DIRECT-TO-CONSUMER ADVERTISING FOR A PRESCRIPTION SLEEP AID: PREDICTING COLLEGE STUDENTS' INTENTIONS TO COMMUNICATE WITH THEIR PHYSICIANS ABOUT THE DRUG

By

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To Mom, Dad, Biz, and my favorite journalist

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Though pharmaceutical companies spend billions of dollars every year marketing their products, most direct-to-consumer (DTC) advertising research lacks a strong theoretical foundation. The current study replicates the work of Young et al. (2005), which drew on Albert Bandura's Social Cognitive Theory (SCT). Their study explained female college students' intended communication behaviors in response to an advertisement for a fictitious birth control pill. In the current research, 169 male and female undergraduates were asked to review a print ad for a fictitious insomnia medication and were queried about their intentions to communicate with their physicians about the drug.

Findings suggest that when respondents think discussing prescription drugs with their doctors is useful, they are more inclined to pursue such conversations. Respondents' confidence in their communicative abilities, however, did not affect their intended communication behaviors. Controlling for a host of background characteristics failed to alter these results in multivariate analyses. Linear regressions explained two to three times more variation in men's intended communication behavior scores compared to women's scores – a sex difference that Young et al. (2005) could not find with their all-female sample.

CHAPTER 1
INTRODUCTION

In 2009, the pharmaceutical industry spent $4.5 billion on direct-to-consumer advertising, with more than $2.9 billion of this going toward television advertisements (Arnold, 2010). Although currently widespread, this technique for marketing prescription drugs only became popular with modern pharmaceutical companies recently – when the U.S. Food and Drug Administration (FDA) relaxed its regulatory guidelines in 1997 (Macias, Pashupati, & Lewis, 2007). According to some researchers, the paternalistic relationship that had long existed among patients and physicians made marketing drugs directly to the public "inconceivable" until 1981, when the pharmaceutical industry finally proposed the idea to the FDA (Wilkes, Bell, & Kravitz, 2000, p.113). Arthur Hull Hayes, the acting FDA Commissioner, called for a voluntary prohibition period while the proposal was under consideration (Wilkes, Bell, & Kravitz, 2000). It slowly gained acceptance after 1985, when an FDA notice – published in the *Federal Register* – asserted that the regulatory standards already in place were enough to sufficiently protect consumers (Wilkes, Bell, & Kravitz, 2000). While the first print ads appeared in the early 1980s (Treise & Rausch, 2009), broadcast ads were not aired until after the FDA's 1997 decision to alter its guidelines (Beltramini, 2006).

The practice remains controversial; supporters and detractors can be found in both academia and the healthcare fields. According to Kravitz et al., "Critics charge that it leads to overprescribing, while proponents counter that it helps avert underuse of effective treatments, especially for conditions that are poorly recognized or stigmatized" (2005, p. 1995). The issue has also received considerable attention from lawmakers and journalists. A recent *New York Times* article described several legislators' unsuccessful attempts to place limits or bans on the marketing of prescription drugs to consumers (Singer, 2009). According to Singer, the United

States and New Zealand are “the only two countries that permit direct-to-consumer advertisements.” Thus far, efforts to curtail the marketing practice have failed in the U.S. mainly on the grounds that such measures violate the First Amendment right to free speech (Singer, 2009). Marvin Lipman, a physician and chief medical advisor for Consumers Union (publisher of *Consumer Reports* magazine), faulted pharmaceutical companies for over-marketing prescription sleep aids in a *Los Angeles Times* story (Yi, 2006). The article asserted that over-the-counter medications and lifestyle changes might alleviate sleeplessness as well or better than prescription drugs, and it suggested that drug companies play a pivotal role in causing the public to regard insomnia as a disease (Yi, 2006). Julie Deardorff, health and fitness reporter for the *Chicago Tribune*, went so far as to write: “I just don't trust the pharmaceutical industry” (Deardorff, 2006).

For their part, scholars have lamented the dearth of research on the effects of direct-to-consumer (DTC) advertising (Donohue & Berndt, 2004; Mahon, 2006). While some studies have been conducted on DTC advertising of antidepressants (Donohue & Berndt, 2004; Kravitz et al., 2005) and cholesterol-lowering drugs (Calfee, Winston, & Stempski, 2002), little is known about DTC advertising's impact on various target populations or what factors influence the effectiveness of these ads. The current study will examine factors that may be related to college students' intentions to communicate with physicians about DTC advertising for a prescription sleep aid, such as the confidence they have in their ability to communicate effectively with healthcare providers about this topic and the perceived usefulness of such interactions. Young, Lipowski, and Cline's article titled “Using Social Cognitive Theory to Explain Consumers' Behavioral Intentions in Response to Direct-to-Consumer Prescription Drug Advertising” (2005) will serve as a guide. These authors tested whether Albert Bandura's Social Cognitive Theory

(SCT) could explain variation in female college students' intentions to speak with their doctors about a (fictitious) advertisement for a once monthly oral contraceptive.

Overall, the purpose of this study is to examine factors that may account for variation in responses to a DTC advertisement for a prescription sleep aid. The research project is informed by Bandura's concept of "triadic reciprocality" (1985, p. 27) – a phrase that refers to how an individual's (1) behavior, (2) personal factors (i.e. cognitive, affective, and biological events), and (3) environment act on one another simultaneously to influence humans' feelings, thoughts, and actions. This theoretical construct suggests that beliefs about one's ability to communicate effectively with healthcare providers and expectations about what will result from speaking with physicians about advertised drugs can influence intended behaviors. That is, if one thinks that he or she might benefit from taking a prescription sleep aid, is confident in his or her ability to initiate the necessary conversation with a healthcare provider, and believes that such a conversation will produce the desired result, then he or she will be inclined to pursue this behavior – likely by requesting a prescription for the medication.

CHAPTER 2
LITERATURE REVIEW

History of DTC Advertising

Direct-to-consumer advertising of prescription drugs has been described as "one of the most controversial modern business practices in history" (Royne & Myers, 2008, p. 60). Gelland and Lyles (2007) assert that the prevalence of direct-to-consumer advertisements for prescription drugs has "increased exponentially" since 1997, when the Food and Drug Administration's guidelines pertaining to broadcast DTC advertising changed (p.475). The result of these changes was that "manufacturers could give both the drug's name and the condition without disclosing all of the product's risks" (Wilkes, Bell, & Kravitz, 2000, p. 114). It did require, however, that advertisers list the most important risks and point consumers to sources where they can find additional information about the product (Gelland & Lyles, 2007; Wilkes, Bell, & Kravitz, 2000; Terzian, 1999).

Given the current controversy, one might be surprised to learn that the practice of marketing pharmaceutical products directly to consumers is not a "new phenomenon" (Gelland & Lyles, 2007, p. 475). In 1708, a Bostonian named Nicholas Boone placed the first advertisement for a patent medicine in an American newspaper (Young, 1969). Over the next 200 years, these drugs were advertised heavily, and by the dawn of the 19th century, newspapers relied on patent medicine advertising as one of their most important revenue generators (Young, 1969). It was not until 1938 –when the Food, Drug, and Cosmetic Act passed – that the FDA was granted authority over the labeling of over-the-counter and prescription pharmaceuticals (Wilkes, Bell, & Kravitz, (2000). The Kefauver-Harris drug amendments enacted in 1962 specified that pharmaceutical companies must present fair and balanced coverage of their drugs' risks and benefits; this caused manufacturers to pitch their products exclusively to healthcare providers

during the next two decades (Wilkes, Bell, & Kravitz, 2000). In the early 1980s, the pharmaceutical industry "changed its marketing approach to include consumers," arguing in a proposal to the FDA that "consumer protection should no longer be seen as simply providing the public with access to accurate claims but rather as providing the public with knowledge that they would not have, were it not for the educational "benefit of pharmaceutical advertising" (Wilkes, Bell, & Kravitz, 2000, p. 113). The FDA "imposed a moratorium on this marketing strategy in 1983, then lifted it in 1985," after which time it slowly became more popular (Hollon, 1999, p.382). As mentioned previously, however, modern DTC advertising did not become widespread until the late 1990s (Gelland & Lyles, 2007).

Before that time, not only did FDA regulations prevent DTC advertising on television, but long-standing paternalistic practices still characterized the patient-physician relationship – thereby ensuring that pharmaceutical companies mainly directed their marketing efforts toward those with the power (i.e. healthcare providers with prescribing rights) (Wilkes, Bell, & Kravitz, 2000). Drug companies spent a "tremendous" portion of their marketing budgets on physician literature, free samples, and gifts, since if they could persuade the doctors, they won their patients "by default" (Hartgraves, 2002, p.6). In fact, it has been suggested that drug companies only initiated direct-to-consumer advertising campaigns after physicians' "authority to prescribe specific drugs" began to erode (Kravitz, 2000, p. 2244). That is, they re-directed some of their advertising dollars to reach the public at-large when the rise of drug formularies, pharmaceutical risk-sharing agreements, and utilization review systems made it more difficult for them to "transform the goodwill generated from company-sponsored educational dinners into actual prescriptions" (Kravitz, 2000, p.2244).

DTC Advertising and the Patient-Physician Relationship

Historically, physicians have been the gatekeepers of health information (Hesse et al., 2005; Askelson, Campo & Carter, 2010). Their opinions dictated the course of treatment, while passive, uninformed patients played only a small role in medical decision-making (Emanuel & Emanuel, 1992; Charles, Gafni & Whelan, 1999; Charavel, Bremond, Moumjid-Ferdjaoui, Mignotte, & Carrere, 2001; Charles, Whelan, Gafni, Willan, & Farrell, 2003). Fortunately, the public now can – and *does* – access a wealth of health information through various media sources (e.g., television, print, and online) (Anderson, Rainey, & Eysenbach, 2003; Kivits, 2004). For example, "Nearly one-quarter of the Internet is devoted to health care information" (Holmer, 1999, p.380). Being profit-driven, drug companies have utilized all available formats to educate consumers about their products (Macias & Lewis, 2003; Frosch, Krueger, Hornik, Cronholm, & Barg, 2007; Bell, Wilkes, Kravitz, 2000; Roth, 1996). According to one scholar, not only do pharmaceutical companies have a right, but they have "a responsibility" to keep the public informed about their products (Hollon, 1999, p.381)

While DTC advertising has received its share of scrutiny, the companies' new and inclusive marketing strategies are seemingly positive in at least one respect: the better informed patients are, the more proactive they can be regarding their healthcare (Grol, 2001). Indeed, numerous experts have chronicled a recent trend toward greater patient autonomy and empowerment (Balint & Shelton, 1996; Roberts, 1999; Nordenberg, 1998). Several scholars have noted that these changes coincide with an increase in DTC advertising (Reeves, 1998; Singh & Smith, 2005; Rothman, 2001). The Federal Drug Administration would seem to attribute this correlation to more than chance alone. A *New York Times* article quoted Dr. Nancy Ostrove of the FDA's Division of Drug Marketing, Advertising, and Communications as saying that DTC advertising is "consistent with the whole trend toward consumer empowerment. We

believe there is a certain public health benefit associated with letting people know what's available" (Stolberg, 2000). Nevertheless, DTC advertising's potential influence on the patient-physician relationship is a "major concern" (Kravitz, 2000, p. 2244), as it has implications for perceived quality of care, measurable health outcomes, trust in healthcare providers, and patient satisfaction.

According to Kravitz, the academic literature suggests that "while patients are in favor of these [DTC] ads, their physicians are not" (2000, p. 2244). A random survey of more than 3,000 people living in the contiguous United States showed that 83% had seen an advertisement for a prescription drug in the past 12 months and 14% had discussed health concerns with their doctors as a result of viewing one of these ads (Murray, Lo, Pollack, Donelan, & Lee, 2004). A total of 47% thought the recent increase in DTC advertisements was either a "good" or "very good" development (Murray, Lo, Pollack, Donelan, & Lee, 2004). Only 19% thought it was "bad" or "very bad" (Murray, Lo, Pollack, Donelan, & Lee, 2004). The effects were more pronounced among people of low socioeconomic status (Murray, Lo, Pollack, Donelan, & Lee, 2004). Less than a third (30%) of respondents agreed that DTC advertising "interferes with good relationships between doctors and patients" (Murray, Lo, Pollack, Donelan, & Lee, 2004, p.11).

An earlier study conducted by the same authors showed that 80% of a nationally representative sample of physicians had experience with patients bringing up information they had learned from DTC ads (Murray, Lo, Pollack, Donelan, & Lee, 2003). Only 31% of these doctors thought DTC advertising was a "good" or "very good" development (Murray, Lo, Pollack, Donelan, & Lee, 2003). More than half (52%) reported that the rise in DTC advertising was "bad" or "very bad" (Murray, Lo, Pollack, Donelan, & Lee, 2003). Nearly 40% of physicians surveyed indicated that DTC advertising interferes with the patient-doctor

relationship (Murray, Lo, Pollack, Donelan, & Lee, 2003). One of the most striking differences between doctors' and patients' views, however, appears in perceptions of DTC advertisements' educational value. While 72% of patients agreed that these ads "improve people's understanding of medical conditions and treatments," (Murray, Lo, Pollack, Donelan, & Lee, 2004, p.11), only 54% of physicians agreed with this statement (Murray, Lo, Pollack, Donelan, & Lee, 2003). Another area where the two groups seem to disagree is over the time it takes to address patients' questions regarding DTC ads. Over half (53%) of physicians reported that DTC advertising "causes patients to take up more of their doctors' time" (Murray, Lo, Pollack, Donelan, & Lee, 2003, p.518), but only 38% of patients thought this was the case (Murray, Lo, Pollack, Donelan, & Lee, 2004). Results from these two studies support Kravitz's (2000) assertion that patients are in favor of DTC advertising and their doctors are not.

However, Robinson et al. (2004) concluded after surveying 500 Colorado households and 784 physicians across the United States that *both* groups "have negative views of DTC pharmaceutical advertising" (p. 427). Fewer than 10% of physicians and 29% of public respondents in their study agreed that DTC advertising was "a positive trend in health care" (Robinson et al., 2004). Surprisingly, the poll by Robinson et al. showed that doctors thought DTC ads were more educational than did public respondents: Approximately 43% of physicians and 29% of lay people reported that DTC ads lead to a patient population that is "better informed" about their medical problems (2004, p.429). Their opinions diverged even more when it came to how DTC ads affected patient expectations. While nearly 80% of doctors thought DTC ads had led patients to request specific medications and 67% reported that such advertising had changed what their patients expect of them, only about 13% and 11% of public respondents agreed that DTC ads had led them to make prescription requests or influenced their expectations

of their doctors, respectively (Robinson et al., 2004). Although this study's patient sample comes only from one geographic region, and thus cannot be generalized, the findings by Robinson et al. (2004) suggest that there may be a disconnect between how doctors and members of the general public perceive DTC advertising's effects on the patient-physician relationship.

Researchers have also interpreted the effects DTC advertising has on the patient-physician relationship differently, such that proponents tend to concentrate on patients' empowerment (Holmer, 1999; Lyles, 2002); alternatively, their opponents focus on how it threatens physicians' authority (Emanuel & Emanuel, 1992). A content analysis of 225 DTC ads in 18 popular magazines from January 1998 to December 1999 indicates, however, that the messages appearing in DTC print ads typically "uphold rather than undermine the physician's control" (Cline & Young, 2005, p.1049). All but four ads in the sample referred to doctors or physicians rather than Nurse Practitioners or Physician Assistants – who also have prescriptive authority (Cline & Young, 2005). Approximately 84% of the ads referring to "doctors" or "physicians" mentioned *communication* between the patient and provider (Cline & Young, 2005). While more than three-fourths of the ads suggested that patients should be the ones to initiate these conversations, nearly 55% reinforced the idea that physicians should have "relational control" – "the right to direct, delimit, and define the actions of the dyad" (Cline & Young, 2005, p.1050). This study's results provide at least some evidence that threats to physicians' authority in DTC advertising are relatively uncommon. This is not to say, however, that healthcare providers do not *feel* pressured to give in to patients' demands for prescriptions –frequently for drugs patients learned about through exposure to DTC ads.

