ministerul Sănătăţii, Str. Academiei nr. 34, Bucureşti, Sector 1, Tel. 3153860.

Vă rugăm să citiţi paragraful următor, să semnaţi mai jos şi să returnaţi această secţiune a formularului la şcoală NUMAI dacă NU doriţi cu fiul sau fiica dvs. să participe la acest studiu. Dacă nu semnaţi şi nu returnaţi acest formular, fiul sau fiica dvs. va participa la studiu.

„Am citit conţinutul acestui formular. Întrebările mele referitoare la acest studiu au primit un răspuns satisfăcător. Fiul sau fiica mea va participa la acest studiu cu excepţia cazului în care voi semna şi voi returna acest formular către şcoala copilului meu înainte de administrarea chestionarului, care va avea lor în data de ..... (se va completa de fiecare şcoală). Participarea fiului sau fiicei mele nu îmi anulează drepturile şi nici nu îi absolvă pe cercetătorii, instituţiile sau sponsorii acestui proiect de responsabilităţile lor. Înţeleg că pentru alte întrebări sau nelămuriri pot să contactez pe dna cercetător Valentina Mihăilă din cadrul Institutului de Management al Serviciilor de Sanatate, Centrul National de Promovarea Sanatatii si Programe, Str. Vaselor 31, Sector 2, 73258, Bucuresti, OP. 10, Secretariat: tel. 01-2527834, Email: IMSS@DNT.RO."

Semnătura părintelui sau tutorelui	Data	Numele elevului
_____	_____	_____

LOMA LINDA UNIVERSITY
INSTITUTIONAL REV IEW BOARD
APPROVED 11/26/01 VOID AFTER 10/22/2002
#5127 CHAIR

Appendix C:

Ukraine IRB Approval

INSTITUTIONAL REVIEW BOARD

OSR # 51102

Initial Approval Notice - Expedited Review

OFFICE OF SPONSORED RESEARCH • 11188 Anderson Street • Loma Linda, CA 92350
(909) 558-4531 (voice) • (909) 558-0131 (fax)

To: **Joyce W. Hopp, PhD**
Department: **Health Promotion & Education**
Protocol: *An assessment of HIV/AIDS risk and protective factors of adolescents in the Ukraine: An application of a theory based behavioral model*
Date: 05/21/2001

The protocol and consent form for this study were reviewed and approved administratively on behalf of the IRB. This decision includes the following determinations:

1. Risk to research subjects: **Risk - Minimal**
2. Approval period begins **05/21/2001** and ends **05/20/2002.**
3. Conditions of approval are: **<None Specified>**

Consent Form

If a written consent form is required, approval will be indicated by the affixed IRB approval stamp. This now becomes your official consent form for the dates specified and should be used as a master for making the necessary copies.

Adverse Events / Protocol Changes

The IRB should be notified in writing of any modifications to the approved research protocol. All adverse effects, anticipated or not, should be reported to the IRB: serious events should be reported within seven days; all others within 15 days.

Protocol Review

Your protocol is tentatively scheduled for review and renewal at the meeting of the IRB in
To assure uninterrupted approval of this project, you will be sent a status report form to complete and return prior to this date. In addition to reporting the number of subjects enrolled, you may close the study or request renewal at this time.

Records

All records relating to this project, including signed consent forms, must be kept on file for three years following completion of the study.

Please note the PI's name and the OSR number assigned your IRB application (as indicated above) on any future communications with the IRB about this project. Direct all communications to the IRB c/o the Office of Sponsored Research.

Thank you for your cooperation in LLU's shared responsibility for the ethical use of human subjects in research.

Signature of IRB Chair/Vice Chair: _____ Date: 5/29/01

RB Chair:
. William Saukel, M.D.
epartment of Pathology
09) 558-4794 Gsaukel@ahs.llumc.edu

IRB Administrator:
Linda G. Halstead, M.A., Assoc. Director
Office of Sponsored Research
Ext. 43570, FAX 80131, lhalstead@univ.llu.edu

IRB Specialist:
J.R. Krausz
Office of Sponsored Research
Ext. 43042, FAX 80131, jrkrausz@univ.llu.edu

Appendix D:

Ukraine Parental Consent Form

Loma Linda University/Adventist International Medical Center/
Kiev Medical Institute
Parental Consent

Your son/daughter has been invited to participate in a research study entitled: "An assessment of HIV/AIDS risk and protective factors of adolescents in the Ukraine: an application of theory based psychosocial variables."

