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DISSENTANGELING ANTI-DRUG SOCIALIZATION PROCESSES
FOR YOUTH SUBSTANCE USE PREVENTION

A Dissertation in
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by
YoungJu Shin

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The dissertation of YoungJu Shin was reviewed and approved* by the following:

Michael L. Hecht  
Distinguished Professor of Communication Arts & Sciences  
Dissertation Co-Advisor  
Co-Chair of Committee

Michelle Miller-Day  
Associate Professor of Communication Arts & Sciences  
Faculty Affiliate with the Center for Family Research in Diverse Contexts  
Dissertation Co-Advisor  
Co-Chair of Committee

Roxanne Parrott  
Distinguished Professor of Communication Arts & Sciences

Eric Loken  
Research Associate Professor of Human Development and Family Studies

Kirt Wilson  
Associate Professor of Communication Arts & Sciences  
Director of Graduate Studies in the Department of Communication Arts & Sciences

*Signatures are on file in the Graduate School.
While prevention researchers make efforts to protect youth from negative influences including substance use, little is known about the social processes promoting youth substance use prevention by taking E-E prevention and parents as anti-drug socialization agents for adolescents. To better understand the processes of youth substance use prevention socialization, the current research investigated the effects of E-E prevention and parent-adolescent communication about substance use on youth self-efficacy, norm, and behavior to use substances.

Chapter 2 presents an empirical study \((N = 210)\) that examined the effects of the E-E video, as a part of a school-based substance use prevention intervention, keepin’ it REAL (kiR) curriculum, on adolescent substance use through youth refusal self-efficacy. The moderating effects of interpersonal communication about substance use were also examined. Path analyses revealed that interest and realism of the E-E video positively affected youth refusal efficacy. However, there was no significant evidence between the relationship between refusal efficacy and past 30-days substance use. Moderating effects of interpersonal communication were not found significant.

Chapter 3 reports the longitudinal effects of parental socialization processes on youth substance use. The study \((N = 1059)\) examined the indirect effects of family communication environments on recent substance use via the hypothesized relationships from parental injunctive norms about substance use to youth personal anti-drug norms to recent substance use, and parent-adolescent communication about media portrayals of substance use to youth personal anti-drug norms to recent substance use. The results indicated that expressiveness was positively related to parental injunctive norms, which in turn affected youth personal anti-drug norms and
consequently led to decreases in youth substance use. It was also found that expressiveness and conflict avoidance were positively related to parent-adolescent communication about media portrayals of substance use, which in turn affected youth personal anti-drug norms and consequently led to decreases in youth substance use.

Based on the overall findings, Chapter 4 discusses theoretical contribution and practical implication. Future research directions are also provided on youth substance use prevention.
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CHAPTER 1
INTRODUCTION

Social cognitive theory (SCT) explicates media as a socialization agent showing performances of others’ behaviors (Bandura, 2002, 2004). According to the theory, these behaviors serve as “models” promoting vicarious learning. As a result, children and adolescents learn risky behaviors by observing media portrayals (Everette, Schnuth, & Tribble, 1998; Ribisl, Lee, Henriksen, & Haladjian, 2003; Sargent, Wills, Stoolmiller, Gibson, & Gibbons, 2006). Although exposure to the mass media is viewed as a risk factor for adolescent development, prevention researchers have shown that the mass media also can be used to promote healthy behaviors. In a pursuit of effective public health campaigns, various communication channels are utilized to deliver health messages including television show, drama, radio soup opera, and film (Bae, 2008; Beck, 2004; Lapinski & Nwulu, 2008; Smith, Downs, & Witte, 2007). One form of media messages, called entertainment-education (E-E), has proven to be particularly effective in promoting pro-healthy practices in public.

Entertainment-education (E-E) refers to “the process of purposely designing and implementing a media message to both entertain and educate, in order to increase knowledge about an issue, create favorable attitudes, and change overt behavior” (Singhal & Rogers, 1999, p. 9). E-E studies have shown positive impacts on the target audience’s self-efficacy, attitude, norm, and behavior changes in diverse health contexts such as HIV/AIDS (Brodie, Foehr, Rideout, Baer, Miller, Flourney, et al., 2001), cancer (Hether, Huang, Beck, Murphy, & Valente, 2008), diabetes (Unger, Molina, & Baron, 2009), organ donation (Morgan, Movius, & Cody, 2009), and substance use prevention (Warren, Hecht, Wagstaff, Elek, Ndiaye, & Dustman, et al., 2006). A
narrative form of E-E enables audiences to identify with characters and these role models, in turn, become an impetus for encouraging behavior changes (Do & Kincaid, 2006; Smith et al., 2007; Sood, Menard, & Witte, 2004; Wilkin, Valente, Murphy, Cody, Huang, & Beck, 2007).

The pro-social uses of E-E have been observed in youth substance use prevention. E-E plays a role of an anti-drug socialization agent to prevent youth from substance use by showing a role model performing a desirable health behavior. Pro-healthy practice messages embedded into entertainment content are effective in grabbing adolescents’ attention and sustain interest during its delivery (Moyer-Guse, 2008; Lee, Hecht, Miller-Day, & Elek, 2011; Warren et al., 2006). E-E videos and live performances are found to significantly influence adolescents’ perceptions, behavioral intention to use substance, and recent substance use behaviors (Gelders, Patesson, Vandoninck, Steinberg, Malderen, & Nicaise et al, 2009; Guttman, Gesser-Edelsburg, & Israelashvili, 2008; Hecht, Corman, & Miller-Rassulo, 1993; Mitschke, Loebl, Tatafu, Matsunaga, & Cassel, 2008; Starkey & Orme, 2001; Turner-Musa, Rhodes, Harper, Quinton, 2008; Warren et al., 2006).

In addition to understanding the important role of media as an anti-drug socialization agent in the line of youth substance use prevention research, family communication scholars argue that families, especially parents, are children’s primary socialization agents and the influence of this socialization continues across lifespan (Goodnow, 2005; Fitzpatrick & Badzinski, 1994; Saphir & Chaffee, 2002; Socha, 2009; Socha & Stamps, 1995). During the transitional period of adolescence, parent-adolescent communication plays a key role to adolescent health adjustment by explicitly communicating about norms, expectations, responsibilities, and health choices (Ackard, Neumark-Sztainer, Story, & Perry, 2006; Brody, Murry, Gerrard, Gibbons, McNair, & Brown et al., 2006; Miller-Day, 2008). Parents also
mediate the effects of adolescents’ media use by discussing the media contents with them (Austin, Chen, & Grube, 2006; Austin, Pinkleton, & Fujioka, 2000). In this light, parent-child communication is protective for youth against negative influences (Austin, Bolls, Fujioka, & Engelbertson, 1999; Miller-Day & Kam, 2010; Kelly, Comello, & Hunn, 2002; Socha, 2009).

Past research shows that parental injunctive norms about substance use directly predict youth recent substance use (Elek, Miller-Day, & Hecht, 2006; Van der Vorst, Engels, Meeus, & Dekovic, 2006) and indirectly influence substance use via adolescents’ attitude, personal norm, perceived behavior controls (Kam, Matsunaga, Hecht, & Ndiaye, 2009). Studies also suggest that parent-child communication about alcohol use positively influences youth drug and alcohol use (Ennett, Bauman, Foshee, Pemberton, & Hicks, 2001; Miller-Day, 2008; Miller-Day & Dodd, 2004; Miller-Day & Kam, 2010). Through conversations with adolescents, parents socialize youth perception of anti-drug such as alcohol (Brody, Flor, Hollette-Wright, & McCoy, 1998), smoking (Henriksen & Jackson 1998), and drugs (Kelly et al., 2002).

More importantly, the processes of parental socialization can be better understood when quality of family communication is accounted. The general theory of family communication (Koerner, & Fitzpatrick, 2002a) explicates family communication environments as knowledge structures implying family members’ perception and understanding of what family members say and do. Family communication environments consisting of expressiveness, structural traditionalism, and conflict avoidance explain qualitative aspects of parent-child communication within family (Fitzpatrick, 2004; Fitzpatrick, & Ritchie, 1994). Family scholars argue that these three dimensions of family communication environments predict different aspects of family functioning and children’s well-being (Baxter, Bylund, Imes, & Scheive, 2005; Koesten, Schrodt, & Ford, 2009; Schrodt, 2005, 2009). Previous studies show that family expressiveness is
positively related to family cohesion and flexibility (Schrodt, 2005) and family strengths and satisfaction (Schrodt, 2009), whereas structural traditionalism and conflict avoidance are inversely associated with family functioning (Schrodt, 2005, 2009). Based on these findings, it is speculated that effects of parent-adolescent communication about substance use can differ, depending on family communication environments and further different types of parent-adolescent communication may have differential impacts on youth behavioral outcomes, in conjunction with E-E prevention intervention.

Although media researchers and family scholars respectively recognize the potential roles of media and parents as anti-drug socialization agents for adolescents, early prevention research did not seriously consider conceptualizing message effects in a social context. Recently, more scholars understand the need to take account of the potential influences of interpersonal communication about the media message (Helme, Noar, Allard, Zimmerman, Palmgreen, & McClanahan, 2011; Southwell & Yzer, 2007). Stimulating conversations with family members, friends, and other social relations have long shown to be two key determinants of media campaign effects. Interpersonal communication about the content of media campaigns are found effective in increasing individuals’ belief and attitude toward the topic or altering personal values and norms (Southwell & Yzer, 2007).

In this respect, E-E researchers urge that the joint effects of E-E prevention intervention and interpersonal conversations about the health topic are an important area to explore in a pursuit of effective E-E health intervention (Galavotti, Kuhlmann, Kraft, Harford, & Petraglia, 2008; Galavotti, Pappas-DeLuca, & Lansky, 2001; Pappas-DeLuca, Kraft, Galavott, Warner, Mooki, & Hastings, et al., 2008). As a CDC summary report indicates the "effects of E-E interventions appear to be enhanced when accompanied by and/or followed by structured
interpersonal communication about topic” (Salmon, 2001, p. 20), communication about E-E messages and interactive communication quality would enhance our understanding of how people process the E-E programs on an interpersonal level, which in turn may lead to reinforce desirable behavior changes or unexpectedly discourage behavior changes.

Among various types of interpersonal channels, parent-adolescent communication about substance use can be an important protective factor for E-E youth substance use prevention (Miller-Day & Kam, 2010). Therefore, understanding the joint effects of E-E substance use prevention and parent-adolescent communication about substance use provides insights into of how E-E and parents as anti-drug socialization agents protect youth from harmful influences and indeed prevent youth substance use.

The remaining part of this chapter provides theoretical frameworks of entertainment-education health campaigns and parent-child communication in youth development. This chapter also discusses the overview of past research on effects of entertainment-education as a means for health intervention and protective effects of parent-child communication in youth functioning. Lastly, the need for research on the joint effects of E-E prevention intervention and parent-adolescent communication about substance use is indicated.

**Theoretical Background of Entertainment-Education**

Singhal and Rogers define entertainment-education (E-E) as “the process of purposely designing and implementing a media message to both entertain and educate, in order to increase knowledge about an issue, create favorable attitudes, and change overt behavior” (1999, p. 9). E-E researchers have created health campaigns aiming to awaken an audience’s awareness of health related topics, acquire health knowledge, shape favorable attitudes toward health promotion and prevention, and render healthy behavior changes. As Glik and colleagues (2002)
note, the key idea of E-E is to combine entertainment and education to obtain certain advantages from each with the appeal of popular communication channels (Glik, Nowak, Valente, Sapsis, & Martin, 2002). E-E delivers persuasive, educational health messages embedded in the popular entertainment contents through a variety of formats including television drama, show, radio soap opera, comic book, music, and live performance (Guttman et al., 2008; Unger et al., 2009).

Social cognitive theory (SCT) (Bandura, 1982, 2002, 2004) is the underlying theoretical framework to explain E-E health campaigns. The theory explicates how individuals vivaciously learn behaviors by observing others. In a process of learning, people develop self-efficacy beliefs about adapting new behaviors and evaluate outcome expectations of such behavior changes, which in turn motivate behavior change. In the health domain, E-E programs show role models portraying practices of healthy behaviors that positively influence health-related attitudes, norms, and behavioral changes of the target audience (Chen, Kohler, Suzuki-Crumly, Schoenberger, Davis, & Powell, 2009; Galavotti et al., 2008). Among various types of E-E (i.e., television show, drama, radio soap opera, film, music, and comic book) (Bae, 2008; Beck, 2004; Lapinski & Nwulu, 2008; Smith et al., 2007; Turner-Musa et al., 2008; Unger et al., 2009), a narrative form of E-E enables audiences to identify with characters and these models, in turn, become an impetus for encouraging behavior changes (Do & Kincaid, 2006; Smith et al., 2007; Sood et al., 2004; Wilkin et al., 2007). As Slater and Rouner (2002) notes “entertainment-education, by blocking counterarguing, provides an extraordinary opportunity to influence individuals who would ordinarily be resistant to persuasion” (p. 180), health communication scholars stress benefits of narrative persuasion of E-E to promote effective public health campaigns. Based on the review of social cognitive theory (Bandura, 1982, 2002, 2004) as a theoretical framework, impacts of E-E health intervention are discussed next.
Effectiveness of Entertainment-Education as a Means for Health Promotion and Prevention Intervention

Driven by social cognitive theory, the key philosophy of E-E is established by combining the advantage of entertainment and education with the appeal of popular communication channels (Glik et al., 2002). Various communication channels have utilized to promote E-E campaigns domestically and internationally. In the United States, visual formats of E-E including a television drama, show, film, and book are prevalently used for HIV (Brodie et al., 2001), cancer (Hethe et al., 2008), diabetes (Chen et al., 2009), and substance prevention campaigns (Warren et al., 2006). Among visual communication channels, television is the most popular media outlet for E-E campaigns in the United States. For example, A CDC report states that 88 percent of people in the United States learn about health issues from television (Salmon, 2001). Moreover, a nation-wide survey reveals that 28% of the regular television viewers (approximately 28445 respondents) report taking action after learning about a health issue (Porter Novelli, 2005). Over a decade, Hollywood, Health, & Society (HH&S) has maintained collaborative work with television producers and E-E scholars to provide accurate health relevant information and supportive resources (Beck, 2004; Glik, Berkanovic, Stone, Ibarra, Jones, & Rosen et al., 1998; Lapsansky, Schuh, Movius, Cody, Woodley, & Buffington, 2010; Morgan et al., 2009; Movius, Cody, Huang, Berkowitz, & Morgan, 2007; Nahm, Le, Buffington, Schiman, Raider, & Resko, 2010). As a result, E-E programs enable lay audiences to obtain health knowledge and further encourage them to seek out more information in diverse health contexts.

E-E television dramas successfully disseminate health promotion and prevention campaigns in the United States (Hether et al., 2008; Nahm et al., 2010; Sharf, Freimuth, Greenspon, & Plotnick, 1996; Wilkin et al., 2007). For example, the actress on the popular teen
drama, titled 90210, presented information about bipolar disorder in a public service announcement (PSA) to promote a less familiar health topic specifically targeting to teenagers. After the bipolar disorder episodes, a phone hotline for the Substance Abuse and Mental Health Services Administration (SAMHSA) was offered during the PSA. Additionally, the drama homepage provided a direct link to the Child and Adolescent Bipolar Foundation (CABF) website for further information during the episode season in collaboration with the CABF (Nahm et al., 2010). The results showed that there were significant increases in phone calls received via hotline as well as the number of website visitors, which indicated the audience’s interest in seeking out more information about the newly introduced health topic.

E-E drama was also used to introduce a message on breast cancer detection targeting ethnic minority women. Funded by National Cancer Institute and Centers for Disease Control and Prevention, breast cancer prevention message was delivered in a form of a Spanish language telenovela, Ladron De Corazones, targeting to Latino women in the United States (Wilkin et al., 2007). The E-E health messages contained information about breast cancer and treatment options including getting a mammogram. The E-E drama was followed by a public service announcement (PSA) promoting a telephone line for further information and consequently, there were a significant numbers of calls made by the viewers after a dramatic plot point in the storyline. E-E programs in conjunction with PSA, telephone lines, and/or websites, increased the audience’s awareness of health issues and provided knowledge about detective methods and treatment options for such health conditions.

In the similar vein, international health communication researchers consider E-E as an effective tool for disseminating public health messages and making social changes on health issues (Sood, 2002). In the developing countries, radio E-E dramas are the most preferable
channel to promote reproductive health behaviors and HIV/AIDS prevention (Roberto, Murray-Johnson, & Witte, 2011). To support this claim, evidences show that in comparison to non-listeners, increase in knowledge about family planning and modern contraceptives was found among listeners of the E-E radio soap opera, Twende na Wakati (Let's go with the times) in Tanzania (Rogers & Vaughan, 2000; Rogers, Vaughan, Swalehe, Rao, Svenkerud, & Sood, 1999; Vaughan, Rogers, Singhal, & Swalehe, 2000) and listeners of Bienvenida Salud (Welcome to Health!) in the Peruvian Amazon (Sypher, McKinley, Ventsam, & Valdeavellano, 2002).

Similarly, viewers of a television drama, Shabuj Chaya in Bangladesh, reported more knowledge about use of modern contraceptives and HIV/AIDS (Do & Kincaid, 2006).

In addition to promote domestic and international public health campaigns, E-E has been utilized to improve patients’ understanding of health issues and medical options in clinical settings (Jibajua-Weiss, Volk, Granchi, Neff, Robinson, & Spann et al., in press; Volk et al., 2008). For instance, research showed that less educated individuals easily obtained health knowledge about cancer and possible treatment options after exposure to E-E decision aids, which offered medial information to help patients to make an informed decision. Based on patients’ assessments of pre-decision, pre-surgery, and 1-year follow up, the findings revealed that E-E decision aids helped early stage breast cancer patients to learn more about the disease and better informed about their surgical options (Jibajua-Weiss, Volk, Granchi, Neff, Robinson, & Spann et al., 2011).

In addition to health information dissemination and knowledge improvement of the lay public, E-E health intervention has proven effective in changing health behaviors through narrative health messages (Green & Brock, 2000; Green, Strange, & Brock, 2002; Miller, Kotchick, Dorsey, Forehand, & Ham, 1998; Moyer-Guse, 2008). Past research has suggested that
E-E positively influence the audience’s behavioral intention in various preventive health contexts such as HIV (Do & Kincaid, 2006; Lapinski & Nwulu, 2008; Pappas-DeLuca et al., 2008), diabetes (Unger et al., 2009), and substance use (Lee et al., 2011; Warran et al., 2006). For example, in Nigeria, people who watched a short experiment E-E film about HIV reported significantly higher intention to test for HIV than those who were not exposed to the film (Lapinski & Nwulu, 2008). In Bangladesh, television viewers’ intention to use modern contraceptives as a preventive behavior against HIV infection was significantly stronger than non-viewers (Do & Kincaid, 2006). Similarly, researchers discovered that individuals who listened to the entire drama, Makgabaneng in Botswana reported stronger intention to test for HIV in comparison to those partially exposed to the drama (Pappas-DeLuca et al., 2008).

The effects of E-E on behavioral intention are consistently found in different health contexts including diabetes prevention and substance use prevention. Fotonovelas titled Sweet Temptations, which is a small booklet portraying a dramatic story with photographs and captions was used to promote excise as well as eating habits of fruits and vegetables. Considering fotonovelas is a popular form of entertainment among Hispanic population (Unger et al., 2009), the target audience of Sweet Temptations was Hispanic adults, particularly in low levels of education and socioeconomic status living in Los Angeles. As a result of a pre- and post-survey, the participants showed significant changes on their behavioral intention to practice healthy behaviors after reading the E-E book.

In the context of substance use prevention, E-E videos more effectively affected youth behavioral intention to use substances than a public service announcement (PSA) (Warren et al., 2006). The findings revealed that adolescents who watched E-E videos as a core lesson component of a school based intervention, keepin’ it REAL (kiR), reported less intention to use
substances than youth who were exposed to PSA. Additional findings indicated that theater performance targeting youth anti-smoking prevention, *Crossroads*, had positive effects on adolescents, particularly youth at risk group, in relation to changes of knowledge, attitude, and future intention to smoke (Mitschke et al., 2008).

While some researchers focused on the direct relationship between exposure to E-E and audiences’ behavioral intention to adapt healthy behaviors, others delved into understanding the narrative health message processing of E-E and changes on behavioral outcome. Findings suggested that favorable attitudes toward characters on E-E programs was a significant viewing factor for the Korean E-E show, *Shin Dong-Yub & Nam Hee-Suk’s Man II Man* (Jin, 2006) and a radio serial drama, *Makgabaneng*, listeners’ intention to test for HIV in Botswana (Kuhlmann, Kraft, Galavotti, Creek, Mooki, & Ntumy, 2008; Pappas-DeLuca et al., 2008). It was also found that liking of an E-E program was strongly related to intention to test for HIV. In Ethiopia a majority of people who listened to a radio drama, *Journey of Life* expressed a strong desire to protect themselves from HIV/AIDS and intention to change their behaviors such as limiting sex partners and using condoms for sex (Farr, Witte, Jarato, & Menard, 2005). Recently, it was discovered that liking of a Korean E-E show, *Open Your Eyes*, had a significant mediating effect on the relationship between identification with a media character and behavioral intention toward cornea donation (Lee, Park, Choi, & Kim, 2010). In the domain of youth substance use prevention, Lee et al. (2011) found that youth perceptions of interest and realism of E-E videos were negatively related to positive expectancies to consume alcohol and tobacco, as well as youth intent to use alcohol.

Moreover, E-E scholars assert that emotional involvement in the E-E program was linked to changes in self-efficacy in preventive behaviors for HIV/AIDS among listeners of *Journey of*
Life in Ethiopia (Smith et al., 2007) and listeners of Tinka Tinka in India (Sood, 2002). In promoting organ donation via E-E, emotional involvement was found to be associated with subjective norm and intention toward cornea donation (Bae, 2008), and willingness to organ donation (Morgan et al., 2009; Movius et al., 2007). To the extent, an audience’s emotional involvement with characters invokes the process of transportation. Transportation occurs when individuals lose contact of the real world and become involved in the E-E program (Green & Brock, 2000; Moyer-Guse, 2008). Researchers revealed that transportation played a key role in promoting knowledge about bone marrow donation and willingness to become a donor among the television viewers of the Bold and the Beautiful (Lapsansky et al., 2010). It was also found that non donor who watched E-E medical dramas such as Numb3rs (CBS), CSI: NY (CBS), Gray’s Autonomy (ABC), and House (FOX) reported more willingness to become donors when they saw drama characters verbally discussed the issue of organ donation and the storylines explicitly encouraged donation (Morgan et al., 2009; Movius et al., 2007).

Based on the overview of the E-E empirical studies, it stands to reason that E-E health campaigns effectively increase knowledge of the lay public and positively influence self-efficacy, attitude, and behavioral intention. Although health researcher and practitioners have paid close attention to effects of E-E on immediate outcomes, actual behavior changes have not been fully investigated in this line of research. Thus, more research is needed to examine effects of E-E intervention on individuals’ behavior changes. Particularly, the need to focus on E-E prevention intervention for youth substance use is discussed next.