A telephone poll of 199 primary care physicians practicing in Pennsylvania and Ohio during 1999 revealed that an average of five patients a week requested prescriptions for specific

drugs – 30% of the time the doctors acquiesced (Spurgeon, 1999). Unfortunately, 91% of the doctors reported feeling "pressured" to prescribe the drugs patients asked them about, and 30-36% of the time they gave in against their better judgment (Spurgeon, 1999). Doctors reported that DTC ads were their patients' most common sources for drug information: A total of 77% had seen TV ads for the drugs about which they inquired, while 51% had seen print ads for these drugs (Spurgeon, 1999). It is possible, however, that patients are not necessarily intent on coercing their providers into writing prescriptions. Requests for more information may simply reflect a desire to know more about a drug and the condition it treats, nothing more.

According to Alan Holmer, President of Pharmaceutical Research and Manufacturers of America, direct-to-consumer advertising "merely motivates patients to learn more about medical conditions and treatment options and to consult their physicians . . . The patient has been empowered with information, not prescribing authority" (Holmer, 1999, p.381). Cline and Young agree, stating that patients who are only "asking more questions" may be thought of as "demanding" (2005, p.1056).

Others have taken issue with the idea that participatory healthcare relieves physicians' of their duties. For example, in a *Wall Street Journal* article, associate professor Jerry Avorn from Harvard Medical School staunchly proclaimed: "There's no detail man or pharmaceutical company or patient that puts a gun to a doctor's head to write a prescription. Ultimately, it isn't the patient's signature on the prescription – it's the doctor's" (Tanouye, 1997). The ethical boundary remains cloudy between appropriately involving patients in medical decision-making and irresponsibly relinquishing treatment planning to untrained lay persons. After all, patients may have preferences, but they are ill-equipped to determine which medical course of action is in their best interest.

Other DTC Advertising Controversies

Apart from the potentially negative effects DTC advertising might have on the patient-provider relationship, this marketing strategy has also been criticized for contributing to rising healthcare costs, causing patients to think there is a "pill for every ill," and misleading consumers about medication risks. Proponents have countered that there is little evidence to suggest a causal relationship between advertising expenditure and drug costs; they argue the ads have the benefit of de-stigmatizing embarrassing health conditions and patients are provided with valuable information about the latest available treatments.

Drug Prices

Between 1996 and 2005, pharmaceutical prices rose by 140% (Pasdirtz, 2009). Data from Intercontinental Marketing Services (IMS) Health, a large pharmaceutical information supplier, reveal that prescription drugs sales equaled about 10% of total healthcare expenditure in the United States during 2007 (Hartman et al., 2009). The same company projects that, even though numerous drugs' patents are scheduled to expire, global pharmaceutical sales will grow by seven percent in 2011 – up from four to five percent growth in 2010 (Generics & Biosimilars Initiative, 2011). In the United States, the world's largest pharmaceutical market, growth during this timeframe is expected to be more modest at three to five percent – around $320-330 billion (Generics & Biosimilars Initiative, 2011). Sales in the United States account for almost 40% of drug companies' profits (Generics & Biosimilars Initiative, 2011). It is unclear how promotional efforts might affect these numbers.

Evidence regarding DTC ads' influence on pharmaceutical prices has been called "somewhat conflicting" (Capella, Taylor, Campbell, & Longwell, 2009, p. 148). Arguments on both sides are logical. Increased advertising leads to greater consumer awareness about treatment

options and, therefore, could increase competition among drugs – which would lower prices. Alternatively, because patients are insulated from the actual business transaction (since healthcare providers are ultimately the decision-makers and insurance companies cover much of the cost), advertising cannot function as it would normally. In this line of thinking, pharmaceutical companies' DTC advertising expenses might simply be passed on to insurance companies in the form of higher drug costs. According to Capella, Taylor, Campbell, and Longwell, "In comparison with what occurs in some other industries, pricing of prescription drugs is relatively complex, involving issues related to intellectual property, doctors, and health insurance companies" (2009, p.146). Another factor is that demand for drugs may not vacillate as much in response to changes in price, a marketplace phenomenon called "price elasticity of demand" (Gönül, Carter, Petrova, & Srinivasan, 2001; Rizzo, 1996). This is because certain medications are unique: there are no lower-cost products that will perform a similar function. If patients *need* the drug, they will obtain it at any cost.

A comprehensive economic study that examined promotional data and drug prices from 1996 to 2005 concluded that while curtailing free drug samples and limiting face-to-face meetings between pharmaceutical sales representatives and physicians could result in lower medication costs, "DTC advertising by itself does not have a major impact on shifting demand for pharmaceuticals" (Pasdirtz, 2009, p. 2100). Ultimately, however, the researcher concluded that a decade of data was not enough to confirm or reject the idea that promotional efforts affect drug prices (Pasdirtz, 2009). Nevertheless, according to Capella, Taylor, Campbell, and Longwell, even though ". . .it is widely believed that consumers of pharmaceutical products are price insensitive as a result of third-party insurance coverage, recent evidence indicates that this may no longer be the case in many instances" (2009, p. 147). They point to the fact that patients'

share of drug costs are often a percentage of the total now (usually 20-70%), rather than a flat rate (Capella, Taylor, Campbell, & Longwell, 2009). Appleby (2008) reported that between 2000 and 2007, patients' payment for generic drugs increased 38% and their payments for brand name drugs nearly doubled during the same timeframe. DTC advertising expenditure grew as well. Correlation, however, does not point to a causal relationship. Capella, Taylor, Campbell, and Longwell (2009) examined how DTC advertising and other promotional activities between 2001 and 2005 might have impacted U.S. drug prices in five major therapy classes. They analyzed national data sets for prescription medications that treat the following conditions: sleep problems, erectile dysfunction, overactive bladder, elevated cholesterol, and depression (Capella, Taylor, Campbell, & Longwell, 2009). The authors determined that "there is little reason to believe that DTC advertising increases the prices consumers pay, at least after the product is beyond the introductory stage of its life cycle" (Capella, Taylor, Campbell, & Longwell, 2009, p.153).

De-stigmatizing Illness vs. Disease Mongering

The next issue (i.e. whether DTC ads de-stigmatize embarrassing health conditions or cause patients to think there is "a pill for every ill") is primarily a matter of opinion, given that it is nearly impossible to determine if a greater number of prescriptions indicates that healthcare providers are being pressured into over-prescribing or that this simply means patients' illnesses have a history of under-treatment. The question of whether an increase in sales "leads to overuse or alleviates underuse" (Pasdirtz, 2009, p.2100) requires further research, but may never be answered with confidence since countless variables affect public health (Donohue, 2006; Sweet, 2005). It has been suggested that exposure to DTC ads for sensitive issues alleviates some of patients' discomfort, allowing them to speak more freely with their doctors about available treatment options (Rados, 2004). According to one scholar, the argument that DTC ads "break

down the reluctance of people to talk about difficult or embarrassing medical conditions" is "supported by one of the most successful and well-known campaigns for erectile dysfunction treatment – Viagra" (Auton, 2007, p.68). Researchers have also noted DTC advertising's power to de-stigmatize clinical depression (Pitts, 2004), incontinence (Benson, 2004), and genital herpes (DeLuca, 2005).

Alternatively, some have leveled criticism against DTC advertising for essentially "creating" disease – turning members of the public into anxious hypochondriacs who are more comfortable with popping pills than with making health-improving lifestyle changes. A GlaxoSmithKline advertising campaign launched in 2003, which informed consumers about a previously little-known condition called "restless leg syndrome," has received a great deal of ridicule from experts who have accused pharmaceutical companies of "disease mongering" (Woloshin & Schwartz, 2006, p. 452). These experts maintain that drug companies have a financial interest in expanding their market, which gives them an incentive to narrow the definition of health "so normal experiences get labeled as pathologic" and expand the definition of disease "to include earlier, milder, and pre-symptomatic forms (e.g., regarding a risk factor such as high cholesterol as a disease in itself) (Woloshin & Schwartz, 2006, p. 452). Ultimately, arguments on both sides have merit. In elevating the public's awareness of various health conditions, DTC advertising has almost certainly led to more medical intervention in patients' lives (Gilnert & Schommer, 2005). Some people have sought treatment for life-threatening conditions they otherwise would have ignored, while others pestered their doctors until they were written prescriptions for drugs with damaging side effects when lifestyle changes and/or over-the-counter medications would have been preferable.

Providing Valuable Health Information vs. Misleading the Public

Though it is an unfair oversimplification to state that advertising is only about persuading the public, scholars who research the media strongly suggest that consumers should not implicitly trust advertisements as unbiased sources of information (e.g., Roberts, 1982; Kunkel et al., 2004; Moore, 2004; Story & French, 2004). Some critics of DTC advertising have asserted that "the objectives of drug promotion and health education are inherently at odds" (Bell, Wilkes, & Kravitz, 2000, p.1092), while others maintain that these goals are compatible – especially given that perceived dishonesty can hurt sales (Ingram, 1992; Wind, 1994). Even if one accepts that DTC ads are not *intentionally* misleading, there is evidence that the general public is not well-positioned to assimilate information about disease treatment options or place these findings within the appropriate medical context (Kaphingst & DeJong, 2004; Cohen, 1988; Schommer, Doucette, & Mehta, 1998).

This begs the question: How educational are DTC advertisements? In order to address this issue, Bell, Wilkes, and Kravitz (2000) analyzed 320 DTC print ads which ran in 18 popular magazines between January 1989 and December 1998. The authors coded the ads, representing 101 distinct brands, for the presence/absence of specific information: condition name, misconceptions, precursors, prevalence, symptoms, competing treatments, mechanism of action, success rate, supportive behaviors, time until onset of action, and treatment duration (Bell, Wilkes, & Kravitz, 2000). The average number of educational codes was just 3.2 out of the possible 11, causing these scholars to conclude that "A time may come when DTC advertising is recommended for its educational value, but that day is not yet at hand" (Bell, Wilkes, & Kravitz, 2000, p.1096).

A survey of 1,200 *Prevention* magazine readers conducted in 1998 and repeated in 1999 revealed that although 67-72% of respondents thought DTC ads helped to educate them, almost

the same proportion (60-61%) were unclear about the drugs' risks and benefits (Mintzes, 2001). Furthermore, after reviewing the literature, Shin and Moon (2005) determined that exposure to DTC advertising causes consumers to overestimate the efficacy of prescription drugs. A study of 168 pharmacy students' attitudes toward DTC advertising also lent support to the idea that even though consumers value DTC ads as an important source of health information, they do not trust them completely (Joseph, Spake, & Finney, 2008). Sixty-seven percent of their sample agreed or strongly agreed that "prescription drugs are educational to the public" (Joseph, Spake, & Finney, 2008). Less than half the sample (49.1%), however, agreed or strongly agreed that "prescription drug advertising accurately portrays side effects and risks," and only 42.8% believed that prescription drug advertising "presents accurate information to the public" (Joseph, Spake, & Finney, 2008).

According to Wilkes, Bell, and Kravitz, "Ultimately, the argument that DTC promotions educate the public about medical conditions and their treatments hinges on the quality of drug information available to consumers through advertising" (2000, p.116). The authors assert that the education quality of DTC advertisements is "highly variable" (2000, p.116). In their content analysis of 320 DTC print ads, which ran in 18 popular magazines from 1989 through 1998, only 27% of the ads identified disease risk factors and just 12% provided information about the condition's prevalence (Wilkes, Bell, & Kravitz, 2000). A minority of ads attempted to rectify common condition-related misconceptions (9%), discussed ameliorative lifestyle changes (24%), or supplied statistics regarding the drug's success rate (9%) (Wilkes, Bell, & Kravitz, 2000).

A more recent study, however, suggests that pharmaceutical advertisements directed at consumers are more accurate and comprehensive than they once were. After analyzing 1735 print DTC ads published in nine popular magazines between 2000 and 2007, Macias, Lewis, and

Baek (2010) found that nearly all ads included some type of risk information – either common side effects (97%) or contraindications (70%). Nearly a third of ads discussed the drug's mechanism of action, 57% mentioned symptoms of the condition being treated, and 32% presented information about disease precursors (Macias, Lewis, & Baek, 2010). Other topics received little coverage, though: Only 22% mentioned beneficial lifestyle changes, 10% discussed what would happen if the condition was not treated with medication, and 8% reported disease prevalence (Macias, Lewis, & Baek, 2010). The vast majority of advertisements published after 2004 employed "consumer-friendly language" to discuss risk (93%) and benefit (97%) information (Macias, Lewis, & Baek, 2010). The authors concluded that DTC advertisements appear to be "improving in terms of educational content," but few companies go above and beyond FDA recommendations simply to augment the public's health knowledge (Macias, Lewis, & Baek, 2010, p.175). Direct-to-consumer advertisements are frequently criticized for focusing more on selling than education (Macias, Lewis, & Baek, 2010), but it is only logical that pharmaceutical companies would highlight their drugs' benefits when attempting to manufacture greater consumer demand and boost profits.

Does DTCA Really Work? Assessing DTC Advertising Strategies and Outcomes

Few studies have examined the strategies that are employed to sell the public prescription drugs, and an even smaller number has explored their effectiveness. Frosch, Krueger, Hornik, Cronbolm, and Barg (2007) conducted a content analysis on pharmaceutical companies' direct-to-consumer television advertisements for prescription drugs to determine the prevalence of the various marketing strategies employed. The results of this study demonstrated that the vast majority (95%) involved some type of emotional appeal (Frosch, Krueger, Hornik, Cronbolm, & Barg, 2007). Fifty-eight percent framed illness and medication usage in terms of losing control over one's life (Frosch, Krueger, Hornik, Cronbolm, & Barg, 2007). Eighty-five percent framed

illness and medication usage in terms of regaining control over one's life (Frosch, Krueger, Hornik, Cronbolm, & Barg, 2007). The researchers concluded that despite FDA regulations, most ads provide inadequate information about disease risk factors (Frosch, Krueger, Hornik, Cronbolm, & Barg, 2007).

Macias, Pashupati, and Lewis (2007) also examined DTC television ad content, exploring adherence to FDA regulations and the commercials' ability to educate consumers. The authors developed a code sheet that was used to conduct a content analysis of all DTC television commercials airing on seven networks during a seven-day time period (Macias, Pashupati, & Lewis, 2007). Their research revealed that rational appeals were slightly more common than emotional appeals, but that the majority of ads utilized both emotional and rational sales' pitches (Macias, Pashupati, & Lewis, 2007). In the authors' opinion, the ads did not adequately meet the FDA's requirement for fair and balanced coverage of risks and benefits (Macias, Pashupati, & Lewis, 2007).

In a more recent article, Kim and Park (2010) reported the results of an experiment related to message framing and the effectiveness of DTC advertising. In their study, 112 female undergraduate students were randomly assigned to one of four experimental conditions (Kim & Park, 2010). After being exposed to a fake advertisement for an allergy medication or an emergency contraceptive – with either a gain or loss focused message – each subject filled out a survey (Kim & Park, 2010). Loss focused messages were found to be more effective in the emergency contraception category, but loss and gain focused messages were equally effective in the allergy category (Kim & Park, 2010). Obviously, the issue of DTC advertising effectiveness deserves further research attention. Given that billions are spent annually on DTC marketing (Arnold, 2010), pharmaceutical companies likely have reason to believe that these

advertisements improve sales. The extent to which DTC advertising exposure influences the likelihood audience members will take these drugs remains to be seen, however.

