A SOCIAL COGNITIVE APPROACH TO INTEGRATED COMMUNICATIONS WITHIN A PUBLIC INFORMATION CAMPAIGN:
MEDIA AND INTERPERSONAL INFLUENCES ON KNOWING AND DOING

by

JOHN CHRISTOPHER WOOD
Under the Direction of Ruthann Lariscy

ABSTRACT

The social cognitive approach to public communications campaign has had great success in the past, accounting for the direct and indirect influences of mass media and interpersonal communications to accomplish campaign goals and objectives. Yet, this study extends the social cognitive perspective to include the specified interpersonal influences of the theory of planned behavior. First, this study examines the influences of mass media and public information, as separate predictors and in combination, on acquired knowledge of an industry issue within a specified campaign. In turn, this investigation notes the existence of a gap between actual and perceived knowledge of a salient industry issue among utility customer respondents, which influences media selection on the part of utility customers. Finally, the theory of planned behavior is a successful means for extending the social cognitive perspective, as the primary interpersonal influences outlined in this model successfully predict behavioral intention within the context of a public communications campaign.

INDEX WORDS: Social cognitive theory, theory of planned behavior, mass media, interpersonal communication, public communications campaigns, issue knowledge.
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by

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DEDICATION

To anyone who ever doubted they could it, or that the value of an education would not be worth it.
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CHAPTER I
INTRODUCTION

Designing and implementing effective public communication campaigns, no matter the industry or issue focus, can be a daunting task. Finding the best tactical ingredients for a recipe of campaign success is imperative if communication goals and objectives are to be obtained. In doing so, research becomes not only relevant to practitioners on the front lines of communication campaigns, but also significant for scholars who are attempting to extend the parameters of proven theoretical models.

The study of public communication campaigns provides an ideal means, through case studies of applied theory, to further test and refine hypotheses. Practitioners can find value in the close examination of campaigns because these cases can provide lessons in how to strategically reach communication goals and objectives in various applied settings. Scholars can utilize public communication campaigns to replicate or extend existing theoretical models, as well as add to the academy’s body of knowledge.

This study attempts to advance the causes of both audiences – practitioners and scholars – by further testing the social cognitive perspective and theory of planned behavior in a unique campaign setting. Social cognitive theory has yet to be applied in the area of a public communication campaign advocating increased awareness, support and behavioral compliance for a relevant, important environmental issue, such as grease disposal education for water utility customers. In addition, this study will apply the theory of planned behavior to further investigate the role of actual versus perceived knowledge of utility customers, as well as other predictors of behavioral intention and, ultimately, actual compliant behavior for proper grease disposal among
utility customers under investigation. Finally, with these theoretical models in mind, this research intends to investigate the potential for Integrating Marketing Communications (IMC) to serve as structured litany of those best tactical communications “ingredients” for strategically advancing the objectives of a public communications campaign.

The review of relevant literature for this study lies first in the stream of research covering public communication campaigns. Findings from numerous studies of the effects of persuasive messages, the selection and strategic combination of communication channels within a campaign, the importance of interpersonal communication as one of those channels, and the potential for other communication tools to serve as surrogates for interpersonal communication, are all reviewed and summarized in the literature in order to provide a broad theoretical and applied framework in which to place this current investigation.

Not surprisingly, a majority of the public communication campaigns testing the persuasive messages and the use of strategic communication tools in combination – including interpersonal communication and potential surrogates – have been generated in the context of public health communication. For that reason, the review of relevant literature for this study categorizes a number of successful public health communication campaigns, noting how they have provided an historical and practical foundation for advancing theory in other areas of public communication campaigns.

From the review of the public communication campaigns literature, specifically the campaigns in health communication, it becomes evident that the theoretical foundation for many of these successful initiatives is social cognitive theory. From that common theoretical grounding in successful public communication campaigns, social cognitive theory is selected as the primary, broadly applied model for this study. In addition, because of the need to further
examine the effects of campaign knowledge and identify interpersonal predictors of behavioral intention and actual behavior of targeted audiences within a public communication campaign, the theory of planned behavior and its evolution into an applied conceptual and methodological model also will be reviewed in this study.

After reviewing the public communication campaigns literature, the theoretical assumptions of the social cognitive framework will be reviewed more extensively. In doing so, the literature will support this study’s intent to advance social cognitive theory’s premise that mass media and interpersonal communication can be used strategically and appropriately in combination during a public communication campaign. Social cognition accounts for the external or environmental factors that influence the potential effects of mass media, within the context of such a campaign. In addition, the theory of planned behavior sharpens the focus of public communication campaigns to examine some of those external, interpersonal influences on behavioral intention and actual behavior, such as attitudes, subjective norms, and control factors, as will be explained in more detail in the forthcoming literature review on this paradigm. But why is there a need for this research, at this time, utilizing this theoretical premise?

First, in the rapidly expanding media environment, where practitioners are trying to determine the most effective means for utilizing a new collection of communication channels and tools, and researchers are investigating the effects and theoretical implications of such, it is important to continually re-examine assumptions and findings from previous work. Continual examination of the uses and effects of media, new and old, in combination and under varying circumstances, is necessary in order for communication science and its professionals to make further advances in the field.
Second, just as media tools continue to evolve with increased sophistication and application, likewise their audiences continue to change as well. Thus, previous research findings need to be re-evaluated as communication consumers become more dynamic and sophisticated, evident in such trends as new media consumption beginning at earlier and earlier ages, as well as consumers becoming more independent, autonomous, and involved in media channel and message selection.

Third, and the most compelling reason for this current investigation, it is critically important to expand the examination of theoretical and applied findings into contexts or settings that are both (a) understudied and (b) increasingly utilizing public communication campaigns. Such is the case with this attempt to provide a social cognitive and planned behavior theoretical framework in the context of communication campaigns in government and public affairs, particularly for public water utilities.

Thus, this study undertakes the examination of strategic media choices applied in the context of a public communication campaign for a governmental agency that seeks to increase knowledge, improve attitudes, and positively influence behavior, among key audiences on a critically important, salient issue. In doing so, this research will help fill a void for both practitioners and scholars in the current research stream impacted by this study.

Overview

In creating a successful public communication campaign, there is the need for utilizing sound, proven theoretical models in appropriate settings. Social cognitive theory is applicable to this study because it proposes both a direct and indirect pathway to educating target audiences of a public communication campaign. The indirect, or socially mediated pathway, is of particular interest here because “media influences link participants to social networks and community
settings that provide natural incentives and continued personalized guidance for desired change” (Bandura, 2001, p. 265).

Likewise, the theory of planned behavior further examines interpersonal influences (personal characteristics) that can serve as predictors of behavior, in even greater detail than those “reinforcements” referenced in the social cognitive perspective. These influences on behavioral intent and actual behavior – notably attitudes toward behaviors, subjective norms, and perceived behavioral control – are of critical significance to scholars and practitioners attempting to educate targets more effectively through public communication campaigns. The theory of planned behavior has evidence that “the more favorable the attitude and subjective norm with respect to a behavior, and the greater the perceived behavioral control, the stronger (should be) the individual’s intention to perform the (desired) behavior under consideration” (Ajzen, 1988, p. 132-133).

This study will examine the advances and appropriateness of social learning or social cognitive theory (Bandura, 1977; Bandura, 1986), and more specifically the application of the theory of planned behavior (Ajzen, 1985), which extended the conceptual parameters of the theory of reasoned action (Fishbein & Ajzen, 1975).

The literature review first highlights landmark health communication campaigns since this area of public communication research is where the theoretical perspectives of this study have been most widely applied to this point. One of the most noted collections of health communication campaigns applying social cognitive theory is in the area of AIDS public education, dating back approximately 20 years ago. In addition to social cognitive theory advancing campaign objectives in the area of AIDS awareness, this approach also helped advance desired outcomes in other health-related issues, such as alcohol and drug abuse, sex
education and birth control, anti-smoking initiatives and cancer prevention, as well as additional general health care concerns.

After noting the health care industry’s extensive application of social cognitive theory in public communication campaigns specific to this and other industries, the literature review will begin to closely analyze the critical components and philosophies relevant to social cognitive theory itself. In doing so, this discussion attempts to shed light on the imperative answers of why this theoretical approach is so appropriate for use in healthcom campaigns, and why it has so much relevance in other areas, including communication campaigns conveying a number of policy issues in government and among public utilities – the setting of this study.

Social Cognitive Theory

Social learning theory or social cognitive theory (Bandura, 1977; Bandura, 1986) has its roots in media effects literature, providing a new way of explaining how people behave differently according to different situations or stimuli – media exposure as an example in this context (Bandura, 2001; Bryant & Zillmann, 2002). From this point of view, scholars employing social cognitive theory presume that people’s behavior has a great deal to do with the interaction between a person and various personal and environmental circumstances. The social cognitive perspective is still relevant and widely supported today, especially when applied to public communication campaigns.

Social cognitive theory provides “a framework that allows us to analyze the human cognitions, or mental functions, that produce certain behaviors. The theory describes the mental processes at work whenever a person learns” (Bryant & Thompson, 2002, p. 67). That learning and subsequent behavior occur as a result of a process that Bandura (1994) calls triadic reciprocal causation, which describes three different factors that determine thought and behavior
by interacting and influencing each other “with variable strength, at the same or at different
times” (Bryant & Thompson, 2002, p. 67). Those three influences include: behavior, personal
characteristics, and environmental factors/events (Bandura, 1986; Bandura, 2001; Bryant &
Zillmann, 2002).

All three are of interest and will receive some degree of attention in this study. Behavior
is the ultimate outcome sought in most public communication campaigns. The objective of this
research project likewise rests in assessing how behavior is best attained, and to what degree
personal characteristics, such as perceived and actual knowledge of an issue and attitudes toward
a public utility and its services, influence behavior. (The “personal characteristics” that
influence behavior, as referenced in social cognitive theory, are examined further in this study
through a conceptual and methodological application of the theory of planned behavior.) In
addition, this study attempts to examine how certain cognitions – especially knowledge,
awareness, and attitudes – are affected by environmental factors, primarily those that are
mediated, such as mass media news content and interpersonal communication. From a social
cognitive perspective, interpersonal communication can serve as an invaluable reinforcement of
behavior, either positively or negatively.

Social cognitive theory, especially in the context of a public communication campaign,
helps practitioners and scholars evaluate the impact of environmental forces on uniquely human
characteristics, and how that interaction ultimately predicts behavior. In doing so, the profession
and the academy can gather valuable insight into how communication channels and the
information flowing through them (the environment) affects customer knowledge and attitudes
(personal characteristics), and ultimately, customer responses (behaviors) to campaign objectives
sought by practitioners. The *triadic reciprocal causation* describes the process of what often occurs as a result of a well-executed, planned communication campaign.

Social cognitive theory also helps guide more effective means for reaching target audiences and publics – the customers of a water utility, for example – while exploring their capacity to learn from media content, especially that promoting pro-social or supportive behavior that will legitimize an organization’s public education efforts. Persuasive communication, especially when serving a function of social prompting or providing an inducement for desired outcomes, is only as effective as those factors influencing behavior are strong. In short, “many different factors influence behavior. Sometimes people are influenced by what they see on television, sometimes they are persuaded by interpersonal communication, and sometimes by a little of both” (Bryant & Thompson, 2002, p. 80). Thus, the study of the influence of mass media content, coupled with interpersonal communication reinforcements, has merit, especially in the context of how mass media and interpersonal communication – or possible surrogates – can best accomplish goals and objectives of public communication campaigns.

After extensively reviewing the literature in social cognitive theory, other samples of general public communication campaigns – outside of those previously noted in health communication in which this perspective has been applied – will be examined. Since the framework of social cognitive theory allows a closer look at the effects of human cognitions (thoughts and ideas) on behavioral outcomes, it is possible to see how specific campaigns attempt to manipulate environmental factors, personal characteristics of audiences, and other human conditions in order to achieve desired behaviors in line with campaign objectives. In the context of communication campaign effects, social cognitive theory helps explain how audience attitudes and behaviors change according to persuasive messages in campaign media content.
How individual audience members think about and act upon public information received during a public communication campaign could depend greatly on the process of triadic reciprocal causation (Bryant & Thompson; Bandura, 1986; Bandura, 2001; Bryant & Zillmann, 2002).

The public communication campaigns examined in this literature that have impacted public policies have been designed and implemented according to principles of social cognitive theory, with each campaign attempting to advance a number of issues and pro-social initiatives. Some examples of public policies and social causes benefiting from the social cognitive theoretical approaches include efforts to encourage recycling behavior, exercise and physical education, as well as seat belt and bicycle/motorcycle helmet use.

If, as social cognitive theory advances, some people learn about public communication campaign issues through mass media, while others learn through interpersonal communication, and still others through a combination of both, then it will be useful to review the specific application of interpersonal and mass communication as strategic tools in various cases. So the discussion of the relevant literature then transitions into the examination of reported benefits of mass media use, strategically, in public communication. In addition, this area of review highlights some illustrations of the effective use – especially as a means for behavioral reinforcement – of interpersonal communication. It is appropriate, then, to inspect campaigns that use both mass communication and interpersonal communication, whether formally introduced according to social learning theoretical principles or not, in order to gauge the effectiveness of these tools in combination. In fact, Bandura (2001) specifically addressed these “dual paths of influence” in his discussion of social cognitive theory, whereby the media directly and indirectly (mediationally through connection to influential social systems) impact behavior.
Theories of Reasoned Action and Planned Behavior

Additionally, this study will review the relevance of the theory of reasoned action (Fishbein & Ajzen, 1975; Ajzen & Fishbein, 1980) and the expanded theory of planned behavior (Ajzen, 1985; Ajzen, 1988) – first, in connection and relevance to the “personal characteristics” identified as criteria influencing behavior according to social cognitive theory, and second, because of the potential of these models to help predict behavioral intention through more specific investigation of what considerations are made prior to actual behavior.

While public communication campaigns benefit from adherence to a social cognitive framework, the theory does not account for certain additional “personal characteristics” or more interpersonal influences on compliant or pro-social behaviors that are within the scope of a majority of focused public communication campaigns. The theory of planned behavior provides this conceptual extension of the investigation. For example, public relations practitioners are often puzzled when mass media strategies, coupled with reinforcing interpersonal messages, continually fail to reach desired campaign goals and behavioral objectives. They are left wondering why targeted audiences failed to comply with desirable behavioral responses. The theory of planned behavior helps explain these possible results within a model that further challenges scholars and practitioners to account for additional pre-determinants or influences of behavioral intention, or even actual behavior.

First, the theory of planned behavior accounts for the difference between one’s intent to behave accordingly and in fact doing so. Intention is a noted precursor of actual behavior in the planned behavior model. In addition, before even garnering desired behavioral intent, a campaign following the model of planned behavior must account for predictive, pre-determining factors that directly or indirectly influence actual behavior. According to the model, people’s
attitude toward a behavior is a predictor of behavioral intention, as are those universally held subjective norms – the opinions and actions of referent others – that influence decisions. Thus, the model challenges researchers and practitioners, whose interests are in scripting more effective public communication campaigns, to consider the significance of salient public opinion toward issues and causes, as well as the influencing role played by significant others and the perceived control people have over their own actions.

The theory of planned behavior later will be explained and referenced further as to its relevance to this study’s methodology.

Following the review of the theoretical implications of social cognitive theory, communication campaign effects, as well as the theories of reasoned action and planned behavior, the discussion of relevant research findings notes the very few communication campaigns in government and among public utilities that have applied the aforementioned theoretical perspectives. This study, then, will help fill a void in the literature that has yet to fully examine the social cognitive implications of the theory of planned behavior applied within government or public utility public information campaigns. The examples cited of government or public water utility communication campaigns in the literature review do not formally follow a defined, proven theory in their design, implementation or evaluation. Yet, some of the issues advanced by governments and water utilities through effective public education include water quality management, water conservation, environmental protection, and more.

The final section of relevant literature review includes brief mention of the potential for Integrated Marketing Communications (IMC) to provide a template of categorical communication tools that might be accessed more logically, and even theoretically, for better execution of public communication campaigns. In addition, with IMC practice as a guide, it is
inferred that the identifiable direct communication tools therein could potentially serve as surrogates for interpersonal communication, at least in accordance with the social cognitive framework.
CHAPTER II
LITERATURE REVIEW

A large percentage of the existing, documented community-based public education efforts follows an applied social cognitive theoretical framework, so this literature review begins by examining the numerous industry settings or categories of these public communication campaigns, beginning with the proliferation of AIDS public education initiatives and continuing with campaigns addressing health care objectives on several other common fronts.

Next, the literature highlights the studies and advances in social cognitive theory, which provides the broad guidelines for practitioners and scholars to design more effective public communication campaigns.

Third, the theory of planned behavior is offered as a conceptual and methodological extension of the social cognitive perspective, addressing more closely the defined “personal characteristics” referenced in social cognition that are relevant to this model’s specific pre-determining factors (predictors) of behavioral intention and actual behavior.

Fourth, public communication campaigns most germane to this study – those that governments and related agencies sponsor – are appraised for their relevance.

Not everyone is supportive of public communication campaigns sponsored by governments, governmental agencies, or even public utilities. For that reason, studies are also cited that question the persuasive nature of public education on policy issues. This section is provided to remind practitioners and researchers alike that changes in knowledge, attitude, and ultimately behaviors, are the focus of nearly every public communication campaign. However, these campaigns, and the subsequent communication processes they facilitate, are likely to face
opposition to advocacy, no matter the policy issue or campaign objective. That is the nature of public relations practice and theory.

Finally, a brief overview of the applied practice of Integrated Marketing Communications (IMC) provides an inventory of communication tools that might be structured or “integrated” to follow the social cognitive perspective, accounting for the theoretical significance of interpersonal communication and the potential of certain IMC tools to serve as “surrogates” of such.

Public communication campaigns: health education applying social cognitive theory

AIDS education provides historical perspective

Since the nature of public health is important to virtually all Americans, communicators within the health sciences are continually breaking new ground in terms of how to plan and execute effective public communication campaigns. Practitioners in health communication have applied various theoretical models and utilized any number and combination of media tools, from mass to interpersonal or traditional to non-traditional, in order to accomplish defined goals and objectives.

While AIDS remains a salient health issue today, and public education addressing it continues to be a priority for practitioners, the early AIDS awareness campaigns, designed according to a social cognitive framework, helped bring that issue to the forefront of the media’s agenda, while ultimately making progress toward educating at-risk populations and garnering more compliant behaviors as a result (Mulvihill, 1996).

Consistent with social cognitive theory in a public health setting, interpersonal communication attempting to raise AIDS awareness among key publics was found to be positively related to both actual and perceived knowledge (Engelberg, Flora, & Nass, 1995).
This study focused on the importance of proper media channel selection, rather than media message strategy, for successful public education. Sometimes that media channel can be a special event, especially one that received as much national attention and mass media exposure as the unveiling of the AIDS memorial quilt. Knaus, Pinkleton, & Austin (2000) found that the success in this event was not only measured in its ability to raise awareness of the AIDS epidemic while paying tribute to its victims, but the quilt unveiling got people talking, as this increase in public discourse resulted in a decrease in risky health behaviors.

A campaign attempting to prevent the spread of perinatal HIV transmission utilized principles of social cognitive theory to ultimately garner the increased use of condoms. The health communications used in this AIDS Prevention for Pediatric Life Enrichment (APPLE) campaign utilized street outreach or interaction with social workers, as well as small media or collateral materials, to promote the APPLE program and increase community targeted use of condoms. The results of quasi-experimental research tied to the campaign showed that condom use rose for both groups – those who interacted with health professionals and those who consumed the community media. However, significantly higher use was shown for the group who interacted interpersonally with the health care workers, even though nearly twice as high a percentage of respondents were exposed to the media materials (Santelli, Celentano, Rozsenich, Crump, Davis, Poacsek, Augustyn, Rolf, McAlister, & Burwell, 1995).

This AIDS public education campaign provides an opportunity for health care professionals and communication researchers to learn a few valuable theoretical and practical lessons. First, social cognitive theory was proven an ideal premise to guide future campaigns in public education on this issue. Second, nothing can discount the powerful influence, not just on knowledge and attitude, but also on behavior, of direct, interpersonal contact with influential
individuals or groups. Finally, in the absence of influential health care professionals, mentors, or even peer groups, it appears that interpersonal influences can be simulated, though choosing an appropriate surrogate requires further investigation.

Whatever positive results have come from tested theories in AIDS education campaigns, these results must be tempered by the realization that many variables impact knowledge, attitudes and behaviors toward HIV potential risk for infection, as well as any other issue under investigation in human social science (Moatti, Dab, Loundou, Quenel, Beltzer, Anes, & Pollak, 1992). One of the unique challenges of educating the public on risk of HIV infection is the stigma that has been associated with the disease. Thus, any public information campaign regarding AIDS should include consideration for the trade-off between attempts to garner behavioral change and the public’s perception, and even acceptance, of educational materials and messages (Moatti et al., 1992).

Kalichman and Belcher (1997) also found that a successful public education campaign that provides a means for targeted audiences to directly contact a health care advisor – in this instance through a telephone hotline – helped them access information that could apply to their own personal experiences. In doing so, the public education served both “preventive and destigmatizing functions” (p. 279).

AIDS campaigns also provide a valuable illustration of the difficulty in reaching certain targeted publics, for example, at-risk intravenous drug users in this instance. In AIDS public education initiatives, mass media might serve as an “information traffic cop,” telling potentially at-risk publics where to go to seek more concrete and detailed public health information (Jason, Solomon, Celentano, & Vlahov, 1993). Some investigations have looked at hard-to-reach publics for AIDS education (Pully, McAlister, Kay, & O’Reilly, 1996). They found that the use
of theory helped to develop communication tools that featured positive role models, noting that “peer networks prompted and reinforced the behavior change process” (Pully et al., p. 488). That “reinforcement” that this study documented as key to public education success is at the heart of the premise of social cognitive theory.

Myhre and Flora (2000) conclude that AIDS preventative public education efforts will benefit from the consideration of a number of findings that have been garnered from a number of research designs addressing the issue through the last few decades. The authors first call for increased reporting of campaign results and outcomes, in addition to more scientific, systemic evaluation of campaigns. In addition to tying communications into community-wide intervention strategies, the importance of “greater integration of theory” cannot be overstated (Myhre & Flora, 2000, p. 29).

From AIDS Education to Alcohol and Drug Prevention

Elwood and Ataabadi (1997) note that research evaluating the effectiveness of public health campaigns often overlooks the importance of “integrated interpersonal and mass-mediated communication channels” (p. 635). Interesting is the reference to “integration” of media, which can be a critical strategic concept (as IMC practice reflects) for directing communication channel selections to properly reach targeted audiences.

Healthcare professionals often turn to media as the means for advancing preventive messages addressing alcohol and drug abuse. According to Baillie (1996), “The impact of media output on alcohol also has implications for the evaluation of alcohol-related health education campaigns, which utilize newspapers and television as an information source for members of the public” (p. 235). This study also alludes to the importance of accessing the news agenda by
public education professionals, in order to more properly evaluate media effects that might equate to desired changes in knowledge, attitudes, and behaviors among targeted groups.

Media use alone has been determined as having a positive effect on staving off drug use, especially among adolescents who might be entering a time of increased opportunity for exposure (Kelly, Swaim & Wayman, 1996). In this instance, adolescents with a reported low to moderate use of drugs were positively impacted by recall of anti-drug campaign content, obtained through mass media. Mass media campaigns are also found to be effective in garnering drug prevention among those “high sensation seekers” – a target audience showing a higher proclivity for drug use and/or substance abuse (Stephenson, 2003, p. 233).

**Sex education and safe sex practices**

Public health education campaigns have also demonstrated a degree of effectiveness in improving attitudes, social norms, self-efficacy and behavioral intentions, regarding safer sex. People who were exposed to a public education campaign showed much higher measures on the aforementioned variables than those who were not (Yzer, Siero, & Buunk, 2000). Even in less industrialized nations, public education initiatives were found to positively impact contraceptive use among targeted publics (Kim & Marangwanda, 1997; Valente & Saba, 1998; Valente & Saba, 2001).

**Campaign success in health care screening and cancer-related education**

Health care professionals have long argued the importance of early diagnoses in the fight against cancer. In mass media, they have found an effective conveyor of this key message. In France, an attempt to increase the number of people seeking screenings for, and thus receiving early diagnoses of, malignant melanoma featured a concentration of resources into broadcasting an informative movie on the subject through regional television outlets. As a result, the number
of malignant melanoma cases diagnosed after the airing of this public information “increased significantly compared with the same period of the previous year” (Bonderandi, Grob, Cnudde, Enel, & Gouvernet, 1992, p. 105). In Germany, similar results were found from a pilot education campaign that impacted subsequent campaigns on raising cancer awareness in the country. The study found that those people seeking medical advice concerning their potential diagnosis of malignant melanoma had done so reportedly following exposure to public information caught on local media (K. Hoffmann, Drachma, Schatz, Segerling, Tiemann, A. Hoffmann, & Altmeyer, 1993).

Yet other campaigns have supported a strategic emphasis to include additional communication tools, besides mass media, for improving health education on the topic of cancer. One such study reviewed the effectiveness of four specific channels, including interpersonal discussions with doctors, friends or family, as well as organizations, in addition to exposure to media messages. The most influential factor causing women in this study to undergo mammography was the reported interpersonal influence of their social network (Johnson & Meischke, 1993).

Interestingly, as mass media and interpersonal communicative influences were examined in terms of perceived risk to self (of being diagnosed with cancer) versus perceived risk to others, the media’s third-person effect was found (Morton & Duck, 2001). Mass media have a tendency to impact people’s perceived risk for others, while interpersonal communication is most strongly associated with people’s perceived risk for themselves. Interpersonal communication, as noted in social cognition theory, can have a mediating impact on exposure to mass media. What is clear though is “the interdependence of mass and interpersonal communication as sources of social influence” (Morton & Duck, 2001, p. 602). By noting this
media interdependence, the authors are leading one to believe in the combined effectiveness of mass media and interpersonal communication in campaign practices. In analyzing people’s attitudes and responses to risk information, Morton & Duck (2003) found that media exposure stimulated interpersonal communication and increased perceptions of personal risk among women who reported some direct experience of breast cancer. This study ultimately called for campaigns to be examined in a broader context, taking into account the critically important use of alternative information sources.

**Frightening statistics justify investment in anti-smoking programs**

With frightening statistics connecting illnesses and deaths to smoking, health educators have invested a great deal in anti-smoking public education and prevention programs, and their efforts are paying off. Since the stakes of these campaigns are high – reducing risks for cancer and other life-threatening illnesses – properly applying proven communication theories to anti-smoking initiatives is likewise critically imperative.

One study even reported findings from a longitudinal examination that evaluated the effectiveness of three separately timed, but related mass media anti-smoking campaigns (Hafstad, Aaro, Engeland, Andersen, Langmark, & Straypedersen, 1997). While this research notes the importance of the message strategy – in this case provocative, emotional appeals – the end result of mass media exposure was that it got people talking. And within that serious interpersonal exchange lays the seed for behavioral change. Specifically, the arousing nature of the media messages helped “create affective reactions and (led) to interpersonal communication” that was particularly effective for those young adults who had yet to experiment with smoking, while even revealing positive results among adolescent girls (Hafstad et al., 1997, p. 227).
Although the importance of the message strategy in this instance cannot be denied, the more relevant implication for those practitioners and scholars seeking theoretical guidance for proper selection of strategic media channels is in the powerful combination, according to the social cognition premise, of mass media supplemented and reinforced by interpersonal communication. In three specific campaigns under review in a longitudinal study, each noted the strongest predictor of pro-social behavior was the discussion of the campaign by the target audience with significant others (Hafstad & Aaro, 1997; Hafstad, Aaro, & Langmark, 1996; and Hafstad, Straypedersen & Langmark, 1997).

Obviously, for personally significant issues such as smoking, people’s will to quit may be a long way from them actually being able to quit for good. In fact, one of the first behavioral objectives of anti-smoking public education campaigns is to get smokers initially to seek help. Television has been proven as an effective means for doing so by motivating more smokers seeking help to quit (Piece, Anderson, Romano, Meissner, & Odenkirchen, 1992). Likewise, interpersonal communication – whether through telephone conversation or peer counselors – has been proven effective in modifying behavior, or transforming the will into the way to stop smoking (Elder, Woodruff, Wildey, Demoor, Sallis, Eckhardt, Edwards, Erickson, Goldbeck, Hovell, Johnston, Levitz, Molgaard, Young, & Vito, 1993). But when analyzed in sequence, one study combined the two methods of mass and interpersonal communication to provide even more significant results. In this case, men were likely to attempt to quit smoking when exposed to mass media messages, but both men and women showed the same tendency when exposed to both mass media and interpersonal communication (T. Korhonen, Uutela, H.J. Korhonen, & Puska, 1998).
Other health education campaigns built on theory

The use of mass media and interpersonal communication in combination for successfully achieving public health education objectives has been overwhelmingly successful. However, one study comparing the respective influences of these essential channels found mass media to be more influential than interpersonal sources, which in this instance included health care providers sharing information on the importance of participating in a national vaccination program in cities in the Philippines (McDivitt, Zimicki, & Hornik, 1997).

When a national asthma campaign was formed in Australia in 1990, the strategy focused on mass media as the most appropriate channel for disseminating key messages to targeted audiences, while unveiling new approaches to preventive asthma therapy and calling for those with symptoms to consult health care professionals for more information (Comino, Bauman, Mitchell, Ruffin, Antic, Zimmerman, & Gutch, 1997). This study showed that the success of the campaign depended on the “relatively non-selective medium of television to raise awareness and to start to change attitudes toward asthma” (Comino et al., 1997, p. 251). Those with asthma symptoms showed a greater tendency for consulting with physicians to find out for sure how to obtain proper treatment, just as the theoretical approach to the campaign had hoped.

Heart disease is another important issue on the agenda of health care professionals trying to reach targeted populations and convince them to alter lifestyles and adopt preferred behaviors. One campaign resulting in limited success was argued to contain little focus or emphasis on theory. While mass media channels helped raise awareness of cardiovascular diseases among Danish citizens, they weren’t enough to garner the intended behavioral compliance that a more integrated, diverse communication strategy – utilizing additional critical media channels – might have attained (Osler & Jespersen, 1993).
Strategic communication is also involved in garnering more healthy citizens by promoting the benefits of physical education. There is a need for communication campaign managers to be realistic in their expectations of the limits of what can be accomplished via mass media advocacy of more active lifestyles. Research has attempted to engage practitioners educated in sport sciences to “have a key role in advising and encouraging sedentary people to be more active,” revealing yet another example of public communication that utilizes the benefits of both mass media messages and interpersonal communication to convey the importance of specific lifestyle changes (Owen, 1996, p. 213).

Finally, no matter the specific health issue, some educators argue for the need to create a greater “health orientation” among the public, which would translate into greater awareness, understanding, and likelihood to be involved in preventive, responsible behavior, regardless of the health crisis someone might face. Indeed, using a longitudinal sample of health communication campaigns, researchers found that health campaign exposure correlated with health information seeking and subsequent interpersonal communication, which in turn correlated with improved health behavior (Rimal, Flora, & Schooler, 1999). Again, while this inquiry was not issue specific, it was helpful in determining that the broader, more abstract concept of improving “health orientation” among people was achieved when people were exposed to an effective health education campaign and subsequently sought more information, often through interpersonal sources, which resulted – as all health communication campaigns intend – in an improved health conscience and subsequent behavior.

Social Cognition Theory as a framework for public information campaigns

Researchers have argued that one shortcoming of public communication campaigns is that they often fail to follow proven theoretical models. Michael Slater (1999) has noted that
appropriate streams of research for application in public communications include perspectives on persuasion and behavior change theories, and he even recommends use of the stages-of-change model (Prochaska & DiClemente, 1983, 1984) because of its ability to integrate a number of theoretical approaches, including social cognitive theory.

Yet in itself, social cognitive theory provides an ideal, albeit broad, outline for the strategic choice of media channels in order to obtain progressive changes in knowledge, attitude and behaviors of targeted audiences.

Albert Bandura, renowned social psychologist from Stanford University, advanced the idea of social learning theory in the 1960s, providing a framework for analyzing cognitions – thoughts, beliefs, or mental functions – and their impact on certain behaviors. Social learning theory had its historical roots in mass media effects study, as Bandura and others investigated how television content, for example, might facilitate modeled behavior, especially on the part of young viewers (Bandura, 1977, 2001; Bryant & Zillmann, 2002; Bryant & Thompson, 2002). A direct offshoot of social learning theory, social cognitive theory provided the beginning of more specific examination of behavior according to how cognitive, behavioral, and environmental factors interact (Bandura, 1977, 1986).

Social learning theory, which preceded the social cognitive perspective, provided guidance for public communication campaigns years ago in the aforementioned areas of public education, such as health care strategies against smoking and substance abuse (McAlister, Ramirez, Galavotti, & Gallion, 1997; Akers & Lee, 1996). As McAlister and others noted, historically it has been easier to devote all of the attention in public communication campaigns to the use of mass media, since interpersonal communication on a large scale is more difficult to organize and execute.
However, as advances in social cognitive theory have been established, communicators know that the persuasive, reinforcing power of interpersonal communication cannot be overlooked. According to McAlister et al. (1997), “New behaviors may be acquired from mediated communication (e.g. television), but they will not be performed unless the environment is one in which those behaviors will be reinforced. A powerful source of reinforcement is found in interpersonal communication” (p. 299). In yet another early application of social learning theory, efforts to recruit volunteers as health educators were successful as a result of the persuasive nature of peers, family members and others, who “provided positive reinforcement (for them) to join” (Nicole, Sondag, & Drolet, 1994, p. 126).

While much of the research reviewed thus far in this study has examined limited effects from mass media and interpersonal communication, the most beneficial examination of public education campaigns from a social cognitive theoretical framework requires the examination of the media, personal characteristics, and environmental influences in combination. As noted by Bryant and Thompson (2002), “No single pattern of influence exists to explain every instance of persuasion or modeling or adoption of a new behavior. Sometimes people are influenced by what they see on television, sometimes they are influenced by interpersonal communication, and sometimes by a little of both” (p. 80). Certainly then, social cognitive theory is especially useful in advancing public communication campaigns, even assisting in their design and execution, in a number of disciplines, industries, and select topics, including applications in health communication, political and issue campaigns, as well as other plans to advance public policy (Bandura, 1998, 2004; Bryant & Thompson, 2002; Bryant & Zillmann, 2002; Rice & Atkin, 2001).
So the challenge for public information officers and public relations practitioners is to get key messages out quickly and effectively through those mass media channels to introduce targeted publics to new ideas. Then, practitioners and scholars must determine the most effective and influential interpersonal channels to follow, in an attempt to reinforce the key message(s) and advance the desired objectives of the public communication campaign, from a social cognitive perspective. It is important then to weigh equally, at least at the initial communication planning stages, the influence of mass and interpersonal communication, as well as other channel selections. As Bandura (2002) noted, “People seek information that may be potentially useful to them from different sources. Neither informativeness, credibility, nor persuasiveness is uniquely tied to interpersonal sources or to media sources. How extensively different sources are used depends, in large part, on their accessibility and the likelihood that they will provide the kinds of information sought” (p. 140).

Professionals in public communication also should study more closely the patterns targeted publics follow when seeking public information on new ideas and issues, especially. Observing newspaper readership and viewing habits of televised news or public service announcements, for example, helps make progress toward this end. Communication research has even investigated specific journalistic practices from a social learning/cognitive perspective, like the persuasive, personal nature of exemplars, or pull quotes, which are a form of interpersonal communication disseminated typically via print mass media (Brosius, 1999).