**Entertainment-Education in Youth Substance Use Prevention Research**

During the course of adolescence, youth anti-drug beliefs and norms dramatically decline under the negative influence of mass media (Johnston, O’Malley, & Bachman, 2001; Kelly,
Slater, & Karan, 2002). As adolescents are exposed to media portrayals of smoking and drinking through advertisement, dramas, and movies, they tend to develop normative beliefs on substance use (Anderson, Bruijn, Angus, Gordon, & Hastings, 2009; Cin, Worth, Gerrard, Gibbons, Stoolmiller, & Wills et al., 2009; Kelly et al., 2002; Sargent, Gibson, & Hatherton, 2009). According to social cognitive theory explicating media as a socialization agent, media negatively socialize youth perception of drug use as normative (Bandura, 2002). Although media scholars view mass media as a risk factor for adolescent development (Everette et al., 1998; Ribisl et al., 2003; Sargent et al., 2006), prevention researchers contend that E-E can be a vital component for youth substance use prevention intervention. By utilizing E-E strategies, popular media and other communication sources are used for effective prevention intervention that can influence adolescents’ perceptions about substance use and further provides skills to refuse drug offers from others (Gelders et al., 2009; Hecht, Marsiglia, Elek, Wagstaff, Kulis, & Dustman et al., 2003; Warren et al. 2006). E-E videos and live performances significantly influenced youth perception, intention, and recent use of substance (Gelders et al, 2009; Guttman et al., 2008; Mitschke et al., 2008; Turner-Musa et al., 2008; Warren et al., 2006).

Although these findings indicate that E-E intervention can be an effective means for youth substance use intervention, there is a lack of understanding of the joint effects of E-E prevention and interpersonal conversation about substance. Family scholars assert that communication with parents and families need to be considered as a part of E-E prevention interventions (Jorone, Rankin, & Astedt-Kurki, 2008) and effective parent-child communication about substance use can protect adolescents from negative social influences such as drug offers (Miller-Day, 2002, 2007, 2008; Miller-Day & Dodd, 2004; Miller-Day & Kam, 2010). Thus, it is now turned to the discussion of parents as socialization agents. Specifically, primary
socialization theory (Oetting & Donnermeyer, 1998) and the general theory of family communication (Fitzpatrick, & Ritchie, 1994; Koerner, & Fitzpatrick, 2002a) are presented as theoretical underpinnings of parental socialization processes for youth substance use prevention.

Parents as Socialization Agents

It is well recognized that parents are typically the primary socialization agents for children and the influences of socialization carry on throughout lifetime (Fitzpatrick & Badzinski, 1994; Miller-Day, 2008, Saphir & Chaffee, 2002; Schrodt, Ledbetter, Jernberg, Larson, Elledge, & Glonek, 2009; Socha, 2009). Children learn how to interpret family members’ verbal and nonverbal communicative behaviors based on communication environments within family and hence socialization takes place through family communication, particularly through parent-child communication (Fitzpatrick & Ritchie, 1994). Primary socialization theory (Oetting & Donnermeyer, 1998) indicates that family is one of the primary socialization sources for adolescents’ pro-social and/or deviant norms and behaviors. More importantly, the theory stresses that communication between parent and child prevents youth’s involvement with drug use and deviant behaviors. Empirical studies suggested that parents’ anti-drug socialization efforts are found to be protective of youth against initiation, intention, and actual use of substance (Henriksen & Jackson 1998, Miller-Day, 2002, Miller-Day & Kam, 2010). Parental use of substances influences children’s perceptions of parents as anti-drug socialization agents (Hawkins, Catalano, & Miller, 1992; Henriksen & Jackson 1998; Rangarajan & Kelly, 2006). There is evidence indicating that children and adolescents whose parents smoke were less likely to perceive their parents as anti-smoking socialization agents than those with nonsmoking parents (Henriksen & Jackson 1998). Interestingly, however, parents’ anti-drug socialization efforts are stronger influences on children’s substance use than parents’ current consumption of
substance (Hawkins et al., 1992; Rangarajan & Kelly, 2006). That is, parental efforts on anti-drug socialization play a significant role to protect children against risky behaviors. To better understand the protective influence of parents’ socialization processes in youth substance use prevention, a review of literature on parental injunctive norms about substance use and parent-child communication about substance use is discussed next.

**Parental Injunctive Norms about Substance Use**

In past research, injunctive norms refer to individuals’ perceptions of what others typically approve/disapprove of in terms of certain behaviors (Cialdini, Reno, & Kallgren, 1990). In this respect, parental injunctive norms about substance use are defined as youth perceptions of parental disapproval on substance use (Elek et al., 2006; Kam et al., 2009). Empirical findings indicate that parental anti-drug injunctive norms showed significant impacts on youth intention (Kam et al., 2009) and recent substance use (Elek et al., 2006, Van der Vorst et al., 2006). For example, there was evidence that parents’ injunctive norms positively influenced youth attitudes toward substance use, personal anti-drug norms, and their self-efficacy to refuse drug offers, which in turn led to decreases in intention to use substances (Kam et al., 2009). The previous findings suggest that parental injunctive norms about substance use play an important role in shaping youth personal anti-drug norms and reducing intention to use substances. Nonetheless, to date, it has not been fully explored to understand the consequent impact of parental injunctive norms about substance use on youths’ actual substance use behavior. Investigating the influence of parental injunctive norms on youth substance use adds to enhance our knowledge of youth substance use prevention research.

**Parent-Child Communication about Substance Use**
Parental socialization efforts take place not only through the influences of parental injunctive norms about substance use, but also communication between a parent and a child. Past research shows that parent-adolescent communication conveys parents’ norms and expectations as well as youth responsibilities and healthy choices including substance use, which are important determinants for adolescent health adjustment (Ackard et al., 2006; Brody et al., 2006; Henriksen & Jackson 1998; Miller-Day, 2002, 2008; Miller-Day & Kam, 2010). In addition, children showed lower rates of intention to smoke when parents communicated with children about knowledge, attitude, and skills to refuse smoking offer (Henriksen & Jackson 1998). Similarly, adolescents who talked with parents about substance use were less likely to accept drug offers (Miller-Day, 2002, 2008; Miller-Day & Kam, 2010).

To broaden our understanding of how a parent communicates with a child about substance use, Miller-Day and Dodd (2004) present a parent-offspring drug talk (PODT) model. Based on formative research investigating form, content, and function of parent-child conversations about drugs, integrated socialization and targeted socialization are identified as two forms of PODT. Integrated socialization represents on-going drugs talks embedded in daily events and interactions throughout the children’s development. The researchers suggest that day-to-day interaction and conversation about drug use are more popular in parent-child communication (Miller-Day & Dodd, 2004). Conversely, targeted socialization takes place when parents intentionally sit down with children and share their attitudes, rules and expectations about children’s drug use. To the extent of the PODT model, Miller-Day (2007) specifies four types of parent-child communication about drugs such as ongoing direct talk, ongoing indirect talk, targeted direct talk, and targeted indirect talk. As previously discussed, ongoing talk appears as interactive conversation between parents and children in daily life interactions whereas
targeted talk is held intentionally by parents. Direct talk implies explicit messages from parents about rules, expectations, and drug use whereas indirect talk includes hinting, referring, or nonverbal messages of parental disapproval on drug use. A recent empirical study reveals protective associations between targeted parent-child communication about alcohol use and youth outcomes measuring positive expectancies of alcohol use and recent alcohol use (Miller-Day & Kam, 2010).

Based on discussion of the prior findings, it stands to reason that parental socialization efforts take place through the influence of parental injunctive norms and communication about substance between a parent and an adolescent child. These socialization processes play a protective factor for adolescents’ behavioral functioning against substance use (Elek et al., 2006; Kam et al., 2009; Miller-Day, 2008; Miller-Day & Dodd, 2004; Miller-Day & Kam, 2010). Parental socialization, however, does not occur in a vacuum. Rather, it takes place in a reciprocal way: that is, children may teach parents about social changes, which influence family identity formation and transition through communication (Saphir & Chaffee, 2002; Peterson & Hann, 1999). Family scholars who perceive family interaction as a transactional process conceptualize family as a group of intimates who generate a sense of group identity, maintain mutual ties of loyalty and share experiences of a family history and a future (Fitzpatrick, & Caughlin, 2002; Segrin, & Flora, 2005). Fitzpatrick and Caughlin (2002) also underscore the importance of family communication as “family is where most of us learn to communicate and, even more important, where most of us learn how to think about communication” (p. 726). Thus, it is reasonable to argue that family communication and interaction affect how family members perceive and interpret the world around them, while continuously managing dialectical tensions across the life span (Miller-Day & Kam, 2009). Also, family processes are patterned and
structured by family communication, which in turn sustains behavioral patterns within family (Vangelisti, 2004).

Family communication scholars delve into family interaction and communication, which plays a key function to create family identity and sustain family coherence. Particularly, Fitzpatrick and colleagues (Fitzpatrick & Ritchie, 1994; Koerner & Fitzpatrick, 1997, 2002a, 200b) have focused on investigating qualitative assessment of communication patterns and environments among family members and introduced the general theory of family communication. Taking account of family communication environments in the processes of parents’ socialization allow us to have better understanding of family processes promoting youth substance use prevention.

Theoretical Background of the General Theory of Family Communication

The general theory of family communication (Koerner, & Fitzpatrick, 2002a) was originated by two dimensions of family communication patterns (Richie, 1991; Ritchie & Fitzpatrick, 1990), which later evolved into three constructs of family communication environments (Fitzpatrick, & Ritchie, 1994; Koerner, & Fitzpatrick, 2002a). Family communication patterns (FCP) were originally developed by mass communication scholars to describe the socializing effects of parent-child communication about media (McLeod & Chaffee, 1972). This approach distinguishes between families with concept- and socio-orientations in communication processes. According to FCP, children from concept-orientated families process information and make decisions, based on ideas and concepts, whereas children from socio-oriented families are heavily influenced by social roles and relationships in decision-making process.
Family communication scholars extended FCP by re-conceptualizing the dimensions to better explicate family communication patterns and family well-being. Richie (1991) reinterpreted concept orientation beyond the original concept emphasizing ideas to incorporate the meaning of supportiveness within family. Likewise, socio-orientation was redefined as parents’ assertion of power on children. In this regard, family communication patterns were revised to explore perceptions of family norms and as a result, two dimensions were identified as conversation orientation and conformity orientation (Richie, 1991; Ritchie & Fitzpatrick, 1990). Conversation orientation refers to the degree to which families create a climate of open and supportive communication with a wide array of topics. Conversely, conformity orientation corresponds to the degree to which families create a climate that stresses uniformity of attitudes, values, and beliefs within family. In revised family communication patterns (RFCP), conversation orientation originated from concept-orientation whereas conformity orientation derived from socio-orientation.

The revised family communication patterns (RFCP) assume that these two dimensions can be explained along continua. For example, families on the high end of conversation orientation interact with each other more frequently and discuss unrestrained topics in open communication, whereas families on low conversation orientation less frequently interact with other family members and their communication is limited in terms of topics and openness. On the other hand, highly conformity-orientated families emphasize compliance with shared family values that are based on hieratical structure among family members. Harmony and obedience to the parents are most important values in this family type. Families on low conformity orientation, however, put more emphasis on individuality and independence of family members within family. Although both measurement of FCP and RFCP attempt to explain parent-child
interaction and socialization within family, the focus of RFCP differs from FCP in that FCP examines information processing and children’s decision making whereas RFCP investigates parent-child communicative behaviors (Fitzpatrick, 2004).

Based on these two dimensions, family scholars demonstrated family communication environments (FCE), by conceptualizing four types of families, using high and low continuum of conversation and conformity orientation (Koerner & Fitzpatrick, 1997, 2002b; Fitzpatrick, 2004; Fitzpatrick & Ritchie, 1994). Family communication scholars viewed family environments as knowledge structures that represent how family members perceive the world around them and provide understanding of what family members say and do (Fitzpatrick & Ritchie, 1994; Koerner & Fitzpatrick, 2004). Therefore, more efforts were made to explain and further predict family processes and outcomes, based on family communicative practices (Koerner & Fitzpatrick, 2002a).

In this light, FCE delineates four types of families. The first type is called consensual families, which are characterized by high in both conversation and conformity orientation. Consensual families openly discuss their ideas and opinions but their communication is pressured to agree with the common values of family, which tends to be values of parents or others in hieratical power. In this type of family environment, parents are open to listen to their children but they make final decisions, hoping their children understand the reasoning behind their decision-making. Next, pluralistic families are defined as high on conversation orientation but low on conformity orientation. Open discussion and free exchange of ideas are encouraged among family members with little pressure to conform to other family members’ values and opinions in pluralistic families. Children in this family communication environment learn to value independent ideas in communication. Contrary to pluralistic families, protective families
are positioned low on conversation orientation but high on conformity orientation. Protective families emphasize obedience and compliance to the family values with little opportunity for dissent or critical thinking. Children in this family type are inclined to avoiding conflict by obeying to parental authority and thus, are likely to be influenced by authorities in other social contexts more easily. Lastly, laissez-faire families lay on low continuum of both conversation orientation and conformity orientation. Families in this communication environment are less likely to engage in interaction and communication among family members, most of whom are emotionally divorced from other family members. Children in laissez-faire families are more likely to be influenced by external social groups such as peers.

In relation to four types of FCE, Miller-Day (2008) identified seven parental antidrug communication strategies that predict children’s risky behavior outcome such as substance use. The strategies include 1) use own judgment, 2) hinting, 3) no tolerance rule, 4) provided information, 5) threat of punishment, 6) rewarded for non-use, and 7) avoid addressing topics about substance use. The findings suggested that parents in protective and consensual families were more likely to sit down and talk about drugs with their children and encourage their children to use own judgment about substance use than parents in laissez-faire and pluralistic families. In contrast, parents in pluralistic and laissez-faire families were more likely to use hint (i.e., indirect communication about substance use) than parents in protective and consensual families. In terms of no tolerance rule and threat of punishment for drug use, parents in consensual and pluralistic families were more likely to use these strategies than parents in protective and laissez-faire families. With the strategy of rewards for nonuse, parents in consensual families were most likely to promise their children for reward than parents in the other three types of FCE. Lastly, parents in laissez-faire families were most likely to avoid
communication about substance use with their children than parents in other types of FCE. Among various types of anti-drug communication strategies, no tolerance rule was found to be a significant indicator that inhibited children’s drug use such as alcohol, tobacco, and marijuana. Miller-Day’s (2008) study offers a more complex process of parent-child communication about substance use in different types of family environments. Her study moves beyond prior research on openness, presence, and frequency of parent-child communication and thus provides better understanding of parents’ anti-drug socialization through communication strategies in relation to FCE.

In addition to identifying four types of FCE, family communication scholars attempted to develop more statistically valid measures of FCE by introducing three dimensions of FCE as family expressiveness, structural traditionalism, and conflict avoidance (Fitzpatrick & Ritchie, 1994; Koerner & Fitzpatrick, 2002a). Expressiveness implies to a key characteristic of conversation orientation that values open communication and free expression of feelings. Structural traditionalism implicates a main feature of confirmatory orientation that values conventional beliefs about family relationships and thus emphasizes hierarchical power and harmony in family. Conflict avoidance also derives from confirmatory orientation. Family communication researchers claimed that conflict avoidance may occur among families in different types of family communication patterns but it leads to different consequences. For example, to avoid conflict, families in conversation orientation may suppress unpleasant topics while families in conformity orientation enforce conformity within family (Fitzpatrick & Ritchie, 1994; Sillars, 1995). Thus, conflict avoidance was emerged as additional dimension to build measurement of FCE.
Throughout the development of FCE, family scholars have applied these dimensions to better understand communication processes within family. More specifically, parent-child communication has been examined in relation to family function and youth outcomes. The overview of past empirical research is discussed next.

**Effects of Parent-Child Communication on Family Functioning and Youth Outcomes**

Constructs of family communication patterns (FCP) and family communication environments (FCE) have been applied to investigate various aspects of family functioning, ranging from individual cognitive processing, psychosocial well-being, to behavioral outcomes (Koesten et al., 2009; Koerner & Fitzpatrick, 2002b; Ledbetter & Schrod, 2008; Miller-Day, 2008; Schrod, Ledbetter, & Ohrt, 2007). Measures of revised family communication patterns (RFCP) and family communication environments instruments (FCEI) are used to test effects of family communication.

**Family Communication Patterns and Outcomes**

Past literature on the FCP constructs shows conflicting findings about the effect of conversation-orientation and conformity-orientation on children well-being. Some researchers show that conversation-orientation, not conformity-orientation, is the single indicator to predict positive psychosocial functioning of children and family functioning while others report that two dimensions of family communication patterns have differential effects on family outcomes. Empirical research suggests that conversation orientated families are positively associated with children’s interpersonal communication and relationships. For example, young adults from high conversation orientation families reported high degrees of parent-child communication satisfaction, specifically between fathers and daughters (Punyanunt-Carter, 2008) and psychological closeness with friends via face-to-face maintenance (Ledbetter, 2009). Another
example was found with regard to psychological outcomes such as depression and anxiety. The results showed that only conversation orientation significantly related to decrease in depression (Koerner & Fitzpatrick, 1997).

On the other hand, college students who came from low levels of conversation orientation families reported suffer from reticence, which indicates symptoms of being anxious about communicating and less skilled in communication (Kelly, Keaten, Finch, Duarte, Hoffman, & Michels, 2002). The researchers reasoned that these individuals did not learn appropriate coping skills to deal with negative emotions because they were raised by a lack of open discussion and sharing emotion with parents. Consequently, they became afraid of being perceived as foolish and reticent in communication. A recent study of Schrodt and colleagues (2008) also presented evidence that conversation orientation is a positive predictor of psychosocial outcomes. Based on a meta-analysis of empirical findings on FCP and outcomes, it was concluded that the dimension of conversation more significantly predicted psychosocial outcomes (i.e., self-esteem, and self-concept, mental health, relational satisfaction, perceived stress, feelings of triangulation, closeness, commitment, reticence, and communication apprehension) than information processing and behavioral outcomes (Schrodt, Witt, & Messersmith, 2008).

Although some scholars claim that the dimension of conversation-orientation from family communication patterns is a single predictor for positive psychological functioning and interpersonal communication skills, others contend that both conversation orientation and conformity orientation influence family functioning, specifically psychosocial outcomes of children. For example, Ledbetter and Schrodt (2008) found that young adult children from high conversation-orientated families reported lower informational reception apprehension indicating low levels of listening anxiety and intellectual inflexibility than those from low conversation-
orientated families. Conversely, children from high conformity-orientated families scored higher levels of informational reception apprehension implying high degrees of listening anxiety and intellectual inflexibility. Also, it was revealed that college students from high conversation-oriented families were more inclined to viewing themselves positively, having open discussion about personal matters with their friends, taking leaderships roles, and being sociable than those from low conversation-oriented families (Huang, 1999). On the other hand, children from high conformity-oriented families were more likely to be shy and self-monitored, as well as having lower self-esteem than children of low conformity-oriented families.

Additional findings suggested that conversation orientation and conformity orientation have different influences on family members’ communication strategies and psychological outcomes. For instance, in the context of conflict management, families from conversation orientation were inversely related to conflict avoidance behavior but positively related to seeking social support (Koerner & Fitzpatrick, 1997; Segrin & Fitzpatrick, 1991). On the other hand, conformity orientation was positively correlated with conflict avoidance and the venting of negative feelings.

In addition to investigating the direct relationships between FCP and family members’ psychological functioning, indirect effects of FCP on children’s outcomes were assessed through parental confirmation and affection among divorced families (Schrodt et al., 2007). The results revealed that parental confirmation and affection significantly mediated the relationship between conversation orientation and children’s self-esteem and perceived stress in conformity-orientated families. In other words, conformity orientation in divorced families was less influential on children’s self-esteem as well as perceived stress when parents explicitly recognized children’s value and expressed emotional warmth and love to children. It was also discovered that parental
confirmation significantly mediated the effects of conversation orientation and conformity orientation on children’s mental health symptoms. That is, as long as parents reinforced personal values of children in communication, children in both conversation- and conformity-oriented divorced families were less likely to experience mental health symptoms. As a result, it was concluded that parental confirmation was positively influential for children’s psychological adjustment in divorced families with both conversation orientation and conformity orientation, whereas parental affection was only effective among children of conversation-oriented families.

Based on the discussion of the previous findings, it is reasoned that a majority of family communication researchers conceive conversation orientation and conformity orientation as dichotomous in nature. Some researchers argue that conversation orientation is a positive predictor for children’s development, while others suggest that conversation orientation and conformity orientation show separate but equal influences on the outcomes. In addition to testing FCP as a predictor for family outcomes, family scholars considered FCP as mediator on family functioning. In this respect, FCP is not viewed as cause of family functioning, but perceived as the communication process that changes the mechanism of the original causal relationship between family factors and functioning and in turn influences family outcomes. For example, conversation orientation was found to mediate the relationship between paternal alcoholism and adult children’s self-esteem. That is, open communication between a parent and a child played a protective factor for children’s self-esteem against negative influences from parental alcohol use (Rangarajan & Kelly, 2006). This result indicates that parent-child interaction and communication is more influential than parents’ substance use behavior.

FCP also significantly mediated the relationship between parents’ communication competence and young adult children’s communication competence (Schrodt et al., 2009).
Specifically, the findings indicate that the effect of parents’ communication competence on daughters’ communication competence was fully mediated by conversation orientation, whereas the effect on sons’ communication competence was partially mediated by conversation orientation. In other words, children whose parents low in communication competence reported high levels of communication competence when their parent-child communication was conversation orientated. The results show that FCP has different effects on sons and daughters and further support reasoning that direct observation of parental communication competencies and indirect internalization of FCP enhances children’s social development.

*Family Communication Environments and Outcomes*

As stated previously, family communication environments (FCE) evolved from FCP. Based on FCP research, family communication researchers re-conceptualize expressiveness, structural traditionalism, and conflict avoidance as three constructs of FCE (Koerner & Fitzpatrick, 2002a). Prior research on FCE suggests that these three dimensions of FCE predict different aspects of family functioning and children’s well-being (Baxter et al., 2005; Koesten et al., 2009; Schrodt, 2005, 2009). Findings show that family expressiveness was positively related to family cohesion and flexibility (Schrodt, 2005) and family strengths and satisfaction (Burns & Pearson, 2011; Schrodt, 2009), whereas structural traditionalism and conflict avoidance were inversely associated with family functioning (Schrodt, 2005, 2009). That is, when family members engage in open communication and share their feelings freely, family members tend to strengthen their emotional bonding and are more likely to accommodate changes in role relationships and relationship rules (Schrodt, 2005). On the other hand, when family members, especially children are taught to value family norms and obey to family decisions with a
tendency to avoid family conflict, it is less likely to have stronger family bounding and better life satisfaction.

In addition to the main effects of each dimension on family outcomes, the interaction effects between expressiveness and structural traditionalism were found with regard to family adaptability (Schrodt, 2005) and satisfaction (Schrodt, 2009). The results discover that as family has open communication and puts less emphasis on conventional values about family, they are more likely to change family roles to manage changes within family and feel more satisfied with other family members than family who highly value conventional norms with closed communication.

In terms of effects on family psychological well-being, FCE showed direct and indirect effects on young adults’ cognitive flexibility and well-being (Koesten et al., 2009). In particular, expressiveness positively predicted cognitive flexibility, whereas conflict avoidance negatively influenced cognitive flexibility. Moreover, it was found that the positive effect of expressiveness and negative effect of conflict avoidance had indirect effects on young adult children’s self-esteem, health distress, and physical health through cognitive flexibility. By contrast, structural traditionalism showed a direct and negative effect on children’s psychological functioning (Koesten et al., 2009).

FCE was also applied to investigate parental articulation and sanctioning of health-related rules as well as rule application and identification among family members (Baxter et al., 2005). The results show that expressiveness was inversely related to parental rule articulation, sanctioning of rule violations, and child’s rule compliance. Structural traditionalism led to greater agreement between parents and children in identification of rules, whereas conflict avoidance was associated with rule application to all children, not individual child in the family.
Based on the previous literature on FCE, it is documented that three constructs of FCE show differential predictions on family and youth outcomes. In this regard, it is plausible to assume that expressiveness, structural traditionalism, and conflict avoidance respectively influence parental socialization processes for youth substance use prevention. Investigating indirect effects of FCE on youth substance use behavior through parental influences provides the comprehensive underlying mechanism of parental anti-drug socialization in diverse family communication environments.