Young Adults' Sleep Patterns, Habits, and Medication Use

For the past decade, National Sleep Foundation polls have consistently found that over half of Americans experience one or more symptoms of insomnia a few nights a week (Neubauer, 2009). Difficulty falling asleep, waking frequently during the night, and restless/non-recuperative sleep can all lead to daytime lethargy, an inability to concentrate, and irritability. Conservative estimates of insomnia's annual economic burden on employers and society as a whole reach $100 billion or even higher (Stoller, 1994). In 2005, insomnia symptoms affected 50 million Americans, and 14% reported using either a prescription drug or an over-the-counter medication to address the problem (Gershell, 2006). Strong sales figures for the newest sleep drugs (Lunesta®, Rozerem®, and Ambien CR®) have been said to reflect the public's "unmet need" for insomnia relief (Gershell, 2006). While Ambien® hit the market in 1992, its "controlled release" formula first became available in 2005 (Consumer Reports, 2008). Lunesta® and Rozerem® were released in 2004 and 2005, respectively (Consumer Reports, 2008).

A recent Thomson Reuters study found that use of prescription sleep medications increased by 50% from 1998 to 2006 (Russo, Miller, & Marder, 2008). The upward trend is particularly pronounced for young adults, as sleep aid use nearly tripled during this same time period among 18 to 24 year olds (Russo, Miller, & Marder, 2008). Previous research has shown that insomnia symptoms are closely associated with a number of psychiatric disorders, including depression (Riemann & Voderholzer, 2003; Breslau, Roth, Rosenthal, & Andreski, 1996), and 25% of current prescription sleep aid users under age 45 in the Reuters' study "had a mental health diagnosis noted as the principal reason for a healthcare encounter in the month prior to sleep aid use" (Russo, Miller, & Marder, 2008, p. 3). Despite the prevalence of psychiatric

problems, fewer than 10% of new users consulted with a mental health professional before starting these drugs, indicating that the majority of sleep aids were prescribed by healthcare providers who may be less aware of how insomnia medications are likely to affect these pre-existing mental health conditions (Russo, Miller, & Marder, 2008).

Research suggests that sleep-related problems may be particularly prevalent among college students. Forquer, Camden, Gabriau, and Johnson surveyed 313 randomly selected college students enrolled at a public university about their sleep patterns and habits (2008). Results showed that sleep problems were common in this population, as 33% of students took longer than 30 minutes to fall asleep, 43% woke more than once nightly, and 33% reported daytime tiredness (Forquer, Camden, Gabriau, & Johnson, 2008). The respondents' year in school (e.g., freshmen versus graduate student) did not significantly predict sleep quality (Forquer, Camden, Gabriau, & Johnson, 2008). A more recent cross-sectional study queried 1,125 students – ages 17-24 – about their sleep habits, academic performance, physical health, and psychoactive drug use (Lund, Reider, Whiting, & Prichard, 2010). More than 60% of the sample ranked as poor-quality sleepers according to the Pittsburgh Sleep Quality Index (Lund, Reider, Whiting, & Prichard, 2010). Students indicated that emotional and academic stress compromised the quality and quantity of their sleep, and 24% of the variability in PSQI scores could be accounted for by tension/stress (Lund, Reider, Whiting, & Prichard, 2010).

Taylor and Bramoweth's research examined college students' sleep patterns over a week-long time period via daily sleep diaries (2010). A total of 1,039 undergraduates participated in the study. There were no significant differences when the data were analyzed by demographic factors (i.e. gender, ethnicity, or year in school). Insufficient sleep was found to be a significant problem, as 70% of respondents reported getting less than six hours of sleep per night (Taylor &

Bramoweth, 2010). Daytime sleepiness was also an issue for the majority of respondents, and 16% had fallen asleep while driving (Taylor & Bramoweth, 2010). Approximately 7% of the respondents used medication to address insomnia (4.81% took prescription drugs and 2.02% took over-the-counter medications), while 60% of the sample used stimulants, such as caffeine, to address daytime sleepiness (Taylor & Bramoweth, 2010). Men were more likely than women to consume alcohol in an effort to fall asleep (Taylor & Bramoweth, 2010).

Thatcher (2008) sampled 120 university students, questioning them about their sleep habits. More than half (60%) of respondents reported engaging in "all nighters" – an "all nighter" being defined as a single night of total sleep deprivation (Thatcher, 2008). On average, participants who reported "pulling an all nighter" at least once in their lives had later regular bedtimes, a preference for evenings, lower grade point averages, and a greater propensity for depression (Thatcher, 2008, p.20). In a similar study examining the relationship between sleep hygiene and academic performance, Eliasson, Lettieri, and Eliasson, (2010) administered questionnaires to 157 college students. High academic achievement was related to earlier bedtimes, earlier wake times, and greater frequency of napping (Eliasson, Lettieri, & Eliasson, 2010). Timing of sleep correlated more closely with academic performance than any other independent variable, including amount of sleep (Eliasson, Lettieri, & Eliasson, 2010). Evidence indicates that, for some individuals, sleep problems are self perpetuated. Digdon and Rhodes (2009) surveyed 362 undergraduates attending a small Canadian college. The students' circadian preferences were evaluated with the Morning/Eveningness Questionnaire. It was determined that so-called "evening types" were more likely than "intermediate types" to address their sleepiness with long naps and caffeine, which have been shown to interfere with one's ability to fall asleep at night, thereby leading to a cycle of chronic sleep deprivation (Digdon & Rhodes, 2009). Such

findings indicate that daytime sleepiness in this age group is at least partially self-inflicted. If, for example, a young adult forgoes adequate sleep because he/she would prefer to spend this time cramming all night for an important exam the next day, a sleep aid likely will do little to ameliorate the root problem. Irresponsible habits, like all-nighters, can simply reflect poor sleep hygiene and may not be indicative of an underlying medical condition or chronic insomnia. Further research is needed to determine if young adults are more likely than other age groups to intentionally deprive themselves of restful slumber and whether prescription sleep aids are less helpful to those who accumulate a sleep debt volitionally.

Theoretical Orientation

According to Young, Lipowski, and Cline, "little is known about the mechanisms that drive consumers' intentions regarding communication with physicians in response to drug advertising" (2005, p.271). These authors, however, assert that Albert Bandura's social cognitive theory suggests outcome expectancy and self-efficacy beliefs might play a crucial role in consumer's communication behaviors with healthcare providers following exposure to DTC advertisements (Young, Lipowski, & Cline, 2005). This section will discuss Bandura's social cognitive theory, as it informs overall study design and will provide "a theoretical explanation for patients' communication behavior in response to [DTC] advertising" (Young, Lipowski, & Cline, 2005, p. 272). Considered "one of the most comprehensive models of human behavior" (Redding, Rossi, Rossi, Velicer, & Prochaska, 2000, p. 184), social cognitive theory holds that learning, behavioral intentions, and actions are influenced by personal, environmental, and behavioral determinants.

Social Cognitive Theory

Since its inception, social cognitive theory (SCT) has served as a lens through which researchers have viewed the issue of media effects and, in recent years, several scholars have

drawn upon it when examining aspects of DTC advertising (e.g., Cline & Young, 2005; Park & Grow, 2008; Stout & Villegas, 2004; Sumpradit, Fors, & McCormick, 2002; Young, Lipowski, & Cline, 2005). A refined version of his earlier work on social learning theory (SLT), psychologist Albert Bandura developed SCT approximately 25 years ago (Bandura, 1985; Bandura, 1986) in an effort to explain how knowledge is acquired and to highlight factors which influence the likelihood that learning will take place (Tragesser, Aloise-Young, Swaim, 2006).

Even Bandura's early work focused on the mechanisms by which learning occurs. Many of his studies demonstrated children's tendency to model their actions after adult behaviors and illustrated the importance of observation and mimicry (e.g., Bandura, 1962; 1977a). A year after publishing *Social Learning Through Imitation* in 1962, Bandura co-authored his seminal work titled *Social Learning and Personality Development* with Richard Walters (1963). The book laid out "social learning principles" that recognized "social variables" as being highly influential in the learning process, differentiating SLT from similar theories of that time (1963, p. vii). By the mid-1980s, Bandura had begun to refine SLT, placing greater emphasis on cognition, and eventually renamed his perspective "social *cognitive* theory" (1986). The two theories, however, are similar, and SCT can be thought of as simply a variation on its predecessor. Bandura's description of SLT included the phrase "triadic reciprocality" – an expression he continued to use when referring to SCT (1985, p. 27). This expression references an individual's (1) behavior, (2) personal factors (i.e. cognitive, affective, and biological events), and (3) environment – the three elements that, according to Bandura, contribute to the process of social learning (1985). He maintained that these variables are mutually influential, coining the term "reciprocal determinism" (1985, p. 27). In his words, reciprocal determinism refers to the manner in which "behavior, cognitive and other personal factors [i.e. affective and biological events], and

environmental influences all operate as interlocking determinants which affect each other bi-directionally" to create human learning (Bandura, 1985, p. 27). For example, a person's environment can affect his or her behavior and personal factors (such as attitude), while – at the same time – his or her behavior and attitudes can alter the social environment (Figure 2-1). In some of his work, Bandura used "cognition" and "personal factors" interchangeably, but cognitive determinants were actually one type of personal factor – the other two being affective and biological variables (Bandura, 2001).

Bandura held that this triadic relationship functioned differently according to the situation, stating that "the relative influence exerted by the three sources of interlocking determinants will vary for different activities, different individuals, and different circumstances" (1985, p. 27). Furthermore, he described these pairs of determinants (personal-environmental, personal-behavioral, environmental-behavioral) as being in constant flux, all acting on each other at the same time (Bandura, 1985). Each of these pairings is essential to Bandura's reciprocal model because "through their interactions . . . people influence situations, which in turn affect their thoughts, emotional reactions, and behavior" (Bandura, 1985, p. 27). Changes to one determinant almost invariably affect the other two.

Overall, Bandura's work pushed psychology toward a greater understanding of human beings, defining them as proactive, reflective and self-regulating agents who are influenced by more than external forces (e.g., Bandura, 1986). More than flotsam, floating aimlessly and waiting to be acted upon by the physical world, people actively engage with and influence their environments. He established that social learning and subsequent behavior are more complex than originally thought, as they are governed by the interactions within and among three dyadic relationships.

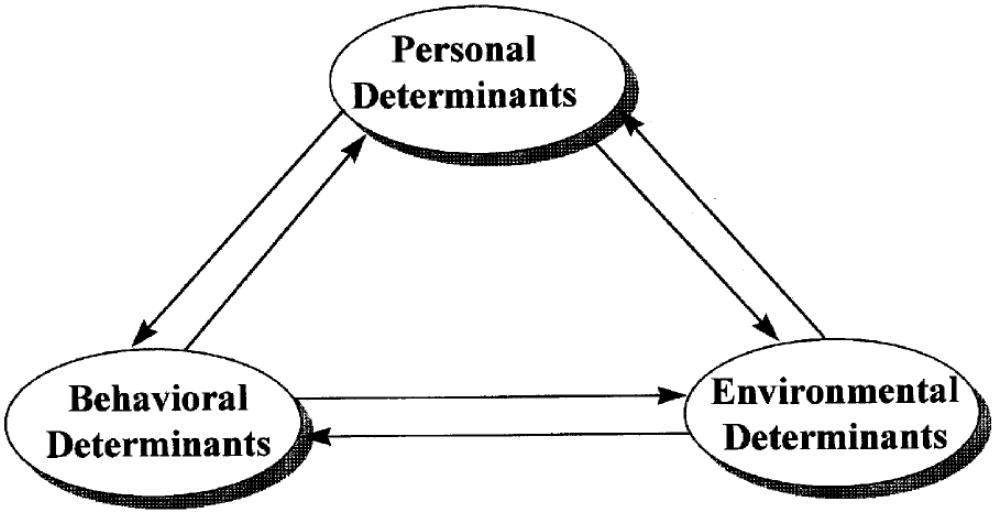

Figure 2-1. Illustration of social cognitive theory Note. From "Social Cognitive Theory of Mass Communication," by A. Bandura, 2001, Retrieved from http://www.des.emory.edu/mfp/Bandura2001.pdf

Using Social Cognitive Theory to Explain Health Behaviors

Outcome expectancy and self-efficacy are "central determinants of behavior" in Bandura's social cognitive theory (Armitage & Conner, 2000, p. 176). The psychologist defined outcome expectancy as "a person's estimate that a given behavior will lead to certain outcomes" and self-efficacy as "the conviction that one can successfully execute the behavior required to produce the [desired] outcomes" (Bandura, 1977b, p. 193). These constructs have been used to predict numerous health behaviors and behavioral intentions (Strecher, DeVellis, Becker, & Rosenstick, 1986; Redding, Rossi, Rossi, Velicer, & Prochaska, 2000; Williams, Anderson, & Winett, 2005; Armitage & Conner, 2000; Ellickson & Bell, 1990; Resnicow, Davis-Hearn, Smith, Baranowski, Lin, Baranowski, Doyle, & Wang, 1997). Bandura clarified where these interrelated concepts diverge, stating: "Outcome and efficacy expectations are differentiated, because individuals can believe that a particular course of action will produce certain outcomes, but if they entertain doubts about whether they can perform the necessary activities, such information does not influence their behavior" (1977b, p. 193).

This perhaps explains why DTC advertisements and public health campaigns, both of which are directed at initiating or changing behavior, frequently model the desired actions in question. The aim is not only to persuade audience members that engaging in the behavior will lead to a positive outcome (outcome expectancy), but also to boost viewers' confidence in their ability to perform the behavior (self-efficacy). It is easy to see how these concepts relate to Bandura's original research interest: human learning. In addition to explicating how observational learning occurs, social cognitive theory "emphasizes what people think and its effect on their behavior" (Redding, Rossi, Rossi, Velicer, & Prochaska, 2000, p. 185).

Scholars have suggested that Bandura's recognition of self-efficacy as integral to behavioral decision-making might be his single greatest contribution to psychology (Armitage & Conner, 2000; Redding, Rossi, Rossi, Velicer, & Prochaska, 2000), as it acts as "an important mediating variable" between knowledge, attitudes, and skills (Redding, Rossi, Rossi, Velicer, & Prochaska, 2000, p. 185). Bandura himself thought self-efficacy a step "toward a unifying theory of behavioral change" (Bandura, 1977b, p. 191). Expectancy-value theories had long held that "when deciding on a course of action, people consider what they stand to gain or lose from performing . . . [a] behavior" (Williams, 2010, p.417). Self-efficacy was Bandura's unique insight – one which has had a "tremendous influence on psychological theory and research" (Williams, 2010, p. 417). Recently, it has been asserted that the relationship between self-efficacy and outcome expectancy is bi-directional – that is, expected outcomes can influence individuals' perceptions about their ability to perform certain tasks, but self-efficacy can also influence their assessments regarding likely outcomes that will result from said behavior (Williams, 2010). Bandura, however, primarily focused on the latter relationship (Bandura, 1978, 1984, 1986, 1998, 2004, 2006), and "the causal influence of expected outcomes on self-efficacy"

remains a point of disagreement (Williams, 2010; Bandura, 2007; Cahill, Gallo, Lisman & Weinstein, 2006).

Whatever the relationship between the two variables, self-efficacy has proven to be a "robust predictor of behavior" (Williams, 2010, p. 417). It has been used to explain variation in drug use (Ellickson & Bell, 1990), study habits (Multon, Brown, & Lent, 1991), on-the-job performance (Stajkovic, & Luthans, 1998), smoking cessation (DiClemente, 1981), dieting/weight control behaviors (Jeffery, Bjornson-Benson, Rosenthal, Lindquits, Kurth, & Johnson, 1984), alcohol relapse (Rist & Watzl, 1983), contraceptive use (Longmore, Manning, Giordano, & Rudolph, 2003), and compliance with exercise programs (McAuley, 1993). Still an important variable in its own right, outcome expectancy has been shown to significantly predict success in smoking cessation programs (Wetter, Smith, Kenford, Jorenby, Fiore, Hurt, Offord, & Baker, 1994), alcohol consumption among non-alcoholics (Sher, Wood, Wood, & Raskin, 1996), physical activity and healthy eating program compliance (Carels, Darby, Rydin, Douglas, Cacciapaglia, & O'Brian, 2005), as well as various risk-taking behaviors like driving drunk, having sex without a condom, engaging in "extreme" sports, and using illegal drugs (Fromme, Katz, & Rivet, 1997). Previous research clearly demonstrates that self-efficacy and outcome expectancy, both fundamental concepts to Bandura's social cognitive theory, are valuable independent variables for explaining a wide range of health-related behaviors.