Investigating other media channels, such as the public’s utilization of Web sites, readership of newsletters and other direct mail pieces, attention to public notices, as well as attendance to open meetings and special events, are all-important inquiries by scholars and practitioners. In doing so, they can determine not just the most effective combination of
integrated communications to reach targeted audiences, but the likelihood of those publics to succumb to the influential capacity of the public information that reaches them through those channels.

According to social cognitive theory, community-wide social changes require communication systems to work along two distinct pathways (Bandura, 2002). “In the direct pathway, communications media promote changes by informing, enabling, motivating, and guiding participants. In the socially mediated pathway, media influences are used to link participants to social networks and community settings” (Bandura, 2002, p. 141). These social networks are activated most commonly by effective interpersonal communication, or perhaps surrogates that might serve the same function as one-on-one communicative interactions. Interpersonal communication provides the “continued personalized guidance, as well as natural incentives and social supports, for desired (behavioral) changes” (Bandura, 2002, p. 141). Thus, “When media influences lead viewers to discuss and negotiate matters of import with others in their lives, the media set in motion transactional experiences that further shape the course of change” (Bandura, 2002, p. 141).

Furthermore, without interpersonal communication and the influences it asserts, the impact of one-way mass communication is likewise limited. However, thanks to advances in new media technology, communicators have additional means for expanding the impression of both interpersonal communication and mass media, since Internet sources have characteristics of both. In any event, as social cognitive theory concludes, “there is no single pattern of social influence. The media can implant ideas either directly or though adopters” (Bandura, 2002, p. 142).
Social networks are then critical considerations for the everyday flow of public education information. For example, the state of Georgia invested its expertise and resources into a public information campaign to create healthier habits among farmers to decrease their risk of getting skin cancer. The statewide public education campaign applied social cognitive theory to its action plan, and emphasized a number of strategic initiatives that included interpersonal communication. These efforts attempted to create a more supportive environment that promoted and reinforced healthy sunscreen habits among farmers, which proved successful in garnering their compliance with this pro-social, health conscious behavior (Parrott, Steiner, & Goldenhar, 1996).

Many times, public relations practitioners note that in order to reach targeted individuals, they must first reach the social groups to which they belong. This persuasive process of social cognitive theory leads to the adoption of ideas as facilitated by the influence of peers, networks, or groups, on individual behavior. “People share information, give meaning by mutual feedback to the information they exchange, gain understanding of each other’s views, and influence each other” (Bandura, 2001, p. 291).

Personal self-efficacy, or people’s ability to successfully function in various aspects of their own lives, is a crucial self-reflective process that serves as a major component of social cognitive theory (Bandura, 1977, 1986, 1999, 2001). Self-efficacy is relevant to this study when viewed in terms of people’s media self-efficacy – their mastery or effective use of specific communication channels. (Later, efficacy will refer to a conceptual component of perceived behavioral control within the theory of planned behavior.) Media self-efficacy, however, is a relatively new concept, found to be a key potential mediator in Bandura’s social cognitive theory. Media self-efficacy was found to be positively associated with the amount of media
exposure, the perception of media providing intellectual stimulation, and the idea that media are credible sources for information (Hofstetter, 2001). Persons who feel skilled in using various types of media may serve as a valuable target audience for public communication campaigns in the future, due to their potential to serve as more informed publics, earlier adopters of ideas, and even likely influences of behavioral change among others.

**Social Cognitive Theory applied to successful formation of policy**

There are several areas outside of health communication that have applied social cognitive theory, or at least its media and interpersonal components, to successful public communication campaigns. While there has been lengthy discussion of successful health communication campaign practices thus far, other public policy decisions with social implications are aided by effective communication plans that implement a framework based on social cognitive theory.

In the world of environmental stewardship, various groups have applied strategic mass communication and related strategies to facilitate compliant recycling behavior among targeted publics. Whether applied to mass media news and editorial content (Martinez & Scicchitano, 1998) or persuasive advertising (Weaver-Lariscy & Tinkham, 1994), communication theory has helped advance pro-social, recycling behaviors.

Public policy enacted to address seat belt use and enforcement has turned to public communication to disseminate details of stricter legislation. As a result, policy makers have identified two components necessary for a successful campaign: public information and education, as well as enforcement (Kaye, Sapolsky, & Montgomery, 1995). Similarly, public communication campaigns hoping to increase use of bicycle and motorbike helmets have evaluated criteria needed to facilitate compliance. In doing so, enforcement, which can be
viewed as a form of interpersonal contact, has been found to be very effective in changing attitudes and behaviors regarding helmet use (Dannenberg, Gielen, & Beilenson, 1993; Ballart & Riba, 1995). In one instance, intervention for helmet safety use came in the form of a booklet (which would be categorized by public relations professionals as a direct mail piece or collateral material). The booklets, when evaluated as a strategic communications tool, “may present an inexpensive solution to the problem of persuading adolescents to use safety helmets” (Quine, Rutter, & Arnold, 2001, p. 327).

Political Communication and a wealth of campaign insight

There are a wealth of public information and public education insights, both theoretical and practical, which can be gleaned from a review of political campaign communication. Certainly, the stakes are high when effective communication might make the difference between candidates being elected to office, or public policy being enacted. Again, the strategic decisions made by campaign advisors often revolve around selection of the proper media channels to increase issue knowledge and salience, leading ultimately to voter participation or citizen involvement.

Research has shown that citizens get information on issues, as well as candidates’ stance on those issues, from a number of sources, including direct messages from candidate camps (advertising), news coverage, and discourse with fellow citizens. Obviously, those three sources fall nicely into media categories referenced in social cognitive theory and Integrated Marketing Communications (IMC) literature. As a result, and per the social cognitive perspective, “the combination of results presents evidence that candidate to citizen (mass media) and citizen to citizen (interpersonal) communication play unique roles in determining levels of issue knowledge and salience” (Holbert, Benoit, Hansen, & Wen, 2002, p. 296).
Studies focused solely on the media effects of mass communication on citizen involvement in politics provide a starting point for analyzing communication campaigns tactically. In at least one instance, newspaper readership was valued ahead of television viewership as a means for facilitating citizen interest, attachment, and involvement in community politics and issues (Rothenbuhler, Mullen, Delaurell, & Ryu, 1996). This is not surprising, since “community newspapers” have a local news advantage over their more regionally affiliated broadcast news counterparts.

As for facilitating better understanding of the news process and news content, regardless of print or broadcast orientation, Robinson and Levy (1986) note, “Conversation about the news is a major and often overlooked correlate of comprehension, and that interpersonal channels may play at least as important a role in the public’s awareness and understanding of the news as exposure to the news media” (p. 160). “Public understanding of the news does increase as people talk about it” (p. 172). The authors recommended that community journalists provide news coverage that stimulates political discussion, which theoretically would activate this powerful second stage of interpersonal information flow (Robinson & Levy, 1986).

However, studied as complementary tools for advancing the political process, interpersonal and mass communication networks were found to be “intermediation environments (that) should be studied simultaneously” (Schmitt-Beck, 1994, p. 381). Interpersonal communication, at least in politics, has a proven mediating effect on mass media influences (Mendelsohn, 1996), as media coverage tends to get audiences focused on personal characteristics of candidates, while interpersonal discussions help return their evaluation of a candidate back to ideology. Interpersonal communication has also been found to be an
especially important source of public information for highly involved voters seeking verification of candidate stances on the issues (Pinkleton, 1999).

An initiative in northern California prior to the general election of 1994 attempted to get typically non-voting groups to become engaged in the political process. After disseminating educational materials on voting behavior to uninvolved voters, results found that these collaterals were effective in improving the attitudes of registered voters, who were more confident, as a result, of where to go for additional issue-based public information to help them make decisions, even though the collateral materials themselves were not directly responsible for increasing voter turnout (Steel, Pierce, & Lovrich, 1998).

However, the integration of mass and interpersonal communication has on occasion helped predict political participation in two ways: that of more “institutionalized” acts of participation, as well as less conventional acts of political involvement, through participation in public forums, for example (McLeod, Scheufele, & Moy, 1999). Newspaper readership tended to have a more direct impact on institutionalized participation in this example, while interpersonal communication tended to facilitate more citizen involvement in community forums.

Thus, defining the level of desired participation in the political or policy formation process can in turn determine the appropriate communication tools for use in a campaign. An interesting inter-relationship found in the results of this study showed that “Television hard news (coverage) was positively related to interpersonal discussion of local issues…but there was no path from newspaper use to interpersonal discussion” (McLeod, Scheufele, & Moy, 1999, p. 323). Furthermore, none of the hypotheses under examination supported the “direct path from use of television to participation” (p. 325). Citizens then have two means for obtaining more in-
depth information from the brief sound bites of news coverage obtained from television – either engage in further, clarifying political discussions with others, or consult a newspaper for further issue analysis (McLeod, Scheufele, & Moy, 1999).

The relationship between hard news coverage, subsequent discussion of that news coverage, and resulting political participation as a result of this mass media and interpersonal exposure, is very complex (Scheufele, 2002). Yet, “There is strong evidence to support the notion that interpersonal discussion of politics is a key antecedent of political participation” (p. 46). While there is a main effect for hard news exposure on political participation in this instance, that main effect is significantly different for those who talk about politics with others often, versus those who do not (Scheufele, 2002).

In the words of Schmitt-Beck (1994), interpersonal networks and mass communication channels can be viewed as “intermediation environments that provide individual voters with links to the distant world of politics” (p. 381). Indeed, voters can sometimes feel far removed from the world of politics, and as a result disengaged in the political process, whether for candidate selection or policy formation. However, interpersonal communication can reverse that trend in political campaigns, while often serving the influential function of connecting citizens in political discourse and decisions (Schmitt-Beck, 1994).

Theory of Reasoned Action and Theory of Planned Behavior

The theory of reasoned action was first introduced by Fishbein and Ajzen (1975) in an attempt to provide some explanation and convergence of previous theories on attitudinal measures and links to intended behavior. “Generally speaking, the theory is based on the assumption that human beings are usually quite rational and make systematic use of information available to them” (Ajzen & Fishbein, 1980, p. 5).
In the context of this study, it is important to consider that the “information available to them” as noted by the authors could equate to public information as disseminated by public relations practitioners working in communication campaigns within the industry. So, as the flow of information between client and public is opened, researchers and practitioners should take guidance from Ajzen and Fishbein (1980) and bear in mind the “implications of (people’s) actions before they decide to engage or not engage in a given behavior” (p. 5).

Central to the theory of reasoned action, too, is the assumption that most behaviors, including those labeled as pro-social often advocated during a public communication campaign, are “under volitional control,” so “a person’s intention to perform (or to not perform) a behavior (is) the immediate determinant of the action” (Ajzen & Fishbein, 1980, p. 5). In general, say the authors, people’s actions more often than not reflect their intentions.

The specific predictors of behavior, or at least behavioral intent, according to the theory of reasoned action involve two primary factors – one’s attitude toward the behavior and the subjective norms that might be influential (Ajzen & Fishbein, 1980). The attitude toward the behavior is simply whether or not one thinks favorably or unfavorably about the intended act, or whether the person sees the behavior as good or bad. The subjective norm is a descriptor for the social pressures felt by a person to perform a certain behavior. In general, individuals will intend to perform a behavior when they evaluate it positively and when they believe that important “others” think they should perform it.

As the authors note, it is common sense to assume that people’s (1) attitudes toward behaviors and (2) subjective norms applicable to such behaviors are both influential on decision-making. However, it is when these predetermining factors are in conflict that the theory gathers value as a predictive model. Ajzen and Fishbein (1980) explained the theory of reasoned action
further to address the attitudinal and normative factors that determine behavioral intentions. These antecedents better explain and explore why people hold certain attitudes toward behaviors and subjective norms (Ajzen, 1988).

Ajzen and Fishbein (1980) explain further the theory of reasoned action: “attitudes are a function of beliefs. (So), the beliefs that underlie a person’s attitude toward the behavior are termed behavioral beliefs. Subjective norms are also a function of beliefs, but beliefs of a different kind, namely (people’s) beliefs that specific individuals or groups think (they) should or should not perform the behavior. These beliefs…are termed normative beliefs” (p. 7).

In the case of this study, positive or negative attitudes toward a behavior might be more specifically observed on a global or personal level, depending on the issue salience or the importance of the behavior to people’s lives. Thus, further examination of the theory could assess if there are differing degrees of global and personal (behavioral) beliefs, and how these more specific influences might impact attitudes toward behaviors.

The theory of reasoned action is very closely associated with social cognitive theory, since considerations are made in both for cognitive (in the latter) or attitudinal (in the former) factors, as well as interpersonal (in the latter) or normative (in the former) influences. The behavioral beliefs and subsequent attitudes people have toward particular behaviors may also be viewed as cognitions that form schema that can impact behavioral intent. Likewise, the reinforcing nature of interpersonal communication identified in the previous review of social cognitive literature has similarities to normative beliefs and their subsequent subjective norms outlined in the theory of reasoned action. Such interpersonal, subjective norms manifested in the social pressures from referent others can exert influence on one’s behavioral intention and, ultimately, behavior.
As the theory of reasoned action evolved through the years, Ajzen (1985) expanded upon its original premise in an attempt to explain behaviors that were not purely volitional. In doing so, his theory of planned behavior (Ajzen, 1985) began to take form, and it took into account additional, outside factors influencing behavior – factors individuals are not able to control. And there are different degrees of control people have over their behaviors – control Ajzen (1985) described best as fluctuating along a continuum, depending on the behavior in question.

The means to which intent leads to actual behavior depends “not only on one’s desire or intention, but also on such partly non-motivational factors as availability of requisite opportunities and resources” (Ajzen, 1988, p. 127).

Some of the control factors examined by Ajzen (1988) have included internal factors, such as information, skills and abilities, as well as emotions and compulsions. External factors include opportunities and dependence on others, or more specifically, the actions of other people. As a result, “many of these factors can disrupt the intention-behavior relation,” as first outlined in the theory of reasoned action. “Collectively, these factors represent the actual control or lack of control over the behavior; a behavioral intention can best be interpreted as an intention to try performing a certain behavior” (Ajzen, 1988, p. 132).

As is the case in the theory of reasoned action, the theory of planned behavior likewise accounts for an individual’s intention to perform a certain behavior, according to attitudes toward the behavior and subjective norms. However, the theory of planned behavior adds a third pre-determinant of behavioral intention. Ajzen (1988) called this factor, as explained above, perceived behavioral control, which refers to “the perceived ease or difficulty of performing the behavior… assumed to reflect past experience as well as anticipated impediments and obstacles. As a general rule, the more favorable the attitude and subjective norm with respect to the
behavior, and the greater the perceived behavioral control, the stronger should be the individual’s intention to perform the behavior under consideration” (Ajzen, 1988, p. 132).

In the case of a pro-social behavior under examination, perhaps one even featured in a public communication campaign, identifying the perceived behavioral control of targeted audiences is extremely helpful, especially when either anticipating or evaluating the true success of such persuasive efforts. Even the greatest PR campaigns can be limited in their effectiveness, especially when attempting to achieve behavioral goals, because targeted audiences might be facing real, challenging constraints to carrying out their intentions. In the case of disposing of household grease, as an example, people with good intentions might still be unable to conform to preferred pro-social behaviors because of their lacking knowledge in how to do so, because of their lacking equipment or containers in which to dispose of grease properly, or because of the act’s inconvenience or other related issues. Such circumstances, then, would create a realistic, inhibiting factor theoretically categorized in the theory of planned behavior as perceived (lack of) behavioral control.

According to Ajzen (1988), the theory of planned behavior features two additional considerations for the third predictor – the influence of perceived behavioral control. For one, it directly impacts the motivation behind intentions, and two, it can be linked directly not just to behavioral intention, but also to actual behavior. Ajzen (1988) adds, “In other words, perceived behavioral control can influence behavior indirectly, via intentions, and it can also be used to predict behavior directly because it may be considered a partial substitute for a measure of actual control” (p. 134).

As is the case with the theory of reasoned action, the theory of planned behavior addresses the importance of antecedents to attitudes and subjective norms, as well as antecedents
for the third predictor of behavioral intention and actual behavior – perceived behavioral control. These control beliefs “provide the basis for perceptions of behavioral control,” according to Ajzen (1988, p. 134).

It’s essential for practitioners, especially, to execute campaigns that consider the theory of planned behavior’s third determinant of behavioral intention – one’s perceived behavioral control – and its antecedents. These control beliefs primarily consist of the presence or absence of required resources and opportunities (Ajzen, 1988). Some examples of control beliefs, according to Ajzen, include past experiences, second-hand information, observations of others (or modeling as it would be deemed within the social cognition framework), as well as additional factors.

Ajzen (1988) further explains control beliefs and their impact on perceived behavioral control by noting that the more resources and opportunities individuals believe they possess, and the fewer obstacles or impediments they expect, the greater their perceived control over their behaviors.

As the current study utilizes the broad premise of social cognitive theory as a means for examining the effectiveness of public communication campaigns, the theory of planned behavior also explains specific action tendencies performed (Ajzen, 1988).

With the theory of planned behavior as a model, an applied study can be designed to obtain valuable insight on the behavioral tendencies of people, especially those who are mass media news consumers and recipients of public information, by considering the influence of their specific attitudes, subjective norms, and perceived behavioral control. People intend to perform a behavior if they view it as favorable, if they think that important others would approve, and if they believe necessary resources and opportunities will be available (Ajzen, 1988).
So, in addition to observing the possible benefits of using mass communication and interpersonal communication in combination during a public communication campaign, as guided by the social cognitive framework, this study also plans to further examine the ability for the theory of planned behavior to assist scholars and practitioners in better predicting and accounting for the determinants of behavioral intention and, ideally, actual behavior – independent of potential media influences.

Industry-specific examples of public communication initiatives

While not always following sound theoretical frameworks to determine communication practices, public education and public information professionals within the water, sewer and/or environmental sectors have attempted to promote their causes, utilizing the expertise and means available to them.

One of the means for policy makers’ more enlightened decisions about water issues and the use of natural resources, for example, is to gather public information from as many varied sources as possible. In one instance, thirteen sources of information were reviewed – in terms of their frequency of use, relevancy, and reliability – to determine which were most likely to be used by community leaders to make water policy decisions. The decision makers tended to solicit information directly from experts, while the media was “broadly rated as less relevant and reliable than other sources of information” (Berry, Markee, Stewart, & Giewat, 1996, p. 1089).

This study and others like it begin to inventory those communication tools that are effective in educating and persuading target publics, but few have embraced proven communication theory to determine the ideal means for public information exchange; and none, either in an applied or academic setting, have been found to employ social cognitive theory for a public utility’s communication campaigns.
In South Africa, the Department of Water Affairs and Forestry has been committed to water quality issues for years, identifying them – much like in the U.S. – as critical to economic development and quality of life in their respective communities. The public awareness campaign of the Jukskei River Water Quality Steering Committee was designed to address the value systems of citizens, in an attempt to bring them more closely aligned to the desired behavioral outcomes of a public fully cognizant of the importance of water quality to its community and nation. Unfortunately, acting with no legal authority or consistent funding, one would expect such an organization to have difficulty carrying out public information campaign objectives, although they were commendable nonetheless (Vanveelen & Vanzyl, 1995).

One of the model public information campaigns – addressing critical drinking water and environmental issues no less – comes from educators who have organized efforts to protect South Downs, which includes the East Hampshire and Sussex Downs natural resources in the community of Brighton, England. Because of low levels of groundwater during drought conditions in South Downs, residents in Brighton experience trepidation over having enough raw water to supply drinking water for the community. Yet, even in such dire circumstances of limited water resources, policy makers have not deemed watering restrictions necessary, because of conservation practices and compliant behavior on the part of local citizens. Educators have attributed this in part to the use of focused public information campaigns, together with media coverage of the specific issue(s) (Miles, 1993). Additional studies have evaluated the effectiveness of public information campaigns to promote voluntary household water conservation, even reviewing innovative ideas that can provide creative focus on the efforts of water utilities and local governments all over the country (Postel, 1993; Syme, 2000).
Another issue facing public utilities is environmental stewardship. While not an official federal holiday, Earth Day has gained national attention, with schools and communities recognizing its significance annually. Media also help advance the cause of environmental stewardship by offering strong news coverage of special events held in communities throughout the country to recognize this occasion and raise awareness of its importance. However, there is concern among environmentalists that traditionally poor stewards from industrial corporations use Earth Day as a token display of their commitment to community, by sponsoring and participating in initiatives that are shallow, pseudo-events and public relations ploys (Fried, 1998). Yet, it is hard to argue the significance and impact of this centerpiece to a public communication campaign that has succeeded in attaining international recognition of the importance of environmental issues, while securing its own brand identity within non-profit circles. In short, Earth Day is a marvelous PR case study, and an example of a special event that in itself has functioned as a successful public education campaign.

Environmental issues certainly have a tendency to attract opposing publics and to facilitate conflict over potentially controversial issues. Thus, public communication campaigns centered on such issues must be carefully integrated when selecting effective communication channels, or tools, to carry key messages from organizations to targeted audiences. In Sweden, an environmentally focused campaign failed to reflect an agenda-setting role of regional newspaper coverage of related issues, instead finding that interpersonal communication, among other factors, have a more substantial impact on the public’s perceptions of local environmental risks than information obtained through the press (Gooch, 1996).

Another public education campaign, designed by the Dutch Ministry of the Environment, also found it difficult to change cognitions and behaviors concerning environmental issues solely
by using mass media. In addition, knowledge and awareness of the problem may have been less instrumental in promoting behavioral change than was assumed before the campaign (Staats, Wit, & Midden, 1996).

No matter the circumstances surrounding the scope of a public communication campaign, practitioners and scholars – as managers of information flow and researchers of media effects, respectively – should always try to utilize sound theoretical premises before implementing their action plans, especially when they are working in a government setting where public communication is often publicly funded.

Keeping the public informed of the public’s business: concerns for public information

As Weiss and Tschirhart (1994) noted, considerable controversy surrounds public information campaigns, which are defined as government-directed and sponsored efforts to communicate to large numbers of citizens in order to achieve a policy result. Opponents of these framed messages distributed to targeted citizens through select channels have called them government propaganda (Weiss & Tschirhart, 1994). But after studying the details of more than 100 public education campaigns, these authors concluded that the advantages of public information and public education coordinated efforts far outweigh the disadvantages, thus justifying their strategic use as instruments to convey policy to the public, when used carefully and within appropriate contexts.

Often, public relations practitioners have to fight the stigma of “spin doctors” who work solely in the area of media relations, when in fact as communication scientists and managers of message strategies and information flow for organizations, they are so much more than that and have many more tools at their disposal than just the news media. Whether taking objection to the label of “spin doctor” or not, practitioners are not likely to be found apologizing for being
“advocates” of policy positions that require the framing of issues through appropriate media channels.

Media advocacy has been labeled as “the strategic use of mass media and community organizing for advancing a social or public policy initiative” (Jernigan & Wright, 1996, p. 306). Media advocacy was found effective in altering media coverage and thus shifting public debate of health policies, following the public communication campaigns of the U.S. Center for Substance Abuse Prevention, targeting alcohol and tobacco users in various communities, including African-American and Latino populations. Jernigan and Wright (1996) concluded, “Media advocacy is a potent tool for public health workers, making an important contribution to campaigns to promote healthier public policies” (p. 306).

Holder and Treno (1997) also investigated the effectiveness of media advocacy in public information campaigns of the Community Trials Project, which attempted to address the negative social effects of alcohol abuse. During these campaigns, public information professionals were trained in media relations practices and were able to garner more news coverage on alcohol related issues as a result, which included key messages of support for individuals and prevention of DUI incidents. This study found that media advocacy was more effective than paid advertisements for raising public awareness of the importance of the issues, perhaps strengthening the assumption by PR practitioners that the third person credibility of news sources is invaluable to the message strategies of their public communication campaigns.

Exploring the potential of surrogate means for interpersonal communication

If PR is the profession of advocates, then practitioners are certain to use one of advocacy’s most powerful weapons – interpersonal communication – characterized in the social
cognitive perspective as the primary means for reinforcing desired outcomes of public communication campaigns.

Interpersonal communication, as defined by Devito (2004), is the “communication between two persons or among a small group of persons and distinguished from public or mass communication; communication of a personal nature and distinguished from impersonal communication; communication between or among connected persons or those involved in a close relationship” (p. 362).

Interpersonal communication, especially within the parameters of a political communication campaign, can serve as an alternative or supplement to mass communication (D.M. McLeod, Kosicki, & J.M. McLeod, 2002). Chaffee (1982) proposed that mass media and interpersonal communication may have a convergent or complementary role, especially when used within political communications. Popkin (1990) noted that when people were contacted directly during door-to-door canvassing by political candidates or their supporters, they more likely paid attention to news coverage on the candidates and more likely turned out to vote.

There is substantial evidence that patterns of exposure and attention to public affairs content in mass media stimulate interpersonal discourse. Although inefficient in conveying information about issues, the media do seem to stimulate interpersonal interaction and interest in a campaign (D.M. McLeod, Kosicki, & J.M. McLeod, 2002).

With this evidence of the complementary role of mass media and interpersonal communication within the context of political communications comes a logical assumption that the same effects might extend to other types of public communication campaigns. If the denotation of interpersonal communication could be extended to connote communications such as direct mail or other methods for such “one-on-one” interactions, though mediated, these
potential “surrogates” could produce similar media effects and campaign successes as those more traditional interpersonal means.

In one example from a communication campaign in the world of politics, political knowledge was best enhanced through social interaction with personal intermediaries, or interpersonal channels (Myers, 1994). A review of twelve different forms of mass and interpersonal communication channels to fill an assortment of communication needs found some interesting results. Interpersonal communication, in this instance via telephone and in-person conversations, was rated most useful at providing information for involved voters (Perse & Courtright, 1993).

Another study that targeted the elderly to assess their desired sources for public information on five salient topics found a revealing ordering of preferences according to age rather than gender (Goodman, 1992). An interesting categorization in this research labeled media sources as television, radio, newspapers, magazines, and perhaps surprisingly, brochures/leaflets – which theoretically could be considered interpersonal “surrogates” because of their direct distribution. In addition, this research tested three interpersonal channels for obtaining information used by elderly populations – friends/relatives, professionals, and organizations. In order of preference, television and newspapers were the preferred channels for information, followed by friends/relatives, brochures/leaflets, and organizations (Goodman, 1992). Thus, a social cognitive theoretical approach appears to have been represented here, with mass and interpersonal communication ranking one-two as preferred sources of information among the elderly.

In political communication, strategic channels for disseminating campaign information are often divided into “traditional” versus “non-traditional” source categories. One study
examines the direct impact of these two groups on political issues, such as people’s campaign interest, their campaign information processing strategies, the candidate’s use of and participation in these media, the knowledge gathered via each, and the public assessment of a candidate’s image from traditional and non-traditional media sources. Results were non-traditional media had the greatest impact on creating campaign interest, but on substantive issues, such as one’s knowledge of a candidate’s position on the issues, traditional media continued to have the strongest influence in campaigns (McLeod, Guo, Daily, Steele, Huang, Horowitz, & Chen, 1996).

Though categorized as “controlled” media because of its ability to control messages therein, direct mail – more specifically, directly distributed newsletters – have interpersonal characteristics and are distinguishable from mass communication accordingly. In one case a newsletter provided a very critical and specific form of public information to supplement what was found in an area’s printed newspaper. In Amish communities, “The Budget” is a specialized newspaper providing valuable information to settlements all across North America. Within this publication is a regular newsletter written by “scribes,” who are charged with reporting news from specific church districts for all readers to enjoy. In a study of this unique, strategic form of communication, the newsletter provides community news that is “central to maintaining the importance of the interpersonal basis of Amish community life” (Galindo, 1994, p. 77). Thus, in this instance, a targeted newsletter serves very much like a facilitator, if not surrogate, for interpersonal communication.

An inquiry of members of environmental organizations found that volunteers who consume information through both interpersonal and mass media channels were more in agreement with the leaders of their respective organization than were those volunteers who were
exposed to just mass media channels. In addition, organizational mass media – public information such as that featured in a mass mailed newsletter – were stronger predictors of goal consensus than interactions with fellow members of the organization (Collinsjarvis, 1997).

In one instance of a major health care campaign to disseminate preventive messages on reducing HIV risks, newsletters containing stories about role models were distributed to targeted audiences, as this direct, more interpersonal channel of media formed the backbone of this communications plan. In addition, and perhaps shedding light on the reason for this channel selection, the campaign followed “theoretical cognitive determinants of behavior change” for targeting harder to reach at-risk HIV populations that were difficult to influence with other messages (McAlister, Johnson, Guenther-Grey, Fishbein, Higgins, & O’Reilly, 2000, p. 143). Certainly in this case, a social cognitive theoretical perspective scripted a subsequent strategic plan that highlighted the role newsletters have for effectively initiating and positively reinforcing, interpersonally, the intended behavior change.

In addition to direct mail, newsletters, and similar collateral materials potentially serving as surrogates for interpersonal communication, so too can new media technology. Shah, McLeod, and Yoon (2001) provided a sound study that explores and validates the use of mass media for informational purposes to ultimately produce more civic-minded citizens. Furthermore, in this case, young adult targeted audiences’ use of the Internet for information exchange more strongly influenced their trust in people and their civic participation than did using traditional print and broadcast news media for those purposes (Shah, McLeod, & Yoon, 2001).

Additional support for the strategic use of the Internet for persuasive, interpersonal communication comes in a study addressing the role of traditional media versus non-traditional
media during the 1996 Presidential campaign. Non-traditional media, such as Web site sources, “had a greater impact on the images of the two candidates than traditional media” (Johnson, Braima, & Sothirajah, 1999, p. 99). For PR practitioners and related professionals, new technologies – particularly Web sites and Internet sources – have the strategic advantage of possessing tactical characteristics of both interpersonal and mass media. O’Sullivan (1999) attempted to bridge this mass-interpersonal divide for practitioners and scholars in health communication, concluding that “innovation in communication technologies have challenged the traditional definitions of mass and interpersonal communication by blurring many of (their) practical distinctions” (p. 569).

If not through newsletters or the Internet, simple direct mail pieces can serve as surrogates for interpersonal communication. A public education campaign titled “Call Fast, Call 911” utilized a single channel selection – direct mail in this instance – to facilitate use of emergency medical services. While the direct mail campaign did not significantly impact the target audience’s knowledge of emergency services, the experimental group did reveal “significant differences in beliefs and behavioral intentions to call 911 in a cardiac emergency” (Meischke, Eisenberg, Schaeffer, Larsen, & Henwood, 1994, p. 402).

Personalizing a direct mail piece to include an address and name of the target, rather than a generic reference to “resident” or “occupant,” becomes much more interpersonal and as a result is found to be much more effective in garnering a positive response from the direct mail recipient. This campaign helped measure the overall effectiveness of more personalized direct mail as an effective technique to augment mass media health education, which is less effective in reaching difficult target audiences not likely to consume traditional mass media sources (Dignan, Michielutte, Joneslighty, & Bahnson, 1994).
Perhaps no one has looked so closely at the potential of specific communication channels to serve as surrogates for interpersonal communication than Westmeyer, Dicioccio, and Rubin (1998). In the context of other-directed and self-directed needs fulfillment, the authors viewed the impact of six communication channels – face-to-face, telephone, voice mail, electronic mail, letter and fax – on four interpersonal communication motives. In their first study, they asked respondents to rate each communication method according to its appropriateness and effectiveness for achieving the specific desired interpersonal communication objective. A follow-up study examined the use of those communication tools according to specific scenarios reflecting self-directed and other-directed needs fulfillment. What’s more revealing than how each specific communication channel rated in its degree of interpersonal effectiveness was that five of the six – all but face-to-face interaction – could be argued as atypical “surrogates” for what is traditionally defined as interpersonal communication.

Investigating the possible gap between perceived and actual knowledge of targeted audiences, Price and Zaller (1993) noted the more knowledgeable and aware an audience member, the more effective – at least in terms of information recall – a public communication campaign targeting them will be. They concluded that in terms of recall, “a measure of general prior-knowledge, not a measure of news media use, is likely to be the most effective indicator” (p. 133).

The IMC toolbox for constructing a theoretically sound public information campaign

A review of Integrated Marketing Communications (IMC) literature and case studies of practice provides an overview for this study of categorical tools that might provide surrogates to interpersonal communication within a campaign following the social cognitive framework. Furthermore, IMC research and practice are useful in studying the theoretical implications of
“integrating” mass media and interpersonal communication effectively during public communication campaigns.

Schultz (1993a) endorsed the “integrated” way of thinking by defining the IMC perspective to help develop its practice within a theoretical framework. “If the idea of integration is to help consumers sort through all the information overload that now exists, then there is value in the concept. If integration helps consumers work through all the various media alternatives to find the information they are seeking, then IMC is a worthwhile concept” (p. 10).

It is the intent of the current research to not only advance the theoretical and applied nature of social cognitive theory and the theory of planned behavior, but to also identify IMC as a means of best management practices for choosing strategic communications more effectively. Furthermore, the public information campaigns in which social cognitive theory and the theory of planned behavior are applied should always prioritize the communication needs, wants, and channel preferences of publics and audiences, as IMC proposes, rather than follow the media preferences of organizations or their PR practitioners.

Schultz (1993b) initially described IMC as a concept of marketing communications planning that recognizes the added value of a comprehensive plan. Such a plan is intended to evaluate the strategic roles of a variety of specific communication disciplines – mass media advertising, public relations (garnering news media coverage), direct mail and sales promotions – and combines these disciplines to provide clarity, consistency, and maximum communications impact.

To advance IMC theoretically, Schultz (1997) revised his definition of IMC to a “strategic business process used to plan, develop, execute, and evaluate coordinated, measurable,
persuasive (brand) communication programs over time with consumers, customers, prospects, and other targeted, relevant external and internal audiences” (p. 10).

Discussions of IMC from the academy began by identifying the concept as the “integration of various media for maximum effects” (Schultz, 1996, p. 14). But the concept of integration continues to go beyond just an idea of how to integrate communication channels effectively. Schultz (1997) argued the importance of integrating the entire organization. The value of IMC is its intent to collectively manage all internal and external communication tools, such as traditional advertising, sales promotion, public relations, collateral materials, and direct mail. With this synthesis of strategic communication tools comes the categorization necessary to identify potential surrogates for interpersonal communications. Collateral materials and/or direct mail might serve a similar function as traditional interpersonal communication for reinforcing message strategy within a public communication campaign designed according to a social cognitive framework.

For the purposes of this study, it is not necessary to defend the merits of IMC as communication or marketing theory; rather, IMC is referenced to provide a structured, defined collection of communication tools that might be used to achieve interpersonal effects within the parameters of an otherwise theoretically sound public communication campaign.

Kitchen and Schultz (1999) likewise referred to this model similarly, noting, “IMC, by providing consistency in method and approach, maximizes the communications impact and, therefore, provides a more effective and cost-efficient approach to… communications” (p. 26).

Interpersonal characteristics of effective IMC practice: a philosophical change

An analysis of more specific characteristics of IMC reveals the perspective’s emphasis on the importance of new technology, at least for accessing and utilizing customer data for
communications and (interpersonal) relationship building purposes. Sevier (2004) noted that relationship marketing implies a deeper knowledge of the customer and the use of that knowledge to treat the customer differently, so that the exchanges between customer and company become mutually beneficial.

IMC begins with the customer and works back to the organization (Shultz, 1993c). It is the customer database that “becomes the locus of the organization” and the customer is the “element around which all internal functional groups can coalesce.” As a result, “the use of a relational database allows an organization to connect various types of data about customers and prospects to better understand their interests, potential needs and wants, and, most of all, how the organization can become more relevant to them with its marketing and communications” (p. 14).