Overall, the review of literature addresses that media plays a role of a socialization agent by showing certain behaviors as normative. Particularly, E-E intervention holds great potentials to promote youth substance use prevention. The literature also discusses that parents are one of the primary socialization agents and thus protect youth from substance use. Considering E-E and parents as anti-drug socialization agents, there maybe more synergetic effects when communication is accounted in conjunction with E-E intervention. The remaining part of this chapter discusses the need to focus on the potential effects of E-E and interpersonal communication about substance use.

**The Joint Effects of Interpersonal Communication in E-E Health Intervention**

It is evident that E-E is an effective vehicle for public health campaign. To date, the main focus of E-E research has been to how people internally process the narrative health messages by observing E-E characters as role models. While health communication researchers and practitioners have predominantly focused on cognitive message processing, less attention has been given to how E-E audiences communicate with others. Recently, health communication scholars point out the importance of interpersonal communication about health messages in a process of social proliferation (Hutchinson & Wheeler, 2006; Larkey & Hecht, 2010; Miller-Day
& Hecht, under review; Salmon, 2001; Southwell and Yzer, 2007). It is suggested that E-E influences people to communicate about its content interpersonally.

For instance, it was found that 51% of regular ER viewers reported discussion about health issues with their family or friends when they watched a storyline about emergency contraception and HPV. In addition, 24% of the ER viewers reported that they contacted a doctor or other health care providers, as well as asking friends and family to obtain additional information about the health issues addressed in the drama (Brodie et al., 2001). In the context of diabetes prevention, it was revealed that frequent listeners of a local radio drama, BodyLove, were more likely to discuss diabetes, physical activities, eating healthy diets, and getting screen test for detection than seldom listeners in Alabama (Chen et al., 2009). In Tanzania and the Peruvian Amazon, E-E radio dramas were found to increase conversation about family planning between husbands and wives (Rogers et al., 1999) and between women listener and her friends (Sypher et al., 2002). In Netherlands, 35% of viewers who watched a television drama, Medisch Centrum West depicting cardiovascular health messages, reported that they often or sometime talked about the drama content with others (Bouman, Maas, & Kok, 1998).

Although these findings did show that individuals exposed to E-E programs tended to have conversations about the health topic with others, the joint effects of E-E intervention and interpersonal communication have not been fully tested. As CDC summery report indicates "effects of E-E interventions appear to be enhanced when accompanied by and/or followed by structured interpersonal communication about topic” (Salmon, 2001, p. 20), the contents of talks and interactive communication quality would enhance our understanding of how people process the E-E programs on an interpersonal level, which in turn may lead to reinforce desirable behavior changes or prevent from unexpectedly discouraging behavior changes. Empirical
findings provide evidence that creating role models and stimulating interpersonal communication are two key determinants to promote desirable behavioral changes as well as to reinforce normative changes for HIV prevention (Galavotti et al., 2008; Galavotti et al., 2001; Pappas-DeLuca et al., 2008).

Based on the previous findings, it is plausible to argue that conversations about the E-E health messages with others affect individuals’ normative and behavioral changes by reinforcing healthy behaviors or discouraging unhealthy practices. Thus, understanding message processing on an interpersonal level adds to enhance our knowledge of effective E-E intervention (Southwell & Yzer, 2007). In this respect, it is important to investigate the processes of health messages both on the intra- and interpersonal level. In the domain of youth substance use prevention, this dissertation research attempts to examine the joint effects of E-E intervention and interpersonal communication about substance use with parents, siblings, and friends on youth substance use behavior.

Conclusion

In summary, based on the review of literature, I propose E-E and parents as anti-drug socialization agents for youth. Understanding the effects of E-E prevention and parent-adolescent communication about substance use in different types of family communication environments may result in synergetic impacts on youth self-efficacy, norm, attitude, and behavior to use substances. My research attempts to provide more comprehensive knowledge of E-E prevention, in conjunction with parent-adolescent communication. The remaining of the chapters addresses this topic. Chapter 2 presents an empirical study that examines the effects of the E-E video, as a part of a school-based substance use prevention intervention, keepin’ it REAL (kiR) curriculum, on adolescent substance use. Based on social cognitive theory and theory of narrative
engagement, the chapter tests the hypothesized relationships between youth perceptions of narrative performance, youth refusal efficacy, and recent substance use. The moderating effects of interpersonal communication about substance use are also examined. Chapter 3 tests the longitudinal effects of parental socialization processes on youth substance use. The hypothesized relationships from parental injunctive norms about substance use to youth personal anti-drug norms to recent substance use, and parent-adolescent communication about media portrayals of substance use to youth personal anti-drug norms to recent substance use are tested. Chapter 3 also examines the indirect effects of family communication environments on recent substance use via the hypothesized relationships. Finally, chapter 4 presents overall conclusions from the two studies and provides directions for future research on youth substance use prevention.
As we move into the start of the 21st century, more children and adolescents are increasingly exposed to mass media depicting substance use behaviors such as drinking and smoking (Everette, Schnuth, & Tribble, 1998; Ribisl, Lee, Henriksen, & Haladjian, 2003; Sargent, Wills, Stoolmiller, Gibson, & Gibbons, 2006). A recent survey by the Center on Alcohol Marketing and Youth (CAMY, 2009) reports that youth exposure to alcohol advertising on the United States increased by 71 percent from the year of 2001 to 2009. More importantly, the same survey points out that adolescents’ exposure to alcohol advertisement was 44 percent higher than that for adults above 21 years old. Mass media tend to present messages or images that depict substance use as normative including advertisement, music videos, movies, and popular television dramas. Consequently, these messages may socialize adolescents to believe that substance use is more prevalent among their peers than it is in actuality. Most concerning is evidence that media depictions of substance use may influence adolescents to initiate and continue substance use and abuse (Anderson, Bruijn, Angus, Gordon, & Hastings, 2009; Cin, Worth, Gerrard, Gibbons, Stoolmiller, & Wills et al., 2009; Kelly, Slater, & Karan, 2002; Sargent, Gibson, & Hatherton, 2009).

Although some scholars view media as a socialization agent that negatively impacts youth development, health communication researchers also view media as a viable channel for promoting healthy behaviors (Bandura, 2004; Beacom, & Newman, 2010; Heather & Murphy
Entertainment-education (E-E), in particular, has been utilized for public health promotion and prevention campaigns over the past two decades (Bae, 2008; Beck, 2004; Lapinski & Nwulu, 2008; Rogers & Vaughan, 2000; Rogers, Vaughan, Swalehe, Rao, Svenkerud, & Sood, 1999; Smith, Downs, & Witte, 2007; Vaughan, Rogers, Singhal, & Swalehe, 2000; Ye & Ward, 2010). The persuasive health messages contained in entertainment-education interventions have proven to significantly influence a variety of health practices in promoting cancer detection (Hether, Huang, Beck, Murphy, & Valente, 2008) and organ donation (Morgan, Movius, & Cody, 2009), as well as preventing diabetes (Unger, Molina, & Baron, 2009) and substance use (Warren, Hecht, Wagstaff, Elek, Ndiaye, Dustman, et al., 2006). Entertainment-education has been particularly effective in preventing youth substance use (Gelders, Patesson, Vandoninck, Steinberg, Malderen, & Nicaise et al, 2009; Guttman, Gesser-Edelsburg, & Israelashvili, 2008; Hecht, Corman, & Miller-Rassulo, 1993; Mitschke, Loebl, Tatafu, Matsunaga, & Cassel, 2008; Starkey & Orme, 2001; Turner-Musa, Rhodes, Harper, Quinton, 2008). School based prevention interventions that utilize E-E videos or live performances providing role models who refuse drug offers are typically guided by social cognitive theory (Bandura, 2002) to provide prosocial models of youth resisting drug use (Jorone, Rankin, & Astedt-Kurki, 2008; Mitschke et al., 2008). These kinds of prevention efforts are found to be effective in altering youth perceptions, behavioral intentions, and substance use behaviors (Lee, Hecht, Miller-Day, & Elek, 2011; Warren et al., 2006).

Although E-E interventions show promise for youth substance use prevention, media do not exist in isolation (Bouman, Mass, & Kok, 1998; Brodie, Foehr, Rideout, Baer, Miller, Flournoy, et al., 2001). Media messages are often discussed and interpreted within the context of interpersonal relationships (Larkey & Hecht, 2010; Miller-Day & Hecht, under review). As a
result, there is growing interest in the potential influences of interpersonal communication about E-E campaigns on healthy behavior practices (Salmon, 2001; Southwell & Yzer, 2007). It is reasoned that in conjunction with E-E prevention, interpersonal communication about E-E health messages may create synergetic effects on communicator’s personal values and norms. I turn, now, to a more detailed discussion of these elements.

**Entertainment-Education Effects on Healthy Behaviors**

Entertainment-education (E-E) is an approach to prevention where messages are conveyed through television, film, literature, and other entertainment forms to provide information about an issue, increase knowledge, shape attitudes, and change behaviors (Singhal & Rogers, 1999). In the health domain, E-E has been used for health promotion and public prevention interventions. Utilizing various forms of E-E, E-E has promoted a wide range of health topics including HIV/AIDS (Bogale, Boer, & Seydel, 2010; Brodie et al., 2001; Kuhlmann, Kraft, Galavotti, Creek, Mooky, & Ntumy, 2008; Pappas-DeLuca, Kraft, Galavotti, Warner, Mooky, & Hastings et al., 2008; Vaughan et al., 2000), cancer (Hether et al., 2008; Love, Mouttapa, Tanjasiri, 2009; Sharf, Freimuth, Greenspon, & Plotnick, 1996; Volk, Jibaja-Weiss, Hawley, Kneuper, Spann, & Miles et al., 2008; Wilkin, Valente, Murphy, Cody, Huang, & Beck, 2007), diabetes (Chen, Kohler, Schoenberger, Suzuki-Crumly, Davis, & Powell, 2009; Unger et al., 2009), mental health (Cabassa, Molina, & Baron, 2010; Ginossar & Nelson, 2010; Nahm, Buffington, Schiman, Raider, & Resko, 2010) and substance abuse prevention campaigns (Brodie et al., 2001; Guttmann et al. 08; Warren et al., 2006). For example, E-E television dramas may successfully increase a lay audience’s health knowledge of breast cancer and raise awareness of the importance for self-care, early breast cancer detection, and possible treatment options in the United States (Hether et al., 2008; Sharf et al., 1996; Wilkin et al., 2007).
E-E dramas also may effectively promote the awareness of less familiar health topics such as the issue of bipolar disorder (Nahm et al., 2010). After the popular teen drama 90210 depicted a major character with bipolar disorder, a great number of the show’s viewers sought out more information about bipolar disorder through telephone calls to a special hotline at the Substance Abuse and Mental Health Services Administration (SAMHSA) and by visiting a special website designed to provide further information (Nahm et al., 2010). Similarly, E-E has been used to improve reproductive health behaviors and HIV/AIDS prevention in the developing countries (Roberto, Murray-Johnson, & Witte, 2010). Several studies have found that E-E increased health knowledge about family planning and modern contraceptives in Tanzania (Rogers & Vaughan, 2000; Rogers et al., 1999; Vaughan et al., 2000), the Peruvian Amazon (Sypher et al., 2002), and in Bangladesh (Do & Kincaid, 2006).

In addition to knowledge improvement, E-E has the potential to encourage healthy behavior changes. Previous studies indicate that exposure to E-E programs about HIV significantly increased intention to test for HIV (Lapinski & Nwulu, 2008; Pappas-DeLuca et al., 2008) and to use modern contraceptives as a preventive behavior against HIV infection (Do & Kincaid, 2006). In the context of diabetes prevention, the intention to practice healthy behaviors such as exercising and developing eating habits that include an abundance of fruits and vegetables significantly increased among those who read an E-E booklet illustrating a dramatic story of a character diagnosed by diabetes (Unger et al. 09). E-E intervention has also been found effective in promoting youth substance use prevention (Gelders et al, 2009; Guttmman et al., 2008; Mitschke et al., 2008; Turner-Musa et al., 2008; Warren et al., 2006). For instance, Warren and colleagues (2006) examined the effects of E-E videos, which are a core component of a school-based prevention intervention called keepin’ it REAL (kiR), as well as public service
announcements (PSAs) about adolescents’ substance use. The research findings in this study revealed that exposure to the E-E videos had a greater effect on youth’s intention to use illicit substances than did the PSAs. Given the potentially positive effects of E-E on health practices, particularly youth substance use, the present study further explores the persuasive processes of E-E messages directed at reducing youth substance use.

**Theoretical Background of Entertainment-Education Effects**

According to social cognitive theory (Bandura, 2002, 2004), E-E characters serve as *role models* to demonstrate how to perform a desirable behavior in a specific health context. Individuals vicariously learn healthy behaviors by observing and modeling characters’ behaviors depicted in an E-E intervention, which in turn leads to enhanced self-efficacy for performing a recommended health behavior. Social cognitive theory explains that self-efficacy plays a key role in mediating the relationships between the perception of E-E messages and recommended behavior changes. Studies support the significant role of self-efficacy in mediating the effects of E-E program messages on behavioral intentions such as HIV/AIDS preventive behaviors (Smith et al., 2007; Sood, 2002) and behavioral outcomes (i.e., talking about sexual health) (Moyer-Gues, Chung, & Jain, 2011).

Narrative health messages are a particular type of message found in E-E that has proven effective in changing health behaviors. Some speculate that narratives are effective because of their unique ability to gain the audience’s attention and maintain engagement during messages processing (Green, Strange, & Brock, 2002). Specifically, the theory of narrative engagement (Miller, Hecht, & Stiff, 1998) explains narrative persuasion in terms of the audience’s engagement in the narrative performance. In the theory engagement is defined as multifaceted conceptualizations on the continuum of cognitive and emotional distance. Based on the theory,
Lee and colleges (2011) propose a model of the perception of narrative performance that identified various degrees of engagement. That is, the level of engagement can be understood in terms of the audience’s attention to the performance message called interest, involvement in the story named realism, and involvement in the characters titled identification with characters. To validate the measure of the perception of narrative performance, Lee et al. (2011) collected survey data from adolescents who watched E-E prevention videos as a core part of a school-based youth substance use intervention, keepin’ it REAL (kiR). The results indicated that interest in E-E videos was negatively related to youth positive cigarette use expectancies, whereas realism was inversely linked to alcohol use expectancies and intent to use alcohol.

Based on these findings, the current study extends this line of research to investigate the effects of E-E substance use prevention videos, with regard to the concept of interest and realism. The current study goes beyond examining effects on youth intentions to substances to test the effects of E-E prevention messages on youth self-reports of actual drug use. Based on SCT, the study postulates that these effects are medicated by self-efficacy, investigating youth’s perception of narrative performance in E-E videos, their refusal self-efficacy, and substance use behavior (in the past 30 days). The first set of research hypotheses is posited as the following:

**H1:** Youth perceptions of entertainment education videos are positively related to youth refusal self-efficacy, which in turn is inversely related to youth substance use behavior.

**H1a:** Youth interest in the E-E videos is positively related to refusal self-efficacy, which in turn is inversely related to youth substance use behavior.
H1b: Youth perception of realism in the E-E video story is positively related to refusal self-efficacy, which in turn is inversely related to youth substance use behavior.

Lee and colleagues (2011) conceptualize youth engagement with narrative-based E-E as consisting of three dimensions of interest, realism, and identification with characters. However, their research did not examine the impact of identification with the characters in substance use prevention E-E on actual substance use. It is important to do so because scholars have pointed to the importance of an audience’s involvement with characters in E-E literature (Kincaid, 2002; Miller-Day & Hecht, under review). Perceived similarity with characters, identification with characters, and wishful identification with characters (i.e., wanting to be like characters) represent the various aspects of involvement with E-E characters. Previous research evidence supports this claim that individuals who identify with characters tend to adopt recommended health behaviors (Lee, Park, Choi, & Kim, 2010; Moyer-Gues, et al., 2011; Smith et al., 2007; Wilkin et al., 2007) or change their behavior (Murphy, Frank, Moran, Patnoe-Woodley, 2011). The present study specifically examines identification with E-E characters and its relationship to youth self-efficacy and substance use behavior, posing the following hypothesis:

H2: Youth perception of identification with E-E characters is positively related to refusal self-efficacy, which in turn is inversely related to youth substance use behavior.

To date, numerous studies have explored the cognitive (intrapersonal) processes involved in processing E-E messages. Nonetheless, very little research has focused on how people talk
about the E-E messages with others and how this interpersonal communication might influence the effectiveness of the E-E messages. Exploring the potential effects of interpersonal communication about E-E messages may contribute to better understand the effectiveness of E-E health intervention.

**Interpersonal Communication about Health Messages**

Health communication scholars argue that media campaign effects need to be considered in conjunction within the context of interpersonal discussions about the media message (Southwell & Yzer, 2007). Interpersonal communication about media health messages has been shown to improve the understanding of the health issue and enhance the persuasive effects of E-E health campaigns (Hutchinson & Wheeler, 2006; Salmon, 2001). In a sense, these discussions provide a frame for audience perceptions and interpretation of E-E messages and/or help audiences interpret the messages they have received (Larkey & Hecht, 2010; Miller-Day & Hecht, under review; Slater & Rounder, 2002). Past research suggests that E-E audiences tend to engage in such discussions about health message with family members or friends (Boutman et al., 1998; Brodie et al., 2001; Chen et al., 2009; Rogers et al., 1999; Sypher et al., 2002). More importantly, empirical studies show evidence that conversations about the E-E messages positively influence individuals’ normative and behavioral changes (Galavotti, Kuhlmann, Kraft, Harford, & Petraglia, 2008; Galavotti, Pappas-DeLuca, & Lansky, 2001; Pappas-DeLuca et al., 2008).

Some scholars have pointed out the importance of interpersonal communication about health campaign messages in a process of social proliferation (Larkey & Hecht, 2010; Miller-Day & Hecht, under review; Salmon, 2001; Southwell and Yzer, 2007), suggesting that interpersonal communication about the health messages may reinforce desirable behavior.
changes or prevent from unexpectedly discouraging behavior changes (Galavotti, Pappas-DeLuca, & Lansky, 2001; Hutchinson & Wheeler, 2006; Salmon, 2001). Communicating with whom and what contents discussed determines the social proliferation process (Miller-Day & Hecht, in press).

Yet, the joint effect of E-E intervention and interpersonal communication about substance use, in particular with parents, siblings, and friends has not been fully explored in the domain of youth substance use prevention. Rather, the focus of the previous research was on the potential influences of family and peers on adolescents’ substance use behavior. For example, family scholars provide ample evidences that parent-child communication about substance use is protective of youth against substance use (Hawkins, Catalano, & Miller, 1992; Miller-Day, 2002, 2008; Miller-Day & Kam, 2010; Rangarajan, & Kelly, 2006; Reimuller, Hussong, & Ennett, 2011). Considering a great number of prevention studies examining the influences of parents on adolescent substance use, relatively little attention has been given to the sibling research in youth substance use prevention (Needle, McCubbin, Wilson, Reineck, Lazar, & Mederer, 1986). The existing literature notes that siblings exert negative influences on youth substance use (Altonji, Cattan, & Ware, 2010; Slomkowski, Conger, Rende, Heylen, Little, Shebloski et al., 2009; Windle, 2000).

Prevention researchers also point out peers as influential for adolescents’ substance use behaviors (Bauman & Ennett, 1996). Peers may play both a protect role for youth substance (Elek, Miller-Day, & Hecht, 2006; Kam, Matsunaga, Hecht, & Ndiaye, 2009) as well as serving as a negative influence or risk factor (Bahr, Hoffman, & Yang, 2005; Brook, Brook, Rubenstone, Chenshu, & Naomi, 2011; Duan, Chou, Andreeva, & Pentz, 2009; Stanton, Li, Pack, Cottrell, Harris, & Burn, 2002). Although previous literature documents the influences of parents, siblings,
and friends on youth substance use, less is known about the potential effects of communication about substance use and how this may impact the interpretation of E-E messages. Based on the previous literature, it is plausible to assume that general conversations about substance use may play a role in interpreting E-E messages. For instance, if friends have discussions that glorify drug use and drug users, E-E messages may be interested differently among those whose friends have more negative conversations about substances. Therefore, it is important to explore the joint effects of E-E prevention messages pertaining to youth substance use and youths’ interpersonal communication about substances and substance use. This leads to the following research question:

**RQ1:** Does interpersonal communication about substance use moderate the relationship between youth refusal self-efficacy and youth substance use behavior?

When combined, the research hypotheses and research question form a conceptual model that I seek to test in this study.

*Figure 2.1: Proposed Conceptual Moderated Mediation Model*
Method

The data for the current study were collected as a part of an evaluation study of a school-based substance use prevention program entitled *keepin’ it REAL* (kiR). Keepin’ it REAL (kiR) is an intervention consisting of ten lessons with five entertainment videos teaching youth knowledge, motivation, and communication skills to refuse drug offers (Colby, Hecht, Miller-Day, Krieger, Syvertsen, & Graham et al., in press; Gosin, Marsiglia, & Hecht, 2003; Gosin, Dustman, Harthun, & Drapeau, 2003; Hecht & Miller-Day, 2009; Miller, Alberts, Hecht, Trost, & Krizek, 2000). Self-reported data were collected from eight grade students in 5 classes at one public middle school in a rural area of Pennsylvania. Students were shown five entertainment-education videos (4 minutes 55 seconds – 5 minutes 40 seconds) that are the core video components of 45 minutes kiR curricula and have exhibited independent effects on substance use in prior study (Warren et al, 2006). The videos consists of the introductory video presenting the process of making each video and an overview of the curriculum followed by four narrative videos each showing one of the refusal strategies R.E.A.L. (*Refuse, Explain, Avoid, Leave*) in drug offer situations. Students completed a self-report survey reporting their reactions to each video and then a posttest survey was administered after all five videos were viewed. The current study used students’ self-reports of their perceptions of the E-E videos, along with their personal refusal efficacy, and communication about substance use with parents, siblings, and friends. After watching the final *Leave* video, youth responses were collected about personal substance use behavior. Procedural and time limitations precluded the administration of a pretest survey. This limitation is discussed in the concluding section.

Participants

Two hundred and ten 8th grade students from 5 classes in one middle school participated in the current study. Based on the data, 50.8% were male and 49.2% were female. The mean age
was 13.76 years ($SD = .45$). 95% of the youth self-identified as European American and 5% were Hispanic. Prior to the data collection, parents provided active informed consent and students provided informed assent for participation.

**Entertainment Education Videos**

The evidence-based school prevention intervention curriculum, *keepin’ it REAL* (kiR), promotes anti-drug norms, provides adolescents refusal skills, and motivates youth to competently utilize communication skills in drug offer situations (Eleck, Wagstaff, & Hecht, 2010; Hecht, Graham, & Elek, 2006; Hecht & Miller-Day, 2009; Miller et al., 2000). As core components of the kiR curricula, an introductory video and four videos teaching refusal skills (*Refuse, Explain, Avoid, and Leave*) are presented in entertainment-education (E-E) form. The videos present narratives based on the findings from qualitative research investigating adolescents’ refusal skills in drug offer situations and were written, performed, and produced by high school students, targeting middle school students living in rural areas (Hecht & Miller-Day, 2009).

The introductory video presents an overview of kiR including the process of youth producing the videos and briefly introduces the four refusal strategies. The *Refuse* video presents narratives teaching youth how to refuse a drug offer while maintaining friendships with peers. The *Explain* video demonstrates assertive communication skills to explain the reason for not accepting the drug offer. The *Avoid* video shows youth using a strategy of not being involved in any possible drug offer situations. Finally, the *Leave* video portrays youth walking away from the situation when are offered drugs.