Hypotheses

Social cognitive theory and Young, Lipowski, and Cline's (2005) study allow for the development of three hypotheses, which will further assess SCT's usefulness as a framework for examining reactions to DTC advertising:

> **H1:** There will be a positive correlation between respondents' outcome expectancy scores and their intended communication behavior scores.

H2: There will be a positive correlation between respondents' self-efficacy scores and their intended communication behavior scores.

H3: Outcome expectancy and self-efficacy will significantly predict intended communication behavior, even after controlling for other independent variables.

Social cognitive theory suggests that an individual's beliefs about the outcomes that are likely to results from engaging in a certain behavior (outcome expectancies) as well as the confidence one has in his/her ability to successfully perform the activity in question (self-efficacy) will affect his/her motivation to engage in said behavior (Bandura, 1986). In this case, the behavior is talking with one's physician about "Somnus" – the fictitious prescription sleep aid that appears in this study's DTC ad.

This research addresses a significant gap in the literature because although insomnia symptoms have been shown to affect a large number of college students (Forquer, Camden, Gabriau, & Johnson, 2008; Lund, Reider, Whiting, & Prichard, 2010; Taylor & Bramoweth, 2010) and 18-24 year olds' use of prescription sleep aids nearly tripled from 1998 to 2006 (Russo, Miller, & Marder, 2008), no study has examined young adults' reactions to DTC advertisements for prescription insomnia drugs. Furthermore, replicating Young, Lipowski, and Cline's (2005) study design with a different drug (i.e. *not* a female contraceptive) is important, since it will test whether social cognitive theory proves a valuable lens through which scholars may examine the issue of DTC advertising's effectiveness in more general terms.

CHAPTER 3
RESEARCH DESIGN AND METHODS

This section provides a detailed description of the study's design, including information about variable measurement, procedures, sample recruitment, and the fictitious advertisement that was used as a stimulus during questionnaire administration. Specifics regarding data analysis are also discussed.

Measures

Outcome Variable

The dependent variable in the current study is a seven-item scale that measures respondents' intended communication behaviors. The seven items that comprise this established scale (Young, Lipowski, & Cline, 2005) are all measured on 11 levels (anchored by 0, which indicates "not at all likely" and 10, which indicates "extremely likely"). Respondents were asked to specify how likely they were to engage in the following behaviors: (1) "I would talk to my doctor about the advertised drug," (2) "I would ask my doctor if the advertised drug really works," (3) "I would ask my doctor for more information about the advertised drug," (4) "I would ask my doctor if the advertised drug is appropriate for me," (5) "I would ask my doctor about the advertised drug's side effects," (6) "I would ask my doctor to prescribe the advertised drug for me," and (7) "I would insist that my doctor prescribe the advertised drug for me." These seven, single-item dependent variables were combined by Young et al. (2005) to create the "Intended Communication Behavior Scale." The lowest possible score for the scale as a whole was zero and the highest possible score was 70.

Key Independent Variables

In the linear regression predicting respondents' intended communication behaviors, key independent variables include a scale measuring "Communication Outcome Expectancy" and a

scale measuring “Communication Self-efficacy.” Both instruments were developed by Young et al. (2005). The Communication Outcome Expectancy Scale is comprised of four items. Respondents indicated the extent to which they agree with these statements by circling scores that ranged from zero (“totally disagree”) to 10 (“totally agree”). Respondents specified how closely their opinions matched the following statements: (1) “Talking with my doctor about the advertised drug will give me important information about how to use the drug,” (2) “Talking with my doctor about the advertised drug will give me important information about the drug's risks,” (3) “Talking with my doctor about the advertised drug will give me important information about the drug's benefits,” and (4) “Talking with my doctor about the advertised drug may lead my doctor to prescribe it for me.”

The Communication Self-efficacy Scale was comprised of three items. Respondents were asked to relay how confident they were in their communicative abilities by circling a point from zero (“not at all confident”) to ten (“extremely confident”) when answering the following questions: (1) “How confident are you in your ability to ask your physician questions about prescription drugs?” (2) “How confident are you in your ability to ask your physician to write you a prescription for a specific drug?” and (3) “How confident are you in your ability to insist that your physician give you a specific prescription drug?”

Control Variables

Other independent variables were entered into the regression as controls. These include an established daytime sleepiness scale (Johns, 1991; Johns, 1992; Appendix B, part C), various demographic factors, and items measuring respondents' experience with prescription sleep aids (Appendix B, part D).

The Epworth “daytime sleepiness” scale asks respondents to indicate how likely they are to doze off in the following situations: (1) “sitting and reading,” (2) “watching TV,” (3) “sitting,

inactive in a public place (e.g., a theater or a meeting)," (4) "as a passenger in a car for an hour without a break," (5) "lying down to rest in the afternoon when circumstances permit," (6) "sitting and talking to someone," (7) "sitting quietly after lunch without alcohol," and (8) "in a car, while stopped for a few minutes in traffic." Answers can range from zero (would *never* doze) to three (a *high* chance of dozing). Elevated scores indicate that respondents experience more pronounced daytime sleepiness. It is important to control for daytime sleepiness (Appendix B, part C) because this symptom is likely to explain much of the variation in respondents' intentions to communicate with their physicians about sleep aids – Somnus, or other drugs – and might correlate with "Communication Outcome Expectancy" and/or "Communication Self-efficacy. " Failing to take daytime sleepiness into account might cause one to overestimate the key independent variables' explanatory power.

All remaining control variables are found in Appendix B, part C. The items "gender" and "ethnicity" (asked as "Do you consider yourself Hispanic/Latino?) were dichotomous variables – that is, they had only two answer choices. "Age" and "college major" were presented as "fill in the blank" questions (i.e. "What was your age at your last birthday?; "What is your college major?"), and the "race" question was worded the same as the 2010 Census ("Which of the following races do you consider yourself? If necessary, select more than one category and/or specify another racial group."), where the answer choices were (1) "White/European," (2) "Black/African American," (3) "Asian or Pacific Islander," (4) "American Indian or Alaskan Native," and (5) "Other." The final four questions may be considered intrusive by some respondents, as they address money and drug use. Specifically, the "income" question used the same wording as that used by Young et al. (2005) in their study: "What was your family's approximate annual household income from all sources, before taxes, in 2010?" Answer choices

span these ranges: (1) Less than $29,999; (2) $30,000 to $44,999; (3) $45,000 to $59,999; (4) $60,000 to $74,999; (5) $75,000 to $89,999; and (6) $90,000 or more. Finally, questions regarding participants' use of prescription insomnia medications are dichotomous: (1) "Have you taken a prescription medication to help you fall asleep or stay asleep *in the past 30 days*?," (2) "Have you *ever* taken a prescription medication to help you fall asleep or stay asleep?," and (3) "If you felt you weren't getting enough sleep or not getting good quality sleep would you consider taking a prescription sleep aid?"

Procedures

The survey itself was printed for the students and administered in two parts (Appendices A and B). The first part contains three items that comprise the established Communication Self-efficacy Scale. Students answered these questions *before* viewing the fictitious advertisement for "Somnus" – a prescription sleep aid. After participants completed these items, they were allowed a maximum of 10 minutes to view color copies of the ad (Appendix C). The following verbal instructions were announced: "Please look over the advertisement in front of you, so that you can give your opinions about it. Raise your hand when you are ready to receive the second questionnaire." The second portion of the survey includes 28 items – the majority of these originate from established scales (e.g., an Intended Communication Behavior Scale discussed in the section titled "Outcome Variable" and a Communication Outcome Expectancy Scale discussed under the heading "Key Independent Variables"). In total, there are 31 items. Twenty-two of these items constitute four established instruments. The last nine questions query students about their demographic characteristics and backgrounds. After students turned in the second part of the survey, they were thanked for their time and debriefed about the study's true purpose and the deception involved (Appendix D). The researcher also ensured that students received copies of the informed consent form, which they had signed prior to participating (Appendix E).

Participants

Data collection involved the distribution of self-administered, closed-ended surveys to undergraduate students attending a university located in the southeastern United States. An effort was made to sample from a variety of disciplines, thereby decreasing selection bias. Non-probabilistic sample selection methods (meaning members of the target population have an unequal chance of being selected) obviously preclude generalization of findings to populations other than the one surveyed; however, because study feasibility depends on both the cooperation of professors and timely data collection, a completely random design was impractical. If, for example, a list of all currently enrolled undergraduate students (with up-to-date contact information) had been obtained from the registrar's office – highly unlikely given privacy concerns – and a random number generator was used to select participants for study inclusion, the time and resources needed to track down and invite each subject individually would have been prohibitive. Furthermore, even then, study results could only have been generalized to undergraduate students attending the university in question and would not have applied to students attending other colleges and universities. Sample selection, therefore, occurred at the class level.

Potential classes for study inclusion were limited to 3-credit-hour, 1000-4000 level courses. Correspondence courses were excluded because locating these students individually was not feasible. The researcher also refrained from contacting students in advertising and health-related classes because their above-average familiarity with prescription drugs and DTC advertising might have skewed study results. Twenty-five professors whose summer 2011 classes met study-inclusion criteria were emailed approximately 30 days before the semester began. Of these 25 professors, more than half (n = 13) did not respond to the initial email. Another five professors declined participation – either in response to the first email or in a

subsequent email. Seven professors consented. Two of the seven, however, ceased communication before details were finalized (e.g., before the researcher could make arrangements to speak with students about the study). Ultimately, recruitment at the class level yielded a 20% success rate, as credibility testing or survey administration occurred with five of the 25 possible classes. An economics class (ECO 2013; Principles of Macroeconomics; n=11) and a journalism class (JOU 3110; Applied Fact Finding; n=19) completed a credibility questionnaire that pre-tested the stimulus for believability. A history class (AMH 3931; Illicit Enterprise; n=28), an English class (ENC 3310; Advanced Exposition; n=21), and a chemistry class (CHM 2045; General Chemistry; n=120) completed the actual survey, once credibility had been established for the fictitious advertisement.

In this email correspondence, the researcher requested that professors award their students a small amount of extra credit for participation (no more than a couple of points added to students' final course grades). An opportunity for extra credit was intended to at least partially compensate students for their time, thereby removing an obstacle to their involvement in the study. This request for extra credit may partially explain why professors were disinclined to facilitate student participation. One instructor, for example, indicated that he thought providing "extra" credit was unethical – particularly when extra credit assignments are unrelated to course content. As per Institutional Review Board (IRB) regulations, alternative extra credit assignments were made available for those who preferred not to participate. The nature of the alternative extra credit assignment was left to the professors' discretion. In keeping with IRB policies, all respondents signed informed consent forms, were provided with a detailed summary of their rights as research subjects, and were debriefed about the study's true purpose as well as the advertisement's lack of authenticity (since this constitutes deception). Data collection

continued until 169 completed surveys had been obtained. This number is greater than the minimum threshold set by Young, Lipowski, and Cline (2005).

These authors calculated that a target sample size of 93 would be necessary using a similar population "based on an omnibus test for the hypothesized relationship between intended communication behavior, and outcome expectancy and self-efficacy beliefs, with an estimated square multiple correlation of 0.10, 2 independent variables, and power of .80" (Young, Lipowski & Cline, 2005, p. 275). Also known as a "statistical power analysis," Young, Lipowski, and Cline (2005) employed the omnibus test to determine appropriate sample size (Kraemer & Thiemann, 1987 for a detailed review). According to one social scientist, the technique requires "complicated" calculations that have prevented many non-statisticians from using it to estimate necessary sample size (Schutt, 2001, p. 138). Fortunately, a statistician at the University of Iowa has developed an online Java applet that allows one to enter the desired power (standard = .80), number of regressors (i.e. key independent variables), true rho^2 value (also known as the "estimated square multiple correlation"), and alpha level (.05 = standard) to obtain a recommended sample size (Lenth, 2006). Although this method is certainly appropriate and accepted, some experts rely on simple rules of thumb, like ". . . 5 to 10 observations per parameter, 50 observations per variable, no less than 100, and so on" (Muthén & Muthén, 2002, p. 599). To date, social scientists have yet to agree on a single strategy for determining an adequate number of cases, since there are many factors to consider, "including the size of the model, distribution of the variables, amount of missing data, reliability of the variables, and strength of the relations among the variables" (Muthén & Muthén (2002, p. 599).

Pre-Testing the Fictitious Advertisement for Credibility

Before survey questionnaires could be distributed, it was necessary to establish that the fictitious advertisement rated high in believability/credibility. Although the advertisement was

modeled after Young, Lipowski, and Cline's (2005) ad for "Unigyne" (a fictitious once-monthly birth control pill) and incorporated elements from various print advertisements for prescription sleep aids, it was still possible that respondents would suspect that the ad was a fake. If the ad was not believable, study results might have been severely compromised (as this violates the assumption that respondents will react to the stimulus as if it were a real DTC advertisement).

Exactly 30 undergraduate students reviewed the advertisement and rated its credibility. Eleven economics students and 19 journalism students answered items that compose an established believability scale (Appendix F, part A). Specifically, perceived believability was measured with 10 seven-point items that originate from Beltramini's work (e.g., Beltramini, 1982a; Beltramini, 1982b; Beltramini & Evans, 1985; Beltramini, 1988; Beltramini & Sirsi, 1992; Beltramini & Stafford, 1993; Beltramini, 2006; Atkin & Beltramini, 2007). These items ask respondents to indicate how "believable," "trustworthy," "convincing," "credible," "reasonable," "honest," "unquestionable," "conclusive," "authentic," and "likely" they find information that is presented in a given advertisement (Appendix F). Numerous studies have revealed that this scale is both a reliable and valid measure (e.g., Gould, 1988; Beltramini & Evans, 1985). Typical scores for this instrument, however, tend to be lower than one might expect. For example, real advertisements for two opposing political parties in Australia rated only 3.66 and 3.54 out of seven (O'Cass, 2002). In an earlier study, consumers assigned the information provided in doctor's advertisements a mere 2.86 on the same seven-point scale (Gould, 1988). This suggests that the public is highly skeptical of advertising, or at least that participants in the aforementioned studies are not inclined to believe advertisements that promote doctors and politicians.

The researcher decided beforehand that the advertisement to be used in the current project would be tested, revised, and retested until it received at least a three out of seven on Beltramini's Advertising Perceived Believability Scale (Beltramini, 1982a). An open-ended question was included to guide these revisions (Appendix F, part B). The last two steps (i.e. "revise" and "retest") proved unnecessary, however, as the students rated the advertisement a 3.68 on the one to seven scale – where higher numbers indicate a more convincing ad. The resulting mean on this test, which exceeds the pre-established goal, is in keeping with scores for actual advertisements. The lowest score the ad received was a 1.50, while the highest score was a 6.00 (standard deviation = 1.20). There was no significant difference between economics students' and the journalism students' ratings. The economics students were asked to assess the ad first. Because there were so few students in this initial class, the researcher enlisted the help of a second class. Eliciting feedback from students in another subject area also enhanced sample diversity.

Participants invited to assess ad credibility were recruited as described under the subheading "Participants." An opportunity for a small amount of extra credit was arranged with professors ahead of time. An alternative extra credit assignment was made available to students who were disinclined to participate, as required by the university's Institutional Review Board (IRB). All participants were made aware of their rights as research subjects both verbally and via an informed consent form. Before viewing the advertisement and rating its credibility, all participants were required to read and sign an informed consent document and were provided with a copy for their records (Appendix G). After the credibility surveys had been collected, the students were debriefed about the advertisement's lack of authenticity. The same debriefing script was used for both credibility testing and actual survey data collection (Appendix D).