Stewart (1996) described this “market-back” approach to designing integrated communications campaigns. IMC notes the importance of “the right combination of communications tools and the correct match of the tools with consumers that give marketing communication its power. There is also growing recognition that communications with consumers will become increasingly interactive in the future” (Stewart, 1996, p. 150). Thus, consumers, as active and involved participants in public communication campaigns, have authority over the information they receive, or perhaps more appropriately stated: the information they seek.

Moriarty (1994) also spoke to the importance of data and technology providing the means for establishing and expanding relationships, as (audiences or customers) would have it. “Databases and new media technologies are making it possible to begin to move marketing and corporate communication programs away from mass media and into two-way communication systems that will truly support dialogue based on relationships” (p. 41). Furthermore, according
to Rust and Varki (1996), “Whereas traditional mass media provide individuals with environment and product-related information, the format of these media limits both the quality and depth of information provided. By contrast, interactive media allows individuals to access information that is pertinent to them,” (p. 175).

With the growth of new technology and the autonomy it provides, consumers are no longer dependent on marketers to develop or supply information or messages for them. Schultz (1996) claimed that senders have become receivers and receivers have become senders, such that communication flow is reciprocal, of sorts, between an organization and its customers.

Schultz (1994) also observed the presence of “synergy” in IMC practice, which involves the combination of communication tactics in order to build the value of each as they are used together. In other words, with integration the sum of the communications within a campaign becomes more powerful and more effective than the individual parts when applied separately. In any event, “to think first strategically, and then tactically, in IMC means to think first about customers” (Schultz, 1994, p. 14).

The IMC approach has been applied in a number of professional settings, providing insight to the value of the perspective in different communication contexts. Attempting to build health literacy among key publics, Ratzan (2001) identified four key components to communication for the public good, with IMC being one of them. “Communication is not simply message repetition, but includes the development of an environment for community involvement to espouse common values of humankind” (Ratzan, 2001, p. 207). IMC is a means to attaining community involvement, as noted in the pursuit of health literacy in this instance.

In corporate communications, where IMC programs have their practical grounding, the leading companies investing in IMC make extensive use of interpersonal and cross-functional
communications, designed to “break down functional silos and focus managers on customers, rather than products” (Schultz, 1998, p. 20). Even in other organizational settings, such as governments and public utilities, it is critically important that internal communication is a component of integration. As McGoon (1998) noted, most corporations seeking to implement IMC practice begin by focusing on “functional areas, including advertising, promotion, direct response, public relations, and special events. Emphasis is on developing ‘one-sight, one-sound’ policies and programs” (p. 1). True integration comes, then, from effective coordination and sound implementation of both internal and external communication tools, no matter the organizational setting.

**IMC implications on public relations practice**

Tom Harris, a scholar and practitioner in marketing and public relations, makes interesting observations about the similarities between the public relations and IMC disciplines. Public relations, he noted, plays an important role in integrated programs, because PR has long been responsible for helping to build relationships with customers (Harris, 1994, 1995). IMC, like PR, starts and begins with key stakeholders or involved publics, notably customers. “IMC mandates coordinating every point of contact to manage a customer’s total impressions of (the) company. All disciplines must work together to win the customer’s confidence and loyalty. We may call what we do advertising or public relations or direct marketing or sales or whatever – but to the customer, it’s all one thing” (Harris, 1994, p. 31).

In addition to using technology to better identify and target key publics, the IMC perspective has also spurned the review of public relations and advertising practices within political campaigns. Weaver-Lariscy and Tinkham (1996) assessed the use of direct mail from an IMC perspective in congressional campaigns, noting not just the increased use of this strategic
communications approach, but the different implications it has for incumbents versus challengers in this political context.

When considering all of the communications tools available for strategic use by IMC and PR practitioners, Harris (1994) pointed out the advantage of including news media relations in the IMC mix. Public relations practitioners, especially, are trained and qualified to manage this channel, even within the context of IMC programs. “When a marketing message is delivered by an objective third party, such as a journalist or broadcaster, the message is delivered more persuasively” (Harris, 1994, p. 30).

Lord and Putrevu (1997) also mentioned the importance of positive media coverage in advancing the objectives of communications, and note the strategic advantages of garnering news coverage versus advertising placements in IMC practice. First, consumers typically process news stories intentionally and advertising only incidentally. Second, consumers attach greater credibility to news coverage, and lastly, news media have an ability to provide an “agenda setting” role for the public (Lord & Putrevu, 1997, p. 10). Thus, IMC practitioners, in addition to prioritizing the importance of interpersonal communication for the overall success of a campaign, also recognize the value of the proper utilization of mass media news outlets for disseminating key, strategic messages.

Hutton (1996) noted that since PR professionals are primarily responsible for managing issues and reputations of organizations and clients, they likewise “have long dealt with issues that marketing is now targeting for its own future – relationships, organizational equity (as well as brand equity), and a variety of issues pertaining to the organization’s environment and its ability to function efficiently in that environment” (Hutton, 1996, p. 160). Hutton infers that PR practitioners are ideally suited to advance the ideal of integration. “In the organizational
environment, (the practice of) public relations is frequently responsible for marketing the organization as a whole, through functions such as investor relations, corporate identity programs, government relations, and community relations, which can substantially impact customers as well” (Hutton, 1996, p. 160).

To achieve communications synergy – mentioned earlier as a critical objective of IMC programs – “integrated marketing communications has to do more than add marketing public relations and a database. It requires total management commitment to a multifaceted program of operations and marketing” (Duncan, 1993, p. 22). Noting that the most effective IMC programs usually include public relations, “experience tells us that the best marketing initiatives integrate all the available tools. But it may come as a surprise to learn that marketing and PR truly working together remains a novel concept in many organizations” (Debreceny & Cochrane, 2004, p. 28).

Summary of Literature Review

Based on a review of the relevant literature on social cognitive theory, there is significant evidence that this model provides an ideal perspective for the design, implementation, and evaluation of public communication campaigns. Within the literature review of the social cognitive perspective comes a conceptual premise that mass media, when supplemented by interpersonal communication within the parameters of a communications campaign, can be extremely effective in increasing knowledge, garnering support, and obtaining desirable behavior among targeted audiences.

The successful use of mass media and interpersonal communication in combination is well documented among public communication campaigns in a number of industry settings, as has been referenced in the literature. What is lacking, however, is an investigation that further
defines the boundaries of interpersonal communication within the context of a public communication campaign. According to the social cognitive perspective, it has been noted that interpersonal communication serves the invaluable role of reinforcing messages that are strategically disseminated through mass media channels. Through documented case studies of the combined strategic use of mass media and interpersonal communication, however, the latter is invariably garnered in the traditional sense of interpersonal communication – within the context of discourse or interaction with others.

Little is known, however, about the potential role that strategic communications with interpersonal traits, such as direct mail newsletters, other collateral materials, or Web sites, might serve to likewise reinforce mass media messages and attain communication objectives within the scope of a public communication campaign. The practice of Integrated Marketing Communications (IMC) provides a framework in which to formally identify categories of proven, strategic communications that might be classified as interpersonal, for the purpose of testing their effects within the premise of social cognitive theory. As has been noted in the literature, sometimes people are influenced by “what they see on television, sometimes they are persuaded by interpersonal communication, and sometimes by a little of both” (Bryant & Thompson, 2002, p. 80).

When developed further, Bandura (2001) surmised that as the theory of social cognition was applied to various public communication campaigns, researchers identified both a direct and indirect pathway for educating people. In the indirect pathway, the flow of information according to the social cognitive perspective accounts for the ability of mass media to assist in directing people to additional sources that might help guide them in gathering knowledge, forming attitudes, and reinforcing behavior.
Thus, this study intends to inquire about the most effective use of mass media and alternative sources of interpersonal communication to achieve a typical public communication campaign objective – increasing knowledge among targeted audiences. However, since the social cognitive theory has yet to be tested within the context of a public education program for a public water utility, this study attempts to extend the body of knowledge to include yet another industry in which this theory can be successfully applied. So within another documented campaign setting, is there significance in the effects of mass media and interpersonal communication, when utilized separately or in combination, as would be the case with an integrated approach?

In addition to investigating the potential for mass media and interpersonal communication to positively impact issue knowledge within a directed, public communication campaign, this study also attempts to examine the degree to which knowledge, either perceived or actual, might facilitate media consumption. By providing support for the social cognitive perspective of media effects, the stream of research on public communication campaigns reveals evidence of media consumption patterns dictated by active, involved participants. Further inquiry will provide insight into whether information sought by those targeted in a public communication campaign is contingent upon their actual knowledge or perceived knowledge of industry issues. Thus, is media consumption driven by people’s desire to validate what they already know, or provide confirmation of what they assume, or a combination of both?

According to the social cognitive theory, learning occurs as a result of a process Bandura (1994) describes as triadic reciprocal causation, which includes three factors that help determine thought and eventual behavior as they interact and influence each other – behavior, personal characteristics, and environmental conditions. It is the “personal characteristics” of audiences
targeted in public communication campaigns that can be examined further by utilizing the theory of planned behavior.

The theory of planned behavior (TpB) provides a means for explaining campaign success or failure beyond the realm of media consumption. Whereas the theory of social cognition offers a model for predicting knowledge, attitudes, or behaviors from one’s potentially beneficial use of mass media and interpersonal communication sources, so too might the theory of planned behavior assume that targeted audiences of a public communication campaign “make systematic use of information available to them” (Ajzen & Fishbein, 1980, p. 5). Specific predictors of behavior, according to the TpB model, include one’s attitude toward the behavior, subjective norms influencing behavior, and perceived behavioral control related to the behavior under examination. In this study, a specified behavior outlined in a public communication campaign will be studied from the perspective of the theory of planned behavior. In doing so, a campaign that features mass media and interpersonal communication as sources for disseminating public information to impact issue knowledge, also provides an opportunity to evaluate the possible predictors of behavioral intention as outlined in the theory of planned behavior, as well as the effects of past behaviors that might likewise be influential.

The final research question under consideration in this study, then, will review the potential effects – as predictors of behavioral intention – of attitudes toward a behavior, accessible and applicable subjective norms, as well as perceived behavioral control, as they relate to the proper disposal of household grease – the behavior in question. This study should provide empirical evidence as to whether these predictors of behavioral intention are significant and represented within a target audience currently engaged in a public communication campaign seeking behavioral compliance on this critical, salient issue.
Research Questions

A social cognitive approach toward integrated communications within a public information campaign must first take inventory of the strategic communication tools available to practitioners. From there, accessible tactics are recommended and prepared for integration, according to specific goals and objectives of a campaign, which typically involve eliciting “knowing” and “doing” among target audiences. Thus, it’s critically important to assess the impact of media strategies and tactics on campaign objectives, especially those focusing on improving knowledge or awareness – which often preclude more advanced goals such as changing attitudes or garnering desired behaviors.

In this study, it is important to review the impact media consumption has on all kinds of awareness – from knowledge about global issues, to knowledge about local issues that directly impact an individual or household. From there, if results indicate that certain mass communication, public information practices, or combination of media, work effectively to influence knowledge measures within a campaign, these tactics and subsequent winning formulas that contain them, can be identified and documented – for better strategic use by the practitioner and for stronger theoretical design by the scholar.

In addition, this study seeks to investigate the media choices of citizens seeking knowledge on various public communication campaign issues. When gaps in knowledge exist among groups, insights on where consumers will turn for their answers are likewise helpful for scholars and practitioners seeking to plan and execute more effective public communication campaigns.

Finally, when public communication campaigns move beyond objectives of raising awareness and toward emphases on attitude and behavioral change, additional influences beyond
traditional communications must be taken into account. Fortunately, communication theories exist that identify interpersonal influences on behavior – often outlined within a public communication campaign – while providing the conceptual and methodological means for testing their merit and significance in applied settings.

For these reasons, data were collected, via the procedures and measurement instruments of this study, in order to answer the following research questions:

Q1. Is the level of mass media use, in general, significantly related to or predictive of people’s actual knowledge of specific industry issues?

Social learning theory (Bandura, 1977), which preceded the advancements in the social cognitive theory of mass media (Bandura, 2001), found that mass communication, especially television, has a limited influence on behavior, even when that behavior is modeled by consumers of media messages. Yet, mass communication is but one factor that might potentially influence knowledge or learning. As Bryant and Thompson (2002) noted, no single medium or experience explains how people learn or adopt a new behavior, since some are influenced by media, some by interpersonal communication, and some by both. As Bandura (2002) explained the direct and indirect, or socially mediated, pathways of media influence, media promote changes by informing, motivating, or even guiding participants.

Q2. Is the level of consumption of an organization’s public information – through various media channels within the scope of a public communication campaign – significantly related to or predictive of actual knowledge of industry issues?

Bandura (2002) identified a socially mediated, or indirect, pathway of media influence that further explained the relationship between public information media consumption patterns and subsequent desired cognitive and behavioral changes. He proposed that the socially
mediated pathway of influence involved the strategic use of media to lead participants to social networks or communities that might assist them in learning. The importance of such interpersonal communication as a re-enforcer of mass media messages is most evident in the growing number of public communication campaigns that stress the use of controlled media.

Q3. Is the combination of general mass media consumption and consumption of an organization’s public information significantly related to or predictive of greater actual knowledge of industry issues?

The most successful public communication campaigns are those that utilize, strategically, both mass media and interpersonal communication. Health education campaigns, especially, have featured designs that successfully combine the use of mass and interpersonal communication tools. Elwood and Ataabadi (1997), when investigating the effectiveness of public health campaigns, noted the importance of integrating interpersonal and mass media communication channels. In research assessing the effectiveness of communication campaigns related to cancer screening, Morton and Duke (2001) found a clear interdependence between mass and interpersonal communication. Hafstad et al. (1997) even provided longitudinal evidence that supported the successful use of three separate but similarly designed public information campaigns, featuring all types of mass and interpersonal means for influencing anti-smoking behavior.

Q4a. Is there a significant difference between perceived knowledge and actual knowledge, creating a knowledge gap regarding a specific industry issue?

Q4b. Does a perceived or actual knowledge gap or combination of knowledge measures predict the level of media consumption, either through mass media or public information sources of a sponsoring organization, within the scope of a public communication campaign?
Bandura (2002) noted that people seek information that is relevant and useful to them from a number of different sources. Thus, they reciprocate the intentions of an organization’s public communication campaign by requesting further information, via different channels, to increase their knowledge and understanding of issues. Stewart (1996) described this concept in marketing terms, noting the “market back” approach to designing campaigns according to the needs and preferences of the target audiences. The practice of Integrated Marketing Communications (IMC) provides a defined inventory of communication tools preferred by consumers who seek to establish and expand their relationships with organizations (Moriarty, 1994), who in turn reciprocate by placing the needs of customers first, prior to designing and implementing strategic communication campaigns (Schultz, 1994).

Q5. What is the relationship between (a) attitudes toward a behavior, (b) subjective norms, and (c) perceived behavioral control as predictors of intention to comply with a pro-social behavior outlined in a public communication campaign?

The theory of reasoned action (Fishbein & Ajzen, 1975) and the theory of planned behavior (Ajzen, 1985) are logical extensions of the theory of social cognition, as they provide further explanation of the direct influence of interpersonal factors on behavioral intention and actual behavior. The theory of reasoned action first identified two direct predictors of behavioral intention and actual behavior – attitudes toward a behavior and subjective norms. As the theory evolved into the planned behavior model, Ajzen (1985, 1988) introduced perceived behavioral control as a third predictor of behavioral intention and actual behavior. Through further advances of the theory, Ajzen (2002) provided the conceptual and methodological means for testing the model in various applied settings, such as the public information campaign under examination in this study, seeking pro-social behaviors related to a salient consumer issue.
CHAPTER III

METHODOLOGY

Introduction: the case of the Macon Water Authority’s Grease Education Program

At the Macon Water Authority (MWA), the public communication campaigns of this water utility include the pursuit goals and objectives that typically begin with the need to inform the public – in this case the utility’s approximately 55,000 customers in Macon and Bibb County, Georgia – of a number of policies that address salient, timely issues impacting their daily lives.

One such issue is the MWA’s efforts to educate its customers on the importance of proper disposal of household grease. While admittedly, even by Authority officials, the issue of grease disposal is not the sexiest or most glamorous of public communication campaign topics, but the impact of the issue is no less critical. Those MWA customers who improperly dispose of household grease are negatively impacting the MWA sewer collection and conveyance system, in addition to jeopardizing water quality, public health, and environmental resources of the community and region. Thus, public water utilities such as the MWA are investing in ways to better utilize their limited public information dollars to plan and execute more effective grease education public communication campaigns.

This investigation involves a series of three studies, or a three-part research design, structured primarily to investigate the media habits, issue knowledge and behavioral intentions – and subsequent relationships among them – as they pertain to proper disposal of household grease – the behavior in question. The methodological design of these studies follows theoretical considerations as outlined in the previous review of literature relevant to the social cognitive perspective and the theory of planned behavior.
From the results of this three-part investigation, the MWA hopes to better plan and execute its grease education campaign to follow the social cognitive theoretical perspective, while taking advantage of both the ability of mass media messages to influence audience behavior, as well as interpersonal communication to provide reinforcement to those media messages. Practitioners responsible for MWA grease education will also seek insights from this study into possible predictors of behavioral intention in relation to grease disposal, as outlined in the theory of planned behavior.

Beginning in 2004, the Macon Water Authority laid out a long-term communications research agenda designed to establish baseline measures – and subsequent measures over time – for customer public information consumption patterns, awareness and knowledge of select topics, as well as attitudinal and behavioral change, regarding salient issues. The board of directors and management of the Authority strongly endorsed the need for research to assist with proper communications campaign funding, planning, execution, and evaluation.

This three-part research project began with Part I – a survey conducted in 2004 – designed to obtain baseline measures of the Authority’s customer service performance, as well as customer preferences for public information initiatives. The 2004 survey successfully documented frequencies and tendencies of customer satisfaction and customer public information use, enabling the scope of the future research to widen.

While the first part of this research project – the 2004 survey – enabled the Authority to establish baseline measures of customer media consumption patterns, the second and third stages – the qualitative study and customer survey of 2006 – allowed for further expansion and better alignment of MWA public communication campaign practices according to theoretical perspectives.
The second part of the three-part study featured a qualitative component that identified belief-based measures of potential attitudes, subjective norms, and perceived behavioral controls of MWA customers regarding the proper disposal of household grease – according to the premise of the theory of planned behavior. These belief-based measures and predictors of behavioral intention were investigated further in the third part of the research project – the 2006 survey – that applied the investigation to the context of a public communication campaign addressing an environmental issue impacting customers and the utility.

The third part of this research project – the 2006 survey – is the study of greatest depth and scope within this overall investigation. It will receive the most attention and analysis in the forthcoming results and discussion of research implications.

To conclude, this research project has three critical parts. Part I was a survey conducted in 2004 to obtain, among other things, initial measures of media and public information use among the sample population. Parts II and III were conducted approximately two years later to expand upon some of the findings or tendencies of MWA customers found in Part I, as well as to examine the theory of planned behavior within the context of a public communication campaign.

More specifically, Part II of the research project can best be described as a preliminary, qualitative study conducted in conjunction with Part III. Part II helped to identify belief-based measures according to the premise of the theory, while Part III – the 2006 Survey – applied those measures and others within the framework of the theory of planned behavior, to the practice of proper disposal of household grease among the random sample of MWA customers.

**Part I: The 2004 Survey**

Late in the summer of 2004, the Macon Water Authority (MWA) conducted a survey to obtain feedback on relevant subjects related to its performance in customer service. While
testing the degree of customer satisfaction among its customers, the MWA also sought measures of its customers’ media use and efficacy, including the specific media and communication tools accessed in order to obtain public information about the MWA, their water and sewer utility. The study was also designed to begin assessing levels of knowledge, attitude, and behavioral tendencies of MWA customers on items pertaining to MWA facilities, operations, customer service, and likelihood for compliance to specified, mandated consumer behavior.

After researching industry standards and practices in public administration for customer service measurement, the MWA found that there are few, if any, reliable instruments to measure customer service performance for county or municipal governments, much less water utility authorities and agencies; furthermore, with no real industry guidelines on how to measure customer service performance in a standardized fashion, the MWA had even less idea of what, quantitatively or qualitatively, outstanding customer service entailed. With this in mind, the Authority decided to obtain its own baseline measure of how it was performing in several areas of interest among MWA customers.

To determine a baseline measure for customer service performance and obtain a measure in which to build upon, the MWA stressed that the 2004 survey meet social scientific criteria for generalizing findings to the greater population of MWA customers, due to probability sampling of the customer population.

Sample for Part I (The 2004 Survey)

Through systematic, probability sampling, the computer/server containing the records of MWA customer accounts was able to randomly select every Nth name of the master list of MWA accounts, to collect 2,500 names of potential participants in the survey. As the data shows, there was no bias in selecting customers, as the sample represented an equal number of
possible respondents selected among the respective five geographical billing zones of the utility. From the sampling frame that provided 2,500 names of potential participants, 434 respondents returned completed questionnaires in a timely fashion. (Note: respondents were given one month, from the time of the mailing, in order to respond.) Overall, this response rate to the “passive” customer survey instrument distribution was nearly 18 percent (17.36%), which is considered acceptable when factoring in the nature of the population, selection process, and sampling frame. A comparison of the demographics of the sample with the Census figures of the greater population (see Table 1.0) also provided evidence of external validity since the two were similar. Because the MWA reaches more than 90 percent of citizens in Macon and Bibb County, this response rate is enhanced due to the level in which the MWA customer base so closely represents the population census of Macon and Bibb County, the community under examination in this study.

Procedure of Part I (The 2004 Survey)

At the time of this study, the Macon Water Authority was reviewing its customer service practices in an attempt to find a baseline measure of its performance, allowing for future comparison of this measure following the implementation of new policies, procedures, and customer services. In doing so, the Authority also sought to evaluate the implications of its public communication campaigns, primarily by assessing perceived customer knowledge of issues, as well as their current public information and mass media consumption habits.

Rather than include the survey as an insert in monthly customer bills – a common practice for public information objectives – the survey was mailed independently, but as official correspondence from the Authority. Participants in this study were recruited “passively” by way of direct mail, and there was no need for an “active” follow-up to boost responses, since the
response rate was more than adequate to accommodate the needs of this investigation. The 2004 survey was preceded by a notice to customers of their potential for being randomly selected for participation, as well as an explanation of the nature of the research project. That preview notice appeared in the issue of the customer newsletter published and distributed a month prior to the mailing of the survey instrument. The MWA newsletter reaches all 55,000 customer accounts (households, businesses, and industry) of the utility. Following the public notice of the MWA survey, the Authority mailed a cover letter, the questionnaire, and a pre-paid response envelope to each of the 2,500 randomly selected customers. In the cover letter, written directly from the desk of the MWA executive director and appearing on his letterhead, the Authority explained in more detail its reasons for conducting the research inquiry, its ability to generalize results to the greater customer population, as well as its assurance that participants would remain anonymous and their responses would be held in confidence.

At the conclusion of the cover letter that accompanied the survey in the mailer, the MWA provided contact information for survey participants who might have further questions regarding the instrument or the study. In anticipation that customers may indeed contact the MWA offices for more information, customer service representatives at the Authority were briefed on the study and prepared for how to respond to questions or concerns of customers. (Note: a copy of the cover letter accompanying the 2004 survey is provided in Appendix A.)

Measurement Instrument of Part I (The 2004 Survey)

The measurement instrument of the 2004 survey included 15 initial items with four-point Likert scales in order to force respondents into some degree of either positive or negative assessment of MWA performance or other related topics. There is an admitted limitation in a scale that does not account for neutral responses. A copy of the 2004 questionnaire is in
Appendix B. The first three questions addressed issue salience, with responses including 1 = not very important, 2 = not important, 3 = important, and 4 = very important. The items asked about the importance of the MWA and its operations to economic development, quality of life, and relevance to the respondent’s family, respectively. The fourth item was a directed question that channeled “yes” respondents, who had personal experience with the customer service department, to five more survey items on customer service performance. Those “no” respondents were directed around the customer service items and forwarded to survey question #10.

Questions 10 through 15 then utilized a four-point scale, with 1 = strongly disagree, 2 = disagree, 3 = agree, and 4 = strongly agree, to assess a number of performance measures in other areas of operations at the MWA. Questions 10 through 13 inquired about the level of the perceived competence of the MWA on various system operations. Question 14 addressed the issue of environmental stewardship on the part of the Authority, while question 15 inquired about its fiscal responsibility.

Questions 16 through 24 obtained measures utilizing a 10-point semantic differential scale, rather than the four-point Likert scale that had been used on previous items. Questions 16 through 19 obtained measures of customer knowledge and awareness of various MWA responsibilities and functions, as responses ranged from 1 = not very knowledgeable to 10 = very knowledgeable. Most germane were questions 16 and 17 regarding grease disposal. Customers were asked, via question 16, “How knowledgeable are you regarding the importance of proper grease disposal?” In addition, question 17 inquired about the likelihood of customers “to dispose of grease properly within your home of business?”
Questions 20 through 24 of the questionnaire in the 2004 survey were central to the investigation of MWA media use for public information. These five questions again addressed “likelihood” of the respondent to use the various traditional integrated communication tools for the purpose of obtaining public information on the MWA, with responses ranging from 1 = not very likely to 10 = very likely. Question 20 assessed dependency on mass media (newspapers, TV, and radio) for obtaining information about the Authority, while question 21 asked: “How likely are you to read the (MWA) customer newsletter?” In addition, questions 22 and 23 inquired about Web site use and special event attendance, respectively. To conclude the questions on media use as it relates to effective public information, respondents were asked in question 24 to rate their overall satisfaction with the public information initiatives of the MWA.

By changing the type of scale and units of measurement throughout the survey, respondents were challenged to think independently on each item and respond more thoroughly, rather than with patterned responses that are often facilitated when the same type of scale is used on every item.

Because of the timing of the survey instrument hitting customer households immediately after their receipt of the state mandated “consumer confidence report” that is directly disseminated to all MWA customers, respondents were asked whether or not they read this recent report.

Concluding the 2004 questionnaire – and clearly stated as “optional” items for respondents – were items to capture basic demographic data, consisting of gender, age, ethnicity, education, and household income.

Finally, the questionnaire had yet another notice at the bottom of the instrument, which reassured participants that responses would remain confidential. With it, the Authority provided
another reference to the contact information for respondents to utilize in the event they had any questions about the survey.

The 2004 survey successfully provided a comprehensive list of measures of MWA performance in water, sewer, public education, and more. As a result, these baseline measures were obtained as intended, and provided not only a starting point for campaign evaluation and theoretical design, but also a means for expanding and improving the depth of investigation featured in Parts II and III of this study.

**Level of Analysis of Part I (The 2004 Survey)**

The 434 completed surveys from the 2004 study were coded into a Microsoft Excel spreadsheet and verified for accuracy. The data entered in Excel were initially examined to provide descriptive statistical results for review by the MWA leadership at its board of directors meeting on October 7, 2004. These preliminary results were recorded in the meeting minutes and received a brief mention in news coverage of the meeting agenda by *The Macon Telegraph*.

Following the review and analysis of the data in Microsoft Excel, the results were then transferred into the Statistical Package for the Social Sciences, or SPSS software, for further analysis using more sophisticated inferential statistics, if necessary. However, analysis of the data collected via Part I of this study – the 2004 survey – was limited to frequencies of responses to each questionnaire item, in addition to descriptive statistical output producing categorical data reflective of the sample, for future comparisons.

**Part II: The Qualitative Component of the 2006 Study**

In December 2005, Part II of this three-part research project was completed when a preliminary, qualitative investigation was conducted to assist with the design of the instrument for Part III of this study – the 2006 survey. These second and third parts of the research project
were the primary means for collecting current data to address the research questions under investigation in this study.

Since Part III of this research project – or the follow-up 2006 survey – was designed to apply aspects of the theory of planned behavior within the context of a public communications campaign, conceptual and methodological considerations had to be addressed prior to that. The Ajzen (2002) model for constructing a questionnaire for applying the theory of planned behavior insists that a pilot study was necessary “to identify accessible behavioral, normative, and control beliefs” (p. 8). This pilot study – Part II of the research project – was conducted prior to the final development and distribution of the 2006 survey, so those behavioral, normative, and control beliefs and predictors of behavioral intention could be identified and tested further in Part III.

The focus of the qualitative component of the study, or Part II, was to obtain diagnostic information on indirect belief-based measures, notably those for the three constructs under examination in the theory of planned behavior – behavioral beliefs of attitude toward the behavior, normative beliefs of subjective norms, and control beliefs of perceived behavioral control.

Sample for Part II (The 2006 Qualitative Component)

Part II – the qualitative, preliminary or pilot investigation for the 2006 study – involved open-ended questions written as a semi-structured interview and conducted with 34 Macon Water Authority (MWA) customers selected from the same population that would be sampled in Part III, via an intercept method. The intercept sample was used for convenience and for obtaining the most direct and immediate results to diagnostic items. Since nearly 50 percent of MWA customers pay their bills in person, this intercept sample was deemed sufficiently typical of those respondents that were selected randomly for participation in the other parts of the study.
By gathering the short responses to interview questions in person, it was more easily determined when data approached redundancy. Redundancy in the customer semi-structured survey/interviews was obtained following the completion of 34 interviews. For data analysis purposes, responses or answers to questions – rather than respondents or participants – were coded as the sampled units of analysis. Thus, if respondents had more than one answer to a question, all responses were coded and analyzed accordingly.

One additional characteristic of the 34 respondents was that 11 were Macon Water Authority employees who were also utility customers. Their additional insights proved invaluable to the final design and inclusion of belief-based measures in the 2006 survey.

**Procedure of Part II (The 2006 Qualitative Component)**

The semi-structured survey/interviews in the pilot study were conducted in the customer service department of the Macon Water Authority (MWA). Participants were solicited upon exiting the utility after paying their customer bills. Respondents were intercepted and asked to participate in a study by answering “a few questions to assist the Authority in obtaining valuable feedback on grease education.” Those taking part in the interviews were awarded a grease can cover as thanks and incentive for participation. Respondents were also briefed about the use and implications of their responses after completion of the interview.

**Instrument of Part II (Preparing for TpB measurement in Part III)**

The qualitative pilot study instrument used in Part II of this overall investigation was designed according to the guidelines provided by Ajzen (2002) in his discussion of conceptual and methodological considerations for obtaining belief-based measures to test the theory of planned behavior (TpB). The semi-structured survey/interview featured nine open-ended questions attempting to obtain the belief-based measures necessary for further testing of the
model within the context of Part III of this research project. A copy of the interviewer’s guide that includes the questions of the qualitative study of Part II is provided in Appendix C.

The first three questions of the interview were written specifically to address Ajzen’s (2002) suggested method for eliciting accessible behavioral outcomes. Responses can be used to identify *personal accessible beliefs*, i.e., the unique beliefs of each research participant, or to construct a list of *modal accessible beliefs*, i.e., a list of the most commonly held beliefs in the research population. Modal accessible beliefs can provide the basis for constructing a standard questionnaire that is then used in the main study (Ajzen, 2002).

To elicit those behavioral outcomes, respondents were asked the three questions as suggested by Ajzen (2002) and given ample time to answer during the interview. The behavior in question during the interviews was proper disposal of household grease. The first question asked respondents: “What do you believe are the *advantages* of disposing of grease properly on every occasion within your household?” The second interview question inquired about the *disadvantages* of disposing of grease properly, while the third question addressed anything else the respondent might associate with proper disposal of household grease.

The second set of three questions, written according to the template provided in the theory of planned behavior, was designed to elicit accessible normative referents. These referents were then used in the questionnaire for the 2006 survey, when attempting to measure normative beliefs. These questions in the pilot study are necessary “to elicit the identity of relevant referent individuals or groups that are readily accessible in memory” (Ajzen, 2002, p. 12).

Question 4 of the qualitative interviews asked respondents: “Are there any individuals or groups who would *approve* of your properly disposing of household grease on every occasion?”
Likewise, question 5 asked if there was anyone who might disapprove of such behavior. Finally, question 6 asked if there were any other individuals or groups who came to mind when the respondent thought of properly disposing of household grease.

The final set of three questions in the pilot study was designed to elicit the primary control factors for further testing, which include “a list of accessible factors that may facilitate or impede performance of the behavior” (Ajzen, 2002, p. 13). In the theory of planned behavior, control beliefs have a bearing on perceived behavioral control, which in turn directly impacts behavioral intention, while then directly and indirectly influencing actual behavior.

Question 7 asked respondents: “What factors or circumstances would enable you to properly dispose of grease on every occasion within your household?” A follow up, probing question to rephrase the original and facilitate troubled respondents was to ask what factors or circumstances make it easier for the respondent to act out the desired behavior. Question 8 likewise asked the respondents what factors or circumstances make it difficult or impossible to dispose of grease properly? (Note: when the measure of “convenience” became a common answer of respondents during the pilot study, it was on occasion used as a follow-up or probing question to facilitate responses.) Finally, question 9 – the final question on control beliefs and the last item in the qualitative pilot study – allowed for respondents to consider any other issues that came to mind when they thought about the ease or difficulty of disposing of household grease properly.

Level of Analysis of Part II (The 2006 Qualitative Component)

The semi-structured survey/interview instrument used in Part II of this study did not necessitate the analysis of transcripts, as would be the case for the results of a formal, qualitative study. The responses from the interviews in Part II were needed only to find the direct measures
and belief-based measures outlined in the theory of planned behavior, for further analysis in Part III – the 2006 survey. The questionnaire of the 2006 survey included these conceptual and methodological considerations of the theory of planned behavior (Ajzen, 2002).

**Part III: The 2006 Survey**

In February of 2006, the primary measuring instrument for the 2006 survey was distributed to a sample of Macon Water Authority (MWA) customers, who also served as the sample population for both Part I and Part II of this investigation. The same demographic data for Macon and Bibb County, Georgia, which will be highlighted in the Results Chapter IV, apply to all three parts of this study, since the samples taken in each were selected from the same population of MWA customers.

**Sample of Part III (The 2006 Survey)**

The 2006 survey utilized a systematic, probability sample of the population of MWA customers for distribution of the questionnaire in the 2006 survey. The customer names were selected from the list of residential customer accounts at the Authority. Probability sampling was made according to every Nth name in the customer database. With the MWA customer data, for billing purposes, divided into five geographic areas covering the city of Macon and Bibb County – where MWA customers reside – an even number of randomized names were selected from each of these billing “zones” of the utility. To obtain 5,000 names of potential participants in the 2006 survey, a total of 1,000 customers were randomly selected in each of the five zones. In addition, in the event further research might be necessary within this sample population, another 5,000 names were generated (so 10,000 total respondents were available in a sampling frame if necessary). Again, this secondary sample of the 5,000 additional names was selected proportionately throughout the five districts in the service area.
From the sampling frame that provided the 5,000 original names of potential participants in the 2006 survey, 497 respondents (an approximate 10% response rate) completed questionnaires in a timely fashion, defined as one month from the dissemination of the survey. This number of responses to the “passive” mailer also did not warrant an “active” follow-up to boost the number of respondents, since the response rate was considered adequate to meet the specifications of the statistical analyses to be conducted from the study. The number of responses was considered encouraging in comparison to the response rate of the 2004 survey. Although the response rate of the 2006 survey was nearly half of that of the 2004 survey, such a decrease was expected, primarily due to the length and complexity of the questionnaire used in this latter investigation. Since the sample closely represented the population under examination, the data collected in the 2006 survey can be generalized to the greater population of MWA customers (a population reflecting almost the entire citizenry). In addition, such a large sample size provided for significant findings, from statistical analyses conducted within and among groups of the sample reflected in the 2006 survey.