**Measures**
**Perception of entertainment-education video.** Eight items assessed youth perception of entertainment-education videos. Five items were taken from perception of narrative performance to measure realism and interest (Lee et al., 2011) and 3 items were used to measure identification with characters (Smith et al., 2008). Students responded to the items using a 5-point agree-disagree scale indicating their agreement of the statement (from “strongly disagree” to “strongly agree”). Sample items include “How interesting was the videos?”, “How believable were the stories in the videos?”, and “How much do you want to be like the main character(s) in the videos?” Higher scores represented more positive perceptions of the videos. Cronbach’s alpha in the current sample was .92 for interest, .87 for realism, and .91 for identification with characters.

**Refusal self-efficacy.** Three items were created by the author and used to measure students’ perception of efficacy. The items asked students about their confidence in refusing offers of alcohol, cigarette, and marijuana using a 4-point type scale (1 = not at all sure to 4 = very sure). Sample items include “I would say no if a family member offered me alcohol”, “I would say no if a kid at school offered me a cigarette”, and “I would say no if a close friend offered me marijuana” (Cronbach’s alpha = .80). Higher scores indicated greater certainty of refusal self-efficacy.

**Communication about substance use.** Six items were created by the author and assessed frequency and comfort of communication about drug use with parents, siblings, and friends. Using 4-point scale (1 = never to 4 = frequently) students answered 3 items asking “I have talked about drug use with my parents/ siblings/ any of my friends”. Higher scores represented greater frequency of communication about substance use. Comfort of communication was measured by 3 items questioning “How comfortable were you talking about drugs with your parents/ siblings/ any of your friends” with an option of 6-point scale (0 = did
not talk with them about this, 1 = extremely uncomfortable to 5 = extremely comfortable).
Higher scores indicated greater comfort conversing about drugs. All of the items were used as a
single item to measure communication about substance use.

**Past 30-days substance use.** A modified version of Graham et al.’s (1984) measure was
used to ask youth about their use of alcohol, cigarette, and marijuana in the past 30 days.
Students responded to the 3 questions asking frequency of substance use respectively using 9-
point scale for alcohol, 8-point scale for cigarette, and 8-point scale for marijuana (e.g., “How
many days in the past 30 days have you had alcohol to drink?”, “How many cigarettes have you
smoked in the past 30 days?”, “How many times have you used marijuana in the past 30 days?”).
Higher scores indicated more substance use. Inter-item correlations and CFAs could not be
examined due to the single item measure for each substance.

**Prior substance use.** Three items asked about the frequency of lifetime use of alcohol,
cigarette, and marijuana. These items were included to control for the prior substance use (e.g.
“How many days in your entire life have you had alcohol to drink?”, “How many cigarettes have
you smoked in your entire life?”, “How many times have you used marijuana in your entire
life?”). Higher scores indicated more substance use in terms of frequency.

**Demographics.** Gender (0 = male; 1 = female), age, and class are included as controlling
variables.

**Analysis Summary**

The surveys were machine scored and the data entered into SPSS v 19.0, which was used
for preliminary analyses. Descriptive statistical analyses were conducted to access means,
skewness, and kurtosis for normality of data (see table 2.1) and indicated that the variables were
not normally distributed. As a result, maximum likelihood (ML) method that yield unbiased,
consistent, and efficient model estimation under multivariate normality of continuous data could not be used. Instead the robust weighted least square estimated mean- and variance- adjustment method (i.e., WLSMV) was employed for alternative estimation since the model included ordinal and non-normally distributed variables (Muthén & Muthén, 2011). To handle missing data, multiple imputation and FIML allow stronger missing data strategies to estimate unbiased parameters than traditional missing procedures (e.g., listwise and pairwise deletion) (Graham, Cumsille, & Elek-Fisk, 2003). For this reason, multiple imputation procedure was implemented using NORM 2.03 (Schafer, 1997). Path analyses were utilized to test the mediation model, using M-Plus 6.1 (Muthén & Muthén, 2011).

A series of path analyses was conducted to examine the hypothesized relationships. First, a path analysis was run to test the mediation model posited in H1 and H2. Perceptions of narrative performance (interest, realism, and identification with characters) were entered into the hypothesized model as exogenous variables, whereas youth refusal efficacy, and the past-30 days substance use were used as endogenous variables (see Figure 1). Due to the high skewness of substance use in the lifetime and past 30-days, a single item was computed along with 4-point scales (1 = none; 2 = used one of substances; 3 = used two of substances; 4 = used all three substances). A path analysis was employed to examine indirect paths from the exogenous variables to the endogenous mediating variables, along with direct paths from the exogenous variables to the rest of the endogenous variables (Preacher & Hayes, 2008). As portrayed in Figure 2.1, this study tested a direct path from perception of narrative performance to youth refusal efficacy, a path from youth refusal efficacy to the past 30-days substance use (alcohol, cigarette, marijuana). Also, an indirect path from perception of narrative performance to the past 30-days substance use were examined. Age, gender, class, and lifetime substance use were also
entered into the model as exogenous variables, from which pathways were drawn to youth refusal efficacy and the past 30-days substance use to control for the effects of demographic variables.

Next, the moderated mediation model posted in RQ1 was examined. Prior to this path analyses, the composite score of self-efficacy, frequency and comfort of communication were centered by subtracting the means from the variables. Centering reduces multicollinearity among variables when testing moderation effect (Aiken & West, 1991). This interaction product term represents the effects that are orthogonal to their main effects. Refusal efficacy by communication about substance use interaction terms was created by multiplying the composite score of 1) the item of refusal efficacy with three items of frequency of communication and 2) the item of refusal efficacy with three items of comfort of communication. As a result, six path analyses were run to examine the moderated mediation model respectively. Additional paths were drawn from communication about substance use to the past 30-days substance use, from interaction terms (refusal efficacy x communication about substance use) to the past 30-days substance use in the hypothesized mediation model.

Since $\chi^2$ is influenced by sample size, the root mean square error of approximation (RMSEA), the comparative fit index (CFI), and the Tucker-Lewis index (TLI) were used to evaluate the practical model fit of the moderated mediation model (Kline, 2005; Hu & Bentler, 1999; Yu, 2002). An RMSEA below .05 is considered most desirable, an RMSEA between .05 and .08 is reasonable, and the value equal to or above .10 indicates a poor fit (Boomsma, 2000; Kline, 2005). A value of CFI and TLI above .95 is appropriate (Hu & Bentler, 1999; Kline, 2005).

**Results**
Prior to path analyses, the principal component analysis was run using SPSS to test the new measure of youth refusal self-efficacy. The results of the PCA revealed a single component with three items because the eigenvalue was 2.22 and eigenvalues greater than 1 are considered appropriate (Allen & Yen, 2002). Next, full information maximum likelihood (FIML) was implemented to test the confirmatory factor analysis on the measure of self-efficacy in M-Plus. The CFA measurement model yielded a reasonably good fit to the data: $\chi^2(3) = 255.654; \text{CFI} = 1; \text{SRMR} = .000; \text{RMSEA} = .000$. Instead of the Tucker-Lewis index (TLI), the FIML estimation requires the standardized root mean square residual (SRMR) as model fit index, which is considered favorable below .05 (Hu & Bentler, 1999). As a result, the unidimensional measure was considered validated for this purpose.

A series of path analyses was conducted to examine the moderated mediation model. The mediation model posited in H1 and H2 yielded a reasonably good fit to the data: $\chi^2(30) = 206.362; \text{CFI} = 1; \text{TLI} = 1.029; \text{RMSEA} = .0$. The paths were drawn from exogenous variables (interest, realism, and identification with characters) to endogenous variables (youth refusal efficacy and the past 30-days substance use). Lifetime substance use, age, gender, and class were controlled for by treating these variables as exogenous variables and drawing paths from the controlling variables to youth refusal efficacy and the past-30days substance use.

The research hypotheses predicted that higher levels of interest, realism, and identification with the characters in the E-E video would be associated with youth refusal efficacy and have indirect effects on youth recent substance use via refusal efficacy. The model explained 17% of the variance in refusal efficacy, 59% of the variance in youth recent substance use when taking into account of lifetime substance use. All estimates were in the expected direction, yet some estimates were not statistically significant. The findings revealed that interest
(unstandardized $\beta = .12$, SE = .06, $p < .05$) and realism (unstandardized $\beta = .17$, SE = .06, $p < .01$) were significantly related to youth refusal efficacy, whereas identification with characters showed a non-significant association with youth refusal efficacy (unstandardized $\beta = .05$, SE = .07, $p = .45$).

The results also indicated that youth refusal efficacy was inversely associated with youth recent substance use but that this relationship was non-significant (unstandardized $\beta = -.19$, SE = .17, $p = .271$). None of perception of narrative performance variables exerted significant indirect effects on youth recent substance use via refusal efficacy (for interest $\rightarrow$ refusal efficacy $\rightarrow$ recent use, unstandardized $\beta = -.02$, SE = .02, $p = .318$; for realism $\rightarrow$ refusal efficacy $\rightarrow$ recent use, unstandardized $\beta = -.03$, SE = .03, $p = .310$; for identification with characters $\rightarrow$ refusal efficacy $\rightarrow$ recent use, unstandardized $\beta = -.01$, SE = .02, $p = .539$). Thus, the results supported partial portions of H1 and found no evidence for H2.

In addition to the mediation analysis, path analyses were run to test the moderated mediation model. Six path analyses were conducted to examine the moderation effects of frequency and comfort of communication about substance use (with parents, siblings, and friends) on the hypothesized mediation model respectively. Additional paths were drawn in the hypothesized mediation model from conversation about substance use to youth recent substance use and from interaction terms (efficacy x conversation) to youth recent substance use. The research question posited that the relationship between youth refusal self-efficacy and youth substance use behavior would differ depending on interpersonal communication about substance use. All estimates were in the expected direction, yet none were statistically significant.

The first moderated mediation model examining the frequency of communication about substance use with parents yielded a reasonably good fit to the data: $\chi^2 (40) = 204.484$; CFI = 1;
TLI = 1.027; RMSEA = .0. The findings revealed that frequency of communication about substance use with parents did not significantly moderate the relationship between youth refusal efficacy and recent substance use (unstandardized $\beta = -.28$, $SE = .16$, $p = .081$).

The second moderated mediation model examining the frequency of communication about substance use with siblings yielded a reasonably good fit to the data: $\chi^2 (40) = 221.903$; CFI = .944; TLI = .907; RMSEA = .048. The results indicated that frequency of communication about substance use with siblings did not significantly moderate the relationship between youth refusal efficacy and recent substance use (unstandardized $\beta = -.15$, $SE = .13$, $p = .236$).

The third moderated mediation model examining the frequency of communication about substance use with friends yielded a reasonably good fit to the data: $\chi^2 (40) = 208.628$; CFI = .992; TLI = .987; RMSEA = .017. It was found that frequency of communication about substance use with friends did not significantly moderate the relationship between youth refusal efficacy and recent substance use (unstandardized $\beta = -.18$, $SE = .14$, $p = .184$).

The fourth moderated mediation model examining the comfort of communication about substance use with parents presented a poor fit to the data: $\chi^2 (40) = 268.078$; CFI = .713; TLI = .522; RMSEA = .121. The results showed that comfort of communication about substance use with parents did not significantly moderate the relationship between youth refusal efficacy and recent substance use (unstandardized $\beta = -.14$, $SE = .10$, $p = .147$).

The fifth moderated mediation model examining the comfort of communication about substance use with siblings yielded a reasonably good fit to the data: $\chi^2 (40) = 222.017$; CFI = .949; TLI = .915; RMSEA = .046. The findings revealed that comfort of communication about substance use with parents did not significantly moderate the relationship between youth refusal efficacy and recent substance use (unstandardized $\beta = -.05$, $SE = .07$, $p = .509$).
The sixth moderated mediation model examining the comfort of communication about substance use with parents presented a poor fit to the data: $\chi^2(40) = 283.607; \text{CFI} = .678; \text{TLI} = .463; \text{RMSEA} = .133$. The results showed that comfort of communication about substance use with parents did not significantly moderate the relationship between youth refusal efficacy and recent substance use (unstandardized $\beta = -.05, SE = .05, p = .387$).

Finally, the demographic variables included in the model did not significantly predicted youth refusal efficacy nor youth recent substance use except lifetime substance use (unstandardized $\beta = 1.5, SE = .17, p < .001$). Table 2.2 presents the unstandardized parameter estimates and their standard errors.

**Discussion**

Using the cross-sectional data, the present study investigated the joint effects of the E-E video and interpersonal communication about substance use on actual substance use among youth. This study was guided by social cognitive theory (Bandura, 2002, 2004) and the theory of narrative engagement (Miller et al., 1998) and path analyses were conducted to examine the moderated mediation model. The research hypotheses were posited to text the mediation effects of youth refusal efficacy on the relationship between youth perception of narrative performance and past 30-days substance use. Although the hypotheses were not supported by the results, all of the direct and indirect effects were in the expected direction.

The results revealed that interest and realism both significantly related to youth refusal efficacy. The findings suggest that as youth were interested in the E-E video, they were more likely to report high levels of refusal efficacy. It is also discovered that as youth perceived the E-E story realistic, they tended to have high degrees of refusal efficacy. These findings are consistent with previous E-E- literature noting that E-E narrative messages effectively grab the
audience’s attention and maintain engagement (Green et al., 2002; Lee et al., 2011), and consequently enhance the audience’s self-efficacy (Moyer-Gues et al., 2011; Smith et al., 2007; Sood, 2002).

However, identification with characters was not a significant predictor for youth refusal efficacy. Although the relationship between identification with characters and youth refusal efficacy was not significant, the trend showed a positive association indicating that youth who identified with characters on E-E video were likely to report increased refusal efficacy. This non-significant relationship can be explained that since the E-E video lasts approximately 5 minutes, youth might not have enough time to be emotionally involved with E-E characters. Previous studies examined the effects of identification with characters on the audience’s self-efficacy, attitude, and behavior changes using E-E television and radio dramas broadcasted in the public for a certain period of time. These programs consisted of a series of episodes with the same characters and the audience was continuously exposed to several episodes of E-E programs, which might give the audience more chances to identify with E-E-characters. In this light, past studies show evidence that identification with characters significantly increased the audience’s self-efficacy (Moyer-Gues et al., 2011; Smith et al., 2007) and healthy behavior practices (Lee et al., 2011; Murphy et al., 2011, Wilkin et al., 2007). Comparing to the prior research, the current study used the 5-minute video as an E-E prevention intervention tool, which appears to be relatively short for adolescents to identify with E-E characters. While the E-E video effectively grabbed youths’ attention and made them involved in the story, there seemed to be a lack of time for adolescents to identify with characters. Future research needs to investigate if a series of E-E dramas affects youth perception on identification with characters and its effect on self-efficacy and other behavior outcomes.
Contrary to the expectation, youth refusal efficacy was not significantly related to their recent substance use behavior. Considering the fact that the post-survey was implemented only a month after the prevention intervention, it may have been difficult to detect a dramatic change on youth substance use behavior. In addition, students’ responses on recent substance use were highly skewed meaning that only few students reported their use of substances in the past 30-days. This finding is consistent with the previous research reporting that significant increases of substance use do not typically emerge until 10th grade (Johnston, O’Malley, Bachman, & Schulenberg, 2011; Taylor, Graham, Cumsille, & Hansen, 2000). This fact might also affect the detection of the significant association between refusal efficacy and recent substance use. Future prevention researchers should consider collecting more samples and longer-term post-survey data after E-E prevention intervention to allow time for substance use to emerge.

The research question was asked to examine the moderation effects of communication about substance use on the relationship between youth refusal efficacy and recent substance use. The findings revealed that neither frequency nor comfort in communicating about substance use moderated the hypothesized mediation relationship. Although none of the moderating factors were significant, trends were in the predicted direction of an inverse relationship to recent substance use (i.e., more conversation, less use). Again, examining effects over a longer time period may be needed for these findings to explain influences of interpersonal communication, in conjunction with E-E intervention.

The trend in the results indicates that frequency and comfort in communicating about substance use with parents was a strongest predictor for less recent youth substance use. This finding also suggests that youth who frequently communicated with parents about substance use tended to report less substance use in the past-30 days. In addition, adolescents who felt
comfortable in talking about substance use with parents were less likely to report recent substance use. These findings were consistent with the previous literature on parent-child communication about substance use (Hawkins et al., 1992; Miller-Day & Kam, 2010; Rangarajan & Kelly, 2006; Reimuller et al., 2011) yet the relationships were not statistically significant. Since the present study focused on parent-adolescent communication about substance use, family scholars are encouraged to further investigate whether parent-adolescent communication about E-E messages reinforces and/or reduces youth perception of the E-E messages.

Contrary to the previous literature on sibling research (Altonji et al., 2010; Slomkowski et al., 2009; Windle, 2000), the trend indicated that the frequency and comfort in communicating about substance use with siblings were inversely related to youth recent substance use. The findings may be explained that the prior studies focused on the influences of siblings’ substance use on youth substance use behavior, whereas the present study investigated communication about substance use between youth and siblings. Thus, it is plausible to assume that communication between siblings may exert positive influences on youth substance use behavior. More research is needed to delve into a potential role of older and/or younger siblings for an anti-drug socialization agent.

Similar findings were discovered in the moderation effects of communication about substance with friends. The trend showed that frequency and comfort in communicating about substance use with friends were inversely associated with youth recent substance use. Past research shows contradictory findings about the influence of peers on adolescent substance use and the current study’s findings were consistent with the contention that peers can play a protective role against substance use behavior (Elek et al., 2006; Kam et al., 2009). Future
research should explore peer-to-peer communication about substance use and investigate how the effects of communication differ based on friends who are substance users and who are not users (i.e., user to user, user to non-user, non-user to non-user).

**Practical Implications**

Based on the social cognitive theory (Bandura 2002, 2004) and theory of narrative engagement (Miller et al., 1998), the current study focuses on the joint effects of E-E prevention intervention and interpersonal communication about substances and substance use. Consistent with expectations (Green et al., 2002), youth who reported interest in and realism of the E-E video had higher levels of refusal efficacy. These findings suggest that E-E interventions, in particular those targeting adolescents, should be designed to attract youth’s interest in E-E messages and make E-E stories realistic to them. Such efforts can possibly enhance youth’s ability to refuse substances in drug offer situations.

The present study also attempts to examine communication about substance use with parents, siblings, and friends. Although the results revealed non-significant findings, both frequency and comfort in communicating about substance use were related to youth recent substance use suggesting that frequent communication about substance use and comfortable feeling of communication about substance use with parents, siblings, and friends play protective roles in youth substance use behavior.

E-E has been widely used to promote public health intervention and its effectiveness have been well documented (Bogale et al., 2010; Brodie et al., 2001; Hether et al., 2008; Kuhlmann et al., 2008; Love et al., 2009; Morgan et al., 2009; Volk et al., 2008). The present study seeks to extend this line of E-E research by investigating the joint effects of E-E intervention and interpersonal communication. In spite of non-significant findings of the joint effects, the study
brings our attention to the need to understand interpersonal communication about substances in conjunction with intrapersonal processes of interpreting E-E messages and great attention is needed to further explore the dual processing of E-E messages in public health campaigns.

**Limitations**

There are several research limitations in the current study. First, the pre-test survey was not able to be implemented due to a delay in the IRB (Institute of Research Board) review process. The pre-test survey was originally scheduled with the school prior to the kiR intervention but the delay in IRB approval did not leave enough time to collect the pre-test survey, implement the intervention, and administer the posttest. The absence of the pre-test survey, particularly about youth self-report on lifetime substance use, limited the analysis for the controlling variables. In the present study, lifetime substance use from the post-survey was used to be controlled for in the analysis. Ideally, the recent substance use behavior needed to be measured in at least several months after E-E intervention. However, in the present study the post-survey was collected one month after E-E intervention. Thus, it was reasoned that this short time span might not have provided enough time to change youth substance use behavior. E-E scholars pinpointed that the effects of E-E messages increase with time (Appel & Richeter, 2007; Jensen, Bernat, Wilson, & Goonwardene, 2009) and a sleeper effect may occur when testing the effectiveness of E-E in a short term (Kumkale & Albarracin, 2004).

Second, the data sample \(n = 210\) was relatively small for the purpose of examining the moderated mediation analysis. The sample size may explain why there were many non-significant relationships among mediation and moderation variables. Highly skewedness of youth report on recent substance use was other possible reasons of non-significant findings. Although WLSMV estimation was used to deal with non-normality of data, this method might
not be able to solve the extreme levels of skewedness on substance use completely. In the current study, it was observed that there were relatively small numbers of students who reported the lifetime substance use and recent substance use.

Third, the new measure of youth refusal self-efficacy might possibly imply meaning of youth behavioral intention. The questionnaire item asked “how sure you are that you would say no for each of the following situations”, which could be interpreted as intention to refuse drug offers from parents, siblings, and friends. An item as “how easy you are that you could say no for the following situations”, may measure youth efficacy to refuse drug offers from family and friends more accurately.

Lastly, the present study did not include a control group. In the absence of a control group, the effects of E-E intervention on youth outcomes cannot be interpreted in causal relationships. Future researchers should resolve this limitation by conducting E-E prevention research with the treatment and control group.

Conclusion

This study suggests that E-E prevention video plays a critical role in youth self-efficacy to refuse drug offers. As predicted, youth who perceived the EE video to be more interesting and realistic reported significantly greater refusal efficacy than those with less positive perceptions. Contrary to the expectation, however, identification with characters did not exert significant influence on youth refusal efficacy. Refusal efficacy was inversely related to youth recent substance use, yet such relationship was not statistically significant. In addition, moderation effects of communication about substance use were not found significant, yet the trends indicated that communication about substance use positively moderated the relationship between refusal efficacy and recent substance use. Despite the fact that there were non-significant effects of
communication about substance use, the present study provides future direction in E-E substance use prevention intervention.
### Table 2.1: Summary of Statistics and Scale Reliabilities

<table>
<thead>
<tr>
<th>Variable</th>
<th>Scale</th>
<th>M</th>
<th>SD</th>
<th>Skewness</th>
<th>Kurtosis</th>
<th>Reliability</th>
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<td>3.52</td>
<td>0.97</td>
<td>-0.62</td>
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<td>Realism</td>
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<td>Past 30-Days Alcohol Use</td>
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<td>Past 30-Days Marijuana Use</td>
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<td>Past 30-Days Substance Use</td>
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<td>1.64</td>
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Table 2.2: Bivariate Correlations

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<td>-.67**</td>
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<td>9. SCC</td>
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<td>-.00</td>
<td>-.01</td>
<td>-.13</td>
<td>.17</td>
<td>1.00**</td>
<td>-.14</td>
<td>-.11</td>
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<td>10. FCC</td>
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<td>-.02</td>
<td>-.77**</td>
<td>-.37**</td>
<td>-.12</td>
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<td>.09</td>
<td>-.05</td>
<td>-.19**</td>
<td>-.06</td>
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<td>-.01</td>
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<td>13. AG</td>
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<td>.08</td>
<td>-.03</td>
<td>.02</td>
<td>.01</td>
<td>.09</td>
<td>-.02</td>
<td>-.02</td>
<td>-.11</td>
<td>.44**</td>
<td></td>
<td></td>
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<td>14. GE</td>
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<td>.02</td>
<td>.01</td>
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<td>-.11</td>
<td>.44**</td>
<td>1.00**</td>
<td></td>
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<td>15. LSU</td>
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<td>.08</td>
<td>-.02</td>
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<td>.70**</td>
<td>-.15</td>
<td>-.19**</td>
<td>-.19**</td>
<td></td>
</tr>
</tbody>
</table>
\*p < .05. \*\*p < .01 (two-tailed)

Note. IN = interest, RE = realism, ID = identification with characters, EF = refusal self-efficacy, PCF = frequency of communication with parents, SCF = frequency of communication with siblings, FCF = frequency of communication with friends, PCC = comfort of communication with parents, SCC = comfort of communication with siblings, FCC = comfort of communication with friends, SUB = past 30-days substance use, as well as the covariates CL = class, AG = age, GE = gender, LSU = lifetime substance use.
Figure 2.2: Path Analyses of the Moderated Mediation Model

Note. Path coefficients in the figure are standardized and significant pathways are highlighted by boldface ($\chi^2 [30] = 206.36$, CFI = 1, TLI = 1.029, RMSEA = .0). Effects of gender, age, class, and lifetime use of substances were controlled but the pathways are not shown in the figure for reasons of clarity.