Data Analysis

SPSS® (Statistical Package for the Social Sciences), an IBM computer software program, will be employed for data analysis. The purpose of this study is to test how useful Bandura's social cognitive theory is as a means by which consumer intentions, following exposure to prescription drug advertisements, can be interpreted. To that end, Pearson correlations and a series of nested linear regressions were run in order to determine the relationships between the key independent variables ("Communication Outcome Expectancy" and "Communication Self-efficacy") and the dependent variable ("Intended Communication Behavior").

CHAPTER 4
RESULTS

Univariate

Demographic Variables

A total of 169 completed survey questionnaires were obtained. Data collected from undergraduate classes taught during the summer 2011 semester resulted in students from a wide variety of majors (n = 48). The classes surveyed were: Illicit Enterprise (AMH 3931, n=28), Advanced Exposition (ENC 3310, n=21), and General Chemistry (CHM 2045, n=120). Of the 48 different majors reported, English was the most popular (making up 12.4% of the total sample). Biology (10.1%), History (7.7%), and Psychology (7.1%) were also common. The remaining 62.7% of respondents reported the rest of the 44 majors – with no single major exceeding three percent of the overall sample.

Females accounted for about 52% of respondents (n =88), while males made up approximately 48% of the sample (n =81). The mean age was 19.75 years old (standard deviation = 1.85). The youngest respondents were 18 years old and the oldest respondent was 30 years old at the time the survey was administered. Almost 93% of the sample was aged 22 years or younger – "traditional" college students.

About one-fifth of respondents (n = 32, 18.9%) self-identified as "Hispanic or Latino," while the majority of participants (n = 135; 79.9%) indicated they were not Hispanic/Latino. The race question received one of the lowest response rates on the survey. Nine respondents (5.3% of the total sample) skipped this question. White/European was the largest racial group at 62.7% of the sample (n = 106). Black/African American was the next largest category at 12.4% of the sample (n = 21). Asians and Pacific Islanders accounted for 7.7% (n = 13) and the general category "other" included the remaining 11.8% of respondents (n = 20).

In order to assess how well these students might represent the undergraduate body as a whole, their data were compared to the university's most recent demographic statistics. In the fall 2010 semester, there were 31,833 undergraduate students enrolled at the university (Office of Institutional Planning and Research, 2011). Only about 2.6% of them were English majors, meaning that this group was over-represented in the current study (Office of Institutional Planning and Research, 2011). This finding is not surprising since one of the three classes surveyed was an English course. In the fall 2010 semester, biology, history, and psychology majors constituted 5.5%, 1.7%, and 4.6% of undergraduate students, respectively (Office of Institutional Planning and Research, 2011). Because a history class was one of the three classes surveyed for this study, their over-representation in the final sample is to be expected. One might attribute the preponderance of biology and psychology majors to the fact that students in both of these majors are required to take General Chemistry (CHM 2045). So, while a wide variety of majors were surveyed (n = 48), one cannot assume that these students' opinions reflect those espoused by the entire student body.

Additionally, because about 55% of baccalaureate students in fall 2010 were female and 45% were male (Office of Institutional Planning and Research, 2011), males are also slightly over-represented in the current study. Age distribution was similar, as 91.7% of undergraduates were age 22 years or younger in fall 2010 (Office of Institutional Planning and Research, 2011).

The university's most recent statistics treat Hispanic or Latino ethnicity as a racial category, making it difficult to assess whether the data obtained for the current project is representative of the undergraduate population in this area. The school's race statistics from fall 2010 semester are as follows: 59.5% White/European, 10% Black/African-American, 9.4% Asian or Pacific Islander, and 18% Other (including Hispanic, American Indian, and Alaskan Native), with 2.7% failing to report a racial or ethnic background (Office of Institutional Planning and Research, 2011).

Respondents were also asked to provide an estimate of their families' household incomes before taxes in 2010 (Table 4-1). Ideally, income data from this survey would be compared to university-wide data. Unfortunately, the school does not make student financial information public. Given that income tends to be a sensitive subject for most people, it is not surprising that this question received the lowest response rate on the survey: Thirteen participants (7.7%) left the item blank. Data for the current study reveal that family household income skews toward the higher category (Figure 4-1). Just 16% of respondents (n = 27) reported yearly family incomes less than $29,999. Another 14.2% (n = 24) reported incomes between $30,000 and $44,999. About 10% (n = 17) reported incomes between $45,000 and $59,999, and 13 respondents (7.7%) fell into the next income bracket ($60,000 to $74,999). Eighteen respondents (10.7%) marked the "$75,000 to $89,999" box. Finally, a little more than a third of the sample (33.7%, n = 57) identified incomes in the "$90,000 or more" range. If additional brackets had been added, a bimodal distribution might have been revealed – with discernible spikes at both the high and low ends.

Overall, the demographic information (major, gender, age, ethnicity, race, and family household income) collected from students in the current study aligns closely with available data from previous studies using similar populations. The fact that these figures closely resemble recent statistics from a university-wide survey of undergraduate students suggests that data from the current study would not have deviated dramatically from a random sample – had one been obtained from this population.

Sleep-Related Variables

The survey also included variables that assessed students' experiences with and attitudes toward sleep aids, as well as their quality of sleep. Only 2.4% (n = 4) of research participants admitted to having used a prescription sleep aid in the past 30 days, but over five times as many respondents (12.4%, n = 21) reported having taken a prescription medication to facilitate sleep at

least once in their lives. The sample was split in their openness toward prescription medications. While 58% (n = 98) of respondents were opposed to using a prescription drug, even if they felt they "weren't getting enough sleep or not getting good quality sleep," the remaining 42% (n = 71) of survey-takers would consider turning to prescription medications under such circumstances.

The Epworth Sleepiness Scale (ESS) is comprised of eight items – each with answer choices ranging from zero to three. According to Johns (1991), a score of 10 or more (out of 24) suggests the presence of an underlying medical problem that should be addressed by a healthcare professional. About 61% of respondents in this sample (n = 103) did not meet or exceed this diagnostic threshold (Figure 4-2). A sizeable minority, however, struggles to stay awake during normal activities (e.g., while reading, watching television, or sitting and talking). Sixty-five respondents (38.5% of the sample) had scores that met the criteria for excessive daytime sleepiness. The mean for this scale was 8.62 (standard deviation = 3.75).

Communication Variables

The remaining variables all relate to communication. They make up the Intended Communication Behavior (ICB) scale, the Communication Outcome Expectancy (COE) scale, and Communication Self-Efficacy (CSE) scale. With answer choices that range from zero to 10, the items that compose these scales were added together and then divided by the number of questions to standardize their ranges. Zero is the lowest possible score and 10 is the highest possible score on any of the final scales. "Intended Communication Behavior," which assesses how likely respondents would be to contact their physicians about the prescription sleep aid, is the outcome variable. Answers mostly adhere to a normal bell curve, but a slight skew to the right – a positive skew – is apparent (Figure 4-3). The variable's mean is 4.03 (standard deviation = 2.88). Young, Lipowski, and Cline's (2005) ICB mean for the once-a-month birth control pill was 7.32 on a 0-10 scale. Internal consistency for the ICB scale is high: The un-

standardized Cronbach's alpha for the seven items is .94 (compared to an alpha of .88 in the 2005 study by Young et al.).

The variables that comprise the "Communication Outcome Expectancy" scale measure the degree to which respondents think that a conversation with a doctor about the prescription "Somnus" would be helpful. The final scale is close to a normal distribution, but exhibits a slight skew to the left (a negative skew), indicating that only a few students reported relatively low scores (Figure 4-4). The variable's mean is 7.43 (standard deviation = 1.83). Young, Lipowski, and Cline's (2005) COE mean for the once-a-month birth control pill was 8.10 on a zero-to-ten scale. Internal consistency for the COE scale is adequate: The un-standardized Cronbach's alpha for the four items is .78 (compared to an alpha of .82 in the 2005 study by Young et al.).

Items that make up the final communication variable (Communication Self-Efficacy) assess how confident respondents are in their ability to communicate effectively with a physician about prescription drugs. Responses for this scale adhere to an approximately normal distribution, but a slight skew to the left is apparent. The minor negative skew demonstrates that relatively few respondents lacked confidence in their communicative abilities (Figure 4-5). The variable's mean is 6.64 (standard deviation = 2.39). Young, Lipowski, and Cline's (2005) CSE mean for the once-a-month birth control pill was 6.97 on a 0-10 scale. Internal consistency for the CSE scale is relatively high: The un-standardized Cronbach's alpha for the three items is .81 (compared to an alpha of .82 in the 2005 study by Young et al.).

Bivariate

Hypothesis 1

It was hypothesized that there would be "a positive correlation between respondents' outcome expectancy scores and their intended communication behavior scores." In order to asses this relationship, a two-tailed Pearson product-moment correlation analysis was run on the Communication Outcome Expectancy (COE) and Intended Communication Behavior (ICB)

scales (Table 4-1). The results of this test reveal a moderately strong positive association between the two variables (r = .32), which is highly significant (p-vale <.001). Evidence, therefore, supports the proposed hypothesis and would cause one to reject the null hypothesis (i.e. that there is no meaningful relationship between the variables in question). A positive correlation coefficient indicates that as the values of one variable increase, so do the values of the other variable.

In this case, respondents who reported relatively high COE scores also reported relatively high ICB scores. It is also true that respondents who reported relatively low COE scores also reported relatively low ICB scores. If the correlation coefficient had been negative instead of positive (as well as significant), it would have meant that as the values of the first variable increased, the values of the second variable decreased – and vice versa. The variables would then have exhibited a "negative correlation."

A Pearson product-moment correlation analysis (or Pearson r) illustrates the strength of linear dependence between two variables. Correlation coefficients range in value from negative one to positive one – with zero indicating no relationship between the variables in question. The closer a correlation value is to one (either positive or negative), the stronger the relationship between the variables.

Using these guidelines, the positive relationship between respondents' outcome expectancy scores and their intended communication behavior scores would be labeled "moderate." The evidence strongly suggests that when respondents believe potential conversations with physicians about prescription medications will be more fruitful, they have greater intentions to communicate with those physicians about the drug in question. The results (r = .32; p-value <.001) support the first hypothesis. For comparative purposes: the 2005 study by Young et al. also produced an outcome that led them to reject the null hypothesis for the same COE/ICB relationship (r = .75 and p-value <.01).

Hypothesis 2

The second hypothesis posited that there would be "a positive correlation between respondents' self-efficacy scores and their intended communication behavior scores." The relationship between Communication Self-Efficacy (CSE) and Intended Communication Behavior (ICB) was tested by running a two-tailed Pearson product-moment correlation analysis in SPSS® (Table 4-2). Results strongly suggest that the two variables are unrelated (r = -.05; p-value = .54). Because it is *only* appropriate to interpret the strength of a Pearson Correlation Coefficient when its corresponding p-value is significantly low (e.g., less than .05), the p-value is high enough in this case to preclude any interpretations concerning relationship strength. A p-value of exactly .01, for example, allows one to be 99 percent confident that the relationship between the variables is not simply a product of chance (leaving a one percent chance for doubt). Stated another way, the likelihood that such results are purely coincidental is one in 100. P-values of less than .05 are generally accepted in the social sciences, as researchers in these fields are willing to accept anything less than a five percent chance for error. This threshold (less than .05) was pre-established for the current study, as well.

Based on these results, there is no reason to believe that a significant relationship (positive or negative) exists between respondents' feelings of self-efficacy and their intentions to communicate with physicians about the advertised prescription sleep aid. Hypothesis two is not supported. The r of -.05 and a p-value of .54 produced by the current study contradict the results by Young et al. (2005). Their research demonstrated a significant – but weak – positive association between Communication Self-Efficacy (CSE) and Intended Communication Behavior (ICB) that led them to reject the null hypothesis (r = .21; p-value < .05).

Multivariate

Hypothesis 3

The third and final hypothesis stated that Communication Outcome Expectancy (COE) and Communication Self-Efficacy (CSE) would "significantly predict intended communication behavior, even after controlling for other independent variables." A series of nested linear regressions were run in order to test the validity of this prediction (Table 4-3). Results partially support hypothesis three, as Communication Outcome Expectancy is significant in *every* model – but Communication Self-Efficacy *never* attains significance.

As should be expected, the six regression models explain different amounts of variation in the dependent variable: Ten percent in model one, 13 percent in model two, and 15 percent in models three through six. Adjusted R^2, an important multivariate regression statistic, allows one to assess the amount of explained variation.

The first model, containing only the two key independent variables (COE and CSE), explains 10% of the variation in Intended Communication Behavior (ICB). The first model by Young et al., which used the exact same variables, explained 56% of the variance in respondents' Intended Communication Behavior scores. The second model introduced demographic variables (i.e. age, gender, ethnicity, race, and income). Including these items caused only a small increase in adjusted R^2, allowing the model to explain just three percent more variation. Other than Communication Outcome Expectancy (which remained relatively unchanged from model one to model two), the only significant variable in the second model was "black." This indicates that African Americans' Intended Communication Behavior scores were, on average, higher than whites (the reference group). Interestingly, in model three – when the measure for excessive daytime sleepiness is introduced – the association between "black" and "ICB" disappears, never to regain significance in any of the models.

The third model, where COE and "daytime sleepiness" are the only significant variables, explains 15% of the variation in ICB scores. In the final three models, adding in variables that assess respondents' experiences with and attitudes toward prescription sleep aids does not result in higher adjusted R^2 values, and the key independent variables (COE and CSE) remain relatively unchanged. Excessive daytime sleepiness according to the Epworth Sleepiness Scale (ESS) is significant in models three and four, but loses significance in models five and six.

Overall, the models partially support the third hypothesis. While Communication Outcome Expectancy scores significantly predict Intended Communication Behavior scores in every model, Communication Self-efficacy scores do not attain significance in any of the models. Controlling for demographic variables, experiences with sleep aids, and attitudes towards insomnia medications does not dramatically alter the relationships between the key independent variables and the dependent variable.

Multivariate Results by Gender

In the research performed by Young et al. (2005), only female college students were surveyed for their study involving a fictional once-monthly birth control pill. In contrast, the current research project includes data from both male and female undergraduates who viewed a fake advertisement for a sleep aid called "Somnus." The researcher decided to analyze men and women's data separately since this is one of the areas where the current study could go beyond replication to offer unique insights. Although it was not posed as a formal research question at the outset, the data allowed the researcher to examine whether gender modulated the relationship between the independent variables and the dependent variable. In other words: Are men and women motivated to communicate with their physicians about advertised drugs for different reasons? Indeed, analyzing males and females separately provided some interesting results (Tables 4-4 and 4-5). A small sample size prevented the researcher from running all six models, as there would have been too few cases that met each of the criteria to make meaningful

distinctions. There was sufficient variation, however, to analyze the first three models for males and females separately. Comparing the first models in Tables 4-4 and 4-5 shows that the key independent variables (COE and CSE) account for twice the variation in men's Intended Communication Behavior scores than the variation that could be explained in women's scores (14% versus 7%). The first model's F-value also attained greater significance in the male-only regression compared to the female-only regression (a p-value of <.01 versus a p-value of <.05). The first model is a much better fit for the male-only data. This trend continues in models two and three. In fact, the second and third models do not even achieve goodness-of-fit for the female-only data –as evidenced by the non-significant p-values that correspond to the F-values. No variable other than COE significantly predicts women's ICB scores. Alternatively, ethnicity and race influence men's scores. Model two shows that the men who self-identified as Hispanic or Latino reported higher ICB scores than those who did not. Additionally, in model two, black males reported higher ICB scores than white males. The amount of explained variation in the dependent variable jumps from 14% in model one to 24% in model two. Interestingly, both "Hispanic/Latino" and "black" lose significance when the measure that assesses excessive daytime sleepiness (i.e. the Epworth Sleepiness Scale) is introduced in model three. The third model explains 28% of the variation in men's ICB scores. Clearly the independent variables in models one through three are much better at predicting men's intentions to communicate with their physicians about the advertised drug than women's intended communication behaviors.