It is important to note again the advantages of conducting social science research that utilizes public utility customers as a participating sample of the population. The Macon Water Authority, serving more than 90 percent of the citizens in Macon and Bibb County, boasts a database that is unlike any other in terms of accurately reflecting the true population under investigation.

**Procedure of Part III (The 2006 Survey)**

The procedure for the 2006 survey was almost identical to the procedure used in the 2004 survey. However, because of the increased length of the survey measurement instrument, and because of cost considerations for the entire project (questionnaire printing, outgoing postage,
return envelope, incoming postage, etc.), the mailer in the 2006 survey did not contain a cover letter from the executive director of the MWA as the mailer in the 2004 survey did.

Participants in the 2006 survey were also recruited “passively” by way of direct mail, which included the measurement instrument and a business reply envelope that covered the postage for returning a completed survey. The instructions of the questionnaire included a notice to respondents of how they were being selected randomly among the master list of MWA residential customers, that their responses were assured to remain confidential, and that the survey was being conducted for research purposes only, noting the Authority’s desire to obtain feedback from its customers on their patterns of consumption of public information and media, their knowledge of the issue of grease management, and an inference that their involvement would assist the Authority in making future policy decisions, especially those involving public information. Unlike the procedure in Part I, no preview notice was given in the customer newsletter that the survey instrument would be forthcoming.

The Authority mailed the survey instrument and the business reply envelope to the randomly selected 5,000 MWA customers, again allowing one month from the drop date of the mailer to collect responses.

At the conclusion of the survey, instructions provided the respondents with an opportunity to contact the MWA, including the phone number of the customer service department and the research coordinator, in the event they had questions or concerns about the research project. Approximately a dozen such customer calls were taken. In order to assist customers with such inquiry, customer services representatives of the MWA were briefed on the content and nature of the MWA 2006 customer survey. Customer service representatives were
provided a copy of the instrument for their reference so they might better assist customers calling with questions.

Finally, customers participating in the survey were informed of the nature and reason for the study – and again assured their responses and identity would remain confidential – in the closing section of the 2006 questionnaire. The Macon Water Authority funded the 2006 survey, as it had the previous two parts of this study.

Measurement Instrument for Part III (The 2006 Survey)

The measurement instrument in the 2006 survey was an eight-page questionnaire designed in a booklet form, which included 59 questions. A copy of the 2006 questionnaire is provided in Appendix D.

The first section, items 1 through 14, included differing measures of media use and preferences of the respondents. All of these items were constructed with 7-point Likert scales that measured media use on a 1 = never to 7 = always continuum. Questions 10 (newspaper readership), 12 (television viewership), and 14 (radio listenership) included 10-point scales to obtain measures, ranging from 1 = light to 10 = heavy, of self-reports of media consumption. A 10-point scale was used in items 10, 12, and 14, to differentiate high and low levels of media consumption from measures of general media use taken in the other questions. In addition, by changing the range and type of scale on various items of the questionnaire, respondents are less likely to fall into pre-determined patterns of responses that might reflect less than ideal assessments of each individual question item. By standardizing these measures during data analysis, the concern for using different types and ranges of scales within the questionnaire becomes moot.
Of the (14) questions asking customers about their public information and mass media uses and preferences, questions 1 through 6 focused on the former. Question 1 asked customers: “How often do you read information about the MWA in newspapers?” Question 2 followed by asking a similar question about their seeing the MWA on television. Question 3 featured an inquiry about seeing the MWA on the city’s cable Channel 14, since the MWA board meetings and public service announcements regularly appear, due to contractual obligations, on this channel. Question 4 asked customers how often they heard information about the Authority on local broadcast radio stations.

Question 5 and 6 were more reflective of customer consumption of “controlled” MWA media, since the Authority publishes a customer newsletter every other month and posts a Web site with continual updates of MWA news and developments at the utility. As a result, question 5 asked respondents: “How often do you read the MWA’s newsletter that is inserted in your customer bill?” Question 6 likewise asked how often customers accessed the MWA Web site. The newsletter, like the Web site, has both mass media and interpersonal communication qualities when applied to a public communications campaign. Question 7 asked respondents how often they talked about the MWA with someone else.

Questions 8 through 14 inquired about customers’ general use of different formats of mass media. Question 8 asked: “In general, please estimate how often you spend time reading traditional, printed newspapers?” Question 9 was included to address the possible use of newspapers online, since this technology has grown in popularity since media use was first examined in Part I of this study, via the 2004 survey. Questions 11 and 13 asked about general use of mass media television and radio, respectively. To expand the level of measurement of mass media use among MWA customers, question 10 asked respondents to rate their light or
heavy readership of newspapers, while question 12 likewise asked them to rate their light or heavy viewership of television, as question 14 asked them to rate their light or heavy listenership of radio.

The second section of the questionnaire used in the 2006 survey of this study addressed the customer behavior in question – grease disposal and management. Questions 15 through 22 measured perceived and actual knowledge of respondents on the issue of proper grease disposal. Question 15 obtained the direct report of perceived knowledge of proper disposal of household grease by asking respondents to rate how knowledgeable they were on the subject, according to the 7-point scale that ranged from 1 = not very knowledgeable to 7 = very knowledgeable.

Questionnaire items 16 through 22 were designed to obtain an “actual knowledge” measure of proper grease disposal, to be examined statistically and reported according to the responses as they pertained to the various research questions under investigation. Questions 16, 18, and 19, featured the factual questions that highlighted three respective improper means for disposing of household grease, while question 17 highlighted the proper method: “to let it cool, pour it in a container, and throw it in the trash.” Questions 16 through 19 composed the “actual individual knowledge” measure of proper disposal of household grease, to be used in later analyses. Questions 20 through 22 asked respondents about their general knowledge of three global issues directly related to proper grease disposal – its impact on sewer lines (question 20), water quality (question 21), and sewer overflows (question 22). These three items compiled the “actual general knowledge” measure that would be used during statistical analyses of this study. All responses on the actual knowledge questions 16 through 22 featured 7-point Likert scales with responses ranging from 1 = strongly disagree to 7 = strongly agree.
Question 23 was the single item addressing the salience of the issue of proper grease disposal. It inquired about the importance of grease disposal, to obtain an idea of the issue’s relevance among the sample population. Question 23 featured a 7-point Likert scale with responses ranging from 1 = not very important to 7 = very important.

Questions 24 through 51 began the formal testing of the theory of planned behavior model, as provided by Ajzen (2002) in his discussion of “conceptual and methodological considerations of constructing a TpB questionnaire” (p. 1).

Questions 24 through 26 provided direct measures of behavioral responses concerning proper disposal of household grease – the behavior under consideration in the 2006 survey. Question 24 featured a scale measuring frequency of grease disposal from 1 = never to 7 = always. Question 25 was open-ended so respondents could enter the number of days within the past month that they had to dispose of household grease. Question 26 again featured a scale of 1 = never to 7 = always, for estimating how often respondents had to dispose of grease during the past month.

From there began a series of inquiry on predictor variables for behavioral intent and actual behavior. Questions 27 and 28 explored the direct measure of behavioral intention, again, as outlined in Ajzen’s (2002) theory of planned behavior methodology. Question 27 asked: “In the future, how likely are you to dispose of grease properly within your household?” Customers responded according to a 7-point scale of 1 = extremely unlikely to 7 = extremely likely. Question 28 rephrased this original question with responses coming in the form of disagreement or agreement to the statement: “I plan to dispose of grease properly with my household on every occasion possible.” The scale allowed for responses ranging from 1 = strongly disagree to 7 = strongly agree.
Question 29 assessed the respondent’s attitude toward the behavior by giving a five-part response to an item, describing the behavior with adjectives of varying polarity, to obtain the direct measure of their attitudes toward grease disposal. Those five items in the attitudinal scale featured responses including 7-point scales ranging from: harmful to beneficial, pleasant to unpleasant, good to bad, worthless to valuable, and enjoyable to unenjoyable. As evident in the scale for question 29, the order of positive to negative objects of evaluation changed to assure reliability that respondents were reading the scales thoroughly and accurately, and not conditioned to assume all positive or negative responses appeared on the same ends of the scale.

Questions 30 through 33 were designed to obtain direct measures of the subjective norm, according to both the injunctive quality – what others think you should do – and a descriptive quality – whether others actually perform the behavior themselves – as proposed in the TpB model. That is, the subjective norm is being measured not only according to what others think that the respondent should do, but what significant others do themselves. The first normative influences are described as “Most people who are important to me” in questions 30 and 32, and as “The people in my life whose opinions I value” in questions 31 and 33.

To obtain direct measures of perceived behavioral control, questions 34 through 37 captured “people’s confidence that they are capable of performing the behavior under investigation” (Ajzen, 2002, p. 6). These four survey items were designed to more specifically address both the respondent’s level of self-efficacy and the controllability of the behavior in question. Question 34 addressed self efficacy by asking respondents to rate grease disposal as “impossible” or “possible” according to a 7-point scale. Question 35 proposed the statement: “If I wanted to, I could properly dispose of grease within my household on every occasion,” with true or false scaled responses, to obtain another measure of self efficacy. Question 36 asked
respondents directly “how much control” they had over grease disposal, while question 37 phrased the statement: “It is mostly up to me whether or not I dispose of grease properly within my household on every occasion,” with a “disagree-agree” scale, to obtain this control measure.

Question 38 began the portion of the second section of the questionnaire that addressed belief-based measures. In questions 38 and 39, the instrument measured behavioral beliefs (the first of the three antecedents to the predictors of behavioral intent and actual behavior), both in terms of the behavioral belief strength (item 38) and the outcome evaluation (item 39).

Next, items 40 through 46 were designed to measure normative beliefs, both in terms of the normative belief strength – what influential others think you should do – and the motivation to comply – how much you want to do what influential others think you should do. These two measures – strength and motivation – were applied to each of the three “referents” that were identified in Part II – the qualitative component – of this study. Those results found that the three most prevalent referents, identified from the responses of the sample participating in Part II, were categorically: family, friends, and government/regulatory agencies. The third referent was somewhat surprising, but understandable when considering the nature of the behavior under investigation in this three-part study, as grease disposal is classified more as a compliant behavior than a consumer behavior in this context.

Survey questions 46 through 51 measured control beliefs, or the antecedents of the theory’s third direct predictor – perceived behavioral control – of behavioral intention and actual behavior. As noted earlier, according to the theory of planned behavior, perceived behavioral control directly impacts behavioral intention, while directly and indirectly impacting actual behavior as well. Results from the pilot study were again helpful in assisting with the design of TpB control measures, represented in questionnaire items 46 through 51. In the qualitative pilot
study, respondents noted that (a) knowledge of how to dispose of grease properly, (b) the means or container in which to store used grease, and (c) the inconvenience (noting it is often messy) of grease disposal, were the three primary measures of control beliefs impacting perceived behavioral control over intentions and actions of proper disposal of household grease. Thus, questions 46 through 51 assessed the control belief strength and control belief power, as described by Ajzen (2002), of each of these three accessible control factors garnered from the qualitative pilot study responses – knowledge (questions 46 and 47), inconvenience (questions 48 and 49), and having a proper container (questions 50 and 51).

The third and final section of the questionnaire used in the 2006 survey included optional demographic information. Items 52 through 56 sought gender, age, ethnicity, education, and household income, respectively. Question 57 asked for feedback from respondents on how often “you prepare the meals/cook for yourself/your family in your household?” Likewise, and even more relevant to profiling a potential target likely to address the grease disposal issue, question 58 asked: “How often do you clean up after meals for yourself/your family in your household?” These items were thought to shed additional light on behavioral intention and actual behaviors of those specific respondents whose role is to oversee grease disposal at home.

Finally, item 59 of the questionnaire was an administrative question for the benefit of the Macon Water Authority, added to the end of the measurement instrument to obtain feedback from customers on their preferences for how to pay their water bills. From these responses, the Authority hoped to address the administrative problem of the heavy volume of customers who come in person to the customer service department of the MWA headquarters to pay their bills. Alternative means for cutting down on this traffic is an objective of the MWA, which might facilitate additional research on this topic in the future.
Level of Analysis of Part III (The 2006 Survey)

Completed questionnaires from the 2006 surveys were coded and entered into a Microsoft Excel spreadsheet and later verified for coding accuracy. The data from the completed questionnaires entered into Excel for initial examination then were transferred (from previous coding and tabulation) into SPSS software for more inferential statistical analyses.

The initial descriptive statistical results, provided in Microsoft Excel and in SPSS formats, included the frequency distribution of responses to the questionnaire items and demographic profiles of participants, which will be presented to the MWA board of directors and leadership at a later date, in addition to being reported in this study via output obtained from statistical analyses conducted in SPSS.

Statistical analyses of responses from the 2006 survey investigated, using factor analyses as well as standard multiple regressions, the nature of relationships between media use, via mass and interpersonal means, and perceived or actual knowledge of preferred behaviors regarding the proper disposal of household grease. In addition, a search for relationships among gaps in perceived or actual knowledge and subsequent media consumption, either from mass media or public information sources, or both, also were conducted. Finally, a series of multiple regressions will be conducted to determine the accuracy of the independent variables from the theory of planned behavior – attitudes toward the behavior, subjective norms, and perceived behavioral control – as predictors of the behavioral intention of respondents to dispose of household grease properly.
CHAPTER IV
RESULTS

The results of this investigation are presented within three sections that reflect the findings for the three respective parts of the study. Part I includes the descriptive statistics and frequencies from the 2004 survey, which helped identify initial patterns and tendencies of mass media and public information use among sampled respondents in the population. The 2004 survey also made possible the further investigation of theoretical and conceptual ideas and questions proposed in Parts II and III of this study. Part II involves a qualitative component that was necessary to obtain insights about the theory of planned behavior for further testing in Part III. Finally, Part III reports the findings from the follow-up survey in 2006, which investigated a number of relationships among media use, knowledge, attitudes, and behaviors, related to a specific, salient issue within an applied setting. Data from the 2006 survey are the primary means for addressing the research questions under investigation in this three-part study.

Population for all three parts of the study:

The participants in this research study were customers of the Macon Water Authority (MWA), which is the sole water and sewer utility serving the city of Macon and Bibb County, Georgia. According to the U.S. Census Bureau, Bibb County has a total population of a little more than 153,000 persons, with a median age of 34.7 years. The county is 50 percent white, 47 percent African-American, with 3 percent of the population some other ethnicity. Forty-six percent of the population is male and 54 percent is female. More than 77 percent of the population has obtained a high school degree or higher, while 21 percent are college graduates.
The household median income for Bibb County is $34,532, while the median family income is $43,479.

The city of Macon has a total population of just over 97,000 people, with a median age of 33.6 years. Nearly 63 percent of the city’s population is African-American, while 36 percent is white, and 1 percent is of another ethnicity. Slightly more than 72 percent of the city’s population have at least graduated from high school, while a little more than 17 percent have a bachelor’s degree or higher. The median household income for the city of Macon is $27,405, while the median family income is $33,699.

It is important to note as well that research conducted among public utilities provide the strongest measures of true public opinion, due to the level of penetration of these services to city and county households. In other words, since nearly everyone in the population is represented among the approximately 55,000 MWA customers randomly sampled for participation in the 2004 and 2006 surveys, the results of the data collected among such a statistically strong sample are additionally strengthened when generalizing the results to the greater population. In addition, in working with the customers of a large public utility, the response rates to the two mailed surveys (18% in 2004 and 10% in 2006) resulted in a large enough N to provide for more reliable observations within and among groups of the sample population.

Part I (The 2004 Survey):

Part I of this overall research project consisted of a customer service survey for the Macon Water Authority (MWA).

Description of the Sample of Part I (Results of the 2004 Survey)

The measurement instrument used in the 2004 survey consisted of 26 questions, plus five optional demographic items. A total of 434 of the randomly sampled 2,500 utility customers
participated in the 2004 MWA customer survey. The response rate and subsequent sample size of the 2004 survey are large enough to allow for strong reliability of statistical analyses. In addition, findings may be generalized to the greater population because participants were randomly selected.

Compared to the U.S. Census Bureau statistics on the city of Macon and Bibb County, Georgia, mentioned earlier in this chapter, this sample of MWA customers was fairly representative. Table 1.0 provides a comparison of population and sample demographics.

The data collected from the sample participants of the 2004 survey revealed that income and education measures were similar to those of the Census data. Not taking into account the 15 percent of respondents who did not indicate gender, female respondents (53%) outnumbered male respondents (32%). Results were slightly skewed toward white respondents – 61 percent were white – while 25 percent were African American, less than 3 percent were some other ethnicity, and 11 percent did not specify their ethnicity. Race and gender skew slightly in favor of white women as the highest frequency respondents in Part I of this study.

Half of the respondents to the 2004 survey were over 55 years of age (51%), while a little less than 20 percent were between the ages of 45-54; 12 percent were between the ages of 35-44; 9 percent were between the ages of 25-34; and 8 percent did not divulge their age. Twenty-six percent of households represented earned less than $20,000; 24 percent reported income between $21,000 and $50,000; 22 percent made between $51,000 and $100,000 in household income, while approximately 18 percent reported household income more than $100,000. Less than 10 percent of the participants did not report household income.
Media Use and Issue Knowledge of Part I (Results of the 2004 Survey)

Part I of this study was designed initially to establish a baseline measure and provide feedback on customer service performance of the MWA. However, this research measured customer use of mass media and public information sources, customer knowledge, and interest on a number of industry topics and issues, for the practical purposes of designing a more effective public communications campaign from the results. In addition, Part I provided a foundation for the design of an instrument to use in the follow-up survey of 2006, which could more empirically test theoretical models when applied to the salient, critically important issue of proper disposal of household grease. Some responses in Part I aided in the construction of instruments for Parts II and III.

First, Part I provided feedback on the salience of the broader issues of water and sewer services, finding that 99.5% of respondents rated the MWA’s work as either “important” or “very important” (91%) to the overall economic development and quality of life of the community.

However, of those respondents to Part I who had experiences dealing with the MWA customer service department (approximately 30% of the sample), 85% revealed they were either “satisfied” or “very satisfied” with the customer service performance of the utility.

In rating the competence of the MWA’s overall operations (“agree” or “strongly agree” frequencies in responses), approximately 94% of respondents rated the MWA as competent in water production and 88% viewed the Authority competent in sewer treatment. When asked more specifically to rate the quality of the MWA’s drinking water, 86% of customers either agreed or strongly agreed that quality was high. Likewise, when presented with the statement: “The MWA provides high quality sewer collection and treatment services,” 82% of customers
either agreed or strongly agreed. In addition, 87% of respondents agreed that the MWA was an environmentally sensitive steward of natural resources, 87% of MWA customers either agreed or strongly agreed that they trusted the MWA elected officials to be fiscally responsible when making policy decisions.

The final two series of items addressed initial customer opinions and insights on specific industry issues, and were prioritized and evaluated for their appropriateness to test theoretical and conceptual considerations in Parts II and III. These items consisted of 10-point semantic scales, with 1 being not very knowledgeable and 10 being knowledgeable, to assess perceived customer knowledge on a number of issues, as well as likelihood of using various media for obtaining more information.

Results indicated that MWA customers perceived themselves to be somewhat more knowledgeable of water operations (M=5.19) than of sewer operations (M=4.61).

As a result, an issue pertaining to the sewer side of MWA operations – specifically, the proper disposal of household grease – was determined to be ideal for further inquiry in the semi-structured interviews and survey that followed in 2006 in Parts II and III, respectively. Also, the mean scores for items measuring knowledge and likelihood to dispose of household grease properly were relatively high.

As evidence, when asked, “How knowledgeable are you regarding the importance of proper grease disposal?” respondents revealed a relatively high degree of knowledge (M=7.28), which somewhat contradicts their reported lack of knowledge of sewer treatment operations. This contradiction led into the research questions for further study in Parts II and III. In addition, when considering how likely customers were to properly dispose of household grease in 2004, with responses ranging from 1 = not very likely to 10 = very likely, respondents reported a
strong likelihood to comply with this pro-social behavior (M=7.84). Note that the primary
dependent measure within the planned behavior model, studied further in Parts II and III, is the
behavioral intention measure that closely resembles this questionnaire item from the 2004 study.

In addition to testing knowledge and behavioral intention of select issues salient to MWA customers, Part I also established some baseline measures of public information use, preferences, or tendencies of respondents. In Part I, there were a series of questions that measured the likelihood of MWA customer respondents to obtain public information from specific PR tools or Integrated Marketing Communications utilized by the MWA. The most popular communication tools utilized by the MWA customer respondents included print and broadcast mass media (M=8.0) and the MWA newsletter distributed directly to customers via billing inserts (M=7.13). However, direct mail or other types of billing inserts were not likely to garner readership or response (M=3.41). Apparently, newsletters were not considered direct mail, although they are distributed via this channel. Perhaps, newsletters have more mass media qualities in the eyes of customers. In any event, newsletters were likely to be read while other direct mail was not.

The data also showed that the MWA Web site, which was in the process of being redesigned at the time of the 2004 survey, was only marginally likely to be accessed for public information by MWA customers (M=4.21), while special events were the least likely sources of all public information tools to be utilized for building knowledge or awareness of issues (M=2.97).

While the results of Part I were helpful in assisting with the construction of the measurement instrument used in the 2006 survey, they were not designed to provide the statistical significance nor methodological rigor to test the theoretical perspectives or address the research questions under examination. For one, results were too positively skewed and thus less
effective for testing various conditions of media use and its potential to predict issue knowledge within and among groups of respondents. In addition, Part I did not satisfy the need to obtain enough (reported behavioral) information to examine properly a theoretical model for applied public communications campaigns. The value of Part I, however, as stated earlier, was in documenting relationships between customer knowledge of industry issues and diverse use of public information tools.

Part II (The Qualitative Study of 2006)

The specific purpose of Part II of this study – the qualitative component – was to obtain belief-based measures for testing of the theory of planned behavior, as applied to proper disposal of household grease, which was the focus of the latter part of the measurement instrument in the 2006 survey. The advantages of qualitative methods are well documented. In addition to being a necessary component of the protocol for testing the theory of planned behavior, a preliminary qualitative study that precedes the design and execution of a survey is beneficial in a number of other ways. The qualitative component of this study allowed for more in-depth discussion and understanding of the behavior in question – proper disposal of household grease – among a sample of the population under examination. In addition, when used together with more formal, quantitative methods, a qualitative study can help predict how relationships are structured, as well as why such interactions might exist. As was the case with Parts II and III of this research project, the combined use of qualitative and quantitative methods can provide triangulation, or a better understanding of phenomena, possible only through investigation from different perspectives.

During the qualitative Part II of the study, 34 Macon Water Authority (MWA) customers took part in semi-structured interviews addressing customer beliefs regarding proper grease
disposal. Customers were recruited via intercepts to participate as they came into the MWA headquarters to do business, such as to pay their monthly bill.

As Ajzen (2002) noted, “beliefs play a central role in the theory of planned behavior. They are assumed to provide the cognitive and affective foundations for attitudes, subjective norms, and perceptions of behavioral control” (p. 7).

Responses in Part II identified accessible behavioral, normative, and control beliefs, as they related to the direct measures of attitudes, subjective norms, and perceived behavioral control, respectively, within the framework of the theory of planned behavior. Answers to the first three questions were used to construct a list of “modal accessible beliefs, or the most commonly held beliefs of the research population” (Ajzen, 2002, p. 9). These questions related to the (1) advantages of proper grease disposal (the behavior in question in this study), (2) the disadvantages of proper grease disposal, and (3) anything else they (the respondents) associated with proper grease disposal.

Questions 4 through 6 of the semi-structured survey/interview sought to identify “relevant, referent individuals and groups that are readily accessible in memory” (Ajzen, 2002, p. 12), and potentially influential to behavioral intent and actual behavior, as subjective norms. Participants were asked what individuals or groups would approve (question 4) or disapprove (question 5) of their proper disposal of household grease, and what other individuals or groups came to mind (question 6) when thinking of grease disposal (the behavior in question).

Questions 7 through 9 sought to elicit accessible control factors that might “facilitate or impede performance of the behavior” in question (Ajzen, 2002, p. 13). These control factors were necessary to obtain for further testing of perceived behavioral control within the framework of the theory of planned behavior. Respondents were asked (in question 7) what factors or
circumstances would enable them to dispose of grease properly, as well as (question 8) what factors or circumstances would make it difficult or impossible for them to perform the behavior. In question 9, respondents were asked if any other issues came to mind when considering the difficulty (perceived lack of control) for disposing of household grease properly.

Description of the Sample Responses of Part II (Results of the 2006 Qualitative Study)

The results of the qualitative component of Part II were coded and documented – and are being presented – by the number of responses provided on each question item, rather than number of respondents taking part. The most frequent responses to each question provided the most conclusive examples of relevant behavioral beliefs, normative beliefs, and control beliefs, respectively, that could be used in the instrument for the 2006 survey.

In assessing the behavioral beliefs of customers as they apply to their attitudes toward proper grease disposal, responses to question 1 were a near consensus. When asked “what are the advantages of disposing of grease properly on every occasion within the household,” 26 responses reflected that the behavior helps in reducing/preventing clogs or related problems with plumbing or pipes. The second leading response (with 5 happened to be closely related to the first – the protection of the public utility’s water/wastewater system. “Preventing clogs in my drain” as an advantage of grease disposal was the only behavioral belief outcome included in Part III, to test the premise of the theory of planned behavior.

As for the disadvantages of proper grease disposal, responses focused on either the inconvenience of the proposed behavior or the difficulty in obtaining a container to store the used grease. Other responses noted there were no disadvantages to proper grease disposal. The “no disadvantages” and “inconvenience and the need for a proper container” responses were designated as control factors to further test these responses as control beliefs, within the structure
of the planned behavior model. At the conclusion of the qualitative interviews, it was determined that respondents providing these answered referenced them more as “things that make it difficult to dispose of grease properly,” rather than beliefs about the behavior itself, per se. Thus, the inconvenience of grease disposal was applied to questions 48 and 49 of the 2006 survey, while questions 50 and 51 served as control factors noting the importance of a container for assisting with the proper disposal of grease.

The majority of responses to question 3 in Part II failed to note anything else in association with beliefs about the behavior of proper grease disposal. A few responses did associate grease disposal with sanitation and waste, but this limited feedback failed to generate enough evidence to warrant further testing of this belief as a potential, or even appropriate, influence on respondent attitude toward the behavior. Responses to question 3 did, however, provide further evidence of the importance of clogged pipes and containers, re-affirming these answers as a behavioral belief and a control belief, respectively, of proper grease disposal.

Responses to questions 4 through 6 helped identify relevant referent “others” for the further measurement of normative beliefs through the 2006 survey of Part III. In question 4, which asked respondents about those people who might approve of their proper grease disposal, the three leading and obvious responses for identifiable referent “others” were clearly government or regulatory agencies, family members, and friends. The influence of family members, as a normative belief, appeared again when participants were asked in question 5, “Are there any individuals who would disapprove of (the respondent’s) disposing of grease properly on every occasion?” The overwhelming response (26 mentions) was that “no one” would disapprove of their proper grease disposal. When asked in question 6 if any other individuals or groups came to mind when respondents considered proper grease disposal, the majority either
failed to mention anyone specific or noted that “no one” would disapprove of such a behavior. As a result, the responses: government/regulatory agencies, family, and friends, were included as answer choices in questions 40 through 45 of the Part III 2006 survey.

Questions 7 through 9 of Part II were designed “to generate a list of accessible factors that may facilitate or impede performance of the behavior” (Ajzen, 2002, p. 13). Question 7 sought to identify what factors or circumstances would enable (or make it easier for) respondents to properly dispose of grease within their respective households. While the majority of responses noted that “nothing” would make the task easier, the top three answers to question 7 were studied further in questions 46 through 51 – which measured the control belief strength and power of the control belief factors – in the 2006 survey. The leading response that helped determine a primary control belief of the sample was “a proper container.” The belief that “better circumstances” or “convenience” was also identified as a potential positive influence on being better able to dispose of grease properly, along with “knowledge” of how to properly dispose of grease.

When asked if there were “factors or circumstances that would make it difficult or impossible to properly dispose of grease” in question 8 of Part II, respondents noted again that the lack of “a proper container,” or the “inconvenience” of the act, or a lack of “knowledge” in how to properly perform the behavior, all made the behavior more difficult or impossible to perform. These responses confirmed that those factors were the leading, identifiable control beliefs for further testing in the 2006 survey, along with the belief that “nothing” would make proper grease disposal more difficult.

In question 9, almost all of the responses failed to note “any other issues” that came to mind “when considering the difficulty or ease of properly disposing of grease on ever occasion
within the household.” Responses mentioning the “inconvenience” and “the need for a proper container” were again identified in question 9 as control beliefs applicable to one’s ability or inability to properly dispose of household grease. The fact that these two concepts manifested repeatedly across different sections of the qualitative interviews proved they are no doubt significant and justified as objects of further investigation in the 2006 survey.

**Part III: Results of The 2006 Survey**

Part III of this overall research project involved the development and distribution of a questionnaire for the 2006 survey. This survey served as a follow-up to the 2004 Survey of Part I, by focusing more closely on the relationships between media use and knowledge of salient issues, which surfaced as a result of that initial inquiry. In addition, the survey of 2006 served to operationalize the conceptual components of the theory of planned behavior, found as a result of Part II, within the context of an applied public communications campaign seeking to influence MWA customer compliance with proper disposal of household grease.

A total of 497 MWA customers – a randomly selected sample of the approximately 55,000 residential customer accounts of the MWA – completed the surveys. Results were compiled and coded first in Microsoft Excel for easier verification and greater accuracy, prior to transferring into SPSS for more in-depth analysis. The 497 responses, an approximate 10% response rate (since 5,000 questionnaires were distributed), were encouraging, given the length and sophistication of the measurement instrument. A 10% response rate has been established by some as a minimum response rate for surveys of this type. Assuming 384 total surveys are returned (for statistical analysis featuring a measurement error not to exceed 5%), multiple mailings can be avoided, as was the case in this instance (Stacks, 2002).
Description of the Sample of Part III (Results of the 2006 Survey)

Of the 497 respondents to the 2006 survey, a portion did fail to complete the entire questionnaire, and missing data were excluded from analysis. Most of the missing data were found within the section of the questionnaire addressing the theory of planned behavior. In some instances, missing data approached 25% on the more complex items appearing near the end of the questionnaire.

The prototypical respondent to the 2006 survey, like in the 2004 survey, was an older, white female. Males accounted for 38.4% of respondents and 60.8% were female. Average age was 58.4, while the median age was 58 and the mode was 59. Thus, more than half of the respondents were older than 58 (approximately 52%). Fewer than 7% of respondents were in their 20s, while another 7% were in their 30s. Approximately 14% were in their 40s, and another 22% were in their 50s. More than 20% were in their 60s and another 18% were in their 70s, while more than 10% were in their 80s, and less then 1% were in their 90s. The range of respondents was from age 19 to 96.

As for ethnicity, 66.2% of respondents completing this demographic information were Caucasian (white), while 27.2% were African American, .4% were Hispanic, 1% were Asian American, and 2% responded “other.”

Regarding education, 11.5% had some high school education, 21.5% had completed high school, 24.5% had attended college, nearly 23% had college degrees, and a little more than 17% had advanced degrees.

In terms of household income, nearly 24% reported an income of $0 to $25,000 and nearly 28% reported income from $25,001 to $50,000. Almost 13% of respondents noted that income was between $50,001 and $75,000, while a little more than 10% reported income
between $75,001 and $100,000. More than 11% of participants noted an income greater than $100,000. Again, Table 1.0 provides a comparison of population and sample demographics.

Finally, two questions to measure household roles and behavioral tendencies were added. Participants were asked to rate how often they prepared meals for themselves or their families and how often they cleaned up after meals at home, which are directly related to the issue of proper disposal of household grease. With both questions providing 7-point scales for responses ranging from 1 = “never” to 7 = “always”, results show that customers are likely to prepare and cook meals within their homes (M=5.08) and to clean up after meals (M=5.82), which indicates that this sample is likely to face regularly the dilemma of how to properly dispose of household grease.

Research Question 1: Is the level of mass media use, in general, significantly related to or predictive of people’s actual knowledge of specific industry issues?

The level of general mass media use among respondents was obtained through the analysis of seven items in the 2006 survey. Questions obtaining measures of general (mass) media usage featured 7-point scales with responses ranging from 1 = “never” to 7 = “every day”. In question 8, MWA customers were asked in general, “how often do you spend time reading traditional, print newspapers?” Question 9 inquired how often respondents spent time reading online versions of news sources. General television use was assessed in question 11, while general radio consumption was measured in question 13.

Three additional questions asked respondents to rate their level of consumption of newspaper readership, television viewership, and radio listenership, respectively, according to 10-point scales that ranged from self reports of 1 = “very light” to 10 = “very heavy” readership (question 10), viewership (question 12) and listenership (question 14). This scale differed from
the 7-point scale used to measure general media use, primarily to assure thorough review by respondents of all questionnaire items. The 7-point scales were used to determine general mass media use, while the 10-point scales were used to reflect self-reports of any extreme reading, viewing, or listening patterns. By standardizing the scores of all media items, the use of different scales did not inhibit analysis. The Cronbach’s alpha of this seven-item mass media scale was .58, even though its design was not to compose an index for mass media consumption.

The direct measures of actual knowledge (of proper grease disposal) differ conceptually and methodologically from the perceived knowledge measure since the actual knowledge questionnaire items related to specific facts concerning the industry’s preferred methods of proper grease disposal. Via question 15 in this most recent questionnaire, respondents were asked: “How knowledgeable are you about proper grease disposal in your household?” To obtain measures of accurate, actual knowledge, respondents were asked factual questions with examples of three improper means for disposing of grease (in questions 16, 18 and 19), as well as the proper method (question 17). The correct answers of respondents to these test items were rated on a 7-point scale, with “1” being the most incorrect response and “7” being most correct. A higher mean score on these items then would reflect a higher degree of accuracy.

In addition, three questions in the 2006 survey assessed the level of respondent knowledge on global issues related to grease disposal and its impact on sewer line clogs (question 20), water quality (question 21), and sewer overflows (question 22). Four questions (16 through 19) inquired about actual knowledge of grease disposal on a micro-level, or how it impacts individual households, and were later combined to form a composite measure of “actual individual knowledge.” The three global questions (questionnaire items 20 through 22 in the 2006 survey) were combined to form a measure of “actual general knowledge.” While these
knowledge measures were obtained through self-reports, they represented “actual” knowledge by reflecting the degree to which respondents were familiar with the proven industry and regulatory guidelines for properly disposing of household grease. Thus, to address Research Question 1, dependent measures of “actual knowledge” [ACTUALKN], “actual individual knowledge” [ACTUALIN] and “actual general knowledge” [ACTUALGE] were analyzed accordingly.

The Cronbach’s alphas for the three actual knowledge scales were .50 for overall actual knowledge, .34 for actual individual knowledge, and .68 for actual general knowledge scales. Again, these items were designed to provide a test of factual knowledge among respondents of various grease disposal methods and implications, rather than to serve as an index measure attainable from a more reliable scale.

First, to test the relationship between media consumption and actual knowledge, standard multiple regression was conducted to determine the accuracy of the independent variables on media consumption (Q8, general print media use; Q9, general online media use; Q11, general TV use; Q13, general radio use; Q10, light/heavy newspaper readership; Q12, light/heavy television viewership; and Q14, light/heavy radio listenership), entered independently. Initial screening of the data revealed only one potential predictor (general print media) with a strong enough correlation ($r = .085, p = .034$) with actual knowledge of proper grease disposal. Further analysis of regression results did not indicate that the overall model – the seven independent general media uses – predicts actual knowledge [$R^2 = .029, R^2_{adj} = .014, F(7,449) = 1.899, p = .068$], though the explained variance is small and thus more representative of an explanation of relationships rather than a strongly predictive model.