*p < .05; **p < .01
Table 2.3: Robust Weighted Least Square Parameter Estimates

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Refusal Efficacy</th>
<th>Recent Substance Use</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Direct Effects of Predictors and Covariates</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interest</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Realism</td>
<td>0.51*** (0.11)</td>
<td>0.41</td>
</tr>
<tr>
<td>Identification with Characters</td>
<td>0.25 (0.18)</td>
<td>0.22</td>
</tr>
<tr>
<td>Refusal Efficacy</td>
<td>-0.25 (0.21)</td>
<td>-0.20</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Class</td>
<td>0.50*** (0.07)</td>
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</tr>
<tr>
<td>Prior Substance Use</td>
<td>-0.10 (0.10)</td>
<td>-0.08</td>
</tr>
<tr>
<td><strong>Direct Effects of Intervening Variables</strong></td>
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<tr>
<td>Frequency of Communication with Parents</td>
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<td></td>
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<tr>
<td>Frequency of Communication with Siblings</td>
<td>0.29*** (0.08)</td>
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<td>Frequency of Communication with Friends</td>
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<tr>
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<td>Comfort of Communication with Friends</td>
<td>-0.09 (0.09)</td>
<td>-0.09</td>
</tr>
</tbody>
</table>

* p < .05; ** p < .01; *** p < .001.

Note. Path coefficients are unstandardized estimates and numbers in the parentheses are their standard errors. Dashes in the top panel indicate non-significant pathways.
CHAPTER 3
EXAMINING LONGITUDINAL EFFECTS OF PARENTAL SOCIALIZATION PROCESSES 
ON YOUTH SUBSTANCE USE BEHAVIOR

A recent Monitoring the Future survey (Johnston, O’Malley, Bachman, & Schulenberg, 2011) reports that alcohol is the most commonly consumed substance among 8th grade teenagers (36%), followed by cigarettes (20%) and marijuana (1%). The prevalence of substance use increases as adolescents reach higher grade levels in school. Risk of substance use are included by exposure to mass media that plays a significant role in socializing adolescents’ perception of substance use, tending to establish youth substance use as normative (Everette, Schnuth, & Tribble, 1998; Ribisl, Lee, Henriksen, & Haladjian, 2003; Sargent, Wills, Stoolmiller, Gibson, & Gibbons, 2006). With a great number of advertisements, music videos, movies, and television programs depict substance use as a positive experience (CAMY, 2009), youth exposure to mass media portrayals of substance use is associated with initiation of and continued use of alcohol, tobacco, and marijuana (Anderson, Bruijn, Angus, Gordon, & Hastings, 2009; Cin, Worth, Gerrard, Gibbons, Stoolmiller, & Wills et al., 2009; Kelly, Slater, & Karan, 2002; Sargent, Gibson, & Hatherton, 2009).

While exposed to risk factors during the transitional period between early and middle adolescence, positive influences also exists that protect youth from harmful influences. One of these is parent-child communication about substance use that can help youth achieve positive behavioral outcomes (Miller-Day, 2008; Miller-Day & Dodd, 2004; Miller-Day & Kam, 2010; Reimuller, Hussong, & Ennett, 2011; Schinke, Noia, Schwinn, & Cole, 2006). Although parent-adolescent communication about substance use is found effective in socializing anti-drug normative beliefs (Kam, Matsunaga, Hecht, & Ndiaye, 2009), little is known about how parents
communicate with their children about the substance use depicted in the mass media (e.g., television shows) and how these messages consequently influence youth’s anti-drug norms and substance use behavior. Moreover, recent research by Miller-Day (2008) reveals that parents in different family communication environments use different strategies with their youth to discourage adolescent substance use (e.g., establish a no tolerance rule, provide rewards). Hence, it seems plausible that there may be differences across family communication environments in how parents talk with youth about media messages related to substances.

In addition to understanding the effects of parent-adolescent communication about media portrayals of substance use in varying environments of family communication, it is also needed to investigate how parental injunctive norms about substance use influence youth norms in a process of anti-drug socialization. Empirical findings reveal that parental injunctive norms about substance use positively affect youth intention to use substances (Kam et al., 2009) and their actual substance use behaviors (Elek, Miller-Day, & Hecht, 2006; Van der Vorst, Engels, Meeus, & Dekovic, 2006). These findings are supported by the norm focus approach (Cialdini, Kallgren, & Reno, 1991) suggesting that personal, descriptive, and injunctive norms have the independent effects on individuals’ intentions and behaviors. Although there is evidence that among other norms, personal anti-drug norms is the strongest predictor for adolescents’ substance use (Elek et al., 2006), less attention is given to how parental injunctive norms about substance use would influence youth personal anti-drug norms and their recent consumption of substances in diverse family communication environments.

The current study investigates the protective effects of parental injunctive norms about substance use and parent-adolescent communication about media portrayals of substance use on youth outcomes, in relation to family communication environments. The general theory of family
communication (Fitzpatrick & Ritchie, 1994; Koerner & Fitzpatrick, 2002a) contextualizes parent-child communication environments in terms of expressiveness, structural traditionalism, and conflict avoidance. Examining parental anti-drug socialization processes within the three dimensional environments of communication would provide more comprehensive understanding of parent-child communication and the positive parental influences on youth behavioral development.

**Parents as an Anti-Drug Socialization Agent**

As Fitzpatrick and Caughlin (2002) notes that “family is where most of us learn to communicate and, even more important, where most of us learn how to think about communication” (p. 726), children learn how to communicate and interpret family members’ verbal and nonverbal communicate behaviors through family interaction. Across the life span, family members share experiences and meanings associated with those experiences (Goodnow, 2005; Fitzpatrick & Badzinski, 1994; Saphir & Chaffee, 2002; Socha, 2009; Socha & Stamps, 1995). Families and parents in particular, are children’s primary socialization agents. Family communication, especially parent-child communication renders the process of socialization (Fitzpatrick & Ritchie, 1994). Although family members mutually influence each other throughout the socialization process (Saphir & Chaffee, 2002), parents are more influential on children’s development of social competence than children’s influence on parents (Peterson & Hann, 1999). During the developmental period of adolescence, parents as anti-drug socialization agents have profound impacts on youth behavioral outcomes.

Primary socialization theory (Oetting & Donnermeyer, 1998) indicates the family is a primary socialization sources for adolescents’ prosocial and/or deviant norms and behaviors. Moreover, the theory stresses the role of communication between parent and child in establishing
norms and preventing youth’s involvement with drug use and deviant behaviors. Parents’ anti-drug socialization efforts can be found wherein parents generally enforce their anti-drug norms and directly communicate about substance use with adolescents to enhance youth anti-drug norms and influence their substance use behaviors. Parents’ efforts to socialize their children to embrace anti-drug values and behaviors have been found to serve a protective function for youth, buffering the youth from other risks for increased substance use (Henriksen & Jackson 1998; Miller-Day, 2002, 2007; Miller-Day & Dodd, 2004; Miller-Day & Kam, 2010; Reimuller et al., 2011).

**The influence of parental injunctive norms.** Norms have been conceptualized from various theoretical perspectives (Lapinski & Rimal, 2005). Within the substance use literature, researchers have come to address the multi-dimensional aspects of norms, delineating descriptive norms, injunctive norms, subjective norms, and personal norms to investigate the effects of norms on behavioral intentions and behavior changes (Cialdini, Kallgren, & Reno, 1991; Park & Smith, 2006; White, Smith, Terry, Greenslade, & McKimmie, 2009). Descriptive norms refers to individuals’ perceptions of what others typically do, whereas injunctive norms reflect individuals’ perceptions of what others typically approve/disapprove of in terms of certain behaviors (Cialdini, et al., 1990). In other words, descriptive norms focus on individuals’ perception of prevalence, while injunctive norms deal with others’ value judgments. Subjective norms refer to social expectations and pressure from others, while personal norms refer to an individuals’ own approval/disapproval of certain behaviors (Ajzen, 1988; Cialdini et al., 1990).

Empirical studies reveal that the different types of norms have independent effects on intention and behavior. White and colleagues (2009), for example, discovered that descriptive norms and personal norms were significant predictors for intention to recycle. In addition,
research shows that different types of norms have predicted different behavior outcomes. For instance, taking the social norms approach as a theoretical framework, Park and Smith (2006) examined the effects of norms on organ donation promotion and discovered that descriptive norms were positively related to individuals’ intent to sign for organ donation, whereas subjective norms were positively associated with individuals’ intent to engage in family discussion about organ donation. Based on the aforementioned research findings, it is plausible to assume that the effects of norms may differ depending on the types of norms and health contexts.

In the context of youth substance use prevention, other research found that parental anti-drug injunctive norms had direct and indirect influences on youth intention (Kam et al., 2009) and recent substance use (Elek et al., 2006, Van der Vorst et al., 2006). A recent study by Kam and colleagues (2009) discovered that parents’ injunctive norms about substance use significantly affected youth intention to use substances, through attitudes, personal norms, and perceived behavior control. That is, parents’ injunctive norms positively influenced youth attitudes toward substance use, personal anti-drug norms, and their self-efficacy to refuse drug offers, which in turn led to decreases in intention to use substances. In addition, Elek et al. (2006) found that parental injunctive norms about substance use significantly reduced adolescents’ substance use behaviors. Although there is some evidence to support that parental injunctive norms are protective for youth intentions to use and recent substance use behavior; to date, parental socialization of youth personal anti-drug norms and its consequent impact on youths’ actual substance use has not been fully explored. The present study intends to fill this gap in social research.
Family injunctive norms do not develop in a vacuum. Parental socialization efforts take place not only through the influences of parental injunctive norms about substance use, but also communication between a parent and a child. The review of literature on the effects of parent-adolescent communication about substance use is discussed next.

**Parent-adolescent communication about substance use.** Parental communication about substance use plays a key role to protect children’s substance use (Hawkins, Catalano, & Miller, 1992; Miller-Day, 2002, 2008; Miller-Day & Kam, 2010; Rangarajan, & Kelly, 2006; Reimuller et al., 2011). Henriksen and Jackson (1998) discovered that parent-child communication about knowledge, attitudes, and skills needed to refuse offers of tobacco reduced children’s intention to smoke. Other research has found that conversations about substance use with parents negatively affected youth acceptance of drug offers, positive expectancies to drinking alcohol, and intention to use alcohol (Brody, Flor, Hollette-Wright, & McCoy, 1998; Kelly, Comello, & Hunn, 2002; Miller-Day, 2002, 2008; Miller-Day & Kam, 2010; Reimuller et al., 2011). Through communication, parents socialize youth by conveying rules, expectations, and providing information about health choices related to substance use and sexual behavior (Kelly et al., 2002; Miller, Kotchick, Dorsey, Forehand, & Ham, 1998; Miller-Day, 2008; Van der Vorst, Engels, Meeus, Dekovic, & Van Leeuwe, 2005).

More specifically, in an effort to understand how parents communicate with children about substance use, Miller-Day and colleagues (2002, 2004, 2007, 2008, 2010) have delved into the contents of parent-child communication and identified seven parental strategies to convey expectations. The strategies include 1) use own judgment, 2) hinting, 3) no tolerance rule, 4) provide information, 5) threaten punishment, 6) reward for nonuse, and 7) do not address the issue (Miller-Day, 2008). Based on the contexts of parent-child communication, the researchers
delineate a typology of how parents address substances with youth, identifying four types of approaches: ongoing direct talk, ongoing indirect talk, targeted direct conversation, and targeted indirect conversation (Miller-Day & Dodd, 2006). Ongoing direct talk occurs when a parent talks about drug use with a child on an ongoing basis, providing comments over time as appropriate; whereas, ongoing indirect talk takes place in which a parent provides a child hints about drug use across time. By contrast, targeted direct conversation occurs when a parent targets clearly articulated drug prevention messages to a specific event or time. Targeted indirect conversations take place when a parent provides hints and/or perhaps ambiguous messages about substances at a specific event or time. Based on these prior findings, Miller-Day and Kam (2010) created a measure of targeted parent-child communication about alcohol and statistically validated the measure. Moreover, they discovered that targeted parent-child communication about alcohol was inversely related to positive expectancies about alcohol and youth recent alcohol use (Miller-Day & Kam, 2010).

Miller-Day and colleagues have made significant contributions to advance our knowledge of parent-child communication about substance use and its effects on youth substance use behavior. Nonetheless, there is a need to further investigate how parents socialize adolescent children by communicating about substance use and influencing youth personal anti-drug norms to prevent youth from substance use behavior. While moving to substance-specific discussions sharpens the focus on parent-child communication theory and research, other substance-related topics have not been explored. In this respect, the present study particularly focuses on the association between parent-adolescent communication about substance use depicted in media and youth personal anti-drug norms. Considering the previous findings indicating media portrayals of substance use behavior negatively influence youth perceptions of substance use as
normative (Cin et al., 2009; Heatherton & Sargent, 2009; Primack, Kraemer, Fine, & Dalton, 2009; Wills, Sargent, Stoolmiller, Gibbons, & Gerrard, 2008), more attention needs to be paid to the effects of parent-adolescent communication about substance use, particularly portrayed in media.

**Media portrayals of substance use.** Children and adolescents are place at risk based on their exposure to mass media depicting risky behaviors such as drinking, smoking, or violence (Everette et al., 1998; Sargent et al., 2006). Many scholars have found that youth exposure to mass media portrayals of substance use is associated with initiation of and continued use of alcohol, tobacco, and marijuana (Anderson et al., 2009; Cin et al., 2009; Gibbons, Pomery, Gerrard, Sargent, Weng, & Wills et al., 2010; Kelly et al., 2002; Sargent et al., 2009; Sargent, Stoolmiller, Worth, Cin, Wills, & Gibbons et al., 2007; Ribisl et al., 2003; Wills, Sargent, Gibbons, Gerrard, & Stoolmiller, 2009; Wills et al., 2008; Wills, Sargent, Stoolmiller, Gibbons, Worth, & Cin, 2007).

In spite of the prior findings on the negative consequences of youth exposure to media portrayals of substance use, family scholars contend that parents would have protective effects on adolescents’ substance use behavior. For example, parental rules and monitoring of children’s movie watching reduced youth from the initiation of alcohol and tobacco use (Dalton, Adachi-Mejia, Longacre, Titus-Ernstoff, Gibson, & Martin et al., 2006). Similar result was found that parental restrictions for movie rates predicted a lower likelihood of youth alcohol use in the future (Hanewinkel, Morgenstern, Tanski, & Sargent, 2008; Tanski, Cin, Stoolmiller, & Sargent, 2010). Although the previous literature addresses media portrayals of substance use as a risk factor and parental monitoring of media as a protective factor, less is known about the effects of parent-adolescent communication about substance use depicted in media on youth behavioral
outcomes. The current study intends to investigate the protective effects of parent-adolescent communication about media portrayals of substance use on youth personal anti-drug norms and substance use behavior. More importantly, parental socialization processes can be understood by taking account of different environments of family communication.

**Family Communication Environments and Parent-Child Communication**

Family scholars have argued that frequent parent-child communication is consequential for children’s developmental functioning (Ackard, Neu-mark-Sztainer, Story, & Perry, 2006; Brody, Murry, Gerrard, Gibbons, McNair, & Brown et al., 2006; Laursen & Collins, 2004). More importantly, Miller-Day and colleagues (Miller-Day, 2008; Miller-Day & Dodd, 2004; Miller-Day & Kam, 2010) demonstrate that in addition to the frequency of talks, quality of parent-child communication plays an important role in protecting youth from engaging in risky behaviors. For example, research shows that open and supportive communication has positive effects on youth’s behavioral outcomes, such as drug and alcohol use (Miller-Day, 2008; Miller-Day & Dodd, 2004), sexual behavior (Fasula & Miller, 2006; Henrich, Brookmeyer, Shrier, & Shahar, 2006; Hutchinson, Jemmott, Jemmott, Braverman, & Fong, 2003; Wilson & Donenberg, 2004), and other risky behaviors (Cottrell, Yu, Liu, Deveaux, Lunn, & Bain et al., 2007; Davidson & Cardemil, 2009). These findings suggest that the protective effects of parent-child communication need to be understood in qualitative aspects of communication.

Fitzpatrick and colleagues view family communication environments as knowledge structures implying family members’ perception and understanding of what family members say and do (Fitzpatrick & Ritchie, 1994; Koerner & Fitzpatrick, 2004). The general theory of family communication (Koerner, & Fitzpatrick, 2002a) with two dimensions of family communication patterns (Richie, 1991; Ritchie & Fitzpatrick, 1990), which later evolved into family
communication environments (Fitzpatrick, & Ritchie, 1994; Koerner, & Fitzpatrick, 2002a), explicates characteristics of different communication environments within families. This body of research emerged from earlier media communication scholarship. McLeod and Chaffee (1972) originally developed family communication patterns (FCP) in order to examine the effects of parent-child communication about media. The original theory of FCP explained media message processing and decision making offering two dimensions of family communication that typify all communication in families—concept-orientation and socio-orientation. According to the original FCP theory, the evaluation of ideas and concepts are emphasized for children in concept-orientated families, whereas social roles and relationships would be heavily emphasized for children from socio-oriented families.

Richie and colleagues (Richie, 1991; Ritchie & Fitzpatrick, 1990) shifted the relatively narrow focus of FCP theory from the effects of family discourse about media on decision making to the broader effects of family communication on influencing perceptions of family members and the establishment of family norms. In this revision of the theory, concept-orientation was replaced by conversation orientation and socio-orientation was substituted by conformity orientation. A family’s conversation orientation is characterized by the degree of open communication across a wide range of topics and respect of divergent opinions, whereas conformity orientation represents family climate that stresses uniformity of family values, beliefs, and attitudes among family members. In this revision of the theory, the two dimensions of family communication climates were no longer dichotomous, but orthogonal. That is, a family could potentially function high or low in both dimensions.

Based on the family communication patterns approach, communication researchers have examined the effects of parent-child communication about media on children’s interpretation of a
variety of media content (Fujika, & Austin, 2002; Krcmanr, 1998; Skinner & Slater, 1995). The findings of these studies suggest that parents who engaged in open communication (higher conversational orientation) with a child in daily life were more likely to discuss the media message with a child, while parents who required more conformity (higher conformity orientation) from a child tended to reinforce the media message (Fujika, & Austin, 2002). In a study by Skinner and Slater (1995), family communication patterns also predicted how youth processed anti-drug messages. In this study, rebellious adolescents in conforming families reported the anti-drug messages from public service announcements as less believable.

Most recently, family scholars (Fitzpatrick, & Ritchie, 1994; Koerner, & Fitzpatrick, 2002a) have further revised this theory to better understand the nature and quality of family communication. These scholars have advanced FCP constructs by re-conceptualizing the two orthogonal dimensions of communication patterns and providing evidence of more complex family communication environments (FCE). These FCE can be characterized by three distinct dimensions: expressiveness, structural traditionalism, and conflict avoidance. Expressiveness refers to a family communication environment wherein parents encourage open discussions and a free exchange of feelings and opinions. Children in expressive communication environment are taught to value individual decision-making. Structural traditionalism refers to a family communication environment emphasizing deference to parental power and obedience, privileging parental messages. Structural traditionalist families tend not to appreciate pluralism. Conflict avoidance refers to a family communication environment that can be characterized by the degree to which family members avoid conflict in their family interactions. Members of families who are conflict avoidant desire to avoid unpleasant topics in conversation.
Empirical findings reveal that expressiveness, structural traditionalism, and conflict avoidance predicted different outcomes of family functioning and children’s well-being (Baxter, Bylund, Imes, & Scheive, 2005; Koesten et al., 2009; Schrodt, 2005, 2009). For instance, families high in expressiveness showed positive relationships with family cohesion and flexibility (Schrodt, 2005), family strengths and satisfaction (Burns & Pearson, 2011; Schrodt, 2009), and children’s cognitive flexibility (Koesten et al., 2009). In contrast, families high in structural traditionalism and conflict avoidance had inverse associations with family functioning (Schrodt, 2005, 2009) and children’s psychological functioning (Koesten, Schrodt, & Ford, 2009). Although these studies suggest that the effects of communication environments on family outcomes vary in accordance with expressiveness, structural traditionalism, and conflict avoidance, prevention researchers have not “gone back to the roots” of the theory to apply the updated conceptualization of family communication patterns/environments to how parents and youth talk about media and how this discourse impacts youth.

Today, children are exposed to media depicting substance use, which has been shown to negatively affect youth development (Austin Pinkleton, & Fukioka, 2000; Everette et al., 1998; Ribisl et al., 2003; Sargent et al., 2006). Recent studies support the assertion that parents can protect adolescents from this negative influence by talking with their youth about substances and substance use (Henriksen & Jackson 1998; Miller-Day, 2002, 2007; Miller-Day & Dodd, 2004; Miller-Day & Kam, 2010). Although parental injunctive norms about substances and parent-child communication about substance use are found to be effective in youth substance use prevention (Elek et al., 2006; Kam et al., 2009; Miller-Day, 2002, 2007; Miller-Day & Kam, 2010), less is known about if parents are talking with their youth about media portrayals of substance use and, if so, if that discourse is effective in shaping youth attitudes and behaviors in
relation to different family communication environments. By taking primary socialization theory
(Oetting & Donnermeyer, 1998) and the general theory of family communication (Fitzpatrick, &
Ritchie, 1994; Koerner, & Fitzpatrick, 2002a) as theoretical frameworks, two research
hypotheses are posited first:

H1) Parental injunctive norms about substance use indirectly predict youth substance use
behavior via youth personal anti-drug norms.

H2) Parent-adolescent communication about media portrayals of substance use indirectly
predicts youth substance use behavior via youth personal anti-drug norms.

Based on the previous findings on the family communication patterns and environments,
it is plausible to speculate that the effects of family communication environments on parent
socialization processes may differ depending on the three family communication environment
dimensions. Given the hypothesized indirect effects of parental injunctive norms and parent-
adolescent communication about media portrayals of substance use, it is also anticipated that
expressiveness, structural traditionalism, and conflict avoidance influence the hypothesized
relationships differently. Although there are findings indicating the effects of family
communication environments on family functioning and adolescent developmental outcomes,
less attention has been given to whether family communication environments will influence
parent anti-drug socialization processes. As a result one research question is asked:

RQ) How do expressiveness, structural traditionalism, and conflict avoidant
communication environments respectively influence parents’ socialization processes?
When combined, these hypotheses and research question lead to the following conceptual model.

*Figure 3.1: Proposed Conceptual Mediation Model*

**Method**

The current study’s data were collected as a part of the randomized clinical trial evaluating a school based substance use prevention program, keepin’ it REAL (kiR), which was funded by the National Institute on Drug Abuse grant project (R01DA021670). Keepin’ it REAL (kiR) is an intervention consisting of ten lessons with five entertainment videos teaching youth knowledge, motivation, and communication skills to refuse drug offers (Elek, Wagstaff, & Hecht, 2000).
2010; Hecht, Graham, & Elek, 2006; Hecht & Miller-Day, 2009; Lee, Hecht, Miller-Day, & Elek, 2011; Miller, Alberts, Hecht, Trost, & Krizek, 2000; Warren, Hecht, Wagstaff, Elek, Ndiaye, & Dustman et al., 2006). Teachers instruct lessons by facilitating class discussion, providing lecture, demonstrating examples relevant to students, and encouraging students to perform role plays (Shin, Miller-Day, Pettigrew, & Hecht, 2011). Thirty-six public middle schools located in rural areas in Ohio and Pennsylvania were randomly assigned to three conditions (control and two program conditions; classic version of the curriculum and rural version of the curriculum). The present study used the longitudinal data from 14 schools in control condition so as not to confound findings with the intervention. The longitudinal data were collected at different time points in fall 2009 (Wave 1 or pretest), spring 2010 (Wave 2 or immediate posttest), and spring 2011 (Wave 3 or follow-up posttest).