Synopsis of Results

In summary, survey results support hypothesis one, fail to support hypothesis two and partially support hypothesis three. That is, evidence suggests that a positive relationship between respondents' communication outcome expectancy (COE) scores and their intended communication behavior (ICB) scores likely exists (H1). There is not, however, any reason to believe that communication self-efficacy (CSE) and intended communication behavior (ICB)

scores are positively correlated (H2). While communication outcome expectancy significantly predicted intended communication behavior in all multivariate models, controlling for independent variables did not cause a relationship between CSE and ICB to emerge (H3). Finally, additional linear regressions revealed that the independent variables more accurately predict men's ICB scores than women's scores (explaining two to three times more variation in the dependent variable, depending on the model).

Table 4-1. Pearson correlation between communication outcome expectancy and intended communication behavior

Correlations			
		Communication Outcome Expectancy Scale	Intended Communication Behavior Scale
Communication Outcome Expectancy Scale	Pearson Correlation	1	.323**
	Sig. (2-tailed)		.000
	N	169	168
Intended Communication Behavior Scale	Pearson Correlation	.323**	1
	Sig. (2-tailed)	.000	
	N	168	168

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

Table 4-2. Pearson correlation between communication self-efficacy and intended communication behavior

Correlations			
		Communication Self Efficacy Scale	Intended Communication Behavior Scale
Communication Self Efficacy Scale	Pearson Correlation	1	-.048
	Sig. (2-tailed)		.541
	N	169	168
Intended Communication Behavior Scale	Pearson Correlation	-.048	1
	Sig. (2-tailed)	.541	
	N	168	168

Table 4-3. Results of linear regressions predicting effect of independent variables on intended communication behavior scores

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Communication Outcome Expectancy	.53(.34)***	.52(.34)***	.52(.34)***	.52(.34)***	.51(.34)***	.48(.31)***
Communication Self-Efficacy	-.12(-.10)	-.14(-.12)	-.14(-.12)	-.15(-.13)	-.14(-.13)	-.12(-.11)
Age		.08(.04)	.10(.05)	.11(.06)	.09(.05)	.08(.04)
Female		- 74(-.13)	- .73(-.13)	-.75(-.13)	- .74(-.13)	- .72(-.13)
Hispanic/Latino		.03(-.00)	.01(.00)	.05(.01)	.05(.01)	.05(.01)
Race						
Black[a]		1.40(.17)*	.96(.12)	1.0(.12)	1.0(.13)	.97(.12)
Asian[a]		.50(.05)	.31(.03)	.38(.04)	.34(.04)	.30(.03)
Other/Mixed Race[a]		1.3(.15)	1.3(.15)	1.4(.16)	1.3(.15)	1.4(.16)
Family's Annual Income						
Low ($49,999 or less)[b]		-.50(-.08)	-.56(-.09)	-.65(-.11)	-.55(-.09)	-.64(-.11)
Medium ($45,000-$89,999)[b]		.09(.02)	.17(.03)	.18(.03)	.18(.03)	.16(.03)
R has excessive daytime sleepiness			.95(.17)*	.98(.17)*	.91(.16)	.86(.15)
R took prescription sleep aid in *last 30 days*				2.9(.09)		
R has *ever* taken prescription sleep aid					.24(.03)	
Would *consider* taking prescription sleep aid						.51(.09)
Adjusted R^2	.10	.13	.15	.15	.15	.15
F	10.6***	3.2**	3.4***	3.2***	3.1**	3.2***

Notes: ***p<.001; **p<.01; *p<.05 N= 169 (total sample); Standardized coefficients in parentheses

a. White/European is the reference group

b. High Income ($90,000 or more) is the reference group

Table 4-4. Results of linear regressions predicting effect of independent variables on intended communication behavior scores among female respondents

	Model 1	Model 2	Model 3
Communication Outcome Expectancy	.47(.29)**	.52(.32)**	.54(.33)**
Communication Self-Efficacy	-.19(-.16)	-.24(-.20)	-.23(-.20)
Age		.33(.16)	.33(.16)
Hispanic/Latino		-1.4(-.18)	-1.3(-.17)
Race			
Black[a]		.64(.08)	.37(.04)
Asian[a]		1.0(.12)	.99(.11)
Other/Mixed Race[a]		1.6(.18)	1.4(.17)
Family's Annual Income			
Low ($49,999 or less)[b]		-.29(-.05)	-.23(-.04)
Medium ($45,000-$89,999)[b]		.68(.11)	.84(.14)
R has excessive daytime sleepiness			.68(.12)
Adjusted R^2	.07	.09	.09
F	4.5*	1.9	1.8

Notes: ***p<.001; **p<.01; *p<.05 N= 88 (women only); Standardized coefficients in parentheses
a. White/European is the reference group
b. High Income ($90,000 or more) is the reference group

Table 4-5. Results of linear regressions predicting effect of independent variables on intended communication behavior scores among male respondents

	Model 1	Model 2	Model 3
Communication Outcome Expectancy	.62(.41)***	.54(.39)**	.51(.37)**
Communication Self-Efficacy	-.02(-.02)	.02(.02)	.01(.01)
Age		-.03(-.02)	.01(.01)
Hispanic/Latino		1.9(.26)*	1.7(.24)
Race			
Black[a]		2.1(.27)*	1.3(.17)
Asian[a]		-.31(-.03)	-.89(-.08)
Other/Mixed Race[a]		1.2(.14)	1.5(.17)
Family's Annual Income			
Low ($49,999 or less)[b]		-1.1(-.17)	-1.3(-.20)
Medium ($45,000-$89,999)[b]		-.23(-.04)	-.24(-.04)
R has excessive daytime sleepiness			1.4(.25)*
Adjusted R^2	.14	.24	.28
F	7.5**	3.2**	3.5**

Notes: ***p<.001; **p<.01; *p<.05 N= 81 (men only); Standardized coefficients in parentheses
a. White/European is the reference group
b. High Income ($90,000 or more) is the reference group

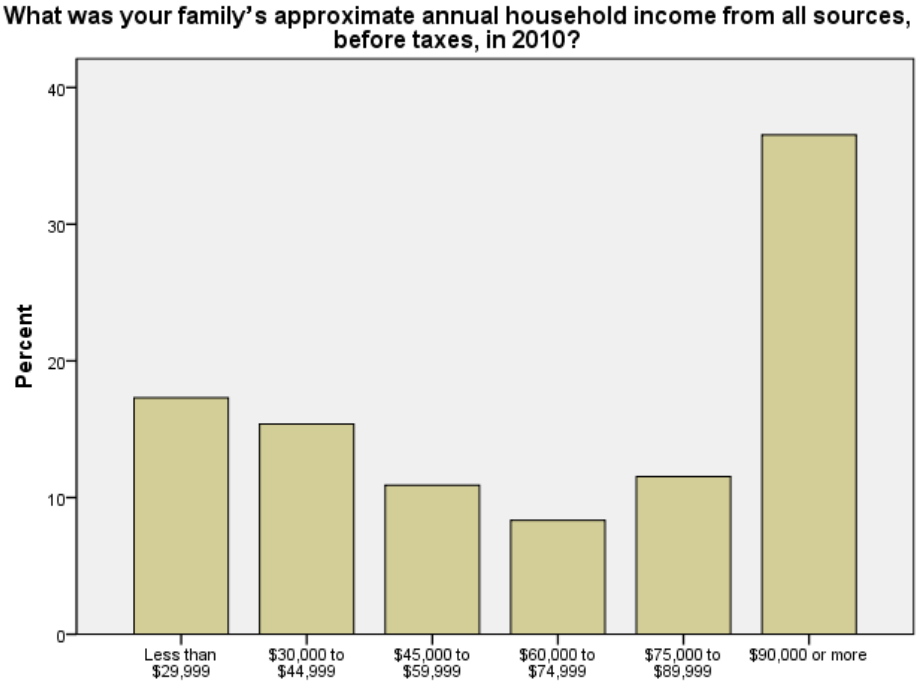

Figure 4-1. Distribution of respondents' family income

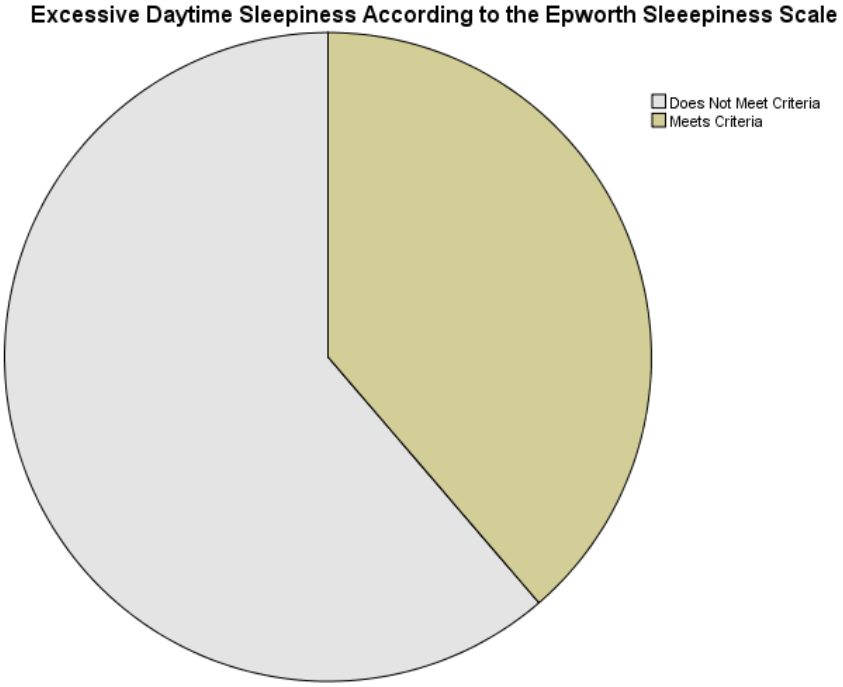

Figure 4-2. Proportion of respondents who meet criteria for excessive daytime sleepiness

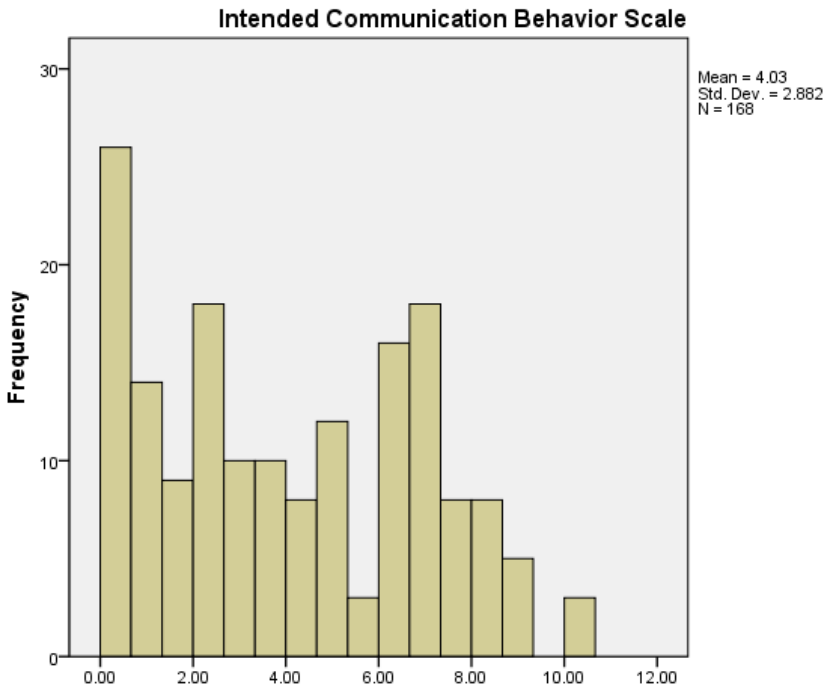

Figure 4-3. Distribution of respondents' intended communication behavior scores

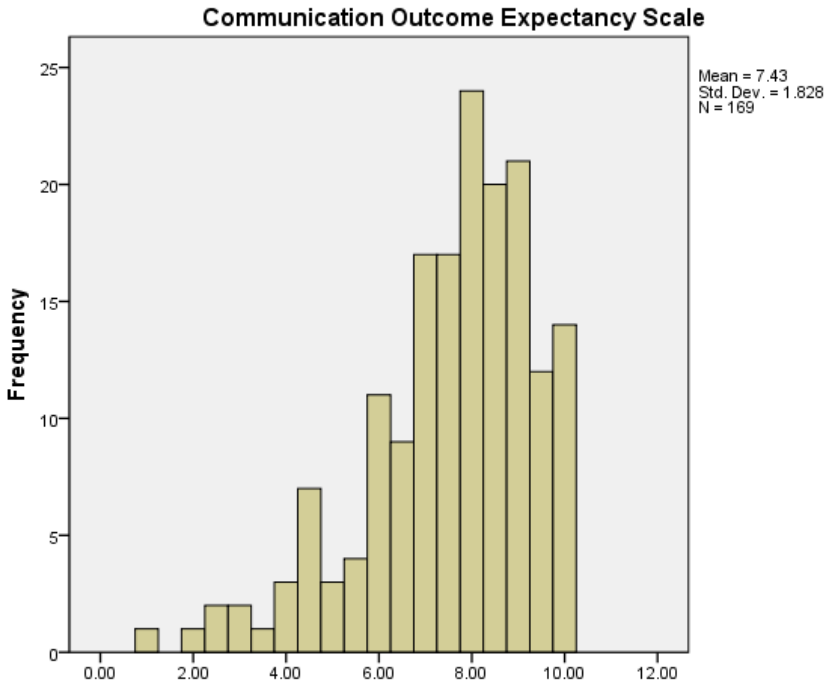

Figure 4-4. Distribution of respondents' communication outcome expectancy scores

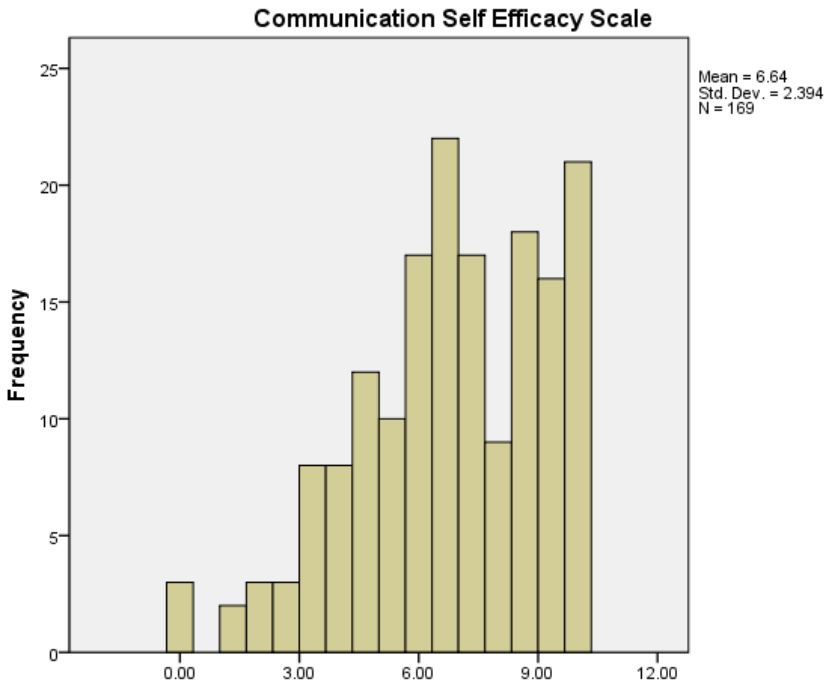

Figure 4-5. Distribution of respondents' communication self-efficacy scores

CHAPTER 5
DISCUSSION AND CONCLUSION

According to Young et al., "Little DTCA research has attempted to provide a theoretical explanation for patients' communication behavior in response to advertising" (2005, p. 272). The current study, a replication of their research with female undergraduates, attempts to remedy this problem. After viewing an advertisement for a fictitious sleep aid called "Somnus," 169 male and female college students attending a large public university in the southeastern United States were surveyed about their intentions to communicate with their physicians about the drug.