Next, the same independent measures were examined as potential predictors of the more specific dependent measure of actual individual knowledge. Standard multiple regression was
conducted to determine the accuracy of these seven media use independent variables predicting actual individual knowledge. Only one potentially significant predictor of actual individual knowledge was found – general TV use ($r=.080, p=.041$). However, the standard multiple regression results indicated that the overall model was not significantly predictive [$R^2=.029$, $R^2_{adj}=.014$, $F(7,459,)=1.974, p=.057$].

To assess the significance of mass media as predictors of actual general knowledge, a standard multiple regression was conducted. Only print media use ($r=.119, p=.005$) and light/heavy newspaper readership ($r=.126, p=.003$) revealed significant correlations with actual general knowledge [ACTUALGE]. Regression results indicated that the overall model failed to predict actual general knowledge [$R^2=.026$, $R^2_{adj}=.011$, $F(7, 454,)=1.739, p=.098$]. Standard multiple regression results did not indicate the overall model predicted actual knowledge or actual individual knowledge, but stepwise regression results indicated that the model, as shown in Table 1.1, predicted actual general knowledge, when considering the independent variable of light/heavy newspaper readership, although its limited explained variance was noted [$R^2=.016$, $R^2_{adj}=.014$, $F(1, 460,)=7.396, p<.01$].

Collectively, the lack of significant results from standard and stepwise multiple regressions, which sought to investigate mass media use as predictors of overall actual knowledge, helped to justify the need to break the dependent measure of actual knowledge (obtained from responses to the seven factual items on grease disposal) into two more specific measures – “individual” or local knowledge (taken from four of the seven items) as well as “general” or global knowledge of grease disposal (reflected in three of the seven items) – for further analysis.
Because of the low reliabilities for the questions on mass media consumption to form an index measure of mass media use, a factor analysis was conducted. When the latent variables correlated minimally via the Promax (oblique) rotation method, the factor structure was found to be naturally orthogonal. Thus, a factor analysis with a Varimax rotation method was conducted, and this method was selected to identify potential components or factors that might be highly inter-correlated and conducive for further analysis as composite independent measures within multiple regressions.

The results of the factor analysis results revealed three factors, provided in Table 1.2, with initial Eigen values over 1.0. These factors consisted of loadings of .30 or higher for the seven individual mass media use items. The first component [StdFactor1RadMedia] consisted of general radio use, light/heavy radio listenership, and general online media use; the second component [StdFactor2NPMedia] consisted of light/heavy newspaper readership and general print media use; and the third component [StdFactor3TVMedia] consisted of general TV use and light/heavy TV viewership.

These three resulting factors were then entered into a standard multiple regression model to determine their accuracy as independent variables, for predicting actual knowledge, actual individual knowledge, and actual general knowledge, accordingly.

First, a standard multiple regression was conducted to determine the predictive power of the three factors on actual knowledge. There were no significant predictors of actual knowledge among the three factors, nor was the overall model significantly predictive. Next, multiple regression was conducted to determine the accuracy of the factors as independent predictors of actual individual knowledge. The results of this regression again revealed that there were no
significant predictors of actual individual knowledge among the three factors, nor was the overall model significantly predictive of actual individual knowledge.

Finally, a standard multiple regression was conducted using the three mass media factors as potential predictors of actual general knowledge. In this instance, following analysis of the data, Table 1.3 reveals the regression results that indicated the overall model predicted actual general knowledge, although the explained variance of such was very slight \([R^2=.019, R^2_{adj}=0.012, F(3, 458,)=2.899, p<.05]\). While this model only accounts for less than 2% of the variance in actual general knowledge, it does show a significant relationship between the variables, which is viewed as more germane to this analysis than the model’s predictive power. However, a summary of regression coefficients revealed that only the second factor of newspaper consumption \([StdFactor2NPMedia]\) significantly contributed to the model.

Research Question 1 does not uncover significant results that indicate mass media are strong predictors of issue knowledge, reflected in the limited explained variance in each of the models. Thus, the overall results reflect an explained relationship between a few isolated variables, rather than a strong predictive power of the models. This is not surprising when considering the growing body of research, much of it referenced in this study, which discounts the direct influence of mass media effects. In this study, only marginal evidence exists that mass media sources – in two models factoring newspaper consumption – may indeed impact one’s issue knowledge, albeit on more global, “general” concepts.

Research Question 2: Is the level of consumption of an organization’s directly or indirectly sponsored public information – through various media channels within the scope of a public communications campaign – significantly related to or predictive of actual knowledge of industry issues?
Research Question 2 asks what the relationship is between various forms of public information and issue knowledge of proper grease disposal, among MWA customers. In doing so, six items on the measurement instrument in the 2006 survey were designed and validated, as a result of their use in the 2004 survey and from the findings of Part I of this research project, as effective means for addressing this question. These independent variables include all of the existing public information tools either directly or indirectly utilized by the Macon Water Authority (MWA) during its public communications campaign on grease disposal. Specifically, questions 1 through 6 of the 2006 survey were designed to measure utility customer consumption of MWA sponsored public information (MWA presence in newspapers, on television, on cable Channel 14, on radio, as well as via the MWA customer newsletter and the organization’s Web site. While the MWA keeps an updated clip file and account of impressions that appear in local media, there was no use of such content analysis in this investigation.

The six public information questions included a 7-point scale, with responses ranging from 1 = “never” to 7 = “always”, for MWA customers to reply accordingly to their level of use of those aforementioned PR tools. In question 1, customers were asked, “How often do you read information about the MWA in the newspapers?” Likewise, question 2 assessed how often customers viewed the MWA on television. These two questions addressed the MWA’s indirect use of “uncontrolled” mass media within its public communications campaign, as the Authority prepares and disseminates a regular schedule of news releases to local print and broadcast media, which conceptually explains the reason for inquiring about such media consumption. However, since the government access cable channel for the city of Macon is contractually obligated to cover MWA board meetings and air the utility’s public service announcements, the MWA’s use of cable Channel 14 can be argued as a form “controlled” media, although cable television is
traditionally categorized otherwise. In any event, question 3 asks customers: “How often do you see information about the MWA on…cable Channel 14?” Question 4 of the 2006 survey asked customers about their use of another “uncontrolled” mass medium, by inquiring how often customers heard information about the MWA on local broadcast radio stations.

Question 5 and 6 addressed public information consumption from directly sponsored or “controlled” MWA media – the Authority’s newsletter inserted every other month into the customer bills and the Authority’s Web site, respectively. These two channels can be argued as having mass media qualities, however, since newsletter distribution totals approximately 55,000 copies every other month, while Web site traffic has reached 10,000 hits over the course of a similar period. Nevertheless, media that allow for the utility to control messages intended to increase knowledge and awareness of issues such as proper disposal of household grease are invaluable. Research Question 2 tests their overall effectiveness.

The dependent measures of actual knowledge, actual individual knowledge, and actual general knowledge, used in analysis of Research Question 2, are the same measures that were compiled for data analysis addressing Research Question 1.

To address Research Question 2, a multiple regression was conducted to determine the accuracy of the six separate public information independent variables in predicting actual knowledge of proper grease disposal. Four variables were significantly correlations with actual knowledge [ACTUALKN]: MWA in print media \(r=.100, p=.016\), MWA on TV \(r=.079, p=.046\), MWA on cable Channel 14 \(r=.124, p=.004\), and the MWA newsletter \(r=.126, p=.003\). Regression results, presented in Table 2.1, indicated that two significant variables entered as predictors of actual knowledge in this model – the MWA newsletter and the MWA on cable Channel 14. For Model 1 – featuring the MWA newsletter – regression results were

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significant, although it should be noted that the explained variance was extremely minimal \( R^2=.016, R^2_{\text{adj}}=.014, F(1,457,)=7.370, p<.01 \). In reviewing the regression coefficients, the MWA newsletter was confirmed as a significant contributor to the model \( (p=.021) \). For Model 2, the MWA coverage on cable Channel 14, regression results were also significant, although once again explained variance was noticeably weak \( R^2=.027, R^2_{\text{adj}}=.022, F(1,456,)=5.061, p<.05 \). After further review of the regression coefficients, the MWA on cable Channel 14 variable was confirmed to significantly contribute to the model \( (p=.025) \).

Multiple regression was conducted to determine the accuracy of the independent variables of the MWA’s public information in predicting actual individual knowledge. Upon the initial review of the correlations between the six public information independent variables and actual individual knowledge [ACTUALIN], two correlations were significant at the \( p<.05 \) level: the MWA on cable Channel 14 \( (r=.119, p=.005) \) and the MWA newsletter \( (r=.085, p=.032) \). Table 2.2 reveals regression results that indicated one significant variable – the MWA on cable Channel 14 – entered as a predictor, albeit one with very little explained variance \( R^2=.014, R^2_{\text{adj}}=.012, F(1,466,)=6.725, p<.05 \). Further analysis of the regression coefficients also confirmed significance \( (p=.010) \).

Finally, a multiple regression was conducted to determine the accuracy of the six independent public information variables predicting actual general knowledge [ACTUALGE]. Four variables correlated highly with actual general knowledge: the MWA in newspapers \( (r=.168, p=.000) \), the MWA on TV \( (r=.084, p=.035) \), the MWA on cable Channel 14 \( (r=.077, p=.049) \), and the MWA newsletter \( (r=.120, p=.005) \). As evident in Table 2.3, regression results indicated only one significant variable – the MWA in newspapers – was a slight predictor
Review of the regression coefficients confirmed that MWA coverage in newspapers did significantly contribute to the model \((p=.000)\).

The Cronbach’s alpha reflecting the reliability of the six-item public information scale was .69, although the inclusion of these items in the questionnaire was not to design a summative scale to obtain an index measure of public information consumption. Because of low reliabilities for the questions on MWA public information usage to form a public information composite measure or index, a factor analysis was conducted to determine factors of public information usage for further analysis in multiple regression, consistent with the approach utilized to form factors of general mass media usage examined in Research Question 1.

The results of the factor analysis revealed two components for public information usage with Eigen values over 1.0. Table 2.4 reports factors with loadings of .30 and higher for the six individual MWA public information items. The first factor [StdFactor1MWAMedia] consisted of the first five public information items – the MWA in print media, the MWA on TV, the MWA on cable Channel 14, the MWA on the radio, and the MWA newsletter. The second factor [StdFactor2MWAWeb] consisted solely of the MWA Web site item. The factor analysis with a Varimax rotation yielded nearly identical patterns as that conducted with a Promax rotation, with both resulting in the two-factor solution with the same public information items.

These two factors – [StdFactor1MWAMedia] and [StdFactor2MWAWeb] – were then entered into a standard multiple regression to determine their potential as predictors of actual knowledge, actual individual knowledge, and actual general knowledge.

The first multiple regression was conducted to determine the accuracy of the two standardized factors as predictors of actual knowledge. The first factor, composed of the MWA mass media and newsletter items, correlated highly with actual knowledge \((r=.136, p=.002)\).
Table 2.5 reveals that regression results indicated the overall model significantly predicted actual knowledge, although it offered very little explained variance \([R^2=.019, R^2_{adj}=.015, F(2,456,)=4.397, p<.05]\). Further analysis of the regression coefficients also indicated only this first factor [StdFactor1MWAMedia] significantly contributed to the model \((p=.004)\).

The results from the second multiple regression assessed whether the two MWA public information factors significantly predicted actual individual knowledge. Only the first factor consisting of MWA mass media and the newsletter [StdFactor1MWAMedia] was correlated with actual individual knowledge [ACTUALIN] at the \(p<.05\) level \((r=.085, p=.033)\). However, regression results indicated that the overall model was not significantly predictive of actual individual knowledge \([R^2=.009, R^2_{adj}=.004, F(2,465,)=2.003, p=.136]\), and further review of the regression coefficients confirmed that neither factor significantly contributed to the model.

Table 2.6 presents the results from a multiple regression conducted to determine the accuracy of the two MWA public information factors as predictors of actual general knowledge. At first glance, the first factor [StdFactor1MWAMedia] showed a high correlation with actual general knowledge \((r=.152, p=.001)\). Regression results presented in Table 2.6 indicated the overall model significantly predicted actual general knowledge, although with little explained variance \([R^2=.029, R^2_{adj}=.024, F(2,463,)=6.838, p=.001]\). Further review of the regression coefficients revealed that the only factor contributing significantly to the model was the first factor composed of variables measuring MWA coverage in newspapers, on TV and cable Channel 14, on the radio, and the MWA customer newsletter [StdFactor1MWAMedia].

Research Question 2 investigated the potential influence of public information tactics – specifically targeting utility customers within a structured communications campaign – as predictors of their awareness or knowledge of an issue, in this case proper disposal of household
Results indicated that as separate, independent measures, the newsletter and access to the cable channel contributed significantly to greater actual knowledge of the issue. The cable channel also influenced the actual individual knowledge of customers on public information regarding the specific, household means for disposing of grease properly, while the presence of the MWA in local newspapers positively influenced customer knowledge of more global, general topics related to grease disposal. Although separate, individual public information consumption patterns did not correlate with one another to assure scale reliability, this was not alarming since the scales were not designed in that fashion, due to the tendencies of customers to proactively seek information from any number or combination of public information sources. However, the further examination of public information tools grouped into standardized factors helped clarify results garnered from the previous analysis, when the six individual public information tools were evaluated as predictors of knowledge measures. In determining the influence of these two factors – the MWA media/newsletter and the MWA Web site – on customer knowledge, results indicated that MWA Media, consisting of the coverage of the Authority in newspapers, on television, on cable, on radio, and in the utility’s newsletter, significantly predicted both actual knowledge and actual general knowledge of grease disposal.

Research Question 3: Is the combination of general mass media consumption and consumption of an organization’s public information significantly related to or predictive of greater actual knowledge of industry issues?

The third research question in the 2006 survey explored the effects of the customer’s use of media and public information consumption in combination.

To operationalize such a concept, the three factors for mass media consumption and the two factors of MWA public information consumption used in the first two research questions,
respectively, will be applied here. These five factor scores used to analyze the potential combined effects of media and public information were standardized into Z scores and collectively converted to positive values since some of them originally had negative scores. By adding 10 to each of the separate factor scores, all would be uniform and able to be multiplied or subtracted from one another to obtain the combined effects measures. Adding 10 to each original factor score was practical since no factor score originally was lower than –9. Factor scores were standardized since some of the original measures of media use were obtained by using 7-point scales, while other original measures of heavy to light consumption were obtained by using 10-point scales.

A noted limitation of this analysis is that the inquiry into the potential effects of media use in combination was limited to the measurement of only the possible pairs of factors, when media use combinations could have been extended to the review of three factors (communication tools) in combination, or four, or all five. For the sake of obtaining initial support of the premise, factor combinations were thus limited to two variables in this instance.

The computed combination of factors – for analysis of any potential effects from the combination of communication tools – was limited then to the 10 possible total combinations of two factors multiplied together according to each possible pair of the five separate factors – the three original factors of varying mass media use, converted to assure positive values [Pfac1Radio], [Pfac2NP], and [Pfac3TV], and the two original MWA public information factors, likewise converted to assure positive values [Pfac1MWAMedia] and [Pfac2MWAWeb]. The 10 possible two-factor combinations of mass media and public information factors included the products of each pair within and across these two groups of mass media and MWA public information consumption. The ten newly combined factors included: [IPFRadNP], [IPFRadTV],
Those ten new factors were then compared and tested along with the five individual factors in a series of multiple regressions similar to those conducted in research questions 1 and 2. This was done to assess the possibility of mass media and MWA public information consumption, in combination, serving as predictors of actual knowledge [ACTUALKN], actual individual knowledge [ACTUALIN], and actual general knowledge [ACTUALGE], of proper grease disposal.

The first multiple regression was conducted to determine the accuracy of the 15 independent variables (five separate factors and ten in combination) in predicting actual knowledge. Seven of the factors produced significant correlations with actual knowledge – the second mass media factor of newspaper use [Pfac2NP] \( (r = .086, p = .034) \); the first public information factor of MWA mass media and newsletter [Pfac1MWAMedia] \( (r = .140, p = .001) \); the combination of the radio mass media factor and the MWA media/newsletter factor [IPFRadMWAMedia] \( (r = .103, p = .015) \); the combination of the newspaper and television mass media factors [IPFNPTV] \( (r = .083, p = .039) \); the combination of the newspaper and MWA media/newsletter factors [IPFNPMWAMedia] \( (r = .134, p = .002) \); the combination of the television and MWA media/newsletter factors [IPFTVMWAMedia] \( (r = .117, p = .007) \); and the combination of the MWA media/newsletter and MWA Web site factor [IPFMWAMediaMWAWeb] \( (r = .092, p = .026) \). Table 3.1 presents the results of the first regression, which revealed that the model significantly predicted actual knowledge, with the first public information factor of MWA media/newsletter use [Pfac1MWAMedia] entered as an
independent variable \[R^2=.020, R^2_{adj}=.017, F(1,448)=8.910, p<.01\]. While the MWA Media factor had an influence on actual knowledge, inferences must be tempered due to the limited explained variance in the results.

Table 3.2 reports the results of the second multiple regression, which was conducted to determine the accuracy of the fifteen independent variables (five separate factors and ten in combination) in predicting actual individual knowledge. Four of the factors produced significant correlations with actual individual knowledge – the first public information factor of MWA media/newsletter [Pfac1MWAMedia] \[(r=.091, p=.025)\]; the combination of the television and MWA media/newsletter factors [IPFTVMWAMedia] \[(r=.106, p=.011)\]; the combined factors of television and public information via the MWA Web site [IPFTVMWAWeb] \[(r=.079, p=.045)\]; and the combined factors of the MWA media/newsletter and the MWA Web site [IPFMWAMediaMWAWeb] \[(r=.097, p=.019)\]. The results of the second regression revealed that the model significantly predicted actual individual knowledge, when the combined TV and MWA media/newsletter factors [IPFTVMWAMedia] entered as an independent variable, which provided the first evidence of an effect of combined media use on increased knowledge, although the predictive strength of the model was ever so slight \[R^2=.011, R^2_{adj}=.009, F(1,457)=5.210, p<.05\].

A third multiple regression was conducted to determine the accuracy of the fifteen independent variables – the five individual factors and the ten combination factors – as predictors of actual general knowledge. The first sign of a possible relationship between select factors and actual general knowledge came in the high correlations of two individual factors and three combination factors – the general use of newspapers [Pfac2NP] \[(r=.147, p=.001)\]; the public information use of MWA media/newsletter [Pfac1MWAMedia] \[(r=.146, p=.001)\]; the combined
radio and newspaper mass media factors [IPFRadNP] ($r = .110, p = .009$); the combined radio and MWA media/newsletter factors [IPFRadMWAMedia] ($r = .108, p = .011$); and the combined newspaper and MWA media/newsletter factors [IPFNPMWAMedia] ($r = .176, p = .000$). The regression results, presented in Table 3.3, indicated that two models significantly predicted actual general knowledge, as two separate, single factors – newspapers [Pfac2NP] and public information [Pfac1MWAMedia] – entered as independent variables. For model 1, the first factor of newspaper mass media [Pfac2NP] entered as a predictor [$R^2 = .022, R^2_{adj} = .019, F(1,453,) = 9.962, p < .01$]. For model 2, the second factor of MWA media/newsletter [Pfac1MWAMedia] entered as a predictor [$R^2 = .030, R^2_{adj} = .026, F(1,452,) = 4.053, p < .05$]. Both variables (factors) contributed significantly to the model (in model 1, $p = .002$ for [Pfac2NP]; and in model 2, $p = .042$ for [Pfac2NP] and $p = .045$ for [Pfac1MWAMass]). In both instances, where an effect was present but explained variance was limited, these results replicated findings from tests conducted to address previous research questions.

Evidence from Research Question 3 supports the social cognitive approach to integrated communications within a public information campaign. The combined use of the mass media (television) and public information (the MWA’s presence in newspapers, on television, on cable, on radio, and its customer newsletter) were found to significantly predict greater actual individual knowledge (reflected in Table 3.2), while these variables as separate predictors did not. Results from Research Question 2 were replicated in results from Research Question 3. Public information use via MWA Media significantly predicted actual knowledge of proper disposal of household grease. As Table 3.3 indicates, the results of Research Question 1 were also replicated in Research Question 3, when general newspaper use was revealed to significantly predict actual general knowledge.
Research Question 4(a): Is there a significant difference between perceived knowledge and actual knowledge, creating a knowledge gap regarding a specific industry issue?

To determine whether a knowledge gap existed between perceived and actual knowledge, means were compared for respondent measures of actual knowledge [ACTUALKN], actual individual knowledge [ACTUALIN], actual general knowledge [ACTUALGE], and perceived knowledge [PERCEIVEDKN], relevant to the proper disposal of household grease.

Perceived knowledge [PERCKNOW] was measured through responses to the single survey item, Question 15, which asked how knowledgeable respondents were about proper grease disposal in their respective households. This item used a 7-point scale, with responses ranging from 1 = “not very knowledgeable” to 7 = “very knowledgeable”

Measures of actual knowledge [ACTUALKN], actual individual knowledge [ACTUALIN], and actual general knowledge [ACTUALGE], were used from the previous research questions when these measures served as dependent variables.

Having composite measures of actual knowledge, actual individual knowledge, and actual general knowledge, as well as a single questionnaire item measure on self reported perceived knowledge, allowed for the comparison of means from these four measures to assess whether a knowledge gap existed between respondent perceived and actual knowledge – what customers reported that they think they know versus what they reported that they really know.

Cronbach’s alphas for the seven factual questions in the survey, which as a set formed the actual knowledge variable as well as the two sub-sets of actual individual knowledge and actual general knowledge measures, was a marginal .570. Correlations between the actual knowledge, actual individual knowledge, actual general knowledge, and perceived knowledge were significant at p<.001. Correlations between the three actual knowledge measures and perceived
knowledge also suggested the measures were tapping into different concepts, which justified the analysis of the three distinctively different concepts of reported knowledge about grease education issues. The perceived knowledge [PERCKNOW] and actual knowledge [ACTUALKN] correlation was significant \( r = .287, p = .000 \). Likewise, the correlation between perceived knowledge [PERCKNOW] and actual individual knowledge [ACTUALIN] was significant \( r = .204, p = .000 \), just like the correlation between perceived knowledge [PERCKNOW] and actual general knowledge [ACTUALGE] as well \( r = .235, p = .000 \). The correlation matrix for these four knowledge variables is presented in Table 4.0.

Evidence of a knowledge gap on the issue of grease disposal through a series of paired t-tests is summarized in Table 4.1. T-test results indicated a knowledge gap between perceived knowledge (M=5.28, SD=1.99) and actual knowledge (M=6.17, SD=.75), \( t(469) = (-7.659, p = .000 \); a knowledge gap was evident between perceived knowledge (M=5.28, SD=1.99) and actual individual knowledge (M=5.99, SD=.96), \( t(480) = (-10.026, p = .000 \); and a knowledge gap was widest between perceived knowledge (M=5.30, SD=1.98) and actual general knowledge (M=6.40, SD=1.03), \( t(476) = (-11.963, p = .000 \). A knowledge gap was also evident between actual general knowledge (M=6.39, SD=1.03) and actual individual knowledge (M=5.99, SD=.95), \( t(471) = (-6.95, p = .000 \).

Research Question 4(b): Does a gap in perceived or actual knowledge predict the level of media consumption, either through mass media sources or public information disseminated from a sponsoring organization with the parameters of a public communication campaign?

In order to further test the concept of the gap between perceived and actual knowledge among respondents on the issue of proper grease disposal, the knowledge gaps between (perceived knowledge < actual individual knowledge) and (perceived knowledge < actual...
general knowledge) were investigated further, along with the gap between actual general knowledge and actual individual knowledge.

Three knowledge gap variables were calculated by multiplying together existing measures in three pairs – actual general knowledge \([\text{ACTUALGE}]\) x perceived knowledge \([\text{PERCEIVED}]\), actual individual knowledge \([\text{ACTUALIN}]\) x perceived knowledge \([\text{PERCEIVED}]\), and actual general knowledge \([\text{ACTUALGE}]\) x actual individual knowledge \([\text{ACTUALIN}]\). These three new variables were representative of varying degrees of combinations of knowledge among respondents. Additional knowledge gap measures – arguably more inherently representative of a difference in separate measures of knowledge – were obtained by subtracting one variable from another, to create three more new “gap” variables representing the differences in pairs of single knowledge measures.

The six new knowledge gap variables included three as a result of multiplying individual knowledge measures by one another, to represent combined knowledge predictors: \([\text{AGKNXPER}]\), actual general knowledge multiplied by perceived knowledge; \([\text{AINKXPER}]\), actual individual knowledge multiplied by perceived knowledge; and \([\text{AINXAGEN}]\), actual individual knowledge multiplied by actual general knowledge. The new measures also included three calculated by subtracting individual knowledge measures from one another, with the lesser value subtracted from the larger to maintain positive values in the difference, including \([\text{AGENMPER}]\), actual general knowledge minus perceived knowledge, \([\text{AINKMPER}]\), actual individual knowledge minus perceived knowledge, and \([\text{AGENMAIN}]\), actual general knowledge minus actual individual knowledge. The direction of each of these paired calculations was taken into account to represent the smaller value of perceived knowledge.
subtracted from the larger values of individual and general knowledge, as well as the smaller
value of individual knowledge subtracted from the larger value of general knowledge.

A bivariate correlation was conducted to confirm significant correlations among the six
measures. Two pairs failed to correlate significantly – actual individual knowledge minus
perceived knowledge [AINKMPER] with actual individual knowledge x actual general
knowledge [AINXAGEN], as well as actual general knowledge minus actual individual
knowledge [AGENMAIN] with actual individual knowledge x actual general knowledge
[AINXAGEN]. A series of five multiple regression analyses were conducted to assess the
accuracy of the new knowledge gap independent variables as predictors of each of the three
factors of general media usage – radio mass media [StdFactor1RadMedia], newspaper mass
media [StdFactor2NPMedia], and television mass media [StdFactor3TVMedia] – and the two
factors of MWA public information consumption – the MWA’s presence in media and its
newsletter [StdFactor1MWAMedia] and the MWA’s Web site [StdFactor2MWAWeb].

In the first multiple regression conducted to determine the accuracy of the six
independent knowledge gap predictors on the general consumption of radio
[StdFactor1RadMedia], none of the independent variables predicted radio use.

As reflected in Table 4.2, results of the second multiple regression determined that the
independent variables predicted general newspaper use, although explained variance was limited
\[R^2=.048, R^2_{adj}=.046, F(1,453,)=22.795, p<.001\]. Regression coefficients revealed that only the
knowledge gap variable of actual general knowledge x perceived knowledge [AGKNXPER]
significantly contributed to the model.

The third regression conducted to analyze the predictive nature of the independent
knowledge gap variables for TV use [StdFactor3TVMedia] did predict television usage, although
the effect is slight in terms of explained variance \[ R^2=.012, R^2_{\text{adj}}=.010, F(1,453)=5.442, p<.05 \]. Table 4.3 provides regression results and coefficients that reveal only the variable of actual individual knowledge \( x \) perceived knowledge \([AINKXPER]\) contributed to the model.

A regression was conducted to determine the accuracy of the independent variables for predicting MWA public information “media” use, reflected in the factor that included the MWA’s presence in newspapers, on television, on cable, on radio, and in its own newsletter \([\text{StdFactor1MWAMedia}]\). The model significantly predicted MWA media use (see Table 4.4), although regression coefficients indicated only the knowledge gap variable of actual general knowledge \( x \) perceived knowledge \([AGKNXPER]\) significantly contributed to the model \[ R^2=.109, R^2_{\text{adj}}=.107, F(1,455)=55.811, p<.001 \]. Once again the model’s explained variance was limited, though the effect was statistically significant.

As shown in Table 4.5, the regression conducted to determine the accuracy of the six independent knowledge gap variables predicting MWA Web site use \([\text{StdFactor2MWAWeb}]\) indicated the model did predict Web site use \[ R^2=.009, R^2_{\text{adj}}=.007, F(1,455)=4.007, p<.05 \]. The regression coefficients indicated that only the independent variable of actual general knowledge minus actual individual knowledge \([AGENMAIN]\) significantly contributed to the model, albeit marginally and in a negative direction (\(\beta=-.093\)).

It should be noted in this last regression that the knowledge gap variable – actual general knowledge minus actual individual knowledge – differed from the knowledge gap variables derived from multiplying an actual knowledge measure by a perceived knowledge measure, or subtracting the lower perceived knowledge measure from either of the two higher actual knowledge measures. This final predictive knowledge gap is highlighted because it does not involve a combination of or difference between an actual knowledge measure and perceived
knowledge, and because it is the only significant predictor of media or public information use that comes from the “difference” of any two separate knowledge gap measures. Evidently, this gap between actual general knowledge and actual individual knowledge influences media channel preferences of customers seeking to increase their knowledge of general, global implications of proper grease disposal versus individual, local knowledge of how to properly dispose of household grease.

A hierarchical multiple regression analysis was conducted to assure the knowledge gap variables “survived” the potential mediating impact of the respective individual knowledge measures from which they were calculated. These regression results would indicate whether the combined effect of the knowledge gap predictors were mediated by the direct predictors, and thus verify whether the effects of knowledge gaps predicting mass media or public information use were spurious or in fact real.

Four hierarchical multiple regression analyses were conducted, with the direct predictors (the separate measures that composed each respective, previously significant knowledge gap variable) entered via a stepwise method – for the sake of keeping the model parsimonious – in the first block, while the appropriate knowledge gap variable, produced by the combination or difference of those direct predictors, was entered in the second block.

In the first hierarchical multiple regression, the direct predictors of actual general knowledge [ACTUALGE] and perceived knowledge [PERCKNOW] were entered as a stepwise regression in the first block, followed by the knowledge gap variable of actual general knowledge x perceived knowledge [AGKNXPER] in the second block. (See Table 4.6.) In the first model, perceived knowledge [PERCKNOW] was a significant predictor of newspaper use, while the second model added the combined actual general knowledge x perceived knowledge...
gap variable [AGKNXPER], which significantly predicted newspaper media use [$R^2=.051$, $R^2_{adj}=.047$, $F(1, 457,)=5.663, p<.05$]. Regression coefficients indicated the knowledge gap variable [AGKNXPER] was the only independent variable that significantly contributed to the model ($p<.05, \beta=.324$), as it served as a more reliable predictor of newspaper use than the direct measure of perceived knowledge, which was no longer a significant predictor.

The second hierarchical multiple regression test featured the knowledge gap predictor [AINKXPER] entered in the second block, following the actual individual knowledge [ACTUALIN] and perceived knowledge [PERCKNOW] direct predictors entered in the first. The regression results, presented in Table 4.7, revealed that the model significantly predicted television use [$R^2=.009$, $R^2_{adj}=.007$, $F(1,463,)=4.412, p<.05$], and the regression coefficients revealed that only the combined (knowledge) effect significantly contributed to the model, ($p<.05, \beta=.097$). The combined effect of a knowledge gap measure again proved to be a better predictor of television use than did the direct predictors in the model.

In the third hierarchical multiple regression, the direct measures of actual general knowledge [ACTUALGE] and perceived knowledge [PERCKNOW] were entered into the first block of the regression, while the combined effect of actual general knowledge x perceived knowledge [AGKNXPER] was entered in the second block, to determine the accuracy of these independent variables predicting use of MWA sponsored media [StdFactor1MWAMedia], consisting of the MWA’s presence in newspapers, on television, on cable, on radio, and within its customer newsletter. Table 4.8 reports the regression results that revealed for model 1, perceived knowledge [PERCKNOW] significantly predicted MWA media use [$R^2=.093$, $R^2_{adj}=.091$, $F(1, 462,)=47.583, p<.001$]. For model 2, perceived knowledge [PERCKNOW] as well as actual general knowledge x perceived knowledge [AGKNXPER] significantly predicted
consumption of MWA media \[R^2=.112, R^2_{\text{adj}}=.108, F(1,461,)=9.662, p<.01\]. Regression coefficients in the second model, however, indicated that only the combined (knowledge) effect [AGKNXPER] significantly contributed to the model \(p=.002, \beta=.406\). Again, a combined effect or knowledge gap variable was a better predictor than the direct effects, when examining the effects on MWA media consumption.

Finally, a hierarchical multiple regression was conducted to verify the significance of the knowledge gap difference between actual general knowledge and actual individual knowledge [AGENMAIN] as a predictor of MWA Web site use, after accounting for the direct effects of the independent variables actual general knowledge [ACTUALGE], and actual individual knowledge [ACTUALIN]. Direct effects of actual general knowledge and actual individual knowledge were entered into the first block, while the knowledge gap effect, or the difference between actual general knowledge and actual individual knowledge, was entered into the second block. Results presented in Table 4.9 pointed out that only the knowledge gap variable significantly predicted MWA Web site use \[R^2=.009, R^2_{\text{adj}}=.006, F(1, 457,)=3.980, p<.05\]. Regression coefficients indicated this knowledge gap effect [AGENMAIN] contributed to the model in a negative direction \(\beta=-.093\).

In conclusion, the examination of the knowledge gap influence on media and public information consumption, as purported in Research Question 4, revealed strong support for this premise. The comparison of means between three actual knowledge measures and perceived knowledge revealed a reverse knowledge gap phenomena for the issue of proper disposal of household grease, in that respondents knew more about the issue of grease management than they perceived they did. The knowledge gap was evident when comparing the difference between actual knowledge and perceived knowledge among MWA customers, while this gap
widened in the comparison of actual individual knowledge and perceived knowledge, and even more so when considering the difference between actual general knowledge and perceived knowledge.

In addition, the combined effects of two knowledge measures served as a more significant predictor of various mass media or public information uses than did their respective direct effects. In one instance, a true knowledge gap, garnered from the difference between actual general knowledge and actual individual knowledge, also served as a more significant predictor of public information use (MWA Web site consumption) than either of the respective direct effects, or separate independent variables, that composed this knowledge gap measure.

In every instance, hierarchical multiple regressions replicated and confirmed previous findings of combined effects, which noted that either the combination of knowledge measures or the knowledge gap difference between variables was a better predictor of the dependent variable in question than were the direct effects. On more than one occasion, a combination of knowledge tendencies or a verified knowledge gap served as a stronger predictor of select patterns of mass media or public information consumption, than any single, specific reported measure of knowledge.

Research Question 5: What is the relationship between (a) attitudes toward a behavior, (b) subjective norms, and (c) perceived behavioral control, as predictors of intention and actual performance of a pro-social behavior outlined in a public communication campaign?

To replicate the theory of planned behavior (Ajzen, 1985) as a model for identifying predictors of behavioral intention, to properly dispose of household grease in this case, measures for the three independent variables of the conceptual model – attitude toward the behavior, subjective norm, and perceived behavioral control – were included in the questionnaire for Part
III of this study – the 2006 survey. In addition, this questionnaire gathered data for establishing a direct measure of behavioral intention, which is the dependent variable under analysis in the theoretical model.

The 2006 survey also included items that gathered data to form measures of behavioral beliefs, normative beliefs, and control beliefs, said to precede and influence as antecedents, the respective three independent variables in the theoretical model – attitude toward the behavior, subjective norm, and perceived behavioral control. The only aspect of the theory of planned behavior not obtained or tested in the 2006 survey was the actual behavior of the respondents. This would have required taking measures at the real time that the behaviors were performed, which was impractical considering the limitations of this study and the type of measurement instrument used. Methods for obtaining all of the other measures necessary for further examination of the theory of planned behavior – from beliefs to predictors to dependent measures – followed the conceptual and methodological guidelines provided by Ajzen (2002) for development and design of questionnaire items for a reliable and valid measurement instrument.