Participants

One thousand fifty nine students from 14 public middle schools in control condition completed three waves of paper-pencil surveys from 7th through 8th grade. Based on Wave 1 data, 53% were male and 47% were female. The mean age was 12.3 years (SD = .50). 96% of the youth self-identified as European American. Prior to the data collection, parents agreed on active informed consent and students were given informed assent for participation.

Measures

The longitudinal, self-reported data from Wave 1 to Wave 3 in the larger study’s control condition (school n = 14) were used to examine effects of family communication environments, parental anti-drug injunctive norms and parent-adolescent communication about media portrayals of substance use on adolescent children’s personal anti-drug norms and substance use behavior. More specifically, indirect effects of family communication environments, parental
anti-drug injunctive norms, and parent-adolescent communication on youth substance use are tested via adolescents’ personal anti-drug norm change. Family communication environments, parental anti-drug injunctive norms, and parent-adolescent communication about media portrayals of substance use were measured at Wave 1. Youth perception of personal norms about substance use was measured at Wave 2. Youth recent substance use was measured at Wave 3. To control for prior use of substance, lifetime substance use measured at Wave 1 was included for the analysis. Age and sex were also added for controlled variables. The data were entered into SPSS v 19.0 (2011), which was used for preliminary analyses, including the means, standard deviation, and the inter-item correlations of the scales. Cronbach’s alpha coefficients were also tested for internal consistency (reliability) of scales. Summary statistics and scale reliabilities were presented in Table 3.1.

**Family communication environments.** Fourteen items were modified from Fitzpatrick & Ritchie’s (1994) to measure three dimensions of family communication environments, consisting of expressiveness, structural traditionalism, and conflict avoidance. Items from the adult version of the measure were modified to make them age appropriate for the current sample. For example, modified items asked “My parents encourage me to express my feelings,” “In our home, my parents usually have the last word,” and “My parents say things like ‘There are some things that just shouldn’t be talked about’”. Respondents used a five point responses ranging from never to all the time. Higher scores indicated stronger association with the environment. Cronbach’s alpha was 0.87 for expressiveness, 0.74 for structural traditionalism, and was 0.62 for conflict avoidance respectively.

**Parental injunctive norms about substance use.** Three items from Hansen and Graham’s (1991) measure were modified to assess parental injunctive norms. Four point scale
items asked youth perceptions of parents’ norms about alcohol, tobacco, and marijuana use (i.e., “How wrong do your parents feel it would be for you to drink alcohol regularly (beer, wine, or hard liquor?”). Higher scores indicated stronger anti-drug norms (Cronbach’s alpha = 0.85).

**Parent-adolescent communication about media portrayals of substance use.** A modified version of targeted parent-child communication about alcohol use (Miller-Day & Kam, 2010) was used to measure parent-adolescent communication about media portrayals of substance use. Students responded to three items asking “Does at least one of your parents ever: make comments about how drinking alcohol is bad if a character on TV is drinking or drunk?” “Make comments about how chewing or smoking is bad if a character on TV is chewing or smoking?”, and “Show you information on the Web, TV, or in the news about dangers of drinking alcohol, smoking/chewing, or other drug use?”. These items were answered based on four scales of frequency of talk, ranging from “no never” to “yes all the time” (Cronbach’s alpha = 0.82). Participants responded to these items using four point frequency of talk scales ranging from “no never” to “yes all the time” (Cronbach’s alpha = 0.82). Higher scores indicated frequency of communication.

**Youth personal anti-drug norms.** Three modified items assessed youth personal norm about substance use (Hansen & Graham, 1991). Using 4-point scale (1 = not at all to 4 = yes, it is very wrong) students answered the items asking “Do you think it is wrong for someone your age to drink alcohol regularly (beer, wine, or hard liquor)/to smoke cigarettes/ to smoke marijuana?” (Cronbach’s alpha = 0.92). Higher scores represented lower acceptability of substance use (i.e., stronger anti-drug norms).

**Past 30-days substance use.** A modified version of Graham, Flay, Johnson, Hansen, Grossman, and Sobel’s (1984) measure was used to ask youth substance use such as alcohol,
cigarette, and marijuana in the past 30 days. Students responded to 3 questions asking amount of substance use respectively. For example, the items asking the amount of alcohol use were answered by 9-point scale (e.g., “How many drinks of alcohol have you had in the past 30 days?”). A "drink" = 1 bottle or can of beer, 1 glass of wine, or 1 shot of hard liquor). Using 8-point scale, tobacco and marijuana uses were asked (e.g., “How many cigarettes have you smoke in the past 30 days?”, “How many marijuana have you used in the past 30 days?”). Higher scores indicated more use of substance in terms of amount. Past 30-days substance use was measured by one item for each substance (e.g., alcohol, cigarette, and marijuana). Consequently, inter-item correlations and CFAs could not be examined.

**Prior substance use.** Three items asking amount of alcohol, cigarette, and marijuana use in lifetime were included to control for the youth prior substance use (Graham et al., 1984). Ten-point scale items measured amount of alcohol use and eight-point scale items questioned amount of cigarettes and marijuana use. (e.g., “How many drinks of alcohol have you had in your entire life?”). For the analysis, these items were recorded as one item (0 = never used; 1 = used one type; 2 = used two types; 3 = used all).

**Demographics.** Gender (0 = male; 1 = female) and age are included as controlling variables.

**Analysis Summary**

Structural equation modeling (SEM) was utilized to test the mediation model, using M-Plus 6.1 (Muthén & Muthén, 2011). Prior to the full structural equation model (SEM) estimation, descriptive statistical analyses and confirmatory factor analyses (CFA) were conducted. Skewness and kurtosis of 21 exogenous and 9 endogenous variables were assessed for normality of data (Byrne, 1998) and indicated the variables were not normally distributed.
As a result, maximum likelihood (ML) method that yield unbiased, consistent, and efficient model estimation under multivariate normality of continuous data could not be used and the robust weighted least square estimated mean- and variance- adjustment method (i.e., WLSMV) was employed for alternative estimation since the model included ordinal and non-normally distributed variables (Muthén & Muthén, 2011). To handle missing data, multiple imputation and FIML are recommended as stronger missing data strategies to estimate unbiased parameters than traditional missing procedures (e.g., listwise and pairwise deletion) (Graham, Cumsille, & Elek-Fisk, 2003). For this reason, multiple imputation procedure was implemented using M-Plus 6.1 (Muthén & Muthén, 2011).

Full confirmatory factor analyses including measures of family communication environment, parental injunctive norms about substance use, parent-child communication about media portrayals of substance use, and youth personal anti-drug norms were run to test the model fit. Since $\chi^2$ is influenced by sample size, the root mean square error of approximation (RMSEA), the comparative fit index (CFI), the Tucker-Lewis index (TLI), and the weighted root mean square residual (WRMR) were used as the primary fit indices to evaluate the practical model fit of CFA and SEM model (Kline, 2005; Hu & Bentler, 1999; Yu, 2002). An RMSEA below .05 is considered most desirable, an RMSEA between .5 and .8 is reasonable, and the value equal to or above .10 indicates a poor fit (Boomsma, 2000; Kline, 2005). A value of CFI and TLI above .95 is appropriate (Hu & Bentler, 1999; Kline, 2005). WRMR represents a fit index particularly for categorical data. A value of WRMR close to 1.0 explains a good fit (Hancock & Mueller, 2006; Yu, 2002).

After CFA analysis, a SEM analysis was conducted to examine the mediation model. Family communication environment dimensions were entered into the hypothesized model as
exogenous variables, whereas parental injunctive norms about substance use, parent-child
communication about media portrayals of substance use, youth personal anti-drug norms, and
recent use of alcohol, cigarette, and marijuana were used as endogenous variables (see Figure 1).
A SEM analysis was employed to examine indirect paths from the exogenous variables to the
endogenous mediating variables, along with direct paths from the exogenous variables to the rest
of the endogenous variables (Preacher & Hayes, 2008). As portrayed in Figure 1, this study
tested indirect paths from family communication to parental injunctive norms about substance
use and parent-adolescent communication about media portrayals of substance use, paths from
parental injunctive norms about substance use to youth personal anti-drug norms, as well as
parent-adolescent communication about media portrayals of substance use to youth personal
anti-drug norms. Also, direct paths from family communication environment to past 30-days
substance use (alcohol, cigarette, marijuana) were examined. In addition, age, gender, and prior
substance use were entered into the model as exogenous variables, from which pathways were
drawn to the past 30- days substance use to control for the effects of demographic variables.

Results

Using M-Plus 6.1 (Muthén & Muthén, 2011), the robust weighted least square estimated
mean- and variance-adjustment method (WLSMV) was implemented to test confirmatory factor
analyses on the measures of family communication environments consisting of three dimensions
such as expressiveness, structural traditionalism, and conflict avoidance, parental injunctive
norms about substance use, parent-adolescent communication about media portrayals of
substance use, and youth personal anti-drug norms. Past 30-days alcohol, cigarette, and
marijuana use were measured by one item respectively and thus could not be included for the
CFA. As a result, the full CFA measurement model yielded a reasonably good fit to the data: $\chi^2$
Table 3.2 displays the bivariate correlation matrix of the main variables and factor loadings from the full CFA measurement is presented in Table 3.3. Inspection of the inter-correlations indicated that most correlation coefficients were in the expected direction and all factor loadings were statistically significant with the magnitudes of loadings ranging from .66 to .98.

Next, a SEM analysis was run to test the hypothesized model in M-Plus 6.1 with the WLSMV estimation method. The structural paths were drawn from exogenous variables (expressiveness, structural traditionalism, and conflict avoidance) to endogenous variables (parental injunctive norms about substance use and parent-adolescent communication about medial portrayals of substance use). Among endogenous variables, additional paths were drawn from parental injunctive norms about substance use to youth personal anti-drug norms, from parent-adolescent communication about media portrayals of substance use to youth personal anti-drug norms, from youth personal anti-drug norms to past 30-days substance use (alcohol, cigarette, and marijuana use). Prior substance use, age, and sex at wave 1 were controlled for in the full SEM model by treating these variables as exogenous variables and drawing paths from the controlling variables to past 30 days substance use at wave 3.

The SEM model, as seen in Figure 2, fit the data well: $\chi^2 (276) = 759.101; \text{CFI} = .973; \text{TLI} = .969; \text{RMSEA} = .041; \text{WRMR} = 1.438$. The research question was posed if three dimensions of family communication environments (expressiveness, structural traditionalism and conflict avoidance) would have significant associations with parental injunctive norms about substance use and parent-adolescent communication about media portrayals of substance use as well as the indirect effects on youth recent substance use via parental injunctive norms about substance use, parent-adolescent communication about media portrayals of substance use, and
youth personal anti-drug norms. The model explained 22% of the variance in parental injunctive norms about substance use, 33% of the variance in parent-adolescent communication about media portrayals of substance use, and 17% of the variance in youth personal anti-drug norms when taking into account of prior substance use.

More specifically, the research question was asked if expressiveness, structural traditionalism, and conflict avoidance are significantly associated with parental injunctive norms about substance use and parent-adolescent communication about media portrayals of substance use. The analysis revealed that expressiveness was significantly related to both parental injunctive norms about substance use (unstandardized $\beta = .51$, SE = .11, $p < .001$) and parent-adolescent communication about media portrayals of substance use (unstandardized $\beta = .50$, SE = .07, $p < .001$). The findings also show that contrary to expectations structural traditionalism was neither significantly associated with parental injunctive norms about substance use (unstandardized $\beta = .25$, SE = .18, $p = .175$) nor parent-adolescent communication about media portrayals of substance use (unstandardized $\beta = -.10$, SE = .10, $p = .340$). Last, the analysis indicated that conflict avoidance was not significantly related to parental injunctive norms about substance use (unstandardized $\beta = -.25$, SE = .20, $p = .225$), yet it was significantly associated with parent-adolescent communication about media portrayals of substance use (unstandardized $\beta = .56$, SE = .12, $p < .001$). As a result, these findings showed the significant associations between expressiveness and both parental anti-drug injunctive norms, and parent-adolescent communication about media portrayals of substance use as well as between conflict avoidance and parent-adolescent communication about media portrayals of substance use but not with norms. However, structural traditional traditionalism was associated with neither variable.
As predicted, the findings also provided support for the first and second research hypotheses. The model explained 17% of the variance in youth personal anti-drug norms when taking into account of prior substance use. The results revealed that parental norms about substance use were significantly associated with youth anti-drug norms (unstandardized $\beta = .29$, SE = .08, $p < .001$). It was also found that parent-adolescent communication about media portrayals of substance use was significantly related to youth personal anti-drug norms (unstandardized $\beta = .28$, SE = .07, $p < .001$). Consequently, youth personal anti-drug norms were significantly associated with youth recent alcohol use (unstandardized $\beta = -.40$, SE = .07, $p < .001$), cigarette use (unstandardized $\beta = -.44$, SE = .08, $p < .001$), and marijuana use (unstandardized $\beta = -.47$, SE = .08, $p < .001$).

The remaining portion of the research question asked if there were the indirect effects of family communication environments on youth recent substance use via parental injunctive norms about substance use and youth personal anti-drug norms, as well as through parent-adolescent communication about media portrayals of substance use and youth personal anti-drug norms. The analyses revealed that expressiveness was significantly associated with alcohol use via parental injunctive norms about substance use and youth personal anti-drug norms (unstandardized $\beta = -.06$, SE = .02, $p < .05$) and through parent-adolescent communication about media portrayals of substance use and youth personal anti-drug norms (unstandardized $\beta = -.06$, SE = .02, $p < .01$). Expressiveness was also significantly related to cigarette use via parental injunctive norms about substance use and youth personal anti-drug norms (unstandardized $\beta = -.07$, SE = .02, $p < .01$) and via parent-adolescent communication about media portrayals of substance use and youth personal anti-drug norms (unstandardized $\beta = -.06$, SE = .02, $p < .01$). Expressiveness was significantly associated with marijuana use via parental injunctive norms
about substance use and youth personal anti-drug norms (unstandardized $\beta = -.07$, SE = .03, p < .05) and via parent-adolescent communication about media portrayals of substance use and youth personal anti-drug norms (unstandardized $\beta = -.07$, SE = .02, p < .01).

On the other hand, structural traditionalism was found non-significant associations with any types of substances through parental injunctive norms about substance use and youth personal anti-drug norms (alcohol use: unstandardized $\beta = -.03$, SE = .02, p = .216; cigarette use: unstandardized $\beta = -.03$, SE = .03, p = .218; marijuana use: unstandardized $\beta = -.03$, SE = .03, p = .217), as well as via parent-adolescent communication about media portrayals of substance use and youth personal anti-drug norms (alcohol use: unstandardized $\beta = .01$, SE = .01, p = .367; cigarette use: unstandardized $\beta = .01$, SE = .01, p = .370; marijuana use: unstandardized $\beta = .01$, SE = .01, p = .369).

The indirect effects of conflict avoidance showed mixed findings on youth substance use. While conflict avoidance was not significantly related to substance use through parental injunctive norms about substance use (alcohol use: unstandardized $\beta = .03$, SE = .03, p = .261; cigarette use: unstandardized $\beta = .03$, SE = .03, p = .261; marijuana use: unstandardized $\beta = .03$, SE = .03, p = .263), there were the significant relationships between conflict avoidance and recent substance use (alcohol use: unstandardized $\beta = -.06$, SE = .02, p < .01; cigarette use: unstandardized $\beta = -.07$, SE = .03, p < .01; marijuana use: unstandardized $\beta = -.07$, SE = .03, p < .05) via parent-adolescent communication about media portrayals of substance use and youth personal anti-drug norms.

**Discussion**

Based on the longitudinal data analysis, the present study investigated the effects of family and media drug socialization processes on youth recent substance use behavior. One
research question and two research hypotheses were tested to examine these influences. The study’s findings revealed that different dimensions of family communication environments respectively influence parental anti-drug socialization processes and youth substance use behavior. Overall, the results supported primary socialization theory (Oetting & Donnermeyer, 1998) and general theory of family communication (Fitzpatrick & Ritchie, 1994; Koerner & Fitzpatrick, 2002a) in the context of youth substance use prevention.

**Testing the associations between family communication environments and parental injunctive norms about substance use**

A research question was posited to examine if three dimensions of family communication environments were significantly associated with parental injunctive norms about substance use. The results indicated that expressiveness was significantly related to parental injunctive norms about substance use, whereas structural traditionalism and conflict avoidance were not significantly associated with parental injunctive norms about substance use. More specifically, it was found that as adolescents reported high levels of expressiveness in family communication, youth perceptions of their parents’ disapproval on substance use increased. While the cross sectional nature of these data precludes firm causal inferences, these findings are consistent with the general theory of family communication (Fitzpatrick, & Ritchie, 1994; Koerner, & Fitzpatrick, 2002a) explicating expressiveness as encouraging openness and covering various topics in family communication. In this respect, it stands to reason that parents engaging in open communication would cover a wide range of communication topics, which may include an issue of substance use. Throughout open communication, parents would indirectly imply their disapproval on substance use in expressive family communication environment.
On the other hand, structural traditionalism and conflict avoidance were not significantly associated with parental injunctive norms about substance use. Nonetheless, the construct of structural traditionalism and conflict avoidance predicted the association with parental injunctive norms about substances use in a different direction. The results revealed that youth whose family placed value on hierarchical family dynamics were more likely to believe that their parents strongly disapproved of children’s substance use. The possible explanation of this positive association between structural traditionalism and parental injunctive norms about substance use is that parents who hold values of structural traditionalism tend to stress children’s conformity to authority structure in family and thus socialize children to comply with parental rules. As part of this socialization process, parents make efforts to convey their injunctive norms about substance use; consequently, adolescents clearly interpret their parents’ disapproval of adolescent substance use.

By contrast, conflict avoidance was negatively associated with parental injunctive norms about substance use, suggesting that as family members tended to avoid conflict in family communication, youth were less likely to perceive their parents’ disapproval on substance use. Conflict avoidant family communication environment is characterized in which family members tend to avoid unpleasant topics, which may possibly cause conflict in family interaction. This dimension originally derived from the conformity orientated family communication pattern demonstrating the hierarchical family dynamic that children are forced to obey parents and taught to avoid conflict in order to sustain family harmony. It is plausible to assume that parents in high conflict avoidance may consider substance use as an unpleasant topic and thus they do not explicitly communicate about their disapprovals and expectations for youth substance use.
Testing the associations between family communication environments and parent-adolescent communication about media portrayals of substance use

The research question also asked if three dimensions of family communication environments were significantly associated with parent-adolescent communication about media portrayals of substance use respectively. The results indicated that expressiveness and conflict avoidance were significantly related to parent-adolescent communication about media portrayals of substance use, whereas structural traditionalism was not significantly associated with parent-adolescent communication about media portrayals of substance use. That is, youth who reported expressiveness in family communication were more inclined to have communication with a parent about substance use depicted on media. Considering the characteristics of the expressiveness construct as encouraging open communication and free exchanges of opinions in a variety of topics, parents in expressive family communication environment may engage in conversations about substance use with adolescent children when they watch media depictions of substance use together. It is reasonable to speculate that communication about substance use portrayed in media is part of the conversational topics between a parent and child in expressive family communication environment.

In addition to the significant prediction of expressiveness, conflict avoidance also showed a positive association with parent-adolescent communication about media portrayals of substance use, meaning that adolescents whose family members tended to avoid conflict in family interactions were more likely to report having parent-adolescent communication about media portrayals of substance use. The assumption is made as directly addressing the topic of substances in a conversation with youth might be seen as “risky”—that is, it might cause conflict with the youth. However, indirectly addressing expectations by commenting on media portrayals
may be seen as less apt to cause conflict. After all, it is not about the kid him or herself but about someone else in television or the internet.

As indicated earlier, structural traditionalism was neither significantly related to parental injunctive norms about substance use nor parent-adolescent communication about media portrayals of substance use. While the relationships were not significant, structural traditionalism was related with each component of parental influence in different directions. More specifically, structural traditionalism was positively related to parental injunctive norms about substance use, whereas structural traditionalism was negatively associated with parent-adolescent communication about media portrayals of substance use. The possible explanation for the former finding of the positive relationship between structural traditionalism and parental injunctive norms about substance use was discussed previously. The latter finding of the negative association might be understood in the following way. Family in structural traditionalism communication environment might not actually consume media together, thus limit opportunities for commenting on the media messages.

**Testing the research hypotheses**

The first research hypothesis predicting that parental injunctive norms about substance use would have an indirect effect on youth recent substance use through youth personal anti-drug norms was supported. In other word, as youth perceived their parents’ disapproval on substance, they tended to report strong personal anti-drug norms, which in turn linked to decreases in recent uses of alcohol, cigarette, and marijuana. The second research hypothesis was also supported postulating the indirect effects of parent-adolescent communication about media portrayals of substance use on youth recent substance use via youth personal anti-drug norms. That is, as parents talked about media depicting substance use with adolescents, youth were inclined to hold
strong personal anti-drug norms, which in turn reduced recent alcohol, cigarette, and marijuana use.

These findings suggested the protective effects of parents’ anti-drug socialization efforts. That is, youth perception of parents’ disapproval on substance use and parent-adolescent communication about media portrayals of substance use both protect adolescents from negative influences such as substance use through positively influencing youth personal anti-drug norms. These findings also support primary socialization theory (Oetting & Donnermeyer, 1998) noting that parents as an influential socialization agent can encourage adolescent children to develop personal anti-drug norms by enforcing their disapproval on substance use and commenting about substance use portrayed on media. These findings clearly showed that not only does youth perception of parental disapproval on substance use matter, communication about substance use, in particular on media depictions, also contributes to shape youth personal anti-drug norms. As a consequent, personal anti-drug norms functioned as a key determinant for youth behavioral changes on substance use. The results found to be consistent with previous literature on the protective effects of parent-child communication about substance use (Henriksen & Jackson 1998; Miller-Day, 2002, 2007; Miller-Day & Dodd, 2004; Miller-Day & Kam, 2010; Reimuller et al., 2011), as well as positive influences of parental anti-drug injunctive norms on youth substance use (Elek et al., 2006; Kam et al., 2009; Van der Vorst et al., 2006).

Testing the indirect effects of family communication environments on youth recent substance use through parental injunctive norms about substance use and youth personal anti-drug norms

The full SEM model was analyzed to examine the indirect effects of family communication environments on youth recent uses of substance via parental injunctive norms
about substance use and youth personal norms about substance use. The result discovered that there were the significant indirect effects of expressiveness on youth recent alcohol, cigarette, and marijuana use, through parental injunctive norms about substance use and youth personal anti-drug norms. The findings suggested that expressive family communication environment was positively related to youth perceptions of parental disapproval on substance use, which in turn led to stronger youth personal anti-drug norms and consequently, reduced recent alcohol, cigarette, and marijuana use. However, the findings did not render support for the indirect effects of structural traditionalism nor conflict avoidance on youth recent substance use via parental injunctive norms about substance use and youth personal anti-drug norms.

**Testing the indirect effects of family communication environments on youth recent substance use through parent-adolescent communication about media portrayals of substance use and youth personal anti-drug norms**

The full SEM model analysis also examined the indirect effects of family communication environments on youth recent uses of substance through parent-adolescent communication about media portrayals of substance use and youth personal anti-drug norms. The results revealed that expressiveness and conflict avoidance each had the significant indirect effects on youth recent substance use via parent-adolescent communication about media portrayals of substance use and youth personal anti-drug norms. That is, parents in expressive family communication environment were more likely to talk about media depiction of substance use with their adolescent children, which in turn linked to stronger youth personal anti-drug norms and consequently, decreased in youth recent alcohol, cigarette, and marijuana use. Similarly, parents who tend to avoid conflict with adolescent children were opt to comment on media portrayals of substance use, which positively affected youth personal anti-drug norms and as a result,
decreased in recent alcohol, cigarette, and marijuana use. Yet, there was no statistically significant evidence for the indirect effect of structural traditionalism on the hypothesized relationship from parent-adolescent communication about media portrayals of substance use, youth personal anti-drug norms to youth recent substance use.