Purpose
The purpose of this study is to learn more about the attitudes of young people regarding behaviors that might potentially be harmful to their health. It is very important to understand the attitudes and behaviors of adolescents that may put their health at risk so that we can develop ways to help prevent such risks.

Procedure
With your consent, your son or daughter will be given a questionnaire in class asking his/her opinions on beliefs of sexual activity, drug use, alcohol consumption, and condom use. Participation in the study will take about half an hour.

Risks
The types of questions your son or daughter will be asked are sensitive and may cause some discomfort. However, your child may stop at any time. Any information your son/daughter daughter reveals on this questionnaire will remain completely anonymous, and no effort will ever be made to identify him/her.

Benefits
The benefits to your son or daughter are that they will become aware of the potential danger of some behaviors. Furthermore, the data gathered from this study will be used to understand the needs of adolescents in future prevention and education programs. This data can potentially be used to gather funds and resources to aid in the establishment of educational programs.

Confidentiality
No attempts will ever be made to identify individual responses by the researchers or their teachers. No one will be asked any identifiable information. The results will be summarized so that no one can be personally identified. No one will ever know what your son or daughter reports on the survey.

Participants' Rights
Your son or daughter is free to withdraw from this study at any time. Participation is completely voluntary and has no impact on academic performance in school.

Impartial Third Party Contact

If you wish to contact an impartial third party not associated with this study regarding any complaint you may have about the study, you may reach [insert contact information].

Informed Consent

Please read the following and sign below for consenting to your son/daughter's participation in this study:

"I have read the contents of the consent form. My questions concerning this study have been answered to my satisfaction. I hereby give voluntary consent for my son/daughter to participate in this study. Signing this consent document does not waive my rights nor does it release the investigators, institution or sponsors from their responsibilities. I may call [insert phone number] if I have additional questions or concerns."

Signature of Parent or Guardian _____ Date _____ Name of Child _____

Унівеситет Лома Лінда, США/
Адвентистський Міжнародний Медичний Центр, м. Київ/
Український Державний Медичний Університет
ім. акад. О.О. Богомольця.

БАТЬКІВСЬКА ЗГОДА

Ваш син/дочка був/а запрошений/а, щоб брати участь в дослідженні:
«Вивчення ризику захворюваності СНІД/ВІЧ інфекціями і захисні чинники серед молоді в Україні».

Мета
Намір цього дослідження дізнатися думка молоді відносно стилів поведінки, які могли б потенційно бути шкідливі їх здоров'ю (куріння, алкоголізм, статеві відносини, токсикоманія і т.п.). Дуже важливо зрозуміти відносини і стилі поведінки юнаків і дівчат, які могли б піддати їх здоров'я ризику, щоб ми могли розробити методи, здатні зберегти їх здоров'я.

Процедура
З Вашої згоди, Вашому сину або Вашій дочці буде роздана анкета в класі, що питає його/її думку щодо сексуальної активності, вживання наркотиків, вживання алкоголю, використання презервативів. Участь в дослідженні займе біля 30 хвилин.

Ризики
Типи питань, на які Ваш син або Ваша дочка будуть відповідати, можуть бути делікатними і можуть викликати деякий дискомфорт. Однак, Ваша дитина може припинити відповідати в будь-який момент. Будь-яка інформація, яку Ваш/Ваш син/дочка виявить про себе в цій анкеті, залишиться повністю анонімною і не буде використана для того, щоб дізнатися хто заповнив цю анкету.