The primary objective of Research Question 5 was to establish the reliability and effectiveness of the independent variables of attitudes, subjective norms, and perceived behavioral control as predictors of behavioral intention for proper disposal of household grease, as measured in this applied setting among the sampled MWA customer respondents to the 2006 survey.

To determine the reliability of the three independent variables as predictors, a bivariate correlation test was conducted to provide the necessary reliability statistics and inter-item correlations to confirm the model’s assumptions. Results of the reliability tests for the scale
measures for each variable showed adequate support to uphold the conceptual requirements of
the model.

For the independent variable of attitude toward the behavior, the five items revealed a
relatively weak Cronbach’s alpha of .661 and Cronbach’s alpha for standardized items of .686
(N=410). The reliability measures are somewhat low. However, the overall attitude-toward-the-
behavior measure has face validity because of the unique nature of the behavior in question, as
well as criterion validity because of its predictive power. While beneficial, grease disposal
likewise can be unpleasant and un-enjoyable, which would explain the low reliability of these
attitudinal attribute measures. It is also possible that a strong personal norm is in effect here,
which would reflect a positive overall attitude toward the behavior, even when unpleasant,
because of its overall merit – a formative concept during the development of this theory.

The bivariate correlation test conducted among the four questionnaire items measuring
the second independent variable in the model – the subjective norm component – had the
strongest reliability compared to the other two independent variables, with a Cronbach’s alpha of
.739, and a Cronbach’s alpha for the standardized items of .750.

The bivariate correlation test conducted to obtain the reliability for perceived behavioral
control yielded a Cronbach’s alpha of .686 and a Cronbach’s alpha for the standardized items of
.697.

Finally, the bivariate correlation test conducted to assess the reliability of the two items
measuring behavioral intention produced a Cronbach’s alpha of .596 and a Cronbach’s alpha for
standardized items of .615. Since only one behavior was under investigation in this study, the
measure had face validity because of the simplicity and directness of this self-reported
questionnaire item, as well as criterion validity because it followed the conceptual and methodological considerations for how to design the model appropriately.

A standard multiple regression was conducted to determine the accuracy of the three independent variables of the theoretical model as predictors of behavioral intention, in this case to properly dispose of household grease. Table 5.1 reports the regression results that the overall planned behavior model significantly predicted behavioral intention to properly dispose of household grease \( R^2 = .312, R^2_{adj} = .307, F(3, 377,) , p < .001 \). Regression coefficients indicated that all three – attitude, subjective norm, and perceived behavioral control – contributed significantly to the model, with Beta values (attitude \( \beta = .284 \), subjective norm \( \beta = .100 \), and perceived behavioral control \( \beta = .311 \)) further indicating the positive strength and direction of the predictors.

To conclude, the theory of planned behavior was a useful model for noting that identifiable and measurable attitudes, subjective norms, and perceived behavioral control, which successfully predicted behavioral intention, even in the instance of an obscure, albeit pro-social compliant behavior, such as the proper disposal of household grease.

**Exploratory Results: further examination of belief-based measures within the Theory of Planned Behavior.**

In addition to testing the direct measures of attitude, subjective norm, and perceived behavioral control as predictors of behavioral intention to properly dispose of household grease, the 2006 survey also included ways to test the belief-based measures of the theory of planned behavior.

A bivariate correlation test was conducted, whereby the behavioral beliefs, normative beliefs, and control beliefs – obtained for use in the questionnaire of Part III, from the
qualitative, preliminary investigation of Part II – were confirmed as appropriate and significant “antecedent” measures, according to the theory. A series of multiple regression analyses were conducted to determine if, in fact, the beliefs predicted, as intended according to the model, their respective direct measures of attitude, subjective norm, and perceived behavioral control.

A standard multiple regression was conducted to test the accuracy of the behavioral beliefs as predictors of the attitude toward the behavior. In the 2006 survey, a limitation of the model reflecting behavioral beliefs as predictors of attitude toward the behavior is that the questionnaire used only included one behavioral belief concept for testing – the belief that behavioral compliance for proper grease disposal would prevent clogs in household drains. However, this behavioral belief was identified as the sole significant response during the observations from the preliminary, qualitative Part II of this study. Results from this regression test, presented in Table 5.2, indicated that the behavioral belief(s) predicted or explained the attitude toward the behavior \( R^2 = .056, R^2_{\text{adj}} = .054, F(1, 403,) = 24.021, p < .001 \), and the regression coefficients confirmed that the independent variable(s) significantly contributed to the model.

A standard multiple regression was conducted to test the significance and strength of each normative belief as a predictor of its respective subjective norm. The three normative beliefs identified from the qualitative, preliminary investigation in Part II of this study specified the subjective norms of family (SN1), friends (SN2), and government or regulatory authority (SN3) as potential components of an overall subjective norm measure. These three normative belief independent variables were entered in the regression model to determine their accuracy as predictors of the direct, general measure of subjective norm. As evident in Table 5.3, results indicated that the overall model predicted subjective norm, although regression coefficients
indicated only normative beliefs concerning family (SN1) and government authority (SN3) contributed to the model \[ R^2 = .246, R^2_{adj} = .240, F(3, 423,) = 45.956, p < .001 \].

A multiple regression was conducted to test the sum of the three normative beliefs as a single, composite predictor of subjective norm. Results presented in Table 5.4 indicated that the model was weakened by the sum of the normative beliefs entered as an independent variable, but the overall model still predicted subjective norm \[ R^2 = .216, R^2_{adj} = .214, F(1, 425,) = 117.129, p < .001 \].

According to the theory of planned behavior, control beliefs should predict the direct measure of perceived behavioral control. From the preliminary, qualitative portion of Part II of this investigation, three potential control beliefs were identified – the knowledge of how to perform the behavior (PBC1), the convenience/inconvenience of the act (PBC2), and the need for a proper container in which to dispose of household grease (PBC3). These three control beliefs were entered in a standard multiple regression to determine their legitimacy as predictors of perceived behavioral control for proper disposal of household grease. Regression results included in Table 5.5 indicated that the model predicted perceived behavioral control. Regression coefficients revealed only the third control belief – the need for a container – and not the need for knowledge or the convenience or inconvenience of the act – contributed to the model \[ R^2 = .036, R^2_{adj} = .029, F(3, 420,) = 5.268, p < .001 \].

A multiple regression was conducted with the sum of the control belief measures serving as an independent, composite predictor of perceived behavioral control. As Table 5.6 reflects, results indicated weakened predictive power and level of significance, although the model still did predict or explain perceived behavioral control as intended \[ R^2 = .012, R^2_{adj} = .009, F(1, 422,) = 4.999, p < .05 \], though explained variance was limited.
Further examination of un-weighted belief-based measures

In addition to verifying that the belief-based measures do indeed predict their respective global measures of attitude, subjective norm, and perceived behavioral control, as outlined in the theory of planned behavior, this study also looked at the belief-based measures as predictors when the weights of the beliefs are removed. This is valuable in objectively assessing the strength of beliefs, even more objectively, as predictors of attitudes, subjective norms, and perceived behavioral control, respectively. In addition, since the weights of each of the belief-based measures were ambiguous, the additional analyses help strengthen the overall assessment of the theory of planned behavior in the context of behavioral intention to properly dispose of household grease, as these supplemental tests accounted for the low predictive power of the direct measures in the model studied previously.

A series of multiple regression analyses was conducted whereby the weights of the behavioral beliefs, normative beliefs, and control beliefs were removed and then entered as un-weighted independent variables predicting their respective attitude, subjective norm, and perceived behavioral control measures.

A standard multiple regression was conducted to determine the accuracy of the un-weighted behavioral belief as a predictor of attitude toward the behavior. Results presented in Table 5.7 indicated that the un-weighted behavioral belief measure predicted attitude toward the grease disposal behavior \( R^2 = .016, R^2_{\text{adj}} = .014, F(1,403,)=6.569, p<.05 \), though explained variance was slight.

A standard multiple regression was conducted to determine if the un-weighted normative beliefs predicted the direct measure of subject norm within the model. Results presented in Table 5.8 revealed that the model predicted subjective norm \( R^2 = .240, R^2_{\text{adj}} = .235, \)
F(3,431,) = 45.487, p < .001, but regression coefficients indicated only the un-weighted beliefs about family and friends significantly contributed to the model, and the government/regulatory authority measure was no longer significant. These results from the un-weighted analysis contradicted the results from the regression test conducted with the weighted normative beliefs as predictors. In that analysis, family and the government/regulatory independent variables served as significant predictors of subjective norm. Another multiple regression conducted to test the accuracy of the un-weighted sum of normative beliefs as a single, composite predictor of subjective norm upheld the previous results of the weighted sum as a direct predictor [R$^2$ = .232, R$_{adj}^2$ = .230, F(1,433,) = 130.437, p < .001].

Finally, a standard multiple regression was conducted to test the un-weighted control beliefs as predictors of perceived behavioral control, within the context of the planned behavior model. The results presented in Table 5.9 indicated that the model consisting of un-weighted control belief measures significantly predicted or explained perceived behavioral control [$R^2$ = .097, R$_{adj}^2$ = .091, F(3,455,) = 16.209, p < .001], and regression coefficients confirmed that all of the un-weighted control beliefs – concerning knowledge, convenience, and a proper container – significantly contributed to the model (p < .05). The un-weighted beliefs, as independent variables, are in stark contrast to the weighted beliefs, when only the “need for a container” contributed to the model for predicting perceived behavioral control. A final regression test of the sum of the un-weighted control beliefs as a single, composite predictor of perceived behavioral control also found this model was predictive [$R^2$ = .094, R$_{adj}^2$ = .092, F(1,457,) = 47.145, p < .001], just as the weighted sum of the control beliefs was predictive of perceived behavioral control, though the explained variance of the model was limited.
Past behaviors as predictors of behavioral intention

In an exploratory attempt to expand the theory of planned behavior, the potential of past behavior to serve as a predictor of (future) behavioral intention was examined. This notion was explored because of the applied nature of this investigation. Proper grease disposal, deemed a necessary, beneficial pro-social behavior by MWA customers in this study, might be categorized as a habitual behavior as well, due to its salient nature. In looking at the behavior as continual, evidence might surface that past behavioral compliance could serve as an additional influence on behavioral intent, as did the previously reviewed predictors of attitude, subjective norm, and perceived behavioral control.

To test this theoretical exploration, a bivariate correlation test revealed a significant (p<.01) relationship between a standardized measure of past grease disposal behavior and future behavioral intention for proper disposal as well. A multiple regression analysis was conducted, entering past behavior [SumZPastBeh] as a fourth predictor alongside the three previously conceptualized independent variables of the theory of planned behavior – attitude toward the behavior, subjective norm, and perceived behavioral control.

Table 5.10 reveals the results that this expanded planned behavior model also predicted behavioral intention \[ R^2=.309, \ R^2_{\text{adj}}=.302, F(4,366,)=40.959, p<.001 \]. Regression coefficients revealed of the four independent variables, all were significant contributors to the model (p<.001), except subjective norm (p=.110). Apparently, in the context of proper disposal of household grease, past behaviors replace or at least supercede the influence of subjective norms as predictors of behavioral intention.

In conclusion, data presented to address Research Question 5 provided evidence that the theory of planned behavior served as a helpful model for identifying the impact of attitudes,
subjective norms, and perceived behavioral controls on behavioral intention, even when applied
to the pro-social, compliant behavior of proper disposal of household grease. In addition to
providing results that supported the model that purports attitudes, subjective norms, and
perceived behavioral control directly predict behavioral intention, the beliefs related to these
three direct predictors were likewise influential.

When weighted or un-weighted, beliefs about the behavior in question directly predicted
the subsequent attitudes toward the behavior. A perplexing finding was when normative beliefs
were weighted, family and government directly influence the subjective norm measure; but if un-
weighted, government was no longer influential, replaced by the impact of friends as a direct
predictor of subjective norm. In any event, the normative influence of family was universally
strong in the model, whether beliefs about such were weighted or un-weighted. As for control
beliefs, when weighted, only the reference of a grease disposal container was predictive of
perceived behavioral control, while all three control beliefs – knowledge, convenience, and the
container – when un-weighted, were predictive of perceived behavioral control.

Finally, this investigation allowed for an attempt to extend the theory of planned
behavior, by testing past behavior as another predictor of future behavioral intention, alongside
the model’s current, direct predictors of attitude, subjective norm, and perceived behavioral
control. When added to the model, past behavior significantly contributed to its predicting
behavioral intention, and interestingly, past behavior replaced subjective norm as an
independent, direct measure significantly contributing to the model.

It can be argued, then, that not only do current attitudes, subjective norms, and perceived
behavioral control influence the intent to properly dispose of household grease, but so does one’s
propensity for, or recollection of, performing the behavior previously.
Table 1.0

Comparison of Population and Sample Demographics

<table>
<thead>
<tr>
<th></th>
<th>Ave. Age</th>
<th>White</th>
<th>Af. Amer.</th>
<th>Other</th>
<th>No Resp.</th>
<th>Male</th>
<th>Female</th>
<th>No Resp.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bibb Co. Population</td>
<td>34.7</td>
<td>50%</td>
<td>47%</td>
<td>3%</td>
<td>N/A</td>
<td>46%</td>
<td>54%</td>
<td>N/A</td>
</tr>
<tr>
<td>Macon Population</td>
<td>33.6</td>
<td>36%</td>
<td>63%</td>
<td>1%</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>2004 Survey</td>
<td>N/A</td>
<td>25%</td>
<td>25%</td>
<td>3%</td>
<td>11%</td>
<td>32%</td>
<td>53%</td>
<td>15%</td>
</tr>
<tr>
<td>2006 Survey</td>
<td>58.4</td>
<td>27%</td>
<td>27%</td>
<td>4%</td>
<td>3%</td>
<td>39%</td>
<td>61%</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Table 1.1

Model for Mass Media Use predicting Actual General Knowledge (ACTUALGE)

<table>
<thead>
<tr>
<th>Change Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>1</td>
</tr>
</tbody>
</table>

Predictors: General Newspaper Use (Light/Heavy NP Readership)

<table>
<thead>
<tr>
<th>Regression Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td>-------</td>
</tr>
<tr>
<td>1</td>
</tr>
</tbody>
</table>

Dependent Variable: Actual General Knowledge (ACTUALGE)
Table 1.2

Factor Analysis of Mass Media Use

Component Matrix of Mass Media Use

<table>
<thead>
<tr>
<th></th>
<th>F. 1</th>
<th>F. 2</th>
<th>F. 3</th>
<th>Mean</th>
<th>S.D.</th>
<th>N</th>
<th>Extraction</th>
</tr>
</thead>
<tbody>
<tr>
<td>How much do you read newspapers?</td>
<td>.390</td>
<td>.779</td>
<td>.302</td>
<td>5.17</td>
<td>2.126</td>
<td>474</td>
<td>.850</td>
</tr>
<tr>
<td>How much do you read news online?</td>
<td>.161</td>
<td>-.133</td>
<td>.431</td>
<td>2.10</td>
<td>1.862</td>
<td>474</td>
<td>.230</td>
</tr>
<tr>
<td>How light or heavy a newspaper reader?</td>
<td>.435</td>
<td>.702</td>
<td>.441</td>
<td>6.55</td>
<td>2.971</td>
<td>474</td>
<td>.877</td>
</tr>
<tr>
<td>How much TV do you watch?</td>
<td>.604</td>
<td>.141</td>
<td>-.644</td>
<td>5.81</td>
<td>1.651</td>
<td>474</td>
<td>.799</td>
</tr>
<tr>
<td>How light or heavy a TV viewer?</td>
<td>.646</td>
<td>.129</td>
<td>-.598</td>
<td>6.52</td>
<td>2.529</td>
<td>474</td>
<td>.792</td>
</tr>
<tr>
<td>How much radio do you listen to?</td>
<td>.685</td>
<td>-.540</td>
<td>.316</td>
<td>4.48</td>
<td>2.165</td>
<td>474</td>
<td>.861</td>
</tr>
<tr>
<td>How light or heavy a radio listener?</td>
<td>.681</td>
<td>-.567</td>
<td>.263</td>
<td>5.25</td>
<td>2.767</td>
<td>474</td>
<td>.855</td>
</tr>
</tbody>
</table>

Extraction Method: Principal Component Analysis – 3 components extracted.

Rotated Component Matrix of Mass Media Use

<table>
<thead>
<tr>
<th></th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>In general, how much do you read newspapers?</td>
<td></td>
<td>.914</td>
<td></td>
</tr>
<tr>
<td>In general, how much do you read news online?</td>
<td>.382</td>
<td>.151</td>
<td></td>
</tr>
<tr>
<td>How light or heavy a print or online newspaper reader?</td>
<td>.933</td>
<td></td>
<td></td>
</tr>
<tr>
<td>In general, how much TV do you watch?</td>
<td></td>
<td>.891</td>
<td></td>
</tr>
<tr>
<td>How light or heavy a TV viewer are you?</td>
<td></td>
<td>.881</td>
<td></td>
</tr>
<tr>
<td>In general, how much radio do you listen to?</td>
<td>.920</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How light or heavy a radio listener are you?</td>
<td>.909</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization, rotation converged in 5 iterations.

Total Variance Explained:

<table>
<thead>
<tr>
<th>Component</th>
<th>Total Eigenvalues</th>
<th>% of Var.</th>
<th>Cum. %</th>
<th>Rotation Sums of Sq. Loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Component 1</td>
<td>2.083</td>
<td>29.756</td>
<td>29.756</td>
<td>1.837</td>
</tr>
<tr>
<td>Component 2</td>
<td>1.768</td>
<td>25.254</td>
<td>55.009</td>
<td>1.745</td>
</tr>
<tr>
<td>Component 3</td>
<td>1.414</td>
<td>20.196</td>
<td>75.206</td>
<td>1.683</td>
</tr>
<tr>
<td>Component 4</td>
<td>.926</td>
<td>13.226</td>
<td>88.432</td>
<td>1.683</td>
</tr>
<tr>
<td>Component 5</td>
<td>.408</td>
<td>5.829</td>
<td>94.262</td>
<td>1.683</td>
</tr>
<tr>
<td>Component 6</td>
<td>.236</td>
<td>3.377</td>
<td>97.639</td>
<td>1.683</td>
</tr>
<tr>
<td>Component 7</td>
<td>.165</td>
<td>2.361</td>
<td>100.000</td>
<td>1.683</td>
</tr>
</tbody>
</table>

Extraction Method: Principal Component Analysis.
Note: Loadings reflect Eigenvalues of 1.0 or greater.
Table 1.3

Model for Mass Media Use predicting Actual General Knowledge (ACTUALGE)

<table>
<thead>
<tr>
<th>Change Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
</tr>
<tr>
<td>1</td>
</tr>
</tbody>
</table>

Predictors: General Media Use Factors for TV (StdFactor3TVMedia), Radio (StdFactor1RadMedia), and Newspapers (StdFactor2NPMedia)

Regression Coefficients

<table>
<thead>
<tr>
<th>Unstd. Coeff.</th>
<th>Std. Coeff.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>B</td>
</tr>
<tr>
<td>1</td>
<td>MWA newsletter</td>
</tr>
<tr>
<td></td>
<td>StdFactor1RadMedia</td>
</tr>
<tr>
<td></td>
<td>StdFactor2NPMedia</td>
</tr>
</tbody>
</table>

Dependent Variable: Actual General Knowledge (ACTUALGE)

Table 2.1

Model for MWA Public Information predicting Actual Knowledge

<table>
<thead>
<tr>
<th>Change Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
</tbody>
</table>

Predictors: MWA newsletter
Predictors: MWA newsletter, MWA on cable channel 14

Regression Coefficients

<table>
<thead>
<tr>
<th>Unstd. Coeff.</th>
<th>Std. Coeff.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>B</td>
</tr>
<tr>
<td>1</td>
<td>MWA newsletter</td>
</tr>
<tr>
<td>2</td>
<td>MWA newsletter</td>
</tr>
<tr>
<td></td>
<td>MWA on cable channel 14</td>
</tr>
</tbody>
</table>

Dependent Variable: Actual Knowledge
Table 2.2  

Model for MWA Public Information predicting Actual Individual Knowledge

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>$R^2$</th>
<th>$R^2_{adj}$</th>
<th>Std. Error</th>
<th>R Square Change</th>
<th>F Change</th>
<th>df1</th>
<th>df2</th>
<th>Sig. F Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.119</td>
<td>.014</td>
<td>.012</td>
<td>.95353</td>
<td>.014</td>
<td>6.725</td>
<td>1</td>
<td>466</td>
<td>.010</td>
</tr>
</tbody>
</table>

Predictors: MWA on cable channel 14

Regression Coefficients

<table>
<thead>
<tr>
<th>Unstd. Coeff.</th>
<th>Std. Coeff.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>B</td>
</tr>
<tr>
<td>1</td>
<td>MWA on cable channel 14</td>
</tr>
</tbody>
</table>

Dependent Variable: Actual Individual Knowledge

Table 2.3  

Model for MWA Public Information predicting Actual General Knowledge

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>$R^2$</th>
<th>$R^2_{adj}$</th>
<th>Std. Error</th>
<th>R Square Change</th>
<th>F Change</th>
<th>df1</th>
<th>df2</th>
<th>Sig. F Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.168</td>
<td>.028</td>
<td>.026</td>
<td>.99945</td>
<td>.028</td>
<td>13.430</td>
<td>1</td>
<td>464</td>
<td>.000</td>
</tr>
</tbody>
</table>

Predictors: MWA in print newspapers

Regression Coefficients

<table>
<thead>
<tr>
<th>Unstd. Coeff.</th>
<th>Std. Coeff.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>B</td>
</tr>
<tr>
<td>1</td>
<td>MWA in print newspapers</td>
</tr>
</tbody>
</table>

Dependent Variable: Actual General Knowledge
### Table 2.4

**Factor Analysis for Public Information Use**

#### Component Matrix for MWA Public Information (PIO) Factors

<table>
<thead>
<tr>
<th>Factor</th>
<th>1</th>
<th>2</th>
<th>Mean</th>
<th>S.D.</th>
<th>N</th>
<th>Extraction</th>
</tr>
</thead>
<tbody>
<tr>
<td>How often do you see MWA in print?</td>
<td>.772</td>
<td>-.226</td>
<td>3.82</td>
<td>2.068</td>
<td>477</td>
<td>.647</td>
</tr>
<tr>
<td>How often do you see MWA on TV?</td>
<td>.799</td>
<td>-.135</td>
<td>3.00</td>
<td>1.832</td>
<td>477</td>
<td>.657</td>
</tr>
<tr>
<td>How often do you see MWA on Channel 14?</td>
<td>.605</td>
<td>.156</td>
<td>1.99</td>
<td>1.642</td>
<td>477</td>
<td>.390</td>
</tr>
<tr>
<td>How often do you hear MWA on radio?</td>
<td>.585</td>
<td></td>
<td>2.07</td>
<td>1.487</td>
<td>477</td>
<td>.348</td>
</tr>
<tr>
<td>How often do you read the MWA newsletter?</td>
<td>.544</td>
<td></td>
<td>4.17</td>
<td>2.192</td>
<td>477</td>
<td>.296</td>
</tr>
<tr>
<td>How often do you use the MWA web site?</td>
<td>.161</td>
<td>.956</td>
<td>1.17</td>
<td>.640</td>
<td>477</td>
<td>.941</td>
</tr>
</tbody>
</table>

*Extraction Method: Principal Component Analysis.*
2 components/factors extracted.

#### Rotated Component Matrix for MWA PIO Factors

<table>
<thead>
<tr>
<th>Factor</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>How often do you see MWA in print?</td>
<td>.793</td>
<td></td>
</tr>
<tr>
<td>How often do you see MWA on TV?</td>
<td>.809</td>
<td></td>
</tr>
<tr>
<td>How often do you see MWA on cable channel 14?</td>
<td>.582</td>
<td></td>
</tr>
<tr>
<td>How often do you hear MWA on radio?</td>
<td>.573</td>
<td></td>
</tr>
<tr>
<td>How often do you read the MWA newsletter?</td>
<td>.542</td>
<td></td>
</tr>
<tr>
<td>How often do you use the MWA web site?</td>
<td>.969</td>
<td></td>
</tr>
</tbody>
</table>

*Extraction Method: Principal Component Analysis.*
*Rotation Method: Varimax with Kaiser Normalization.*
*Rotation converged in 3 iterations.*

#### Total Variance Explained:

<table>
<thead>
<tr>
<th>Component</th>
<th>Total</th>
<th>% of Var.</th>
<th>Cum. %</th>
<th>Total</th>
<th>% of Var.</th>
<th>Cum. %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Component 1</td>
<td>2.265</td>
<td>37.745</td>
<td>37.745</td>
<td>2.265</td>
<td>37.745</td>
<td>37.745</td>
</tr>
<tr>
<td>Component 2</td>
<td>1.013</td>
<td>16.892</td>
<td>54.637</td>
<td>1.013</td>
<td>16.892</td>
<td>54.637</td>
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<tr>
<td>Component 3</td>
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<td>15.218</td>
<td>69.855</td>
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<td></td>
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<tr>
<td>Component 4</td>
<td>.815</td>
<td>13.583</td>
<td>83.438</td>
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<tr>
<td>Component 5</td>
<td>.609</td>
<td>10.155</td>
<td>93.593</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Component 6</td>
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<td>6.407</td>
<td>100.000</td>
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<td></td>
</tr>
</tbody>
</table>

*Extraction Method: Principal Component Analysis.*
*Note: Loadings reflect Eigenvalues of 1.0 or greater.*
Table 2.5
Model for MWA Public Information predicting Actual Knowledge

<table>
<thead>
<tr>
<th>Change Statistics</th>
<th>Model</th>
<th>R</th>
<th>R²</th>
<th>R² adj</th>
<th>Std. Error</th>
<th>R Square Change</th>
<th>F Change</th>
<th>df1</th>
<th>df2</th>
<th>Sig. F Change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>.138</td>
<td>.019</td>
<td>.015</td>
<td>.74667</td>
<td>.019</td>
<td>4.397</td>
<td>2</td>
<td>456</td>
<td>.013</td>
</tr>
</tbody>
</table>

Predictors: MWA Web site Factor (StdFactor2MWAWeb) and MWA Media Factor (StdFactor1MWAMedia)

Regression Coefficients

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Std. Error</td>
</tr>
<tr>
<td>Model</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>StdFactor1MWAMedia</td>
</tr>
<tr>
<td></td>
<td>StdFactor2MWAWeb</td>
</tr>
</tbody>
</table>

Dependent Variable: Actual Knowledge

Table 2.6
Model for MWA Public Information predicting Actual General Knowledge

<table>
<thead>
<tr>
<th>Change Statistics</th>
<th>Model</th>
<th>R</th>
<th>R²</th>
<th>R² adj</th>
<th>Std. Error</th>
<th>R² Change</th>
<th>F Change</th>
<th>df1</th>
<th>df2</th>
<th>Sig. F Change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>.169</td>
<td>.029</td>
<td>.024</td>
<td>1.0024</td>
<td>.029</td>
<td>6.838</td>
<td>2</td>
<td>463</td>
<td>.001</td>
</tr>
</tbody>
</table>

Predictors: MWA Web site Factor (StdFactor2MWAWeb) and MWA Media Factor (StdFactor1MWAMedia)

Regression Coefficients

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Std. Error</td>
</tr>
<tr>
<td>Model</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>StdFactor1MWAMedia</td>
</tr>
<tr>
<td></td>
<td>StdFactor2MWAWeb</td>
</tr>
</tbody>
</table>

Dependent Variable: Actual General Knowledge
### Table 3.1

Model for Combined Media Use predicting Actual Knowledge

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R^2</th>
<th>R^2_adj</th>
<th>Std. Error</th>
<th>R^2 Change</th>
<th>F Change</th>
<th>df1</th>
<th>df2</th>
<th>Sig. F Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.140</td>
<td>.020</td>
<td>.017</td>
<td>.74446</td>
<td>.020</td>
<td>8.910</td>
<td>1</td>
<td>448</td>
<td>.003</td>
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</table>

Predictors: Standardized Factor 1 of MWA Media Use (Pfac1MWAMedia)

#### Regression Coefficients

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Std. Error</td>
<td>β</td>
</tr>
<tr>
<td>1</td>
<td>.106</td>
<td>.036</td>
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</table>

Dependent Variable: Actual Knowledge

### Table 3.2

Model for Combined Media Use predicting Actual Individual Knowledge

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R^2</th>
<th>R^2_adj</th>
<th>Std. Error</th>
<th>R^2 Change</th>
<th>F Change</th>
<th>df1</th>
<th>df2</th>
<th>Sig. F Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.106</td>
<td>.011</td>
<td>.009</td>
<td>.95511</td>
<td>.011</td>
<td>5.210</td>
<td>1</td>
<td>457</td>
<td>.023</td>
</tr>
</tbody>
</table>

Predictors: Interaction/Combined TV and MWA Media Use (IPFTVMWAMedia)

#### Regression Coefficients

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Std. Error</td>
<td>β</td>
</tr>
<tr>
<td>1</td>
<td>.007</td>
<td>.003</td>
</tr>
</tbody>
</table>
### Table 3.3

Model for Combined Media Use predicting Actual General Knowledge

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R²</th>
<th>R² adj</th>
<th>Std. Error</th>
<th>R² Change</th>
<th>F Change</th>
<th>df1</th>
<th>df2</th>
<th>Sig. F Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.147</td>
<td>.022</td>
<td>.019</td>
<td>1.00188</td>
<td>.022</td>
<td>9.962</td>
<td>1</td>
<td>453</td>
<td>.002</td>
</tr>
<tr>
<td>2</td>
<td>.174</td>
<td>.030</td>
<td>.026</td>
<td>.99852</td>
<td>.009</td>
<td>4.053</td>
<td>1</td>
<td>452</td>
<td>.045</td>
</tr>
</tbody>
</table>

Predictors: Standardized Factor of General Newspaper Use (PFac2NP)
Predictors: Standardized Factors of General Newspaper Use (Pfac2NP) and MWA Media Use (PFac1MWAMedia)

### Regression Coefficients

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstd. Coeff.</th>
<th>Std. Coeff.</th>
<th>B</th>
<th>Std. Error</th>
<th>β</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 PFac2NP</td>
<td>.151</td>
<td>.048</td>
<td>.147</td>
<td>3.156</td>
<td>.002</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 PFac2NP</td>
<td>.107</td>
<td>.052</td>
<td>.104</td>
<td>2.040</td>
<td>.042</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PFac1MWAMedia</td>
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<td>.052</td>
<td>.103</td>
<td>2.013</td>
<td>.045</td>
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</table>

Dependent Variable: Actual General Knowledge

### Table 4.0

Correlations of Knowledge Variables

<table>
<thead>
<tr>
<th>ACTUALKN</th>
<th>ACTUALIN</th>
<th>ACTUALGE</th>
<th>PERCKNOW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Corr.</td>
<td>1</td>
<td>.820</td>
<td>.713</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td>N</td>
<td>472</td>
<td>472</td>
<td>472</td>
</tr>
<tr>
<td>ACTUALIN Pearson Corr.</td>
<td>.820</td>
<td>1</td>
<td>.183</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td>N</td>
<td>472</td>
<td>483</td>
<td>472</td>
</tr>
<tr>
<td>ACTUALGE Pearson Corr.</td>
<td>.713</td>
<td>.183</td>
<td>1</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td>N</td>
<td>472</td>
<td>472</td>
<td>484</td>
</tr>
<tr>
<td>PERCKNOW Pearson Corr.</td>
<td>.287</td>
<td>.204</td>
<td>.235</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td>N</td>
<td>470</td>
<td>481</td>
<td>477</td>
</tr>
</tbody>
</table>

Correlation is significant at the 0.01 level (2-tailed). Variable names include:

ACTUALKN = (Overall) Actual Knowledge
ACTUALIN = Actual Individual Knowledge
ACTUALGE = Actual General Knowledge
PERCKNOW = Perceived Knowledge
### Table 4.1

**T-test: Paired Samples Statistics of Knowledge Measures**

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>N</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pair 1</td>
<td>ACTUALKN</td>
<td>6.1657</td>
<td>470</td>
<td>.75383</td>
</tr>
<tr>
<td></td>
<td>PERCKNOW</td>
<td>5.2809</td>
<td>470</td>
<td>1.98766</td>
</tr>
<tr>
<td>Pair 2</td>
<td>ACTUALIN</td>
<td>5.9854</td>
<td>481</td>
<td>.95650</td>
</tr>
<tr>
<td></td>
<td>PERCKNOW</td>
<td>5.2786</td>
<td>481</td>
<td>1.98991</td>
</tr>
<tr>
<td>Pair 3</td>
<td>ACTUALGE</td>
<td>6.3969</td>
<td>477</td>
<td>1.02668</td>
</tr>
<tr>
<td></td>
<td>PERCKNOW</td>
<td>5.2977</td>
<td>477</td>
<td>1.98192</td>
</tr>
<tr>
<td>Pair 4</td>
<td>ACTUALKN</td>
<td>6.1628</td>
<td>472</td>
<td>.75864</td>
</tr>
<tr>
<td></td>
<td>ACTUALIN</td>
<td>5.9894</td>
<td>472</td>
<td>.94762</td>
</tr>
<tr>
<td>Pair 5</td>
<td>ACTUALKN</td>
<td>6.1628</td>
<td>472</td>
<td>.75864</td>
</tr>
<tr>
<td></td>
<td>ACTUALGE</td>
<td>6.3941</td>
<td>472</td>
<td>1.02945</td>
</tr>
<tr>
<td>Pair 6</td>
<td>ACTUALIN</td>
<td>5.9894</td>
<td>472</td>
<td>.94762</td>
</tr>
<tr>
<td></td>
<td>ACTUALGE</td>
<td>6.3941</td>
<td>472</td>
<td>1.02945</td>
</tr>
</tbody>
</table>

**Paired Samples Test**

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Std. Error Mean</th>
<th>95% Confidence Interval</th>
<th>Confidence of the Differ.</th>
<th>Lower</th>
<th>Upper</th>
<th>t</th>
<th>df</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pair 1</td>
<td>ACTUALKN - PERCKNOW</td>
<td>.8848</td>
<td>1.91315</td>
<td>.08825</td>
<td>.7114</td>
<td>1.0582</td>
<td>10.026</td>
<td>469</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>Pair 2</td>
<td>ACTUALIN - PERCKNOW</td>
<td>.7069</td>
<td>2.02403</td>
<td>.09229</td>
<td>.5255</td>
<td>.8882</td>
<td>7.659</td>
<td>480</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>Pair 3</td>
<td>ACTUALGE - PERCKNOW</td>
<td>1.0992</td>
<td>2.00674</td>
<td>.09188</td>
<td>.9187</td>
<td>1.2798</td>
<td>11.963</td>
<td>476</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>Pair 4</td>
<td>ACTUALKN - ACTUALIN</td>
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<td>.54206</td>
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<td>.1244</td>
<td>.2225</td>
<td>6.951</td>
<td>471</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>Pair 5</td>
<td>ACTUALKN - ACTUALGE</td>
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<td>.72275</td>
<td>.03327</td>
<td>-.2966</td>
<td>-.1659</td>
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<td>.000</td>
<td></td>
</tr>
<tr>
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<td>-.2903</td>
<td>-6.951</td>
<td>471</td>
<td>.000</td>
<td></td>
</tr>
</tbody>
</table>