**Theoretical and practical implications**

By integrating the general theory of family communication (Fitzpatrick & Ritchie, 1994; Koerner & Fitzpatrick, 2002a) and primarily socialization theory (Oetting & Donnermeyer, 1998) as theoretical frameworks, the current study sheds light on the underlying mechanisms of parental socialization processes on youth substance use behavior. Consistent with expectations (Elek et al., 2006; Kam et al., 2009; Miller-Day, 2008; Miller-Day & Dodd, 2004; Miller-Day & Kam, 2010), parental injunctive norms about substance use and parent-adolescent communication about media portrayals of substance use each had the indirect effects on youth substance use behavior through youth personal anti-drug norms. Based on such findings, health researchers and practitioners are encouraged to integrate parental involvements in an effort of anti-drug socialization prevention.

The current study also explored how family communication environments influence parents’ anti-drug socialization processes. Analysis revealed that the effects of family communication environments on youth recent substance use behavior differ depending on expressiveness, structural traditionalism, and conflict avoidance. More specifically, expressiveness significantly affected parental injunctive norms about substance use and parent-adolescent communication about media portrayals of substance use, which in turn positively influenced youth personal anti-drug norms and consequently reduced youth recent substance use such as alcohol, cigarette, and marijuana. On the other hand, conflict avoidance was significantly
associated with parent-adolescent communication about media portrayals of substance use, which in turn led to youth personal anti-drug norms, and indeed decreased youth recent substance use.

These findings have implications for youth substance use prevention research suggesting that parental socialization processes do not occur consistently among families in different characteristics of family communication environments. Rather, it appears that expressive and conflict avoidant family communication environment respectively predicted the significant effects on youth substance use behavior through different routes of parental anti-drug socialization processes. The findings are consistent with the previous literature documenting that three dimensions of family communication environments predict different aspects of family functioning and children’s well-being (Baxter et al., 2005; Burns & Pearson, 2011; Koesten et al., 2009; Schrodt, 2005, 2009). As Baxter and colleagues (2005) mentioned “‘one size fits all’ recommendation about how parents should communicate with their offspring is too simplistic in light of different family communication environments” (p. 225), future researchers need to consider different constructs of family communication environments when designing family based prevention intervention for adolescent parents.

Moreover, future research needs to examine moderating influences such as substance use-specific parental monitoring. Parents’ approval on youth alcohol drinking at home and availability of alcohol at home were found the most robust predictors of increases in youth alcohol use (Komro, Maldonado-Molina, Tobler, Bonds, & Muller, 2007). In this respect, youth accessibility of substances and substance offers from a parent at home are considered additional risk factors for youth substance use behavior. Additionally, investigating parents’ recent substance use and parental awareness of youth substance use at home may enhance our
knowledge of parental socialization processes. More importantly, the effects of parent-adolescent communication about substance use may differ depending on whether a parent(s) consume substances. It is assumed that parent-adolescent communication implying parental disapproval on youth substance use may be consistent to or contradicting from parents’ actual substance use. Youth perceptions of message types and evaluations of communication possibly mediate the parental socialization processes.

Lastly, future researchers are encouraged to examine other possible predictors such as qualities of parent-adolescent relationship. A recent study of Allen, Chango, Szwedo, Schad, and Marston (2011) discovers that qualities of attachment relationship and supportive behaviors between parent and adolescent had buffering effects on youth from negative peer influences (e.g., deviant behaviors and drug offers). Since family communication environments focus on the aspect of communication between parent and adolescent, future research can extend this line of prevention research by looking at the qualities of parent-adolescent closeness and supportiveness as additional predictors.

**Conclusion**

This is the first line of research identifying parental socialization processes on youth substance use behavior in the context of family communication environments. The study suggests that parents do matter in socializing adolescents for substance use behavior. Based on the general theory of family communication and primary socialization theory, this study’s findings provide implications for family based prevention intervention for youth substance use.
Table 3.1: Summary of Statistics and Scale Reliabilities

<table>
<thead>
<tr>
<th>Variable</th>
<th>Scale</th>
<th>M</th>
<th>SD</th>
<th>Skewness</th>
<th>Kurtosis</th>
<th>Reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expressiveness</td>
<td>5</td>
<td>2.95</td>
<td>1.06</td>
<td>0.11</td>
<td>-0.89</td>
<td>0.87</td>
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<tr>
<td>Structural Traditionalism</td>
<td>5</td>
<td>3.67</td>
<td>1.00</td>
<td>-0.60</td>
<td>-0.33</td>
<td>0.74</td>
</tr>
<tr>
<td>Conflict Avoidance</td>
<td>5</td>
<td>2.22</td>
<td>1.09</td>
<td>0.74</td>
<td>-0.22</td>
<td>0.62</td>
</tr>
<tr>
<td>Parental Injunctive Norms</td>
<td>4</td>
<td>3.87</td>
<td>0.40</td>
<td>-4.83</td>
<td>27.62</td>
<td>0.85</td>
</tr>
<tr>
<td>Parent-Adolescent Communication about Media Portrayals of Substance Use</td>
<td>4</td>
<td>1.98</td>
<td>0.88</td>
<td>0.70</td>
<td>-0.43</td>
<td>0.82</td>
</tr>
<tr>
<td>Youth Personal Anti-Drug Norms</td>
<td>4</td>
<td>3.48</td>
<td>0.83</td>
<td>-1.74</td>
<td>2.23</td>
<td>0.92</td>
</tr>
<tr>
<td>Past 30-Days Alcohol Use</td>
<td>9</td>
<td>1.87</td>
<td>1.83</td>
<td>2.26</td>
<td>4.36</td>
<td>N/A</td>
</tr>
<tr>
<td>Past 30-Days Cigarette Use</td>
<td>8</td>
<td>1.47</td>
<td>1.46</td>
<td>3.30</td>
<td>10.23</td>
<td>N/A</td>
</tr>
<tr>
<td>Past 30-Days Marijuana Use</td>
<td>8</td>
<td>1.21</td>
<td>0.97</td>
<td>5.28</td>
<td>29.20</td>
<td>N/A</td>
</tr>
<tr>
<td>Variable</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<tr>
<td>1. Expressiveness</td>
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<tr>
<td>2. Structural Traditionalism</td>
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<td></td>
<td></td>
<td></td>
<td>(0.30^{**})</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Conflict Avoidance</td>
<td>(0.18^{**})</td>
<td>(0.36^{**})</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>4. Parental Injunctive Norms</td>
<td></td>
<td>(0.10^{*})</td>
<td>(0.05)</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Parent-Adolescent Communication about Media Portrayals of Substance Use</td>
<td>(0.40^{**})</td>
<td>(0.26^{**})</td>
<td>(0.31^{**})</td>
<td>(0.14^{**})</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Youth Personal Anti-Drug Norms</td>
<td>(0.29^{**})</td>
<td>(0.16^{**})</td>
<td>(0.09^{*})</td>
<td>(0.13^{**})</td>
<td>(0.21^{**})</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Past 30-Days Alcohol Use</td>
<td>(-0.17^{**})</td>
<td>(-0.04)</td>
<td>(-0.07)</td>
<td>(-0.14^{**})</td>
<td>(-0.14^{**})</td>
<td>(-0.33^{**})</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Past 30-Days Cigarette Use</td>
<td>(-0.14^{**})</td>
<td>(0.00)</td>
<td>(-0.02)</td>
<td>(-0.17^{**})</td>
<td>(-0.12^{**})</td>
<td>(-0.28^{**})</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Past 30-Days Marijuana Use</td>
<td>(-0.12^{**})</td>
<td>(0.02)</td>
<td>(-0.01)</td>
<td>(-0.07)</td>
<td>(-0.10)</td>
<td>(-0.25^{**})</td>
</tr>
</tbody>
</table>

\(p < .05\). \(**p < .01\) (two-tailed).
Table 3.3: Factor Loading from the Full CFA Measurement Model

<table>
<thead>
<tr>
<th>Items</th>
<th>Standardized Factor Loadings</th>
<th>Items</th>
<th>Standardized Factor Loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Expressiveness</strong></td>
<td></td>
<td><strong>Parental Injunctive Norms</strong></td>
<td></td>
</tr>
<tr>
<td>EX1 0.66</td>
<td></td>
<td>PN1 0.88</td>
<td></td>
</tr>
<tr>
<td>EX2 0.79</td>
<td></td>
<td>PN2 0.97</td>
<td></td>
</tr>
<tr>
<td>EX3 0.75</td>
<td></td>
<td>PN3 0.94</td>
<td></td>
</tr>
<tr>
<td>EX4 0.80</td>
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</tr>
<tr>
<td>EX5 0.83</td>
<td>Parent-Adolescent Communication</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EX6 0.79</td>
<td>PC1 0.93</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PC2 0.93</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Structural Traditionalism</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ST1 0.76</td>
<td></td>
<td>PC3 0.70</td>
<td></td>
</tr>
<tr>
<td>ST2 0.66</td>
<td>Youth Norms</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ST3 0.58</td>
<td>YN1 0.94</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>YN2 0.98</td>
<td></td>
<td></td>
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<tr>
<td><strong>Conflict Avoidance</strong></td>
<td></td>
<td>YN3 0.93</td>
<td></td>
</tr>
<tr>
<td>CA1 0.66</td>
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<tr>
<td>CA2 0.72</td>
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</table>
Figure 3.2: A Model of Longitudinal Effects of Parental Socialization Processes on Youth Substance Use Behavior

Note. Path coefficients in the figure are standardized and significant pathways are highlighted by boldface ($\chi^2 [276] = 759.10$, CFI = .973, TLI = .969, RMSEA = .041, WRMR = 1.438). Effects of gender, age, and prior use of substances were controlled but the pathways are not shown in the figure for reasons of clarity. * p < .05; ** p < .01; *** p < .001
Table 3.4: Direct Effects from the Full Structural Model

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unstd. (SE)</th>
<th>Std.</th>
<th>Parameter</th>
<th>Unstd. (SE)</th>
<th>Std.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effect on PN</td>
<td></td>
<td></td>
<td>Effect on CI</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EX</td>
<td>0.51*** (0.11)</td>
<td>0.41</td>
<td>YN</td>
<td>-0.44*** (0.08)</td>
<td>-0.41</td>
</tr>
<tr>
<td>ST</td>
<td>0.25 (0.18)</td>
<td>0.22</td>
<td>AGE</td>
<td>0.19 (0.12)</td>
<td>0.19</td>
</tr>
<tr>
<td>CA</td>
<td>-0.25 (0.21)</td>
<td>-0.20</td>
<td>GENDER</td>
<td>0.38** (0.13)</td>
<td>0.38</td>
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<tr>
<td>Effect on PC</td>
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<td></td>
<td>PS</td>
<td>0.56*** (0.6)</td>
<td>0.56</td>
</tr>
<tr>
<td>EX</td>
<td>0.50*** (0.07)</td>
<td>0.36</td>
<td>Effect on MA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ST</td>
<td>-0.10 (0.10)</td>
<td>-0.08</td>
<td>YN</td>
<td>-0.47*** (0.08)</td>
<td>-0.44</td>
</tr>
<tr>
<td>CA</td>
<td>0.56*** (0.12)</td>
<td>0.42</td>
<td>AGE</td>
<td>0.06 (0.17)</td>
<td>0.06</td>
</tr>
<tr>
<td>Effect on YN</td>
<td></td>
<td></td>
<td>GENDER</td>
<td>0.23 (0.18)</td>
<td>0.23</td>
</tr>
<tr>
<td>PN</td>
<td>0.29*** (0.08)</td>
<td>0.26</td>
<td>PS</td>
<td>0.49*** (0.08)</td>
<td>0.49</td>
</tr>
<tr>
<td>PC</td>
<td>0.28*** (0.07)</td>
<td>0.28</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effect on AL</td>
<td></td>
<td></td>
<td>YN</td>
<td>-0.40*** (0.07)</td>
<td>-0.37</td>
</tr>
<tr>
<td>AGE</td>
<td>-0.09 (0.09)</td>
<td>-0.09</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GENDER</td>
<td>0.04 (0.10)</td>
<td>0.04</td>
<td>PS</td>
<td>0.48*** (0.05)</td>
<td>0.48</td>
</tr>
</tbody>
</table>

* p < .05; ** p < .01; *** p < .001.

Note. Unstd. = unstandardized estimate, SE = standard error, Std. = completely standardized estimates, EX = expressiveness, ST = structural traditionalism, CA = conflict avoidance, PN = parental injunctive norms about substance use, PC = parent-adolescent communication about media portrayals of substance use, YN = youth personal anti-drug norms, AL = past 30-days alcohol use, CI = past 30-days cigarette use, MA = past 30-days marijuana use, PS = Prior Substance Use.
Table 3.5: Indirect Effects from Family Communication Environments

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unstd. (SE)</th>
<th>Std.</th>
</tr>
</thead>
<tbody>
<tr>
<td>EX → PN → YN → AL</td>
<td>-0.06* (0.02)</td>
<td>-0.04</td>
</tr>
<tr>
<td>EX → PN → YN → CI</td>
<td>-0.07** (0.02)</td>
<td>-0.04</td>
</tr>
<tr>
<td>EX → PN → YN → MA</td>
<td>-0.07* (0.03)</td>
<td>-0.05</td>
</tr>
<tr>
<td>ST → PN → YN → AL</td>
<td>-0.03 (0.02)</td>
<td>-0.02</td>
</tr>
<tr>
<td>ST → PN → YN → CI</td>
<td>-0.03 (0.03)</td>
<td>-0.02</td>
</tr>
<tr>
<td>ST → PN → YN → MA</td>
<td>-0.03 (0.03)</td>
<td>-0.02</td>
</tr>
<tr>
<td>CA → PN → YN → AL</td>
<td>0.03 (0.03)</td>
<td>0.02</td>
</tr>
<tr>
<td>CA → PN → YN → CI</td>
<td>0.03 (0.03)</td>
<td>0.02</td>
</tr>
<tr>
<td>CA → PN → YN → MA</td>
<td>0.03 (0.03)</td>
<td>0.02</td>
</tr>
<tr>
<td>EX → PC → YN → AL</td>
<td>-0.06** (0.02)</td>
<td>-0.04</td>
</tr>
<tr>
<td>EX → PC → YN → CI</td>
<td>-0.06** (0.02)</td>
<td>-0.04</td>
</tr>
<tr>
<td>EX → PC → YN → MA</td>
<td>-0.67** (0.02)</td>
<td>-0.04</td>
</tr>
<tr>
<td>ST → PC → YN → AL</td>
<td>0.01 (0.01)</td>
<td>0.08</td>
</tr>
<tr>
<td>ST → PC → YN → CI</td>
<td>0.01 (0.01)</td>
<td>0.01</td>
</tr>
<tr>
<td>ST → PC → YN → MA</td>
<td>0.01 (0.01)</td>
<td>0.01</td>
</tr>
<tr>
<td>CA → PC → YN → AL</td>
<td>-0.06** (0.02)</td>
<td>-0.04</td>
</tr>
<tr>
<td>CA → PC → YN → CI</td>
<td>-0.07** (0.03)</td>
<td>-0.05</td>
</tr>
<tr>
<td>CA → PC → YN → MA</td>
<td>-0.07* (0.03)</td>
<td>-0.05</td>
</tr>
</tbody>
</table>

* p < .05; ** p < .01; *** p < .001.

Note. Unstd. = unstandardized estimate, SE = standard error, Std. = completely standardized estimates, EX = expressiveness, ST = structural traditionalism, CA = conflict avoidance, PN = parental injunctive norms about substance use, PC = parent-adolescent communication about
media portrayals of substance use, YN = youth personal anti-drug norms, AL = past 30-days alcohol use, CI = past 30-days cigarette use, MA = past 30-days marijuana use.
CHAPTER 4
CLOSING REMARKS

This dissertation explores the socializing influences of parents and media on adolescent substance use. As youth emerge into adolescents, media emerge as more salient socializing influences (Wills, Sargent, Gibbons, Gerrard, & Stoolmiller, 2009; Wills, Sargent, Stoolmiller, Gibbons, & Gerrard, 2008; Wills, Sargent, Stoolmiller, Gibbons, Worth, & Cin, 2007). However, parents also remain influential in crucial health behavior decisions (Hawkins, Catalano, & Miller, 1992; Miller-Day & Kam, 2010; Rangarajan, & Kelly, 2006; Reimuller, Hussong, & Ennett, 2011).

In the 21st century, children and adolescents are exposed to media that portray substance use behaviors and socialize such behaviors as normative (Everette, Schnuth, & Tribble, 1998; Ribisl, Lee, Henriksen, & Haladjian, 2003; Sargent, Wills, Stoolmiller, Gibson, & Gibbons, 2006). Many scholars have argued that media negatively influence children and adolescents in that regard (Anderson, Bruijn, Angus, Gordon, & Hastings, 2009; Cin, Worth, Gerrard, Gibbons, Stoolmiller, & Wills et al., 2009; Kelly, Slater, & Karan, 2002; Sargent, Gibson, & Hatherton, 2009). Health communication researchers, on the other hand, use media as an effective tool to promote youth substance use prevention in a form of entertainment-education (E-E) (Lee, Hecht, Miller-Day, & Elek, 2011; Warren, Hecht, Wagstaff, Elek, Ndiaye, Dustman, et al., 2006). However, these influences do not emerge in a vacuum; rather family and friends continue to play a role in adolescent decisions (Altonji, Cattan, & Ware, 2010; Bauman & Ennett, 1996; Elek, Miller-Day, & Hecht, 2006; Kam, Matsunaga, Hecht, & Ndiaye, 2009). In recent years these lines of research have merged with greater attention given to the potentials of interpersonal
communication in conjunction with E-E effects. Among various interpersonal relationships, parents are considered a primary socialization agent for youth substance use behavior (Miller-Day, 2008; Miller-Day & Dodd, 2004; Miller-Day & Kam, 2010; Schinke, Noia, Schwinn, & Cole, 2006; Van der Vorst, Engels, Meeus, & Dekovic, 2006). This dissertation, therefore, attempted to disentangle anti-drug socialization processes by considering media and parents as primary socialization agents for youth substance use prevention.

Chapter 1 introduced the conceptual definition of E-E and examined the effectiveness of E-E interventions in reducing health risks. Chapter 1 also discussed the conceptual definition of family communication, in particular focusing on family communication patterns and family communication environments, and protective effects of parent-child communication about substance use. Chapter 2 reported the results of an empirical study examining the joint effects of E-E prevention intervention and interpersonal communication about substance use on recent substance use behavior. This chapter tested the mediation effects of youth refusal efficacy between youth perceptions of narrative performance (interest, realism, and identification with characters) and recent substance use behavior. This chapter also examined the moderation effects of communication about substance use with parents, siblings, and friends on the hypothesized mediation relationships. Chapter 3 reported the results of an empirical study investigating the longitudinal effects of parental socialization processes on youth substance use behavior. This chapter tested the hypothesized relationships between parental injunctive norms about substance use, youth personal anti-drug norms, and recent substance use, between parent-adolescent communication about media portrayals of substance use, youth personal anti-drug norms, and recent substance use. This chapter also examined indirect effects of family communication environments (expressiveness, structural traditionalism, and conflict avoidance) on the
hypothesized relationships. The current chapter summarizes main findings and provides a
discussion of the theoretical contributions and practical implications as well as considering
directions for future research.

Theoretical Contributions

These studies were based on social cognitive theory (Bandura, 1982, 2002, 2004)’s view
that individuals vicariously learn behaviors by observing others and this socialization process
profoundly influences individuals’ self-efficacy to perform the recommended behaviors. Many
health communication scholars have used SCT to design and disseminate effective health
promotion and prevention messages in a form of entertainment-education (E-E) (Bae, 2008;
Beck, 2004; Lapinski & Nwulu, 2008; Rogers & Vaughan, 2000; Rogers, Vaughan, Swalehe,
Rao, Svenkerud, & Sood, 1999; Smith, Downs, & Witte, 2007; Vaughan, Rogers, Singhal, &
Swalehe, 2000; Ye & Ward, 2010). E-E uses models to entertain and educate audiences
concurrently to increase knowledge and change attitudes and behaviors (Singhal & Rogers,
1999).

This dissertation argues that persuasive E-E message processing does not occur on a
vacuum. Empirical studies on E-E suggest that those who exposed to E-E programs were more
likely to talk about E-E topics with family and/or friends around them (Bouman, Maas, & Kok,
1998; Brodie, Foehr, Rideout, Baer, Miller, & Flournoy et al., 2001; Sypher, McKinley, Ventsam,
& Valdeavellano, 2002; Love, Mouttapa, & Tanjasiri, 2009; Unger, Molina, & Baron, 2009). To
further explore the persuasive processing of E-E health messages, scholars recently point out the
need to consider interpersonal communication about E-E messages in conjunction with E-E
health intervention (Salmon, 2001; Southwell & Yzer, 2007). In Chapter 2, a study is presented
to test these relationships.
The study reported in Chapter 2 examined the joint effects of an E-E video and interpersonal communication about substance use in the domain of youth substance use prevention research. The results indicated that youth perceptions of narrative performance such as interest and realism significantly related to youth self-efficacy to refuse drug offers. The findings suggested that youth who were more interested and perceived the E-E videos as more realistic reported higher levels of refusal efficacy in drug offer situations. However, contrary to expectations, identification with characters did not manifest this effect and, further, results did not support the hypothesis that youth refusal efficacy would be negatively associated with recent substance use behavior. In addition, the moderating effects of interpersonal communication about substance use were not found to be significant, although the findings were in the predicted direction (i.e., communication about substance use with parents, siblings, and friends were all inversely related to recent substance use).

Using longitudinal data, the study reported in Chapter 3 examined the effects of parental socialization processes on youth substance use behaviors. Primary socialization theory (Oetting & Donnermeyer, 1998) explains that parents primarily socialize children and adolescents in diverse aspects of social practices. Taking this theory as the theoretical framework, the findings supported the hypotheses postulating the impacts of parental substance use injunctive norms and parent-adolescent communication about media portrayals of substance use on youth personal anti-drug norms and recent substance use behavior. These significant relationships strongly suggest that parents remain primary socialization agents for youth substance use prevention even into adolescence (Elek et al., 2006; Kam et al., 2009; Miller-Day & Kam, 2010; Reimuller et al., 2011; Van der Vorst et al., 2006). In addition, Chapter 3 also examined the effects of family communication environments (expressiveness, structural traditionalism, and conflict avoidance)
on the hypothesized relationships. Family scholars argue that family communication environments influence family functioning and children’s developmental outcomes (Baxter, Bylund, Imes, & Scheive, 2005; Koesten, Schrod, & Ford, 2009; Schrod, 2005, 2009). The findings on Chapter 3 revealed that expressive family communication environment was positively related to parental injunctive norms about substance use and parent-adolescent communication about media portrayals of substance use. It was also found that conflict avoidance in communication environment of family was positively associated with parent-adolescent communication about media portrayals of substance use. These findings add to contribute to enhance our understanding of the effects of family communication environments on parental socialization processes for youth substance use prevention and therefore, it is particularly significant as the first line of research exploring family communication environments in youth substance use prevention research.

Practical Implications

These findings have important practical implications for adolescent substance use prevention. First, when designing E-E health intervention, health communication researchers and practitioners should ensure to make the narrative story interesting and realistic to the target audience. Present findings allow concluding that E-E intervention appealing to grab audiences’ attention and involvement in story hold the premise for changing the audience’s efficacy to perform the desirable behavior in a short term.