Переваги
Перевага полягає в тому, що Ваш/Ваш син/дочка, заповнивши анкету, отримають корисну інформацію про потенційну небезпеку деяких стилів поведінки. До того ж дані, що збираються завдяки цьому дослідженню, використовуються щоб зрозуміти потреби юнаків і дівчат, щоб в майбутньому провести програми по попередженню захворювання СНІД/ВІЧ інфекціями і запобіганню алкоголізму, курінню, наркоманії і т.п. Ці дані можуть бути використані, щоб зібрати кошти і ресурси для установи загальноосвітницьких програм.

Конфіденційність
Гарантується, що не буде спроб розпізнати особистість що заповнював анкету з боку вчителів або людей, провідних дослідження. Не будуть задаватися питання, здатні указати на автора анкети. Результати будуть підсумовуватися, тому авторство анкет не буде встановлюватися. Жодна людина в майбутньому не дізнається, що Ваш син/ дочка повідомив/а в даній анкеті.

Права Учасників
Ваш син/дочка мають право припинити відповідати на запропоновані питання в будь-який момент. Участь цілком добровільна і не впливає на успішність в школі.

Консультант
Якщо у Вас з'являться питання відносно цього дослідження, то дзвоніть, будь ласка, по наступному контактному телефону: 519-32-15 (спитати Раїсу Миколаївну).

Згода родителя/хранителя

Прочитайте наступний абзац і в знак згоди з його змістом, а так само з участю Вашого/Вашого сина/дочки в даному дослідженні, поставте Ваш підпис:

"Я прочитав зміст бланка Батьківської Згоди. Я отримав задовільні відповіді на питання, що були у мене. Я даю мою добровільну згоду на участь мого/мого сина/дочки в цьому дослідженні. Підписання цього документа не відмовляє мені в моїх правах і не звільняє дослідників, установу або спонсорів від відповідальності. Я можу подзвонити по тіл. 519-32-15, якщо у мене виникнуть додаткові питання або пропозиції."

Підпис Родителя або Хранителя	**Дата**	**Ім'я і Прізвище Дитини**
_____	_____	_____

LOMA LINDA UNIVERSITY
INSTITUTIONAL REVIEW BOARD
APPROVED 5/29/01 VOID AFTER 5/20/2002
#5102 CHAIR

Appendix E:

Ukraine Student Assent Form

Loma Linda University/Adventist International Medical Center/ Kiev Medical Institute

Student Assent

You are invited to participate in a research study about your attitudes and behaviors. In this survey you will be asked about your attitudes and beliefs regarding some behaviors which can be harmful to your health. The survey will take about an hour to complete.

Whether or not you decide to participate in the study will not impact your grades in school.

Neither your parents, nor your teachers will ever have access to the answers you provide on this questionnaire. Furthermore, we ask that you do not provide your name on the survey forms since this study will be conducted anonymously.

Please know that your participation is completely voluntary. If you choose not to participate, please work on the puzzles at the end of your packet.

If you have read this form, agree to participate in the study, and have had all of your questions answered by one of the assistants, please sign your name at the bottom. We thank you for your participation in this study.

_____ _____

Signature of Student Date

Унивеситет Лома Линда, США/
Адвентистский Международный Медицинский Центр, г.Киев/
Украинский Государственный Медицинский Университет им. акад. Богомольця.

Вы приглашены, чтобы участвовать в исследовании о ваших отношениях и стилях поведения. В этом обзоре вы будете опрошены о ваших отношениях и фактах относительно некоторых стилей поведения, которые могут быть вредны для вашего здоровья. Обзор отнимет у вас около 30 минут.

Ваше решение участвовать или не участвовать в исследовании не повлияет на успеваемость в школе.

Ни ваши родители/опекуны, ни ваши учителя не будут иметь доступ к ответам, которые вы выявляете в этой анкете. Так же мы просим, чтобы вы не писали ваше имя на бланках анкеты, так как это исследование должно быть полностью анонимным.

Знайте, что ваше участие полностью добровольно. Если вы решили не участвовать, работайте над дополнительным материалом.

Если вы прочитали этот бланк и согласны участвовать в исследовании, и получили ответ на все ваши вопросы, на которые ответил один из ассистентов, подпишитесь ниже. Мы благодарим вас за участие в этом исследовании.

_____ _____

Подпись Участника анкетирования Дата