While a large number of respondents (n=65, 38.5%) met the criteria for "excessive" daytime sleepiness (according to the Epworth Sleepiness Scale), few had turned to prescription insomnia medications in the past. Only four students (2.4%) admitted to having used a prescription sleep aid in the past 30 days. Twenty-one respondents (12.4%) reported treating their insomnia with a prescription drug at least once in their lives. Furthermore, the majority of students (n=98, 58%) were opposed to taking a prescription drug to fall asleep, even if they felt they "weren't getting enough sleep or not getting good quality sleep." Given how common the problem of excessive daytime sleepiness is among these undergraduates, and their general aversion toward prescription insomnia medications, it would have been interesting to ascertain what steps they might be taking to ameliorate the issue. Increased caffeine consumption and more frequent napping might be among the most common strategies for reducing fatigue, but neither addresses the root of the problem – and both may exacerbate the situation.

These findings beg the question: Why is excessive tiredness during normal waking hours so prevalent among those surveyed? Stress and medical conditions likely contribute to undergraduates' drowsiness, but self-inflicted sleep deprivation (stemming from a desire to engage in other activities during regular/designated sleeping hours) might also play an important role. The undergraduate years, especially the freshman and sophomore years, are a period of

transition – and often great upheaval. Upon entering college, most young adults are living without parental supervision for the first time in their lives. The students' ability to dictate their own hours is, therefore, a new-found freedom. Staying up all or most of the night can be viewed as an assertion of independence. In this study, duration and quality of undergraduates' sleep – as well as other factors potentially contributing to their daytime fatigue – were not investigated directly; thus, it is difficult to explicate the reasons why students reported tiredness during normal waking hours.

Nevertheless, the extent of this problem in the current non-random sample of students differs dramatically from its prevalence in the general population and is, therefore, troubling. Previous research has found that approximately one in five American adults suffers from daytime sleepiness that is severe enough to interfere with daily activities (Pagel, 2009; Guilleminault & Brooks, 2001; National Sleep Foundation, 2010a). Nearly twice that many students met the criteria for excessive daytime sleepiness in the current study. A vast body of research shows that this level of fatigue exacts a "significant toll" on individuals and society (Guilleminault & Brooks, 2001, p.1482). Inadequate rest wreaks havoc on concentration, memory, mood, and task performance – contributing to poor grades, decreased effectiveness on the job, deadly traffic accidents, and strained interpersonal relationships (Guilleminault & Brooks, 2001). Indeed, these respondents are not immune to such negative repercussions.

Compared to the 2005 study by Young et al., fewer respondents planned to communicate with their physicians about the advertised drug. The average Intended Communication Behavior score for the 2005 study by Young et al. was 7.32 on a 0-10 scale, while the mean ICB score in the current study was 4.03 (standard deviation = 2.88). Men actually had higher ICB scores than women, so the decreased desire to communicate with a doctor about the advertised drug cannot be attributed to the inclusion of males in this study. Specifically, the average ICB score for the

81 men in this study was 4.38 (standard deviation = 2.88), while the average ICB score for the 88 women was only 3.72 (standard deviation = 2.86).

The difference in men and women's ICB scores cannot be attributed to their relative levels of daytime sleepiness since virtually the same number of males and females meet the criteria for excessive daytime sleepiness, according to the Epworth Sleepiness Scale (38.3% of men versus 38.6% of women). Additionally, Communication Outcome Expectancy and Communication Self Efficacy cannot explain the difference. Men, on average, perceived conversations with physicians about prescription drugs to be less helpful (COE = 7.29, standard deviation = 1.88) than did women (COE = 7.55, standard deviation = 1.78). Males also reported less confidence in their ability to communicate effectively with doctors about pharmaceuticals (CSE = 6.47, standard deviation = 2.38) than their female counterparts (CSE = 6.78, standard deviation = 2.41).

Are young college students, then, inherently more interested in a once monthly birth control pill than an insomnia medication that promises more "restorative" sleep? An answer in the affirmative is partially based on the supposition that these students engage in regular and intentional sleep deprivation, making a prescription sleep aid unnecessary. In this scenario, students are cognizant that an earlier bedtime would relieve their daytime sleepiness. By engaging in responsible sleep patterns, they could eliminate the need for pharmaceutical intervention – as well as the side effects and expense that accompany it. Another reason they may have gravitated toward the birth control pill was its "novelty" factor. In the study by Young et al., the conjecture was that "because no drug in existence is similar to the fictitious product" sheer "curiosity" may have motivated some of the respondents to contact their physicians (2005, p. 285). Though appealing, the notion that one can function on fewer hours of sleep just by taking a pill – as the Somnus advertisement claimed – may not have induced the same level of curiosity.

Respondents in the current study also reported lower Communication Outcome Expectancy scores than the students whom Young et al. (2005) surveyed – suggesting that they think conversations with healthcare providers about prescription drugs are less helpful. This difference, however, is not as large as the gap between the two groups' Intended Communication Behavior scores. Specifically, while the students who reviewed the Somnus advertisement averaged 7.43 on the COE scale (standard deviation = 1.83), the respondents in the 2005 study by Young et al. had a mean score of 8.10 on a 0-10 scale. At least part of this difference might be explained by the fact that respondents in the current study report less confidence in their ability to communicate effectively with doctors about prescription drugs. While the participants in the (2005) study by Young et al. averaged a Communication Self-Efficacy score of 6.97 on a 0-10 scale, the sleep aid study's respondents' mean score was 6.64 (standard deviation = 2.39). This small divergence in Communication Self-Efficacy might have had a greater influence on sleep aid respondents' Communication Outcome Expectancy scores. That is, even if one is only slightly less confident in his or her ability to communicate effectively with healthcare providers, this difference could dramatically decrease his or her perception that the conversation will produce a positive outcome.

Also, birth control's prevalence in mainstream culture may have boosted COE scores. Approximately 65% of the respondents in the 2005 study by Young et al. reported currently using some form of contraceptive. This figure is much higher than the proportion of students in the current study who reported taking a prescription sleep aid even once in their lives (12.4%). Additionally, the first hormonal birth control pill, Enovid®, was approved for sale over 50 years ago (Junod & Marks, 2002), long enough for the media to cover it sufficiently, whereas non-benzodiazepine prescription sleeping pills like Ambien®, Sonata®, Lunesta®, and Rozerem® have not even been available half as long (Richey & Krystal, 2011). Despite prevalent DTC marketing, there is likely more of a knowledge gap with insomnia drugs than hormonal

contraceptives. Lack of awareness and understanding often leads to an assumption of exclusivity. Perhaps this study's respondents viewed prescription sleep aids as a more heavily guarded medication, one that, unlike hormonal contraceptives, is not easily obtained upon request.

In the current study, on average, women had higher COE and CSE scores than men, but women's mean scores were still substantially lower than those reported by the respondents in the 2005 study by Young et al. – meaning that gender cannot explain the difference. Even the men's higher ICB scores did not approach the average ICB scores reported by women in the 2005 study by Young et al.

Respondents in this study reported decreased intentions to communicate with their doctors about the advertised drug, less confidence in their ability to converse effectively about prescription drugs, and lowered perceptions of conversation usefulness when compared to the scores of respondents in the 2005 study by Young et al. What did the results reveal about the relationship among the key variables, though?

Findings demonstrate that correlations were stronger in the 2005 study by Young et al. While the correlation between Communication Outcome Expectancy and Intended Communication Behavior was only moderate in the current study ($r = .32$, $p < .001$), it was strong among the respondents in the 2005 study by Young et al. ($r = .75$, $p < .01$). Not only this, but the correlation between Communication Self-Efficacy and Intended Communication Behavior revealed no significant relationship ($r = -.05$, $p < .54$), while the variables exhibited a weak, positive association in the study by Young et al. ($r = .21$, $p < .05$). One might attribute these differences to the fact that the studies used advertisements for different types of drugs. Perhaps people react much differently to ads for contraceptives compared to ads for insomnia medications. The divergent findings could also have occurred because data collection was conducted nine years apart. Finally, variation in the samples selected (since both were non-representative) might be to blame. One fact is clear: The stronger correlations in the study by

Young et al. do not appear to have resulted from male inclusion in the current research project. Multivariate regressions show that the two key independent variables (COE and CSE) explain substantially more variation in males' ICB scores than females' scores.

Overall, the multivariate regressions in the current study were able to explain much less variation in the dependent variable than the regression of Young et al. Specifically, while the first model by Young et al. containing just COE and CSE explained 56% of the variation in respondents' ICB scores, the first model in the current study (containing the identical variables) explained only 10% of the variation in students' ICB scores. Separate analyses for men and women revealed that the key independent variables were able to explain more variation in men's ICB scores (14%) than women's scores (7%). Further, the control variables predicted men's intentions to communicate with their doctors better than women's intentions. Model three, for example, could correctly predict men's scores 28% of the time. The third model was not even significant for women (the F-statistic's corresponding p-value was greater than .05), indicating that it was not a good fit for the data. With 10 variables included, model three explained just nine percent of the variation in women's ICB scores.

Interestingly, model two of the male-only linear regression showed that black and Hispanic men reported higher Intended Communication Behavior scores. This greater propensity disappeared in model three after the measure for excessive daytime sleepiness was introduced. It seems that Hispanic males and black males' greater tendency toward excessive tiredness during normal waking hours fully explains their higher ICB scores. Race and ethnicity were not significant in the female-only regressions, but being black maintained significance in regressions that included both male and female respondents (that is, until excessive daytime sleepiness was introduced). So why is it that so many more Hispanic males and black males meet the criteria for excessive daytime sleepiness compared to their White counterparts?

One possible reason is that their sleep is disturbed by worry. According to a nationally representative Sleep in America poll, 19% of both blacks and Hispanics are kept awake by employment, personal/relationship, financial, or health-related concerns every night or almost every night, while this number is only 11% for whites (National Sleep Foundation, 2010b). When it comes to worry about money troubles, the difference is even larger: Just six percent of whites are kept awake every night or almost every night by personal financial concerns, while about twice as many blacks (12%) and Hispanics (11%) experience the same sleep disturbances (National Sleep Foundation, 2010b). Personal financial concerns were defined as worry over the ability to make mortgage/rent payments, or purchase items like food or gasoline (National Sleep Foundation, 2010b). Because the 2010 Sleep in America poll did not break down these figures by gender, it is impossible to know whether men or women stay awake more because of worry. Tradition holds that men take on the role of breadwinner, so, perhaps, they are more troubled by financial concerns when they should be sleeping. Most of the respondents in the current study are too young for this to be an issue, though. In the absence of compelling evidence from previous related studies, the current research project actually raises more questions than it answers.

Bandura's Social Cognitive Theory – which outlined the idea of triadic reciprocation – defined self-efficacy and outcome expectancy as behavioral determinants (the other two being personal and behavioral determinants). On the surface, this study may not adequately support the use of Bandura's theory for explaining potential consumers' intentions to communicate with healthcare providers in response to DTC advertising. Certain adjustments to the research design, however, might have yielded different results. Time constraints (i.e. the desire for a brief survey) prevented the researcher from fully exploring undergraduate students' attitudes towards prescription drugs and preferred methods for remedying daytime sleepiness. Unfortunately, the study could not fully address personal determinants. At an individual cognitive level, tired students may plan to rely on other remedies for their sleepiness. Many might fuel their days with

caffeine. Drinks such as Rockstar and Redbull are ubiquitous on college campuses. Some would rather alter their schedules to allot more time for sleep. Others may consider their current levels of daytime fatigue bearable. Though a significant number of undergraduates struggle to stay awake in class and fall asleep while reading or watching television, perhaps they tend to find their current situations manageable and do not wish to turn to prescription drugs. Another key component that might have influenced results, but which was beyond the scope of this study, was the level of belief and trust respondents had in the advertisement. An initial credibility assessment was made by a separate group of students before data collection commenced. However, survey respondents' perceptions regarding believability were not measured. If this had been controlled for in multivariate testing, SCT might have seemed much more appropriate as a guiding principle. Choosing to believe a message is an exercise in cognition, which is a core personal determinant. In this study, though respondents were confident in their abilities to procure the prescription sleep aid, many may not have wanted it because they did not entirely believe that the drug would guide their bodies "into a deep, restorative stage of sleep" and keep them there "throughout the night." Such a reaction fits well within Social Cognitive Theory: A tired student makes a conscious, rational choice not to explore a product because he or she believes that the marketing materials overstate its benefits and understate its costs. Bandura's theory also includes environmental factors. Relatively few of these (aside from demographic information) were included in the study. Nevertheless, such factors exist and can affect assessments about the theory's ability to explain responses to DTC advertisements. A student, in order to acquire the drug, must find a healthcare clinic that not only accepts his or her insurance, but also has an available appointment time that fits into his or her schedule. Other factors include the office's location – he or she may have limited transportation options – and cost. Of those surveyed, 40.2% had parents making under $60,000 a year. If the student is not in a good

financial position, purchasing a prescription drug for sleep enhancement may not be feasible. Social cognitive theory recognizes that pecuniary factors can deter or promote certain actions.

The theory also acknowledges that time constraints can influence behavior – Intended Communication Behavior is no exception. Potential actions are in constant competition. Visiting a doctor about acquiring a sleep aid might need to be squeezed into an already tight schedule that includes working, going to classes, studying, socializing with friends, calling home, and sleeping. For a new activity to be introduced, time spent on existing activities must be reduced. It is possible that many respondents simply decided that they were too busy to invest time in a visit to a doctor. They would prefer to spend those minutes or hours in other ways.

In sum, the fact that Communication Outcome Expectancy correlated with and predicted Intended Communication Behavior while Communication Self-efficacy did neither does not falsify Bandura's Social Cognitive Theory – or prove that it is a poor guide for understanding responses to DTC advertisement. A study that used a nationally representative sample and accounted for some of the factors described here would provide a better test of this theory. Had the theory's other components (e.g., personal and environmental determinants) been accounted for in the survey and the concept of competing behaviors explored, the hypothesized relationships might have emerged.

Limitations

All studies have limitations: This one is no exception. Perhaps the most serious problem is an inability to generalize findings to the populations at large. The small sample size (n = 169) and non-random selection methods prevent one from drawing conclusions about young adults' attitudes in general – or even just those held by students attending colleges in the southeastern United States. Furthermore, because the study is cross-sectional in nature (meaning that data collection occurred at a single point in time) rather than longitudinal (where there are repeated instances of data collection), it is impossible to establish causation. For example, logic dictates

that if most respondents' intend to communicate with their physician about an advertised drug, that choice was preceded and influenced by their beliefs about the relative usefulness of the conversation. But the reverse could also occur. Some individuals may not have thought about the outcomes that are likely to result from communicating with a doctor about an advertised drug. They may be more impulsive and reactionary than contemplative – only forming attitudes *after* gaining first-hand experience. If surveyed at longitudinal intervals, participants' attitudes might change because of these encounters.

Another limitation of this study, which is typical of survey research, is that it does not answer "why" questions. For example, why is it that Communication Outcome Expectancy (COE) significantly predicts Intended Communication Behavior (ICB), while Communication Self-Efficacy does not? Why were the independent variables better at predicting men's intentions to communicate with their doctors than women's behavioral intentions? Why is it that Black and Hispanic men report more daytime sleepiness than White males? And, finally, why did the study by Young et al. explain 56% of the variation in respondents' ICB scores, while the current study explains only 15%? Qualitative research, perhaps in the form of in-depth interviews, would be better suited for answering questions such as these. In fact, qualitative examination of these topics would likely yield findings that could help modify this study for future replications.