**Variables include:**
- ACTUALKN = (Overall) Actual Knowledge
- ACTUALIN = Actual Individual Knowledge
- ACTUALGE = Actual General Knowledge
- PERCKNOW = Perceived Knowledge
Table 4.2

Model for Combined Knowledge predicting General Newspaper Use (StdFac2NP)

<table>
<thead>
<tr>
<th>Change Statistics</th>
<th>Model</th>
<th>R</th>
<th>R²</th>
<th>R² adj</th>
<th>Std. Error</th>
<th>R² Change</th>
<th>F Change</th>
<th>df1</th>
<th>df2</th>
<th>Sig. F Change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>.219</td>
<td>.048</td>
<td>.046</td>
<td>.96746989</td>
<td>.048</td>
<td>22.795</td>
<td>1</td>
<td>453</td>
<td>.000</td>
</tr>
</tbody>
</table>

Predictors: Actual General Knowledge (x) Perceived Knowledge (AGKNXPER)

Regression Coefficients

<table>
<thead>
<tr>
<th>Unstd. Coeff.</th>
<th>Stand. Coeff.</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>B</td>
<td>Std. Error</td>
<td>β</td>
</tr>
<tr>
<td>AGKNXPER</td>
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<td>.003</td>
<td>.219</td>
</tr>
</tbody>
</table>

Dependent Variable: General Newspaper Use (StdFac2NP)

Table 4.3

Model for Combined Knowledge predicting General Television Use (StdFac3TV)

<table>
<thead>
<tr>
<th>Change Statistics</th>
<th>Model</th>
<th>R</th>
<th>R²</th>
<th>R² adj</th>
<th>Std. Error</th>
<th>R² Change</th>
<th>F Change</th>
<th>df1</th>
<th>df2</th>
<th>Sig. F Change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>.109</td>
<td>.012</td>
<td>.010</td>
<td>.99785158</td>
<td>.012</td>
<td>5.442</td>
<td>1</td>
<td>453</td>
<td>.020</td>
</tr>
</tbody>
</table>

Predictors: Actual Individual Knowledge (x) Perceived Knowledge (AINKXPER)

Regression Coefficients

<table>
<thead>
<tr>
<th>Unstd. Coeff.</th>
<th>Stand. Coeff.</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>B</td>
<td>Std. Error</td>
<td>β</td>
</tr>
<tr>
<td>AINKXPER</td>
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<td>.109</td>
</tr>
</tbody>
</table>

Dependent Variable: General Television Use StdFac3TV
Table 4.4

Model for Combined Knowledge predicting MWA Media Use (StdFac1MWAMedia)

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R^2</th>
<th>R^2 adj</th>
<th>Std. Error</th>
<th>R^2 Change</th>
<th>F Change</th>
<th>df1</th>
<th>df2</th>
<th>Sig. F Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.331</td>
<td>.109</td>
<td>.107</td>
<td>.94045382</td>
<td>.109</td>
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<td>1</td>
<td>455</td>
<td>.000</td>
</tr>
</tbody>
</table>

Predictors: Actual General Knowledge (x) Perceived Knowledge (AGKNXPER)

Regression Coefficients

<table>
<thead>
<tr>
<th>Unstd. Coeff.</th>
<th>Std. Coeff.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>B</td>
</tr>
<tr>
<td>1</td>
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</tbody>
</table>

Dependent Variable: MWA Media Use (StdFac1MWAMedia)

Table 4.5

Model for Knowledge Gap predicting MWA Web site Use (StdFac2MWAWeb)

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R^2</th>
<th>R^2 adj</th>
<th>Std. Error</th>
<th>R^2 Change</th>
<th>F Change</th>
<th>df1</th>
<th>df2</th>
<th>Sig. F Change</th>
</tr>
</thead>
<tbody>
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<td>1</td>
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<td>.009</td>
<td>.007</td>
<td>.99745598</td>
<td>.009</td>
<td>4.007</td>
<td>1</td>
<td>455</td>
<td>.046</td>
</tr>
</tbody>
</table>

Predictors: Actual General Knowledge (-) Actual Individual Knowledge (AGENMAIN)

Regression Coefficients

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<th>Std. Coeff.</th>
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</thead>
<tbody>
<tr>
<td>Model</td>
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<td>AGENMAIN</td>
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Dependent Variable: MWA Web site Use (StdFac2MWAWeb)
### Table 4.6

**Model for Combined Knowledge predicting General Newspaper Use (StdFac2NP)**

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<thead>
<tr>
<th>Model</th>
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<th>$R^2_{adj}$</th>
<th>Std. Error</th>
<th>$R^2$ Change</th>
<th>F Change</th>
<th>df1</th>
<th>df2</th>
<th>Sig. F Change</th>
</tr>
</thead>
<tbody>
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<td>.039</td>
<td>.037</td>
<td>.97246132</td>
<td>.039</td>
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<td>458</td>
<td>.000</td>
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<tr>
<td>2</td>
<td>.226</td>
<td>.051</td>
<td>.047</td>
<td>.96754840</td>
<td>.012</td>
<td>5.663</td>
<td>1</td>
<td>457</td>
<td>.018</td>
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</table>

Predictors: Perceived Knowledge (PERCKNOW)
Predictors: Perceived Knowledge (PERCKNOW), Actual General Knowledge (x)
Perceived Knowledge (AGKNXPER)

**Regression Coefficients**

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstd. Coeff.</th>
<th>Std. Coeff.</th>
<th>Std. Error</th>
<th>$\beta$</th>
<th>t</th>
<th>Sig.</th>
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</thead>
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<td>.431</td>
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<tr>
<td></td>
<td>AGKNXPER</td>
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Dependent Variable: General Newspaper Use (StdFac2NP)

### Table 4.7

**Model for Combined Knowledge predicting General Television Use (StdFac3TV)**

<table>
<thead>
<tr>
<th>Model</th>
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<th>$R^2$</th>
<th>$R^2_{adj}$</th>
<th>Std. Error</th>
<th>$R^2$ Change</th>
<th>F Change</th>
<th>df1</th>
<th>df2</th>
<th>Sig. F Change</th>
</tr>
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<tbody>
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<td>.007</td>
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Predictors: Actual Individual Knowledge (x) Perceived Knowledge (AINKXPER)

**Regression Coefficients**

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<th>Model</th>
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<th>Std. Error</th>
<th>$\beta$</th>
<th>t</th>
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Dependent Variable: General Television Use (StdFac3TV)
Table 4.8

Model for Combined Knowledge predicting MWA Media Use (StdFac1MWAMedia)

<table>
<thead>
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<th>Model</th>
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<th>R²_adj</th>
<th>Std. Error</th>
<th>R² Change</th>
<th>F Change</th>
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<th>df2</th>
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<td>.091</td>
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<tr>
<td>2</td>
<td>.335</td>
<td>.112</td>
<td>.108</td>
<td>.93948280</td>
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<td>461</td>
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Predictors: Perceived Knowledge (PERCKNOW)
Predictors: Perceived Knowledge (PERCKNOW), Actual General Knowledge (x)
Perceived Knowledge (AGKNXPER)

Regression Coefficients

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<td>PERCKNOW</td>
</tr>
<tr>
<td>2</td>
<td>PERCKNOW</td>
</tr>
<tr>
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</table>

Dependent Variable: MWA Media Use (StdFac1MWAMedia)

Table 4.9

Model for Knowledge Gap effect predicting MWA Web site Use (StdFac2MWAWeb)

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<th>Model</th>
<th>R</th>
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<th>R²_adj</th>
<th>Std. Error</th>
<th>R² Change</th>
<th>F Change</th>
<th>df1</th>
<th>df2</th>
<th>Sig. F Change</th>
</tr>
</thead>
<tbody>
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<td>.009</td>
<td>.006</td>
<td>.99540139</td>
<td>.009</td>
<td>3.980</td>
<td>1</td>
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<td>.047</td>
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</table>

Predictors: Actual General Knowledge (-) Actual Individual Knowledge (AGENMAIN)

Regression Coefficients

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<tr>
<th>Unstd. Coeff.</th>
<th>Std. Coeff.</th>
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</table>

Dependent Variable: MWA Web site Use (StdFac2MWAWeb)
Table 5.1

Model for Direct TpB Measures predicting Behavioral Intention

<table>
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<tr>
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<th>R² adj</th>
<th>Std. Error</th>
<th>R² Change</th>
<th>F Change</th>
<th>df1</th>
<th>df2</th>
<th>Sig. F Change</th>
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</thead>
<tbody>
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<td>.307</td>
<td>.86617</td>
<td>.312</td>
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<td>377</td>
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Predictors: Attitude, Subjective Norm, Perceived Behavioral Control

Regression Coefficients

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<td>B</td>
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<tr>
<td></td>
<td>Subjective Norm</td>
<td>.106</td>
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<td></td>
<td>Perceived Behavioral Control</td>
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</table>

Dependent Variable: Behavioral Intention

Table 5.2

Model for Behavioral Beliefs predicting Attitude Toward the Behavior

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R²</th>
<th>R² adj</th>
<th>Std. Error</th>
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<th>F Change</th>
<th>df1</th>
<th>df2</th>
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<tbody>
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<td>1</td>
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<td>.054</td>
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</table>

Predictors: Behavioral Belief(s)

Regression Coefficients

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<tr>
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<th></th>
<th></th>
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</thead>
<tbody>
<tr>
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<td>B</td>
<td>Std. Error</td>
</tr>
<tr>
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</tr>
</tbody>
</table>
### Table 5.3

**Model for Normative Beliefs predicting Subjective Norm**

<table>
<thead>
<tr>
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<th>R²</th>
<th>R² adj</th>
<th>Std. Error</th>
<th>R² Change</th>
<th>F Change</th>
<th>df1</th>
<th>df2</th>
<th>Sig. F Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<td>.246</td>
<td>.240</td>
<td>.86935</td>
<td>.246</td>
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<td>3</td>
<td>423</td>
<td>.000</td>
</tr>
</tbody>
</table>

**Predictors:** SN1 (family), SN2 (friends), SN3 (government authorities)

**Regression Coefficients**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
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<td></td>
<td>B</td>
<td>β</td>
</tr>
<tr>
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<td>Family</td>
<td>.083</td>
</tr>
<tr>
<td></td>
<td>Friends</td>
<td>.013</td>
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<tr>
<td></td>
<td>Government Authorities</td>
<td>.034</td>
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</table>

**Dependent Variable:** Subjective Norm

### Table 5.4

**Model for the Sum of the Normative Beliefs predicting Subjective Norm**

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R²</th>
<th>R² adj</th>
<th>Std. Error</th>
<th>R² Change</th>
<th>F Change</th>
<th>df1</th>
<th>df2</th>
<th>Sig. F Change</th>
</tr>
</thead>
<tbody>
<tr>
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</table>

**Predictors:** Sum of the Normative Beliefs

**Regression Coefficients**

<table>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
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<td>B</td>
<td>β</td>
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<td>Normative Belief(s) Sum</td>
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</table>

**Dependent Variable:** Subjective Norm
### Table 5.5

Model for Control Beliefs predicting Perceived Behavioral Control

<table>
<thead>
<tr>
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<th>R²</th>
<th>R²_adj</th>
<th>Std. Error</th>
<th>R² Change</th>
<th>F Change</th>
<th>df1</th>
<th>df2</th>
<th>Sig. F Change</th>
</tr>
</thead>
<tbody>
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<td>.001</td>
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</table>

Predictors: PBC1 (knowledge), PBC2 (convenience), PBC3 (a proper container)

Regression Coefficients

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>β</td>
<td>t</td>
<td>B</td>
<td>Std. Error</td>
<td>β</td>
<td>t</td>
</tr>
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<td>.007</td>
<td>.079</td>
<td>1.593</td>
<td>.112</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Convenience</td>
<td>-.012</td>
<td>.007</td>
<td>-.079</td>
<td>-1.626</td>
<td>.105</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>A Proper Container</td>
<td>.021</td>
<td>.007</td>
<td>.151</td>
<td>3.064</td>
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</table>

Dependent Variable: Perceived Behavioral Control

### Table 5.6

Model for the Sum of the Control Beliefs predicting Perceived Behavioral Control

<table>
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<tr>
<th>Model</th>
<th>R</th>
<th>R²</th>
<th>R²_adj</th>
<th>Std. Error</th>
<th>R² Change</th>
<th>F Change</th>
<th>df1</th>
<th>df2</th>
<th>Sig. F Change</th>
</tr>
</thead>
<tbody>
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Predictors: PBCSum (Sum of the Control Beliefs)

Regression Coefficients

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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>β</td>
<td>t</td>
<td>B</td>
<td>Std. Error</td>
</tr>
<tr>
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</table>

Dependent Variable: Perceived Behavioral Control
Table 5.7  
Model for Un-weighted Behavioral Beliefs predicting Attitude Toward the Behavior

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>$R^2$</th>
<th>$R^2_{adj}$</th>
<th>Std. Error</th>
<th>$R^2$ Change</th>
<th>F Change</th>
<th>df1</th>
<th>df2</th>
<th>Sig. F Change</th>
</tr>
</thead>
<tbody>
<tr>
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<td>.016</td>
<td>.014</td>
<td>1.05132</td>
<td>.016</td>
<td>6.569</td>
<td>1</td>
<td>403</td>
<td>.011</td>
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</table>

Predictors: Un-weighted Behavioral Belief(s)

Regression Coefficients

<table>
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<tr>
<th>Model</th>
<th>Unstd. Coeff.</th>
<th>Stand. Coeff.</th>
<th>t</th>
<th>Sig.</th>
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<tr>
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<td>Std. Error</td>
<td>β</td>
<td></td>
</tr>
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</table>

Dependent Variable: Attitude Toward the Behavior

Table 5.8  
Model for Un-weighted Normative Beliefs predicting Subjective Norm

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>$R^2$</th>
<th>$R^2_{adj}$</th>
<th>Std. Error</th>
<th>$R^2$ Change</th>
<th>F Change</th>
<th>df1</th>
<th>df2</th>
<th>Sig. F Change</th>
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</thead>
<tbody>
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<td>.235</td>
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<td>.240</td>
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</table>

Predictors: Un-weighted Normative Beliefs (UW Family, UW Friends, UW Government)

Regression Coefficients

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstd. Coeff.</th>
<th>Stand. Coeff.</th>
<th>t</th>
<th>Sig.</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>β</td>
<td></td>
</tr>
<tr>
<td>1</td>
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<td>.038</td>
<td>.196</td>
<td>3.682</td>
</tr>
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<td>.309</td>
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<td>UW Government</td>
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<td>.073</td>
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Dependent Variable: Subjective Norm
Table 5.9

Model for Un-weighted Control Beliefs predicting Perceived Behavioral Control

<table>
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<tr>
<th>Model</th>
<th>R</th>
<th>R²</th>
<th>R²adj</th>
<th>Std. Error</th>
<th>R² Change</th>
<th>F Change</th>
<th>df1</th>
<th>df2</th>
<th>Sig. F Change</th>
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</thead>
<tbody>
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<td>.091</td>
<td>.83969</td>
<td>.097</td>
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<td>.000</td>
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</table>

Predictors: Un-weighted PBC1 (knowledge), Un-weighted PBC2 (convenience), Un-weighted PBC3 (a proper container)

Regression Coefficients

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
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<td>B</td>
<td>Std. Error</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>UW Knowledge</td>
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<td>.019</td>
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<tr>
<td>UW Convenience</td>
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<td>.021</td>
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<td>UW Container</td>
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</table>

Dependent Variable: Perceived Behavioral Control

Table 5.10

TpB Model including Past Behavior for predicting Behavioral Intention

<table>
<thead>
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<th>R²</th>
<th>R²adj</th>
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<th>R² Change</th>
<th>F Change</th>
<th>df1</th>
<th>df2</th>
<th>Sig. F Change</th>
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Predictors: Attitude, Subjective Norm, Perceived Behavioral Control, Past Behavior

Regression Coefficients

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<td></td>
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Dependent Variable: Behavioral Intention
Chapter V

DISCUSSION AND CONCLUSIONS

Ideally, upon the completion of social science research, especially in the field of mass communication, theoretical models within the academy have been advanced, while strategic practices within the industry have been enhanced. That is believed to be the case with the findings of this three-part study of mass media and interpersonal communication effects on issue knowledge, personal attitudes, and potential behaviors of target audiences.

This study shows that there is an advantage to designing public information strategies according to proven theoretical perspectives, rather than arbitrarily executing uncoordinated communications on a project-by-project or as needed basis. The latter is the way of the novice. The way of the professional and scholar is to test theoretical models in various applied settings, in order to establish more proven guidelines for effective public communications, while striving to assist stakeholders in their need to stay in tuned with issues and developments impacting the communities in which they live and work. The findings from this study achieved just that.

Additional evidence now exists that supports the respective premises of the theories of social cognition and planned behavior, as applied to public communications campaigns designed to inform and influence key publics about critically important social issues.

For years, social cognitive theory has provided a template for practitioners to follow in planning and executing public communications campaigns, and in this study it likewise serves as an appropriate perspective for guiding strategies and tactics. This study applies the theory of social cognition to the environmental/public health issue of proper grease disposal, which
directly impacts sewer treatment and waste management, which are public health related concerns of the community featured in this investigation. As such, this study extends the current stream of research into a new area, in addition to those where social cognitive theory has been applied in various health communications campaigns – in AIDS education, alcohol and drug prevention, safe sex and anti-smoking practices, as well as topics related to various forms of cancer – as cited earlier in the literature review.

As social cognitive theory purports, audiences are typically enlightened and influenced by two distinct pathways of public information flow – the direct and indirect pathways. In the indirect pathway, mass media and interpersonal communication serve complementary functions in disseminating messages, typically via the former channel, which are then mediated or reinforced – often through various forms of public discourse – via the latter channel.

Identifying a theoretical perspective that helps explain and perhaps predict behavioral change, by extending the examination of interpersonal effects, would be helpful to scholars and practitioners alike. In the theory of planned behavior, there is such a model, and the findings of this study successfully linked the concepts of social cognition with the specifics of planned behavior. Not only does interpersonal communication supplement mass communication with an ability to reinforce key messages, interpersonal influences such as attitudes, subjective norms, and behavioral control, very often account for the public’s propensity for knowing, as well as intention for doing.

By uniting the two theories of social cognition and planned behavior, as this study successfully conceptualized for the first time within such an applied setting, the academic and professional debate can include the notion that mass media and interpersonal communication do
indeed work well together, strategically and theoretically, within the parameters of a public communications campaign seeking to obtain behavioral compliance among a target audience.

The findings of this three-part study provided the “specifics” of empirical evidence to support the suppositions of both theories. Mass media, when examined as individual channels for disseminating messages, were very limited in their collective effectiveness to expand knowledge among specific audiences concerning a critical, salient issue. Likewise, when public information tools – inherently more interpersonal by nature because of their intent to target messages to key publics – are employed within the scope of a public communications campaign, they are only slightly more effective than mass media for impacting knowledge and subsequent attitudes and behaviors. However, when used in combination, the effects of the respective mass media and interpersonal strategies are enhanced by their integration, as was the case in this study.

In addition, there is more to “doing” or complying with behavioral mandates than just “knowing” the consequences or impact of the behavior. There are interpersonal influences on behavioral intention, as this study found with the replication of the theory of planned behavior. As the findings of this study indicate, the theory’s proposed interpersonal predictors – positive attitudes toward the behavior, such as recognizing the advantages of compliance, normative influences, such as those coming from family members, friends, and government authority, as well as control factors, such as knowing how or what to do and having the means for carrying out the act – significantly predicted the intentions of the target audience to actually carry out the behavior in question.

Within the context of this three-part investigation, specific findings indicated that customers of the Macon Water Authority (MWA) are consumers of general mass media via
traditional print newspapers. And that general newspaper use contributes to greater knowledge of broad, global issues, such as the environmental impact of improper grease disposal. This is very important, owing to the historical evidence and extensive body of research that has shown only limited direct effects of mass media, even within the scope of a public communications campaign. That any significant relationship is present between mass media consumption and increased knowledge is additionally surprising because of the mass media landscape in today’s society – where technological innovations and increased access to mass media sources by consumers are more prevalent now than ever before.

As for the impact of public information, disseminated either directly or indirectly through various direct or mass media sources, this study found that knowledge about proper grease disposal is enhanced by the consumption of both “controlled” and “uncontrolled” media – the former in the form of the utility’s customer newsletter, and the latter by the utility’s successful access to the news agenda of local newspapers, television stations, government access cable channel, to some extent local radio. As the results of this study also indicate, with the Authority’s use of local media and its own sponsored communications to disseminate campaign messages, customers are more likely to gain knowledge concerning proper disposal of household grease. Such findings are encouraging for practitioners lobbying for the opportunity and financing from clients to plan and implement public communications campaigns on their behalf. In this case, the client received a tremendous return on its investment in public information addressing grease education.

Ultimately, however, the practice of public relations, especially as planned within the scope of a campaign, involves the strategic use of both mass media and interpersonal communication channels jointly, as all forms of media typically are necessary to proactively
manage issues as well as respond to concerns of stakeholders and publics that might evolve into crises. For that reason, it is extremely helpful to find in this study further evidence of the ideal of “integration” in campaign communications, or in the very least, the successful strategic use of mass media and interpersonal communication in combination.

This research indicates that the combined effects of mass and interpersonal communication are as effective, and in certain cases more effective, than the effects from the use of either source solely. In fact, MWA customers who showed greater actual knowledge of the specific means for proper grease management and disposal within their own households were also those whose preferred mass media and public information in combination. In this study, the effects of mass media and interpersonal communication as separate, direct predictors of knowledge were not only replicated during the study of combined media effects, but they also were overshadowed by the data revealing the that use of television (mass media) and MWA public information (interpersonal) in complementary fashion were most effective in predicting individual knowledge of proper disposal of household grease.

Most insightful, too, from the findings in this study is the apparent reciprocal relationship between a government’s public communications process and the public’s process of gaining knowledge on salient issues. From this investigation, there is empirical evidence that gaps in knowledge, or combined measures of knowledge, have greater predictive significance of media use than do direct measures of knowledge. On several occasions in this research, the combined effects of various degrees of knowledge about proper grease disposal impacted general newspaper and television use, as well as dependency on public information, among utility customers than did direct measures of specific knowledge about the subject. When pitting the direct effects up against the combined effects, the latter survived the potential mediating impact
Indeed, while public water utilities weigh the investment of public communications campaign dollars in mass media and public information messages, their publics reciprocate by seeking information, via interpersonal and mass media channels, to build knowledge as a result of combinations or gaps between what they know – the actual knowledge – and what they think they know – the perceived knowledge – about proper disposal of household grease.

Interestingly, it can be inferred from this study that utility customers who possess a knowledge gap between the actual and perceived, in essence lack the confidence and assurance that what they know is accurate – and what they do is compliant – when in actuality they are further along in the education process than they believe. That could be because grease disposal is an obscure, compliant behavior, compared with other environmental issues more clearly defined in terms of salience, impact, self interest and personal benefits, such as water conservation during droughts or waste management to prevent stormwater pollution.

However, even though proper disposal of household grease is not the most “top-of-mind” behavior for water utility customers, the interpersonal influences on their behavioral intentions are no less significant. As the findings in this study indicate, attitudes toward grease disposal are critically important to obtain compliance from customers to perform the undesirable act properly. In fact, the results of this application of the theory of planned behavior indicates that personal norms may have a strong intervening impact on behavioral intention, providing another interpretation of the theory within an applied context. While grease disposal may be viewed as unpleasant or unenjoyable, it is still considered good, valuable, and beneficial, according to MWA customers. Such a contradiction provides evidence again that not only are attitudes
important indicators of behavioral intention, but also that some attitudes are obviously more
critical to making decisions than others.

In addition, the results of this inquiry indicate that subjective norms also significantly
predict a customer’s intent to dispose of grease properly. In this instance, expectations of family,
regulatory mandates from government, and to a smaller degree, opinions of friends, all influence
whether utility customers even consider disposing of grease properly within their households.

Finally, the findings of this investigation identified significant barriers that can prevent or
deter customers from complying with proper grease management. Most enlightening of all is the
evidence supporting the importance of a container that allows customers to dispose used grease.
To some extent, lack of knowledge of how to dispose of grease properly, as well as the
inconvenience or mess of the act, also deterred customers from willingly complying, but the
container appears to be the key to knocking down the barriers to behavioral compliance. While
seemingly mundane to some, this result is very exciting for the Macon Water Authority.
Empirical evidence from the review of this applied theory provides justification for the utility’s
investment in and promotion of grease can covers for distribution and use among MWA
customers. Apparently, this little plastic cover is a hit among utility customers, as it has already
received an overwhelming response from those who view the otherwise trivial item as a way to
better enable them to comply with the need to dispose of grease properly within their households.
A number of grease can covers have been distributed to participants in this three-part study, as
well as to targeted audiences of direct mail grease education packets.

Overall, the findings of this study provide a great deal of insight for scholars and
practitioners searching for improved models for planning – and empirically measuring –
successful public communications campaigns.
Research Question 1: Is the level of mass media use, in general, significantly related to or predictive of people’s actual knowledge of specific industry issues?

The findings from this study provided only limited results supporting the premise that mass media consumption – in this instance general newspaper use – has a significant impact on greater actual knowledge of proper grease disposal. But that is neither unexpected nor discouraging. Since the early years of mass communication research, the direct “inoculation” effects of mass media exposure have been discredited, replaced instead by models more likely reflecting limited or “cultivating” effects. Such is the case with the findings of this applied research testing the direct effects of general mass media exposure predicting increased knowledge among customers of the Macon Water Authority (MWA).

In addition, the limited findings from the examination of the direct effects of mass media on issue knowledge can be attributed also to limitations of the measurement instrument. With only a few questionnaire items measuring of mass media consumption, the lack of reliability of these scales was documented in the report of the results of this research question, though the scales were not designed to provide a composite measure of media use, per se. To account for this lack of reliability, the mass media measures were standardized and the data were reduced with the help of factor analysis, to create three factor scores of radio, newspaper, and television mass media use, respectively. In doing so, the results of statistical analyses using the factor scores as predictors yielded virtually the same results of the initial tests of the independent predictors – only the newspaper factor was significant in predicting actual general knowledge of proper grease disposal among MWA customers.

Furthermore, to address any additional concerns for the reliability of the mass media questionnaire items to form a composite indicator of mass media consumption, it is helpful to
note that self-reports of media use on questionnaire items involve respondent recall of media
tendencies. On the other hand, data on newspaper readership or television viewership through
ratings services, for example, are much more definitive in measuring media use patterns, and can
help verify such self reports as those attained through the 2006 survey. But again, the inability
of the media use items to form a reliable composite measure of media use is not discouraging,
when considering the nature of mass media audiences who are most often active, involved
participants, seeking customized patterns of media use and selective exposure to a diverse array
of available media sources.

It has been argued in this investigation that, with the help of theoretical perspectives and
professional experiences, mass media work best when accompanied by interpersonal
communication to reinforce message strategies. The results from the 2004 survey indicated
levels of dependency, to some extent, of mass media for public information purposes. The data
from the 2006 survey also documented these consumption patterns, but found only limited
effects of such mass media use on issue knowledge. Thus, the fact that mass media were found
in this study to be least effective as a sole means for building knowledge actually supports the
social cognitive premise. Data collected from this three-part investigation of media consumption
patterns and preferences of MWA customers did find, however, limited evidence that newspaper
consumption – in one case as an individual predictor and in another model as a factor score –
significantly impacted the actual general knowledge of MWA customers on the issue of proper
disposal of household grease.

Recall that actual general knowledge accounted for customer insight on items related to
the global or environmental impact of proper grease disposal. It makes sense then that
readership of environmental-based news in local print media might contribute to better
understanding of these more abstract concepts. It is interesting to note that the influence of newspapers might be expected in this instance, since *The Macon Telegraph* is arguably the leading mass media source of news and information in Macon and Bibb County, not to mention the only member of the local press to provide regular coverage of MWA meetings and events. It could be reasoned, then, that since MWA messages are most likely to appear in print, those customers with tendencies of general newspaper consumption would be more knowledgeable of such “general” facts related to the grease management issue. In addition, one of the news stories with legs that has appeared regularly in *The Macon Telegraph* is the coverage and subsequent impact and consequences of sewer overflows in the MWA system, attributed in many instances to clogs caused by improper grease disposal.

The important insight to take from the findings of this three-part study is that while mass media are not solely responsible for increasing knowledge among target audiences, they are still critical components of integrated public communications. It remains important for public relations practitioners to frame messages for media outlets that help inform constituents of salient issues and subsequent behaviors that impact their daily lives. In short, “getting ink” of grease management policies and practices continues to be an invaluable skill of the PR practitioner attempting to execute successful public communications campaigns, if for no other reason than to avert negative news coverage and potential crises that have resulted from misrepresentations of the issue by local print news media and their readers.

Research Question 2: Is the level of consumption of an organization’s public information – through various media channels within the scope of a public communications campaign – significantly related to or predictive of actual knowledge of industry issues?
While the first research question addressed the limited effects of mass media on grease disposal knowledge among MWA customers, the second question addressed the potential influence of the utility’s public information practices – which include ongoing strategic communications within the parameters of a grease education campaign – on subsequent issue knowledge.

Findings from this three-part study were extremely encouraging for the PR professionals and utility managers and board members attempting to evaluate the success of the grease education campaign, as well as the return on their investment in public information initiatives. Not surprisingly, the separate public information tools used by the Authority within the grease education campaign provided significant results as independent predictors of grease knowledge. In the 2004 study, MWA customers showed a great propensity for use of the MWA newsletter for public information purposes, although use of the MWA Web site was not as noticeable. In any event, data collected in 2004 showed encouraging signs that MWA customers were responding favorably at least to the presentation of Authority public information via these “controlled” media. More specifically and empirically, the 2006 survey provided results that showed conclusive evidence that the MWA customer newsletter and access to the local government cable channel covering MWA meetings and PSAs contributed the most to greater actual knowledge of the issue of proper disposal of household grease. Therein lies verification that public information – keeping the public informed of the public’s business – makes a difference in garnering a more enlightened constituency, with more informed public opinions.

As in the case of the mass media tools, the measures of public information use by MWA customers were not designed to create a reliable scale for accommodating a composite measure of public information use among respondents. However, the findings that indicated an
assortment of PR tools were predictive of various measures of actual knowledge provide support for the value of public communications campaigns, through the statistical and theoretical significance of the public information models examined in this study.

For starters, the Authority’s presence in mass media – as a result of conscious efforts to access the news agenda of local press – and the Authority’s investment in “controlled” media – such as its own newsletter and Web site – add credence to the argument that integrated communications is most effective in obtaining campaign goals and objectives. The findings support this position, as the MWA customer newsletter and the MWA’s presence on the local government access cable Channel 14 both predicted greater actual knowledge of proper grease disposal among MWA customers. Recall that actual knowledge was a measure that was compiled from customer responses on ALL of the knowledge questions related to grease disposal. It is the broadest measure of knowledge on the issue provided by the data.

In addition, the Authority’s presence on the cable channel – which like the local newspaper, provides regular coverage of MWA meetings – also influenced the actual individual knowledge of MWA customers, which was the knowledge measure consisting of questionnaire items addressing the specific, household means for disposing of grease properly. Similarly, the Authority’s public information appearing in local newspapers positively influenced the customers’ actual general knowledge, which was the measure of knowledge on the more general, global implications of proper grease management.

Although the questionnaire items asking respondents about their public information use were not designed to provide a composite measure of public information consumption, they proved invaluable as separate measures. To make them more reliable and testable as composite measures, they were grouped into components of standardized factor scores to help clarify and
indeed replicate the results of the individual public information tools, when considered separate predictors of various degrees of knowledge among MWA customers.

When converting data about the MWA public information tools into two standardized factors for further testing, the factor labeled “MWA Media” – composed of the MWA’s indirect use of newspapers, television, the government access cable channel, and radio, as well as the MWA newsletter – was significantly predictive of both actual knowledge and actual general knowledge of grease disposal. These findings, in addition to replicating the earlier, similar results from the separate independent public information variables, help specify, strategically, which public information sources are most effective for increasing knowledge among targeted customers of proper grease disposal. As was anticipated, only the MWA Web site failed to contribute significantly to any of the knowledge dependent variables. This was not surprising since the demographic data revealed that respondents were more typically older and less likely users of the Internet. Plus, the MWA Web site had only recently been re-designed and uploaded with current public information. Finally, the lower measures of MWA Web site traffic among customers participating in the 2006 survey is consistent with the media use patterns reported by the randomly selected respondents to the 2004 survey.

Research Question 3: Is the combination of general mass media consumption and consumption of an organization’s public information significantly related to or predictive of greater actual knowledge of industry issues?

Of more interest to practitioners and scholars are the findings from the third research question, which examined the combined effects of mass media and interpersonal communication use within the parameters of a public communications campaign. It is here that the most
evidence in support of the social cognitive approach to integrated communications within a public information campaign exists.

Findings indicated that the combined effects of general television consumption and use of MWA public information – including the MWA’s presence in newspapers, on television, on cable, on radio, and its customer newsletter – significantly predicted greater actual individual knowledge. Again, this is consequential support for advocates of an integrated approach. As was the case with the findings in research question 1, general newspaper use directly impacted increased actual general knowledge of the broad, global issues related to proper disposal of household grease. Likewise, the empirical evidence from research question 2, which purported that MWA sponsored public information positively influenced actual knowledge – the overall knowledge of both local and global implications of the issue – was also replicated.

That more combined effects of mass media plus interpersonal public information were not found is not discouraging. The limited quantity of predictive models is offset by the findings that were significant – that the combined general consumption of television and use of public information sponsored by the MWA predicted actual individual knowledge. Looking closer at the dependent measure of actual individual knowledge in this model shows that it was taken from the factual questions in the 2006 survey that addressed mastery of the specific, correct means for individuals to dispose of their household grease properly. This is important because this information is most relevant to the public information goals and objectives of the grease education program of the MWA. Actual individual knowledge represents the capacity for customers to comply with proper grease disposal behavior within their own households. While increasing knowledge on the global impact of proper grease disposal on related issues such as sewer system clogs, overflows, and water quality is nice, confronting this issue at the grassroots
level is where system-wide behavioral change must begin. Finding an effective way to increase knowledge among customers concerning their own behaviors – the proper methods for disposing of grease themselves – is more important to the scope of a campaign aiming to make incremental steps of progress among the collective behaviors of all residential utility customers.

Future strategies and tactics of the MWA’s public communications campaign on grease education should continue to feature the combined use of mass media – particularly messages in the powerful, visual medium of television – with traditional public information tools that enable the Authority to control content, timing, and distribution of its grease education messages.

Research Question 4(a): Is there a significant difference between perceived knowledge and actual knowledge, creating a knowledge gap regarding a specific industry issue?

The need to examine whether a potential knowledge gap existed among MWA respondents came from a concern that customers may perceive they know more about the proper disposal of household grease than they really do. If that were the case, it might have implications on how susceptible this target audience may be to persuasive campaign messages. This investigation did find a growing knowledge gap between perceived knowledge and respective actual knowledge measures, but results indicated that the gap existed in a reverse pattern than what was expected. MWA customers actually know more about proper grease disposal than they think they do.

Recall again the critical components of the actual knowledge measures. The overall actual knowledge measure was taken from seven questionnaire items that quantified both specific knowledge of proper grease disposal methods within the household and global issues impacted by grease disposal. The former component entailed four questions on the specific actual individual knowledge of grease disposal, while the latter component was composed of
three questions addressing the global, general implications of the issue. Perceived knowledge, on the other hand, was taken from a questionnaire item asking respondents to directly rate “how knowledgeable are you” about proper grease disposal.