Second, health communication researchers and practitioners recently turn their attention to the need to consider the potentials of interpersonal communication in conjunction with E-E intervention. In the domain of youth substance use prevention research, parents are considered one of the most influential persons on children and adolescents’ behavioral development. In this
regard, it is believed that parent-child communication about substance use plays a protective role against youth substance use. Also, the findings provide evidence that different dimensions of family communication environments show varying effects on parental socialization processes. Prevention scholars are encouraged to design family based intervention by taking account of characteristics of family communication.

Limitations

The studies in this dissertation show practical implications for youth substance use prevention research, yet there are several limitations that need to be addressed.

The study reported in Chapter Two suffered from administrative delays of the IRB approval process resulting in a drastic revision of the original schedule. As a result of the compressed time frame the planned pre-test survey had to be canceled and consequently, the cross-sectional data were collected right after showing the E-E video to measure youth perceptions of narrative performance and refusal efficacy. As a result, the findings cannot guarantee causality due to the analyses of cross-sectional data. Not only does this preclude the controlling effects of pretest use, but this design was incapable of capturing any delayed or sleeper effect on youth recent substance use behavior found in some previous research since the post-survey data were collected only in a month after the implementation of the E-E intervention (e.g., Kumkale & Albarracin, 2004). Media scholars point out that the effects of E-E intervention tend to occur in a longer term since the cognitive processing of E-E messages requires a long period of time for audiences to adapt to recommended behaviors (Appel & Richeter, 2007; Jensen, Bernat, Wilson, & Goonwardene, 2009). At the same time, substance use levels tend to be low in 8th grade (Johnston, O’Malley, Bachman, & Schulenberg, 2011) and it may simply be that pragmatically there simply may have been inadequate power for effects to emerge prior to
9th grade. In other words, the 30-day lapse between intervention and posttest may simply have been too short a period for these effects to emerge. Therefore, the longitudinal data with the pre-survey, immediate post-survey, and post-surveys in a longer term (i.e., every six months) would allow for examining casual relationships between the effects of E-E intervention and youth recent substance use via self-efficacy as well as interpersonal communication about substance use.

In Chapter 2, an entertainment-education video was chosen to promote refusal strategies. This video was shown as a part of a school-based prevention intervention (kiR), which was implemented by teachers in classroom. Prior to viewing, teachers who delivered the lesson instructed students that the video would present communication strategies in drug offer situations. As a result, students were aware of the reason or purpose for watching the video. Thus, they were primed to look for these strategies. In addition, the study examined interest, realism, and identification with characters as the three constructs of youth perceptions of narrative performance. Emotional involvement in the video was not accounted for in the study. Although past research showed that emotional involvement in E-E was a positive predictor for changes of the audiences’ self-efficacy (Smith et al., 2007; Sood, 2002), norms (Bae, 2008), and behavioral intentions (Bae, 2008; Morgan et al., 2009; Movius et al., 2007), the previous researchers used a series of television drama or radio soap operas to promote health messages, which is contextually different from the kiR video. The former is more likely to enable audiences to immerse themselves with E-E programs with a series of episodes and same characters on the programs, the latter is likely to be perceived by adolescents as part of kiR lessons. Due to the difference of genre, it is plausible to argue that different types of E-E require various approaches to examine the cognitive processes of health messages. That is, emotional involvement may be
considered as a strong indicator for the E-E effects in one genre, while other genre may be
processed through different constructs. Future research needs to contextualize cognitive message
processing (i.e., interest, realism, identification with characters, emotional involvement) based on
E-E genres (i.e., television drama, radio drama, comic book, theater performance) and identify
potential predictors for E-E persuasion.

The study in Chapter 3 examined the indirect effects of family communication
environments (FCE) on youth substance use behaviors. Among the three constructs of FCE, structural traditionalism and conflict avoidance addressed the role of parents as an authority within family. Originated from the conformity dimension from family communication patterns (FCP), structural traditionalism demonstrated the hierarchical power of parents on children in family relationships, whereas conflict avoidance focused on parental influence on communication that teach children to avoid conflict with family members. Thus both structural traditionalism and conflict avoidant environments prioritize authority with family. Although past scholars investigated the effects of FCE constructs on family functioning (Schrodt, 2005, 2009) and adolescent health (Koesten, Schrodt, & Ford, 2009), the role of authority outside of family has not been fully considered in interpersonal relationships and communication. On one hand, it is plausible to assume that structural traditionalism and conflict avoidant environment in family communication may lead children to prioritize other authorities in interpersonal relationships and communication. On the other hand, it is also possible to speculate that some family communication environments may isolate family members against outside influences. Future research needs to explore if the constructs of structural traditionalism and conflict avoidance influence on children’s interpersonal relationships and communication with authority in outside of the family context.
Finally, the study reported in Chapter 3 used a self-report measure of FCE. Thus, the findings representing the indirect effects of FCE on youth substance use behavior needed to be understood from the perspective of adolescents. Future research needs to investigate if the study findings hold the same results using parents’ self-reports on the socialization processes for youth substance use prevention. Using dyadic data allows investigating the processes of anti-drug socialization from more comprehensive perspectives.

**Future Directions**

As prior studies suggested, audiences exposed to E-E programs tended to talk about E-E characters and stories with family members or friends (Bouman et al., 1998; Brodie et al., 2001; Sypher et al., 2002; Love et al., 2009; Unger et al., 2009). More efforts are need to delve into how adolescents talk about the E-E videos with parents, siblings, and friends and whether such conversations reinforce or decrease the persuasion of the E-E messages in a process of anti-drug socialization (see Figure 4.1 for the conceptual model of E-E prevention and interpersonal communication on youth substance use). In addition to frequency and comfort of communication, investigating evaluations of communication (e.g., whether conversations reinforce or contradict E-E messages) would provide better understandings on the interpersonal level of message processing.

Additionally, considering potential moderators should add more insights of parental socialization processes. For example, family scholars suggest that parental monitoring about adolescent children’s substance use, accessibility of substances at home, and parental use of substances would moderate the hypothesized relationship (Komro, Maldonado-Molina, Tobler, Bonds, & Muller, 2007; Rangarajan & Kelly, 2006). Prevention researchers are encouraged to
further explore the potential moderating effects (see Figure 4.2 for the conceptual model of parental socialization processes).

Lastly, parental involvements in E-E prevention intervention (kiR) may render synergetic effects on youth substance use prevention. Assigning students homework that requires watching the E-E videos with parents and talking about the videos may generate more conversations between parent and child. Also, homework assignment asking stories about parents’ experience of drug offers or stories of others in drug offer situations can be another way to bring about substance use in parent-adolescent communication. Lastly, homework assigned to talk about media portrayals of substance use open door for parents to parental involvement in communication about substance use on media. It is unknown whether parent-adolescent communication about E-E videos, personal stories about substance use, and media depiction about substance use as homework assignment may effectively reinforce anti-drug socialization or not. It needs to be ensured that parents receive a guideline for communication about substance use in various contexts. Future researchers need to put more effort to encourage parental involvement in school-based intervention by providing parents with adequate communicative strategies through family-based intervention.

**Conclusion**

In summary, this dissertation examined social processes promoting youth substance use prevention by considering media and parents as socialization agents. The findings suggested that prevention intervention in a form of entertainment-education was a strong predictor for youth self-efficacy to refuse drug offers and parental efforts to socialize adolescents positively affected youth personal anti-drug norms and in turn decreased in youth substance use behaviors. The dissertation research contributed to advance prevention research by integrating social cognitive
theory and theory of narrative performance to investigate the cognitive message processing of E-E intervention in youth substance use prevention. Also, this dissertation attempted to explore parental socialization processes in accounts of family communication environments. Since this is the first line of research applying the general theory of family communication to examine parental influences on youth substance use behavior, the findings add to the theoretical contribution in family and prevention research. For the future research, prevention researchers and practitioners should consider the potential role of interpersonal communication, especially parent-adolescent communication when developing E-E health campaigns to promote youth substance use prevention.
Figure 4.1. Conceptual Model of E-E prevention and Interpersonal Communication on Youth Substance Use.
Figure 4.2. Conceptual Model of Parental Socialization Processes.

- Expressiveness
- Structural Traditionalism
- Conflict Avoidance
- Parental Injunctive Norms about Substance use
- Parent-Adolescent Communication about Media Portrayals of Substance Use
- Recent Substance Use
- Youth Personal Anti-Drug Norms
- Recent Substance Use

**Moderators**
- Parental Substance Use
- Parental Monitoring on Youth Substance Use at Home
- Accessibility of Substances at Home
References


Communicating health information through the entertainment media. *Health Affairs*, 20(1), 192-199.


Hanewinke, R., Morgenstern, M., Tanski, S. E., & Sargent, J. D. (2008). Longitudinal study of
parental movie restriction on teen smoking and drinking in Germany. *Addiction, 103*(10), 1722-1730.


Jensen, J. D., Bernat, J. K., Wilson, K., & Goonwardene, J. (2009). *Narrative persuasion and the sleeper effect: Further evidence that fictional narratives are more persuasive over time.* Paper presented at the annual meeting of the National Communication Association, Chicago, IL.


Mexican heritage. *Prevention Science, 10*(1), 41-53.


conversation orientation and conformity orientation on conflict in the family.  

*Communication Studies, 48*(1), 59-75.


*Communication Theory, 12*, 70-91.


*Communication Yearbook, 26*, 36-68.


*Addiction, 102*, 1597-1608.


Yu, C. Y. (2002). *Evaluating cutoff criteria of model fit indices for latent variable models with*
binary and continuous outcomes. Doctoral dissertation, University of California, Los Angeles.
Appendix A
The Survey Questionnaire of Time 1 & Time 2 (Spring 2011)

<table>
<thead>
<tr>
<th>Interest (Time 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Please indicate how much you agree or disagree with each of the following statements”</td>
</tr>
<tr>
<td>(1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly disagree)</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Realism (Time 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Please indicate how much you agree or disagree with each of the following statements”</td>
</tr>
<tr>
<td>(1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly disagree)</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Identification with Characters (Time 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Please indicate how much you agree or disagree with each of the following statements”</td>
</tr>
<tr>
<td>(1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly disagree)</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>---</td>
</tr>
</tbody>
</table>

### Youth Refusal Efficacy (Time 1)

**“Please indicate how sure you are that you would say no for each of the following situations”**

(1 = not at all sure, 2 = not sure, 3 = sure, 4 = very sure)

<table>
<thead>
<tr>
<th></th>
<th>I would say “no” if a family member offered me alcohol</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I would say “no” if a kid at school offered me a cigarette</td>
</tr>
<tr>
<td>2</td>
<td>I would say “no” if a close friend offered me marijuana</td>
</tr>
</tbody>
</table>

### Frequency of Communication about Substance Use (Time 1)

**“After watching the keepin' it REAL videos, how frequently have you talked about drug use (e.g., alcohol, tobacco, marijuana, or other drugs)?”**

(1 = never, 2 = once, 3 = 2 or 3 times, 4 = frequently)

<table>
<thead>
<tr>
<th></th>
<th>I have talked about drug use with my parents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I have talked about drug use with my siblings</td>
</tr>
<tr>
<td>2</td>
<td>I have talked about drug use with my friends</td>
</tr>
</tbody>
</table>

### Comfort in Communication about Substance Use (Time 1)

**“When talking to parents/siblings/friends about drugs overall, please answer the following”**

(1 = extremely comfortable, 2 = comfortable, 3 = neutral, 4 = uncomfortable, 5 = extremely comfortable, 6 = did not talk with them about this)

<table>
<thead>
<tr>
<th></th>
<th>How comfortable were you talking about drugs with your parents? – reversed coded</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>How comfortable were you talking about drugs with your siblings? – reversed coded</td>
</tr>
<tr>
<td>2</td>
<td>How comfortable were you talking about drugs with your friends? – reversed coded</td>
</tr>
</tbody>
</table>
### Gender (Time 1) – Dummy Coded

“I am a” (1= boy, 2 = girl)

<p>| | |</p>
<table>
<thead>
<tr>
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<tbody>
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</tbody>
</table>

### Age (Time 1)

“How old are you?”

(1 = 11 years or under, 2 = 12 years, 3 = 13 years, 4 = 14 years, 5 = 15 years, 6 = 16 years, 7 = 17 years or older)

<p>| | |</p>
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<tbody>
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<td></td>
</tr>
</tbody>
</table>

### Lifetime Alcohol Use (Time 2) – Recoded as Lifetime Substance Use

“How many drinks of alcohol have you had in your entire life?”

(A “drink” = 1 bottle or can of beer, 1 glass of wine, or 1 hot of hard liquor.)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>None. I have never had even one sip of alcohol</td>
</tr>
<tr>
<td>2</td>
<td>Only sips FOR RELIGIOUS SERVICES</td>
</tr>
<tr>
<td>3</td>
<td>Only sips, but NOT for religious services</td>
</tr>
<tr>
<td>4</td>
<td>Part or all of 1 drink</td>
</tr>
<tr>
<td>5</td>
<td>2 to 4 drinks</td>
</tr>
<tr>
<td>6</td>
<td>5 to 11 drinks</td>
</tr>
<tr>
<td>7</td>
<td>12 to 25 drinks</td>
</tr>
<tr>
<td>8</td>
<td>26 to 50 drinks</td>
</tr>
<tr>
<td>9</td>
<td>51 to 100 drinks</td>
</tr>
<tr>
<td>10</td>
<td>More than 100 drinks</td>
</tr>
</tbody>
</table>

### Lifetime Cigarette Use (Time 2) – Recoded as Lifetime Substance Use

“How many cigarettes have you smoked in your entire life?”

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Lifetime Marijuana Use (Time 2) – Recoded as Lifetime Substance Use

“How many times have you used marijuana in your entire life?”

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Never. I have never used marijuana even once</td>
</tr>
<tr>
<td>2</td>
<td>Only</td>
</tr>
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</tr>
<tr>
<td>6</td>
<td>16 or 30 times</td>
</tr>
<tr>
<td>7</td>
<td>More than 30 times</td>
</tr>
</tbody>
</table>

### Past 30-Days Alcohol Use (Time 2) – Recoded as Past 30-Days Substance Use

“How many drinks of alcohol have you had in the past 30 days?”

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>None. I have never had even one puff</td>
</tr>
<tr>
<td>2</td>
<td>Only one puff</td>
</tr>
<tr>
<td>3</td>
<td>Part of all of one cigarette</td>
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<td>4</td>
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<tr>
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<td>10</td>
<td>More than 20 packs of cigarettes</td>
</tr>
</tbody>
</table>
(A “drink” = 1 bottle or can of beer, 1 glass of wine, or 1 hot of hard liquor.)

<table>
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<tr>
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<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td>None. I have never had even one sip of alcohol</td>
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<tr>
<td>2</td>
<td>Only sips FOR RELIGIOUS SERVICES</td>
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<td>3</td>
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<td>8</td>
<td>16 to 30 drinks</td>
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<tr>
<td>9</td>
<td>More than 30 drinks</td>
</tr>
</tbody>
</table>

**Past 30-Days Cigarette Use (Time 2) – Recoded as Past 30-Days Substance Use**

“How many cigarettes have you smoked in the past 30 days?”

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>None. I have never had even one puff</td>
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<tr>
<td>9</td>
<td>6 to 20 packs of cigarettes</td>
</tr>
<tr>
<td>10</td>
<td>More than 20 packs of cigarettes</td>
</tr>
</tbody>
</table>
### Lifetime Marijuana Use (Time 2) – Recoded as Lifetime Substance Use

“How many times have you used marijuana in the past 30-days?”

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>None</td>
</tr>
<tr>
<td>2</td>
<td>One time, but a really small one</td>
</tr>
<tr>
<td>3</td>
<td>One time</td>
</tr>
<tr>
<td>4</td>
<td>2 or 3 times</td>
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<td>5</td>
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</tr>
<tr>
<td>7</td>
<td>16 to 30 times</td>
</tr>
<tr>
<td>8</td>
<td>30 to 50 times</td>
</tr>
<tr>
<td>9</td>
<td>More than 50 times</td>
</tr>
</tbody>
</table>

### Lifetime Substance Use (Time 2)/Past 30-Days Substance Use (Time 2)

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>None</td>
</tr>
<tr>
<td>2</td>
<td>Used one of substances</td>
</tr>
<tr>
<td>3</td>
<td>Used two of substances</td>
</tr>
<tr>
<td>4</td>
<td>Used three of substances</td>
</tr>
</tbody>
</table>
Appendix B
The Survey Questionnaire of Wave 1 (Fall 2009), Wave 2 (Spring 2010), & Wave 3 (Spring 2011)

### Expressiveness (Wave 1)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>My parents ask my opinion when the family is talking about something</td>
</tr>
<tr>
<td>2</td>
<td>I tell my parents what I am thinking about</td>
</tr>
<tr>
<td>3</td>
<td>I can tell my parents almost anything</td>
</tr>
<tr>
<td>4</td>
<td>My parents encourage me to express my feelings</td>
</tr>
<tr>
<td>5</td>
<td>In our family, we talk about our feelings and emotions</td>
</tr>
<tr>
<td>6</td>
<td>My parents like to hear my opinions, even when they don't agree with me</td>
</tr>
</tbody>
</table>

### Structural Traditionalism (Wave 1)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>When anything really important is involved, my parents expect me to obey without question</td>
</tr>
<tr>
<td>2</td>
<td>In our home, my parents usually have the last word</td>
</tr>
<tr>
<td>3</td>
<td>My parents feel that it is important to be the boss</td>
</tr>
<tr>
<td>4</td>
<td>My parents say things like “You'll know better when you grow up.”</td>
</tr>
<tr>
<td>5</td>
<td>My parents say things like “My ideas are right and you should not question them.”</td>
</tr>
<tr>
<td>6</td>
<td>My parents say things like “A child should not argue with adults.”</td>
</tr>
</tbody>
</table>
### Conflict Avoidance (Wave 1)

**“How often do these things happen?”**

(1 = never, 2 = occasionally, 3 = often, 4 = very often, 5 = all the time)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>My parents say things like “There are some things that just shouldn't be talked about.”</td>
</tr>
<tr>
<td>2</td>
<td>My parents often say things like “You should give in on arguments rather than risk making people mad.”</td>
</tr>
<tr>
<td>3</td>
<td>Some issues will disappear if two people can just avoid arguing about them</td>
</tr>
<tr>
<td>4</td>
<td>It is better to hide one's true feelings in order to avoid hurting a family member</td>
</tr>
<tr>
<td>5</td>
<td>In a family, it is better to avoid conflicts than to engage in them</td>
</tr>
</tbody>
</table>

### Parental Injunctive Norms about Substance Use (Wave 1)

**“How wrong do your parents feel it would be for you to…”**

(1 = not wrong at all, 2 = a little bit wrong, 3 = wrong, 4 = very wrong)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Drink alcohol regularly (beer, wine, or hard liquor)?</td>
</tr>
<tr>
<td>2</td>
<td>Smoke cigarettes?</td>
</tr>
<tr>
<td>3</td>
<td>Smoke marijuana?</td>
</tr>
</tbody>
</table>

### Parent-Adolescent Communication about Media Portrayals of Substance Use (Wave 1)

**“Does at least one of your parents ever...”**

(1 = not wrong at all, 2 = a little bit wrong, 3 = wrong, 4 = very wrong)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Make comments about how drinking alcohol is bad if a character on TV is drinking or drunk?</td>
</tr>
<tr>
<td>2</td>
<td>Make comments about how chewing or smoking is bad if a character on TV is chewing/smoking tobacco?</td>
</tr>
<tr>
<td>Gender (Time 1) – Dummy Coded</td>
<td></td>
</tr>
<tr>
<td>--------------------------------</td>
<td></td>
</tr>
<tr>
<td>“I am a” (1 = boy, 2 = girl)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age (Wave 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>“How old are you?”</td>
</tr>
<tr>
<td>(1 = 11 years or under, 2 = 12 years, 3 = 13 years, 4 = 14 years, 5 = 15 years, 6 = 16 years, 7 = 17 years or older)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lifetime Alcohol Use (Wave 1) – Recorded as Lifetime Substance Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>“How many drinks of alcohol have you had in your entire life?”</td>
</tr>
<tr>
<td>(A “drink” = 1 bottle or can of beer, 1 glass of wine, or 1 hot of hard liquor.)</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
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<tr>
<td>3</td>
</tr>
<tr>
<td>4</td>
</tr>
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<tr>
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<tr>
<td>8</td>
</tr>
<tr>
<td>9</td>
</tr>
<tr>
<td>10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lifetime Cigarette Use (Wave 1) – Recorded as Lifetime Substance Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>“How many cigarettes have you smoked in your entire life?”</td>
</tr>
</tbody>
</table>

### Lifetime Marijuana Use (Wave 1) – Recorded as Lifetime Substance Use

**“How many times have you used marijuana in your entire life?”**

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Never. I have never used marijuana even once</td>
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<tr>
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<td>Only</td>
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### Lifetime Substance Use (Wave 1)

<table>
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<td>Used one of substances</td>
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<tr>
<td>---</td>
<td>-------------------------------------------------</td>
</tr>
<tr>
<td>3</td>
<td>Used two of substances</td>
</tr>
<tr>
<td>4</td>
<td>Used three of substances</td>
</tr>
</tbody>
</table>

**Youth Personal Anti-Drug Norms (Wave 2)**

“Do you think it is wrong for someone your age to...”

(1 = no, not at all, 2 = maybe, but only a little wrong, 3 = yes, it is wrong, 4 = yes, it is very wrong)

<p>| | |</p>
<table>
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<tbody>
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<td>1</td>
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**Past 30-Days Alcohol Use (Wave 3)**

“How many drinks of alcohol have you had in the past 30 days?”

(A “drink” = 1 bottle or can of beer, 1 glass of wine, or 1 hot of hard liquor.)

<p>| | |</p>
<table>
<thead>
<tr>
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<tr>
<td>9</td>
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</tr>
</tbody>
</table>
### Past 30-Days Cigarette Use (Wave 3)

“How many cigarettes have you smoked in the past 30 days?”

<table>
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<tr>
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<tbody>
<tr>
<td>1</td>
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<td>8</td>
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</table>

### Lifetime Marijuana Use (Wave 3)

“How many times have you used marijuana in the past 30-days?”

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<tr>
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VITAE

YOUNGJU SHIN

Education
2012       PhD, Communication Arts and Sciences, The Pennsylvania State University
2007       MA, Organizational and Professional Communication Development, Ball State
            University
2005       BA, Korean Language and Literature, Media and Communication (Double Major),
            Yeungnam University, Kyeongsan, Korea

Employment
2012       Assistant Professor, Department of Communication Studies, Indiana University-
            Purdue University in Indianapolis
2008-2012  Research Assistant, Drug Resistance Strategies Project (DRS), The Pennsylvania
            State University
2008-2012  Teaching Associate, Department of Communication Arts and Sciences, The
            Pennsylvania State University

Publications
socialization processes on youth substance use behavior. *Journal of Health
Communication*.

Latent profile analysis of teacher practices and engagement in school-based substance
prevention program. *Prevention Research*.

Miller-Day, M., Pettigrew, J., Hecht, M., Shin, Y., Hecht, M., Krieger, J., & Graham, J. (Under
review). How prevention curricula are taught under real-world conditions: Types of and
reasons for teacher curriculum adaptations in 7th grade drug prevention curriculum.
*Health Education*.

and Resubmit). Implementation of keepin’ it REAL school-based intervention: Describing

alcohol as a mediator between parentification and substance use: Can parentification
benefit Mexican-heritage youth? *Journal of Adolescence*.

well-being on mother-child communication and youth emotional well-being in low-
income families. *Communication Research Reports*.

elementary school-based substance use prevention programs: Identifying program

Awards
Honorable Mention Award for ECPN Student Poster Contest, Society of Prevention
Research (2012)

Travel Award ($1000), National Institute on Drug Abuse (NIDA), ICPSR Summer Program
Workshop Using Secondary Analysis of the National Survey of Parents and Youth (2010)