Suggestions for Future Research

As stated, researchers may wish to develop qualitative studies that further examine why individuals might be more or less receptive to DTC advertisements as well as how this influences their intentions to communicate with their healthcare providers about prescription drugs. Future research could also explore the possibility that different factors affect men and women's intended communication behaviors following exposure to DTC advertisements – as suggested by the current study. Furthermore, additional scholarly work is needed that uses the measures by Young to assess how people respond to fake advertisements for different types of prescription

medications (e.g., antidepressants, antacids, cholesterol-lowering drugs, etc). Alternatively, researchers could use real drug advertisements, which may or may not yield higher credibility rankings.

This study used a print advertisement; however, replicating the research by Young et al. (2005) with a television, radio, or internet-based advertisement could help determine if the medium modulates the effects that communication outcome expectancy and communication self-efficacy have on intended communication behaviors. Each format has unique features that likely influence message processing. For example, moving images in television advertisements simulate reality well and have been shown to attract and hold audience attention (Rossiter & Bellman, 1999), which might enhance recall. Online ads, though, are more interactive (Allen, Kania & Yaeckel, 1998). This could make their messages more persuasive than those delivered in other formats – particularly if links to objective, third-party websites are provided. Radio advertising is particularly effective for stimulating consumers' imaginations (Miller & Marks, 1998), making them a good medium for hypothetical scenarios (e.g., getting patients to imagine conversations with their doctors). Research also suggests that advertising campaigns using multiple formats have synergistic properties and engage consumers with their messages better than any single-format approach (Chang & Thorson, 2004).

Finally, when attempting to explain patients' intentions to communicate with healthcare providers about advertised drugs, researchers should consider the following study designs: Longitudinal research employing nationally representative samples and experiments using large groups. Though implementing these studies is more expensive and/or time-consuming, their findings contribute significantly to the existing body of scholarly work. Longitudinal research and experiments help to establish causality, and representative groups permit one to generalize findings to the broader population. Experiments also allow the researcher to isolate key variables.

Closing

These research findings add significantly to the existing body of literature. Not only does the project provide much-needed replication of a study focused on a topic receiving surprisingly scant scholarly attention, it goes beyond mere replication in a number of key areas. First, the research examines a different prescription medication than the one explored in the 2005 study by Young et al. (a sleep aid instead of a once monthly birth control pill). Second, the study by Young et al. (2005) surveyed only women; the current project collected data from both sexes, permitting comparisons between male and female respondents. Third, and finally, the study took into account respondents' attitudes toward sleep aids (i.e. their willingness to try such medications if they were displeased with the amount or quality of sleep they were getting on a nightly basis). Conversely, the study by Young et al. (2005) only queried respondents about their current contraception use and did *not* ask if they would consider taking a birth control pill under certain circumstances. Clearly, though, there are numerous ways that future studies can improve upon the current one. Fortunately, according to the Irish novelist James Joyce, errors often serve as the portals of discovery (1922, p. 182).

APPENDIX A
PRELIMINARY QUESTIONAIRE

A. Please circle the number that indicates how confident you are in your ability to perform the actions stated, where **0 = "not at all confident"** and **10 = "extremely confident."**

1) How confident are you in your ability to ask your physician questions about prescription drugs?	0 1 2 3 4 5 6 7 8 9 10
2) How confident are you in your ability to ask your physician to write you a prescription for a specific drug?	0 1 2 3 4 5 6 7 8 9 10
3) How confident are you in your ability to insist that your physician give you a specific prescription drug?	0 1 2 3 4 5 6 7 8 9 10

APPENDIX B
SECONDARY QUESTIONAIRE

A. Refer to the advertisement you just read and circle the number that indicates how likely you are to perform the following actions, where **0 = "not at all likely"** and **10 = "extremely likely."**

1) I would talk to my doctor about the advertised drug.	0 1 2 3 4 5 6 7 8 9 10
2) I would ask my doctor if the advertised drug really works.	0 1 2 3 4 5 6 7 8 9 10
3) I would ask my doctor for more information about the advertised drug.	0 1 2 3 4 5 6 7 8 9 10
4) I would ask my doctor if the advertised drug is appropriate for me.	0 1 2 3 4 5 6 7 8 9 10
5) I would ask my doctor about the advertised drug's side effects.	0 1 2 3 4 5 6 7 8 9 10
6) I would ask my doctor to prescribe the advertised drug for me.	0 1 2 3 4 5 6 7 8 9 10
7) I would insist that my doctor prescribe the advertised drug for me.	0 1 2 3 4 5 6 7 8 9 10

B. Circle the number that indicates the extent to which you agree or disagree with each of the following statements, where **0 = "totally disagree"** and **10 = "totally agree."**

8) Talking with my doctor about the advertised drug will give me important information about how to use the drug.	0 1 2 3 4 5 6 7 8 9 10
9) Talking with my doctor about the advertised drug will give me important information about the drug's risks.	0 1 2 3 4 5 6 7 8 9 10
10) Talking with my doctor about the advertised drug will give me important information about the drug's benefits.	0 1 2 3 4 5 6 7 8 9 10
11) Talking with my doctor about the advertised drug may lead my doctor to prescribe it for me.	0 1 2 3 4 5 6 7 8 9 10

C. Think about your usual way of life in recent times. How likely would you be to doze off or fall asleep in the following situations?

	would ***never*** doze	***slight chance*** of dozing	***moderate chance*** of dozing	***high chance*** of dozing
12) Sitting and reading	0	1	2	3
13) Watching TV	0	1	2	3
14) Sitting, inactive in a public place (e.g., a theater or a meeting)	0	1	2	3
15) As a passenger in a car for one hour, without a break	0	1	2	3
16) Lying down to rest in the afternoon when circumstances permit	0	1	2	3
17) Sitting and talking to someone	0	1	2	3
18) Sitting quietly after a lunch without alcohol	0	1	2	3
19) In a car, while stopped for a few minutes in traffic	0	1	2	3

D. Please answer the following background questions.

20) Gender:	1[ ] Female 2[ ] Male
21) What was your age at your last birthday? Please write it in the space provided.	_____
22) Do you consider yourself Hispanic/Latino?	1[ ] Yes 2[ ] No
23) Which of the following races do you consider yourself? If necessary, select more than one category and/or specify another racial group.	1[ ] White/European 2[ ] Black/African-American 3[ ] Asian or Pacific Islander 4[ ] American Indian or Alaskan Native 5[ ] Other: _____
24) What is your college major?	_____

25) Have you taken a prescription medication to help you fall asleep or stay asleep *in the past 30 days*?	1[ ] Yes 2[ ] No
26) Have you *ever* taken a prescription medication to help you fall asleep or stay asleep?	1[ ] Yes 2[ ] No
27) If you felt you weren't getting enough sleep or not getting good quality sleep would you consider taking a prescription sleep aid?	1[ ] Yes 2[ ] No
28) What was your family's approximate annual household income from all sources, before taxes, in 2010?	1[ ] Less than $29,999 2[ ] $30,000 to $44,999 3[ ] $45,000 to $59,999 4[ ] $60,000 to $74,999 5[ ] $75,000 to $89,999 6[ ] $90,000 or more

APPENDIX C
DIRECT-TO-CONSUMER ADVERTISMENT

Isn't it time you woke up feeling better rested?

Somnus

Somnus SR™ can give you what you never thought possible
. . . a more productive day

It's not just the amount of sleep you get that matters. . . it's also the quality.

Somnus SR™ is a highly effective insomnia medication that gently guides your body into a deep, restorative stage of sleep and keeps you there throughout the night. Clinical studies have shown that patients taking Somnus SR™ performed everyday tasks more efficiently after just five hours of sleep than did control groups who had received a full eight hours.

Get 7 Nights FREE

If you and your healthcare professional decide that Somnus™ is right for you, take advantage of our 7-night free trial offer by visiting **http://www.somnusSR.com/savings-program.html**

Find out how you can dramatically improve your waking hours at **ww.somnusSR.com** or call **1-800-581-5608**.

Somnus

Somnus SR™ is approved for adults who experience insomnia and persistent daytime drowsiness. It is available by prescription only.

IMPORTANT SAFETY INFORMATION:Somnus SR™ is a treatment option that you and your healthcare provider can consider along with lifestyle changes. Clinical trials have shown no risk of dependency and Somnus SR™ can be taken as long as your provider recommends it. Until you know how you'll react to Somnus SR™, you should not drive or operate machinery. Avoid taking Somnus SR™ with alcohol. Be sure you're able to devote 4 to 5 hours to sleep before being active again. In rare cases, severe allergic reactions have been reported. Side effects may include restlessness, unpleasant taste, and dizziness.

APPENDIX D
IRB DEBRIEFING FORM

Debriefing: UFIRB #2011-U-356

Study Title: A Survey Examining Respondents' Intentions to Communicate with Physicians After Viewing an Ad for a Prescription Sleep Aid

Thank you for taking part in this study.

While, as previously explained, the current research project deals with participants' intentions to communicate with physicians following exposure to a pharmaceutical advertisement, certain information was intentionally withheld.

Specifically, you were led to believe that you were reviewing real marking materials for a prescription sleep aid when . . . **the ad you examined is not a real advertisement and was NEVER distributed in the mass media**.

Somnus
(the medication, which promised "restorative sleep" and "more productive days")
DOES NOT EXIST.

Reason for Deception: You were deceived because the purpose of this research is to ascertain how participants will react to (what they believe is) a real –but unfamiliar – advertisement. It is impossible to say for certain, but **you might have provided different answers to survey questions if you had known the ad was a fake**. Unfortunately, in order to obtain good data that can further our understanding of individuals and/or society, it is sometimes necessary to temporarily withhold information about a study's true purpose or even deceive participants. Rest assured, however, that UF researchers' studies must meet IRB ethical guidelines. These rules are designed to protect you from serious physical or emotional harm.

Expected Results: It is hypothesized that respondents who report great confidence in their ability to communicate with healthcare providers, and perceive that such conversations are very useful/productive, will also report that future conversations with their physicians about the drug are likely.

Remedying Negative Effects: I apologize if this experience has upset or inconvenienced you, as this was not my intention. Please feel free to discuss your concerns with me now or call me with questions at 352-337-2819. You can also contact the IRB office at 352-392-0433, UF's Counseling & Wellness Center at 352-392-1575, or address problems to my supervisor: Debbie Treise, Ph.D. (Advertising Department); dtreise@jou.ufl.edu ; 352-392-6557

Once again, thank you for participating. I ask that you refrain from talking with others about this research project (in particular, please do not tell them it involves an inauthentic ad) because doing so will compromise the quality of data collected.

APPENDIX E
INFORMED CONSENT FOR SURVEY PARTICIPATION

Kathryn Gerlach
College of Journalism & Communications
Science/Health Communication

P.O. Box 118400
Gainesville, FL 32611-7330
Phone: (352) 337-2819 E-mail: gerlach@ufl.edu

INFORMED CONSENT FORM

I, Kathryn Gerlach (a graduate student in the College of Journalism and Communications at the University of Florida), request your participation in a study on pharmaceutical advertising. Should you decide to participate, you will be asked to look over a two-page ad and complete a brief survey.

There are no anticipated risks associated with this research project and the only direct benefit to you as a participant is the opportunity to earn extra credit – this will be determined by your professor, but will not exceed two percentage points added to your final grade. Your involvement in this study is completely voluntary and your professor will make an alternative extra credit assignment available for those who do not want to participate. Feel free to skip questions or discontinue participation at any time. All data collected will be kept confidential to the extent provided by law and questionnaire identification will involve only random identification numbers.

By signing this form below, you not only indicate that you have decided to participate in this study, but that you have read and understood the information in this consent form. Your relations with the College of Journalism and Communications or the University of Florida will not be affected by your decision in this matter and your consent can be withdrawn at any time without penalty. Should this research cause you to have unpleasant thoughts or feelings, please be aware that UF's Counseling & Wellness Center offers free counseling services. They can be reached at 352-392-1575.

If you are unclear about your rights as a research participant please, ask now; call me at 352-337-2819; or contact the University of Florida's Institutional Review Board (IRB) office at 352-392-0433. I would also be happy to address any other questions/concerns, or you may direct them to my supervisor:

Debbie Treise, Ph.D.
Department of Advertising
E-mail: dtreise@jou.ufl.edu
Phone: 352-392-6557

Many thanks!

_____

I have read and understood the information outlined above. Having received a copy of this consent form, I voluntarily agree to participate in the research as it has been described.

Participant‟s signature_____ Date_____

Principal investigator _____ Date_____

APPENDIX F
QUESTIONAIRE FOR PRE-TESTING AD CREDIBILITY

A. For each of the 10 items below, please circle the number that best reflects your perceptions of the ad.

1) Unbelievable						Believable
1	2	3	4	5	6	7
2) Untrustworthy						Trustworthy
1	2	3	4	5	6	7
3) Not Convincing						Convincing
1	2	3	4	5	6	7
4) Not credible						Credible
1	2	3	4	5	6	7
5) Unreasonable						Reasonable
1	2	3	4	5	6	7
6) Dishonest						Honest
1	2	3	4	5	6	7
7) Questionable						Unquestionable
1	2	3	4	5	6	7
8) Inconclusive						Conclusive
1	2	3	4	5	6	7
9) Not authentic						Authentic
1	2	3	4	5	6	7
10) Unlikely						Likely
1	2	3	4	5	6	7

B. How would you change this advertisement to make it seem more credible?

_____

_____

_____

_____

_____

_____

_____

APPENDIX G
INFORMED CONSENT FOR THOSE ASSESSING AD CREDIBILITY

Kathryn Gerlach
College of Journalism & Communications
Science/Health Communication

P.O. Box 118400
Gainesville, FL 32611-7330
Phone: (352) 337-2819 E-mail: gerlach@ufl.edu

INFORMED CONSENT FORM

I, Kathryn Gerlach (a graduate student in the College of Journalism and Communications at the University of Florida), request that you assist with my research by assessing a direct-to-consumer advertisement for a prescription sleep aid. Should you decide to participate, you will look over a two-page ad and then complete a short opinion survey. This will likely require less than thirty minutes of your time.

There are no anticipated risks associated with this research project and the only direct benefit to you as a participant is the opportunity to earn extra credit – this will be determined by your professor, but will not exceed two percentage points added to your final grade. Your involvement in this study is completely voluntary and your professor will make an alternative extra credit assignment available for those who do not want to participate. Feel free to skip questions or discontinue participation at any time. All data collected will be kept confidential to the extent provided by law and questionnaire identification will involve only random identification numbers.

By signing this form below, you not only indicate that you have decided to participate in this study, but that you have read and understood the information in this consent form. Your relations with the College of Journalism and Communications or the University of Florida will not be affected by your decision in this matter and your consent can be withdrawn at any time without penalty. Should this research cause you to have unpleasant thoughts or feelings, please be aware that UF's Counseling & Wellness Center offers free counseling services. They can be reached at 352-392-1575.

If you are unclear about your rights as a research participant please, ask now; call me at 352-337-2819; or contact the University of Florida's Institutional Review Board (IRB) office at 352-392-0433. I would also be happy to address any other questions/concerns, or you may direct them to my supervisor:

Debbie Treise, Ph.D.
Department of Advertising
E-mail: dtreise@jou.ufl.edu
Phone: 352-392-6557

Many thanks!

_____

I have read and understood the information outlined above. Having received a copy of this consent form, I voluntarily agree to participate in the research as it has been described.

Participant's signature_____ Date_____

Principal investigator _____ Date_____

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BIOGRAPHICAL SKETCH

Born in Orlando, Florida, Kathryn Gerlach spent the majority of her childhood braving the cold in Columbus, Ohio. Since returning to the South, she has earned three degrees from the University of Florida. In April 2005, she graduated summa cum laude with a B.A. in Sociology and in August 2009, she earned her M.A. in Sociology. She then altered course by taking classes in the College of Journalism and Communications. Specializing in science and health communication, Kathryn received her M.A.M.C. in December 2011. She currently works as a marketing intern in UF's Office of Technology Licensing, where she enjoys creating promotional materials that help researchers commercialize their inventions.