Findings of the knowledge gap investigation indicated that the first knowledge gap existed slightly between overall actual individual knowledge and perceived knowledge, with respondents knowing slightly more about specific household grease disposal methods than they perceived. The knowledge gap widened when average scores were compared among respondent overall actual knowledge and perceived knowledge. Finally, the widest knowledge gap existed between measures of actual general knowledge of global implications of grease disposal and perceived knowledge of the issue. To further examination of the knowledge gap effect, a comparison of the difference between actual general knowledge and actual individual knowledge was also noted.

The resulting correlation matrix among these four knowledge variables – actual knowledge, actual individual knowledge, actual general knowledge, and perceived knowledge – indicated a significant correlation among all four measures. Although related, it can be argued that the three concepts were distinctively different and thus appropriate for examination as measures of overall knowledge, individual knowledge, and general knowledge of the issue.

What is most enlightening about the knowledge gap results is that they reflect, in a way, consumer confidence in what they know about grease education. The objective of public communications can be to instill greater confidence in consumer self efficacy concerning proper disposal of household grease, so the rewards and positive impact of correct, pro-social behavior are recognized by customers to hopefully assure their continued compliance. If the findings of this study are to further impact strategic campaign communications, getting customers to realize
their proper disposal of household grease really makes a difference is just as important as increasing their knowledge of the means for doing so.

Research Question 4(b): Does a perceived or actual knowledge gap or combination of knowledge measures predict the level of media consumption, either through mass media or public information sources of a sponsoring organization, within the scope of a public communication campaign?

The combined effects of actual and perceived knowledge on media and public information consumption were even more surprising and suggestive of a new way of thinking for public relations practitioners. These findings provide a consideration for public relations excellence as a reciprocal communications process, more so than a symmetrical one. Perhaps this is just semantics, but the evidence of the predictive nature of knowledge gaps suggests that organizations using integrated communications to advance public information goals and objectives reciprocate by meeting the needs of publics seeking specific media channels and subsequent expertise to fill those gaps.

One of the key contributors to excellence in public relations practice, according to some, is the distinction between the preferred two-way symmetrical communications versus a two-way asymmetrical model (Baskin, Aronoff, & Lattimore, 1997; Grunig & Hunt, 1984; Grunig, 1992). While two-way symmetrical public relations emphasizes negotiation and a willingness to adapt and make compromises, reciprocal communication appears to be less about negotiation and more about illumination. As the evidence of the knowledge gap or combined knowledge effect in this study revealed, utility customers made distinctive media choices that provided access to information that could help them increase their knowledge on various aspects of an issue. Negotiation and compromise are not necessary when at the heart of “excellent” public
information practice is the willingness of a utility to meet customer needs and preferences for receiving salient information on select topics.

The combined effect of two knowledge measures served as a more significant predictor of various mass media or public information uses than did their respective direct effects. A true knowledge gap, resulting from a significant difference between actual general knowledge and actual individual knowledge, also served as a more likely predictor of public information use than either of the respective direct effects, or separate independent variables, which composed this knowledge gap measure.

The combined effects of knowledge measures among MWA customers to predict their media preferences provides evidence that the public under investigation in this study is engaged in the public communications campaign, seeking specific media to provide insight on the issue of proper disposal of household grease. In one respect, MWA customers may be seeking affirmation of what they know to be true, while in another instance they may need further explanation or verification of their perceptions. In either case, preferences for various media are distinct, and if confidence in the perceived “right way” to dispose of household grease is what customers seek, perhaps their confidence in certain media to provide the “right” answers is indicated in the findings of this study.

In every instance where the combination of knowledge measures or the knowledge gap difference between variables was more predictive than the direct effects, the resulting media use preference was clear. Combined effects of actual knowledge and perceived knowledge significantly predicted or explained greater newspaper readership. Actual individual knowledge and perceived knowledge combined influenced general consumption of television. And actual general knowledge and perceived knowledge predicted, in combination, increased use of MWA
public information, including the Authority’s access to newspapers, television, the government cable station, radio, and its newsletter.

Finally, this study provided evidence of a knowledge gap influence on selective exposure to public information. The difference between actual general knowledge and actual individual knowledge significantly predicted Web site use among MWA customers, but the direction of the effect was negative. Indeed, as the gap between actual general knowledge and actual individual knowledge widens, Web use decreases. That pattern stands to reason that higher scores in general knowledge – and widening of the knowledge gap – result in lower use of the MWA Web site. The Web site is likely a public information source sought by more active, involved customers seeking information on specific facts concerning proper grease disposal within the household.

Research Question 5: What is the relationship between (a) attitudes toward a behavior, (b) subjective norms, and (c) perceived behavioral control as predictors of intention to comply with a pro-social behavior outlined in a public communications campaign?

In this study, the theory of planned behavior was an ideal model for identifying and verifying the attitudes, subjective norms, and control factors that significantly influence MWA customer intentions to properly dispose of household grease. More importantly, the theory of planned behavior is a natural extension of social cognitive theory, providing a closer look at proposed interpersonal influences – the indirect pathway of media effects – that complement the limited direct effects of mass communication. Future research may extend the theory of planned behavior to consider the possible bearing of past behaviors on future behavioral intentions to dispose of grease properly within the household.
This study provides further evidence of the predictive power of the theory of planned behavior, when applied to the real-world setting of a public communications campaign seeking behavioral compliance of proper grease disposal among MWA customer households. The application of the theory of planned behavior in this setting, just like the use of the social cognitive perspective, provided additional support not just for the components of the model, but for their use in predicting behavioral intentions for a less visible and publicized compliant behavior, such as the proper disposal of household grease.

The three direct predictors of behavioral intention as purported by the theory of planned behavior – attitudes toward the behavior, subjective norms, and perceived behavioral control – did predict MWA customer intentions to dispose of household grease properly. The significance and power of the predictors alleviated some initial concerns with the reliability of the direct measures (Cronbach’s alphas from .661 to .750), which followed the conceptual and methodological guidelines of an established model. Also, the belief-based measures preceding each of these direct predictors are likewise significantly influential, validating the preliminary, qualitative study – Part II of this investigation.

Behavioral beliefs said to directly impact attitudes toward the behavior in question according to the premise of the theory, did hold true as significantly predictive of attitudes about grease disposal. However, the belief-based measure for behavioral beliefs were limited to just one indicator – the belief that proper grease disposal would help prevent clogged drains. Although limited to one belief, it still predicted the overall attitude of MWA customers toward grease disposal.

Recall that the attitudinal scale used in the model was only moderately reliable for providing consistent measures for the concept of grease disposal. In part this was because of the
nature of the behavior in question – while grease disposal in unpleasant and unenjoyable (which should result in a negative attitude toward the behavior), it is obviously viewed as good, valuable and beneficial. Likewise, the belief that grease disposal helps prevent clogs should also precede any belief about it being inconvenient or messy. When assessing attitudes toward the proper disposal of household grease, it should also be noted that strong personal norms might be in play. Perhaps any conflicting results in the scales attempting to measure the attitude toward the behavior can be explained by the strong personal norms – the personal benefits and consequences from the behavior in question – that outweigh any potential negative assessment that the behavior is unpleasant or unenjoyable. This strengthened by the finding that whether weighted or un-weighted, the behavioral belief(s) about proper grease disposal significantly predicted the overall attitude among MWA customers toward this behavior.

In the analysis of normative beliefs predicting the subsequent subjective norm measure in the model, whether those beliefs were weighted impacted whether they were influential. From Part II of this study, normative influences were identified in the form of family members, friends, and government or regulatory authorities. When weighted, influences of family and government directly predict the subjective norm measure; but if un-weighted, friends, rather than government, serve as a predictor of the subjective norm for the model. The one normative influence that is sure to at least indirectly influence one’s intention to properly dispose of household grease is family. The strength of the family as a predictor of subjective norm for proper grease disposal is not surprising, since social norms are typically strongest and more likely salient when coming from family members, and since the behavior in question – proper grease disposal – is confined to the household, where the influence of family is most evident.
The control beliefs identified from the qualitative component in Part II of this study revealed that the most common control factors or beliefs more likely to contribute to perceived behavioral control are: (1) knowledge about how to dispose of grease properly, (2) the degree to which proper disposal is convenient, and (3) a container in which to store the used grease. The most influential control factor of these three is the proper container, which would enable customers to properly dispose of grease easier and more often. However, when the control factors were un-weighted, all three contributed as significant predictors of perceived behavioral control.

Apparently, the control factors identified in the preliminary investigation in Part II were right on the mark. What’s even more telling is that the Authority has noted the apparent importance of a container to facilitate proper grease disposal among customers, since several thousand grease can covers have been ordered and are being distributed as a key strategy within the utility’s grease education campaign. It’s enlightening that such a simple item can remove a significant barrier to compliance, while enabling more customers who are willing to properly dispose of their household grease to in fact do so.

**Strengths and Limitations of the Research**

Like any social science research, this three-part study contained strengths and limitations in its research design and findings.

**Reliability and Validity**

As is the case with any quantitative method utilizing scales to obtain attitude and other reported measures, the 2004 and 2006 surveys had to address issues of reliability and validity.

Reliability is the ability of a measure to record the same thing consistently over time, as a reliable measure is one that is stable and does not fluctuate randomly or without reason (Stacks,
Reliability of a measure within the context of a measurement instrument, such as a questionnaire, looks at two components – one being the true score on the measurement instrument and the other being the random error, whether from an error in the instrument or an error in the application (Wimmer & Dominick, 2000). Reliability can be assessed via several methods, including test-retest or split-half techniques. According to the nature of this study and since the primary data for analyses of the research questions were collected via a single instrument – the 2006 survey – reliability was assessed by way of testing for internal consistency of the scaled measures, with Cronbach’s alpha or inter-item correlations used in these instances.

The primary items tested for reliability were the measures of mass media use, the measures of public information use, the knowledge measures, and the scales used to determine the direct predictors of the theory of planned behavior. The first three measures were not designed to possess proven scales that would provide a composite measure of media use, public information use, and knowledge, respectively. This is an admitted limitation of the design, yet statistical analyses were not contingent upon composite measures for either the independent or dependent measures in question. For the direct predictors of the theory of planned behavior, however, the questionnaire items were designed according to the previously tested conceptual and methodological considerations of the model, as provided by Ajzen (2002). Cronbach’s alphas were reported to verify the reliability of belief-based and direct measures of the theory of planned behavior model in use in this study. For the measures provided and explained in the Results Chapter of this research, the Cronbach’s alpha was less than adequate for attitude toward the behavior ($\alpha=.69$), but adequate for subjective norm ($\alpha=.75$), and perceived behavioral control ($\alpha=.70$). The generally accepted lower limit of Cronbach’s alpha is .70. Strengthening the case
for their respective reliability, however, was their collective ability to significantly predict behavioral intention according to the guidelines of the model.

In order to account for the acceptable level of Type I error, or chance that tests revealed significant results when in fact they did not, an alpha level of .05 was set for all analyses conducted in this study. One factor directly influencing Type I error is sample size, which was more than adequate for conducting all necessary statistical tests in both the 2004 and 2006 surveys.

The strength of validity typically comes at the discretion of the researcher who specifies what indicators will be used for a latent construct. Validity of concepts in quantitative research represents the extend to which a scale or set of measures accurately represents the concept under investigation, typically coming in four primary types – face validity, content validity, criterion-related validity, and construct validity (Stacks, 2002). In addition, internal validity refers to the degree to which the researcher conducts and controls measurement of observations, which often creates a tradeoff with an ability to generalize results to the greater population. Internal validity was strong in the instance of this research, since the conceptual and methodological considerations for scale construction were followed as outline by the theory of planned behavior. The items used to measure media use, public information consumption, as well as knowledge of grease disposal concepts were not intended to serve as summative scales to create composite measures. In addition, the questions for media and public information use followed guidelines from the Integrated Marketing Communications (IMC) literature, which provides categorical descriptions of mass media and public information channels, which were subsequently examined here. The concept of integration, then, was reflected both in the design of the measurement
instruments and the results of the research findings supporting the more effective use of combined media.

External validity is enhanced, and results more likely generalized to the greater population, when the sample closely reflects the demographic and psycho-graphic makeup of the greater population. Since demographic data is not available for MWA customers, due to privacy concerns of disclosing customer data for public consumption, U.S. Census figures were used to compare to the samples taken in the 2004 and 2006 surveys. Table 1.0 reflects these sample-population demographic statistical comparisons, which provide marginal support for the external validity of the findings in this study.

This three-part study has face validity based on its ability to operationally define the major concepts under examination. It also has strong support for content validity, based on the review of the research design by colleagues, both in the academy and in the profession, because of the applied nature of the measures that were successfully able to tap into the content of the models under examination. Criterion validity also was apparent in this study because of the predictive significance of the models addressing the research questions, but explained variance was limited in most cases. Finally, construct validity was reflected in the successful application of the theory of planned behavior in this study’s applied context, as outlined according to the established conceptual and methodological considerations that were followed (Ajzen, 2002).

Of most interest here is the predictive or criterion validity reflected in this study, as the primary objective of this research was to provide models that successfully identified the integrated communications that significantly predict aspects or measures of knowledge, attitude, or behaviors, among publics targeted in public communication campaigns. According to Wimmer and Dominick (2000), if the models allow for a high degree of accuracy in the
outcomes, according to the identified relationships between measures, they have predictive validity. The independent and dependent measures, operationally defined and tested through the results gathered primarily via the measurement instrument in Part III – the 2006 survey – successfully reflected the relationships conceptualized in their respective models. In the statistical analyses utilized to address each research question, results obtained possessed at least one outcome reflecting a model whose independent measures significantly predicted the dependent measure under examination ($p<.05$). While the entire model was limited in its predictive power in most cases, save the theory of planned behavior, the results that indicated in the very least a component’s ability to significantly predict outcome measures, likewise reflected at least a limited degree of criterion validity in each case, though limited statistically.

One of the inherent limitations of using a questionnaire as the primary measurement instrument in a study is its dependency on self-reports by respondents to represent knowledge, attitudes, and behaviors related to issues under investigation. Self-reports of “actual” knowledge measures were not as limiting, due to the design of the knowledge questions based on factual information regarding proper disposal of household grease. Attitudes and behaviors taken through self-reports are more limiting, since the researcher cannot document actual observations in the use of surveys. Another limitation in the findings of this research is that they were obtained from only one application of the models under investigation. Obviously to advance or expand upon theory or practice, repeated claims would need to be replicated over time. Finally, a limitation of the survey methodology employed in this three-part study was the failure to use more than one “wave” of solicitation to boost response rate, and respondents were not debriefed on the correct and incorrect methods for proper disposal of household grease, as reflected in the actual knowledge questionnaire items of the 2006 survey.
Although several statistical tests conducted in this study revealed significant findings to support theoretical perspectives and practical applications of integrated communications, in most instances, models featured only limited explained variance. Thus, speculation exists on what other factors are influencing knowledge, if not media or media choices, and the need to fill knowledge gaps. However, the study of the theory of planned behavior, as applied to the issue of proper disposal of household grease, provided results featuring greater explained variance, as would be expected with the testing of an established theoretical model. In the regression results presented in Chapter 4 of this study, the idea of independent variables “predicting” dependent measures more appropriately reflected the significant relationships and effects among the variables, rather than the predictive power of the models.

One of the greatest strengths of this research project, however, is that it was conducted in an applied setting among customers of a local water utility. As has been stated, the strength of social science research conducted among utility customers lies within the comprehensive sampling frame available to the researcher. Since the Macon Water Authority is the only public water utility for Macon and Bibb County citizens, it serves more than 90 percent of the population. Thus, a statistically random sample from this list of customers provides one of the strongest reflections of true public opinion, due to the ability to generalize the results of the data to the greater population, although contingent upon considerations for the external validity of the findings. The objective of this research was more focused on examining relationships among the key theoretical and practical concepts within the parameters of public communication campaigns, rather than obtaining revelations that could be generalized to the greater population.

Another overall strength of this research is its three-part design that allowed for extensive revisions of more reliable measurement instruments to reflect more clearly the conceptualized
relationships and theoretical models under investigation. In addition, the survey research featured in Parts I and III of this inquiry utilized some of the most sophisticated computer database selection techniques, provided by the Macon Water Authority information technology department and staff, in order to assure randomization of the samples assembled in both parts of the study. As for the sample size of the respective 2004 and 2006 surveys, they were comparable and allowed for preferred statistical analyses to collect all necessary data. Some researchers may view the sample sizes as only adequate, but under the circumstances of both surveys – a government-sponsored, intensive review of issues and topics via lengthy questionnaires – these sample sizes were more than adequate.

An additional strength of this research design was reflected in Parts II and III of the project, which included a qualitative component featuring semi-structured interviews in Part II to identify concepts for further testing via a follow-up survey in Part III. In doing so, the combined, conclusive qualitative and quantitative results provided further confirmation of the concepts under investigation, due to the triangulation these complementary research methods provided.

As for the advantages of gathering definitive, empirical data from the results of survey research, the mailed surveys used in 2004 and 2006 offered the fundamental benefits of such methods – respondents could review and answer the questionnaire items at their convenience. Plus, mailed surveys offer a means for inquiry on a number of diverse and often complex subjects. Even though mailed surveys provide more limited control over the respondents, demographic data from both the 2004 and 2006 surveys in this study were almost identical (see Table 1.0). Accounting for those respondents who failed to disclose their demographic information, participant demographics from both surveys were only slightly skewed toward
older, white females, when compared to the Census data for the population of Bibb County and the city of Macon.

Areas for Further Research

There are several areas that warrant further investigation as a result of the findings and implications of this research. In social science research, as many questions remain unanswered as do questions that have been addressed by insights.

From the results of the 2006 survey, findings indicated a possible means for extending the predictive impact of the theory of planned behavior, by testing past behavior as another predictor of future behavioral intention, alongside the model’s current, direct predictors of attitude, subjective norm, and perceived behavioral control.

Exploratory research conducted with the data from the 2006 survey found evidence that past behaviors of grease disposal significantly predicted behavioral intention of future compliance with proper grease disposal. Even more telling, perhaps, was the statistical analysis determining that past behavior replaced subjective norm as an independent, direct measure significantly predicting behavioral intention among MWA customers to properly dispose of household grease, altering the planned behavior model within this context just a bit.

It would be helpful if further research replicated these results that provided empirical evidence that in addition to current attitudes, subjective norms, and perceived behavioral control, past behaviors or habits, perhaps, also influence a customer’s intent to properly dispose of household grease, and to do so almost automatically.

Another area of future research conceptualized in this study but not yet examined is the role of gender and race in grease education. From the results obtained in the 2006 survey, which identified those MWA customers who most often cooked and cleaned after meals for their
families, profiles of consumers might be possible if trends are apparent. In doing so, not only can media channels better target those responsible for proper grease disposal in their respective households, but message strategy might be better designed to meet the needs of these key publics as well.

Finally, further examination of the reciprocal relationship between government and key stakeholders would provide additional insights to the theoretical models and practices being applied to public communication campaigns, specifically, and PR practice, generally. As first identified in the findings on the knowledge gap measures predicting media and public information preferences, there is evidence customers might reciprocate a utility’s efforts to educate them by responding in defined patterns of consumption. The two-way communications process, then, might help identify audience preferences for obtaining public information according to their desire to lessen a knowledge gap, between what they know of the individual consequences of their actions, as well as the global implications of those behaviors as well.

Conclusions

As a result of the many findings of this three-part research project, several conclusions can be drawn from the application of the theories and the significance of the data.

First, this study successfully applied the use of social cognitive theory, which has been a mainstay for designing public communication campaigns in the past, to the real-world context of grease education. Granted, it isn’t the most popular of issues among utility customers, but grease management is becoming more and more critical to water utilities having to adhere to stricter state and federal regulatory guidelines and oversight of operations, including grease management practices. With social cognitive theory providing a philosophical foundation for PR action
planning and implementation, utilities now have the means for organizing their efforts to obtain customer compliance on this critically important issue.

Second, this study also applied the theory of planned behavior as a natural complement and extension of social cognition. Whereas social cognitive theory purports the advantages of utilizing both the direct and indirect (mediated) pathways to influencing targeted audiences, the theory of planned behavior picks up where social cognition leaves off – with further analysis of the critical role interpersonal influences play on obtaining desired behavioral outcomes, whether defined as customer compliance or behavioral change.

Third, while somewhat limited, the findings in this study indicate a significant influence of mass media in disseminating key messages in attempt to garner, in the very least, continued discourse on select topics, notably grease education in this instance. While direct, powerful effects of mass media are unrealistic for practitioners to obtain, the role of mass communication is still vital in providing a primer for the interpersonal influences that often follow.

Fourth, and perhaps most telling for PR practitioners, the importance of organizational investment in proactive public relations cannot be understated, as the findings in this study attest. Even more influential than mass media messages are the scripted communications that are disseminated by sponsoring organizations through various “controlled” and “uncontrolled” channels. A return on investment in public information, as all practitioners are seeking to document for their respective clients, is evident in the impact the practice has made on customer knowledge, attitudes, and behaviors, under investigation in this study.

Fifth, practitioners proposing excellence in their profession are likely to strengthen their cases as advocates of the “integration” of mass media and interpersonal tools for achieving campaign goals and objectives. As this study indicates, the combined use of mass media and
interpersonal communication is exponentially more effective in educating the public about salient issues, than if either method is used exclusively according to territorial boundaries or comfort levels of practitioner expertise. With public communications competing for audience attention amidst a growing number of media stimuli, it behooves practitioners to continually tweak their models that successfully use media, new and old, in combination. In doing so, practitioners can address and account for the growing demand of audiences to gather information via more convenient and accessible media platforms.

Finally, this study provides a rare glimpse at the value of the academy and industry to co-exist in the pursuit of research findings. For practitioners, their insecurities with the use and confidence in research are well documented. Likewise, for the academy, the lure away from applied research into the realm of the abstract is a real threat to advancing the needs of the publics both practitioners and scholars seek to observe and assist.

The ultimate success of this study lies in its ability to both advance the ideal of building upon existing streams of research and theoretical models within the academy, while providing practitioners with models applicable to the “real world” pressures of designing and implementing better campaigns on behalf of clients, even when they involve the obscure needs of public utilities to educate customers on the proper methods for disposing of household grease.
REFERENCES


APPENDIX A

COVER LETTER FOR THE 2004 SURVEY
May 1, 2004

Dear Valued Customer:

In order to serve you better and improve our customer service, the Macon Water Authority (MWA) is conducting a customer survey to get your feedback on a number of issues and changes underway at your local water utility. We need your help by completing the attaching survey.

Your name has been selected via a random sample of MWA customers from our active database, so you not only are providing your input on these survey questions, but your responses will be representative of fellow MWA customers and help provide results that we can generalize to the wider population of our customer base. You are among approximately 2,500 customers selected initially to participate in this survey research. There are no strings attached. We would just like your responses to these questions that ask you about several areas of our performance.

There are legitimate reasons for gathering your responses to these questions. First, we want to establish a baseline measure of customer service that represents where we stand right now with you and fellow customers like you. Then, after making changes in customer service and operations, we can take similar measures a year or so from now and see if the improvements we have planned have been beneficial to you, or have made a difference in our operations. Finally, as we analyze and track customer responses, we can identify and address any problem that might be concentrated in a particular customer billing zone or service area within the city and/or county.

In addition, we feel the customer survey is the best method for obtaining feedback on how we’re performing as your public water utility. This format of the written survey allows you, the customer, to provide opinions without any bias or influence from us or any other party. The responses are strictly confidential, so you should feel free to reply honestly, free of any worry that someone might be critical of your answers.

Finally, we hope this customer survey will convey to you another subtle message that we care about your concerns and opinions, and we want to address them if at all possible. We are a public water utility that is sustained by rate paying customers like you who demand and deserve the best water and sewer services available. We want you to know that the MWA takes its responsibilities very seriously, and often there are no more valuable resources for us to look for solutions to problems than our very own customers.

If you have any questions regarding this customer survey, please do not hesitate to contact us at 464-5600. We hope you will complete the survey and return it to us via the self-addressed envelope included in this mailing.

Again, your cooperation is greatly appreciated and your responses will go a long way toward our being able to improve our customer service and business operations at the Macon Water Authority.

Sincerely,

Tony Rojas, executive director, MWA
APPENDIX B

QUESTIONNAIRE FOR PART I – THE 2004 SURVEY
Macon Water Authority
Customer Survey

Random customers of the Macon Water Authority (MWA) have been selected for a research project to provide Authority leadership with feedback on our customer service and other performances as your local water authority. Your input and responses will assist the MWA in improving its operations. Please know that your responses will be taken very seriously and will remain confidential (though the aggregate results may be published).

Please answer the following items honestly and completely. Contact the MWA at 478-464-5600 should you have any questions regarding this survey. Thank you again for your participation.

Check the box next to your appropriate response to each of the following items.

1. How important is the Macon Water Authority’s delivery of water and sewer services to the quality of life in your area?
   - [ ] Not very important
   - [ ] Not important
   - [ ] Important
   - [ ] Very Important

2. How important is the Macon Water Authority’s delivery of water and sewer services to the economic development of your area?
   - [ ] Not very important
   - [ ] Not important
   - [ ] Important
   - [ ] Very Important

3. How important are the policy decisions of the Macon Water Authority to you and your family?
   - [ ] Not very important
   - [ ] Not important
   - [ ] Important
   - [ ] Very Important

4. Have you had an experience with someone in the Macon Water Authority’s customer service department, either in person or by phone, within the last year?
   - [ ] Yes
   - [ ] No

(If yes, complete the following five questions. If no, move on to question 10)

5. During my experience with the Macon Water Authority, I found their customer service representatives to be professional.
   - [ ] Strongly Disagree
   - [ ] Disagree
   - [ ] Agree
   - [ ] Strongly Agree

6. During my experience with the Macon Water Authority, I found their customer service representatives to be knowledgeable.
   - [ ] Strongly Disagree
   - [ ] Disagree
   - [ ] Agree
   - [ ] Strongly Agree

7. During my experience with the Macon Water Authority, I found their customer service representatives to be polite and courteous.
   - [ ] Strongly Disagree
   - [ ] Disagree
   - [ ] Agree
   - [ ] Strongly Agree

8. During my experience with the Macon Water Authority, I found their customer service representatives to be prompt and responsive to my concerns or requests.
   - [ ] Strongly Disagree
   - [ ] Disagree
   - [ ] Agree
   - [ ] Strongly Agree

9. How satisfied are you overall with the customer service of the Macon Water Authority?
   - [ ] Very Unsatisfied
   - [ ] Unsatisfied
   - [ ] Satisfied
   - [ ] Very Satisfied

10. The Macon Water Authority is competent in its production of drinking water.
    - [ ] Strongly Disagree
    - [ ] Disagree
    - [ ] Agree
    - [ ] Strongly Agree

11. The Macon Water Authority is competent in its treatment of wastewater.
    - [ ] Strongly Disagree
    - [ ] Disagree
    - [ ] Agree
    - [ ] Strongly Agree

12. The Macon Water Authority produces high quality drinking water.
    - [ ] Strongly Disagree
    - [ ] Disagree
    - [ ] Agree
    - [ ] Strongly Agree

13. The Macon Water Authority provides high quality sewer collection and treatment services.
    - [ ] Strongly Disagree
    - [ ] Disagree
    - [ ] Agree
    - [ ] Strongly Agree

14. The Macon Water Authority is an environmentally sensitive steward of natural resources.
    - [ ] Strongly Disagree
    - [ ] Disagree
    - [ ] Agree
    - [ ] Strongly Agree

15. I trust the Macon Water Authority to be fiscally responsible when making policy decisions.
    - [ ] Strongly Disagree
    - [ ] Disagree
    - [ ] Agree
    - [ ] Strongly Agree
For the items below, circle a notch on the scale (from 1 to 10) that most accurately reflects your response to the questions:

16. How knowledgeable are you regarding the importance of proper grease disposal in homes and businesses?

17. How likely are you to dispose of grease properly in your home or business?

18. How knowledgeable are you regarding the drinking water production process at the MWA?

19. How knowledgeable are you regarding the wastewater treatment process at the MWA?

20. How likely are you to use mass media (newspaper, TV, and radio) to find information about the Macon Water Authority and how it affects you and your family?

21. How likely are you to read the newsletter that comes in your Macon Water Authority customer bill to find information about the Macon Water Authority and how it affects you and your family?

22. How likely are you to look at fliers and other inserts that come in your Macon Water Authority customer bill to find information about the Macon Water Authority and how it affects you and your family?

23. How likely are you to log onto the web site www.maconwater.org to find information about the Macon Water Authority and how it affects you and your family?

24. How likely are you to attend an event or visit a facility to find more information about the Macon Water Authority and how it affects you and your family?

25. Overall, I am satisfied with how the Macon Water Authority keeps me informed through public information.

26. Did you read the most recent customer confidence report regarding water quality distributed by the MWA?

Please Circle a response to each item below as it pertains to you: (Optional)

GENDER:  Male   Female

AGE:  18-24   25-34   35-44   45-54   55 and above

ETHNICITY: Caucasian   Hispanic   African American   Asian American   Other

EDUCATION: High School   Some College   College Degree   Advanced Degree

HOUSEHOLD INCOME: (Under $20,000) ($21,000-50,000) ($51,000-100,000) (over $100,000)

Note: All demographic information, as well as survey question responses, will remain confidential.
Thank you for participating in this customer service survey research of the Macon Water Authority.
If you have any questions concerning this survey, please contact us at 478-464-5600.
APPENDIX C

INTERVIEWER’S GUIDE FOR QUALITATIVE PART II
MWA Customer Preliminary Study

The Macon Water Authority (MWA) is preparing a customer survey to obtain feedback on several issues that are critical to our successful operations. With your help, we hope to assess certain measures as customer knowledge on various topics, influences on consumer behavior, preferences for obtaining public information, and more.

Please provide brief answers to the following short series of questions, so we might use your responses to in turn construct a customer survey that addresses a number of topics relevant to MWA operations and customer satisfaction. Your answers will remain confidential and results analyzed and reported solely for research purposes.

If you are completing this form and returning it by mail, please send it to the MWA offices at 790 Second Street, Macon, GA 31202-0108, or fax it to 478-464-5620.

If you have any questions, don’t hesitate to contact customer service at 478-464-5600, or our research coordinator at 770-757-1681.

Topic: Grease Disposal

1. What do you believe are the advantages of disposing of grease properly on every occasion within your household?

2. What do you believe are the disadvantages of disposing of grease properly on every occasion within your household?

3. Is there anything else you associate with properly disposing of grease on every occasion within your household?

4. Are there any individuals or groups who would approve of your properly disposing of grease on every occasion within your household? Who are they? Why would they influence your decision to properly dispose of grease?
5. Are there any individuals or groups who would disapprove of your properly disposing of grease on every occasion within your household? Who are they? Why would they influence your decision to properly dispose of grease?

6. Are there any other individuals or groups who come to mind when you think about properly disposing of grease on every occasion within your household? Who are they? Why might they influence your decision to properly dispose of grease?

7. What factors or circumstances would enable you to properly dispose of grease on every occasion within your household? What would make grease disposal easier for you?

8. What factors or circumstances would make it difficult or impossible for you to properly dispose of grease on every occasion within your household? In other words, why don’t you dispose of grease properly, more often?

9. Are there any other issues that come to mind when you think about the difficulty of properly disposing of grease on every occasion within your household? Anything else that might influence your decision to properly dispose of grease or to not do so?
APPENDIX D

QUESTIONNAIRE FOR PART III – THE 2006 SURVEY
You have been chosen to participate in a research project conducted by the Macon Water Authority (MWA) through the University of Georgia, to provide us with feedback on several topics addressing your preferences for obtaining timely, important public information to update you on news and developments at the Authority. In addition, we are attempting to find out your knowledge on certain subjects, so we might better inform you of MWA operations that impact your daily life and that can help save you money.

Note that your completion of this survey also will help improve the communications and policies of the MWA. Your responses will remain confidential, and your identification will not be released to any party outside of the MWA, though results will be analyzed and reported for research purposes. Please answer the questions openly and honestly, as there will be no repercussions or adverse effects as a result.

If you have any questions, don’t hesitate to contact the MWA customer service department at 478-464-5600, or Chris Wood, our UGA research coordinator, at 770-757-1681. Also, contact us if you’d like to receive a grease education packet compliments of the MWA. A copy of this survey may also be available for you to complete online at www.maconwater.org. If you have questions about your rights as a research participant, contact the UGA IRB at 706-542-3199 or IRB@uga.edu.

Thank you for taking part in this critically important research objective of the MWA.

Media Use and Preferences

In the survey questions that follow, please check or mark an “x” in the appropriate blank that best represents YOUR thoughts, feelings or behaviors related to each item. Place your mark in one of the (7) open spaces on the scale and do not place more than one mark on any of the responses. The scale has descriptive words that range from one extreme to the other, so place your mark in the opening that best reflects your opinion as it relates to those polar opposite words. Again, please place a checkmark or an “x” in one of the blank spaces on each scale to best describe YOU.

1. How often do you read information about the Macon Water Authority in the newspapers?

   Never :____:____:____:____:____:____:Always

2. How often do you see information about the Macon Water Authority on television?

   Never :____:____:____:____:____:____:Always

3. How often do you see information (the monthly meetings, news coverage, public service announcements, etc.) about the Macon Water Authority on the city of Macon’s government access cable station, Channel 14?

   Never :____:____:____:____:____:____:Always

4. How often do you hear information about the Macon Water Authority on local radio stations?

   Never :____:____:____:____:____:____:Always
5. How often do you read the Macon Water Authority’s bi-monthly newsletter that is inserted in your customer bill?

Never :_____:_____:_____:_____:_____:_____:_____:Always

6. How often do you use the Macon Water Authority’s Web site at www.maconwater.org?

Never :_____:_____:_____:_____:_____:_____:_____:Always

7. How often do you talk about the Macon Water Authority with someone else?

Never :_____:_____:_____:_____:_____:_____:_____:Always

8. In general, please estimate how often you spend time reading traditional, printed newspapers?

Never :_____:_____:_____:_____:_____:_____:_____: Every Day

9. In general, please estimate how often you spend time reading online newspapers (on the Internet)?

Never :_____:_____:_____:_____:_____:_____:_____: Every Day

10. On a scale from 1 to 10, with 1 being a very light reader and 10 being a very heavy reader, circle the appropriate number that reflects your level of newspaper readership?

   Very Light Reader  1 2 3 4 5 6 7 8 9 10

Very Heavy Reader

11. In general, please estimate how often you spend time watching television?

   Never :_____:_____:_____:_____:_____:_____:_____: Every Day

12. On a scale from 1 to 10, with 1 being a very light viewer and 10 being a very heavy viewer, circle the appropriate number that reflects your level of television viewership?

   Very Light Viewer  1 2 3 4 5 6 7 8 9 10

Very Heavy Viewer
13. In general, please estimate how often you spend time listening to the radio?


14. On a scale from 1 to 10, with 1 being a very light listener and 10 being a very heavy listener, circle the appropriate number that reflects your level of radio listenership?

<table>
<thead>
<tr>
<th>Very Light Listener</th>
<th>Very Heavy Listener</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 5 6 7 8 9 10</td>
<td></td>
</tr>
</tbody>
</table>

**Issue Knowledge – Grease Disposal and Management:**

In the survey questions that follow, please check or mark an “x” in the appropriate blank that best represents YOUR thoughts, feelings or behaviors related to each item. Place your mark in one of the (7) open spaces on the scale and do not place more than one mark on any of the responses. The scale has descriptive words that range from one extreme to the other, so place your mark in the opening that best reflects your opinion as it relates to those polar opposite words. Again, please place a checkmark or an “x” in one of the blank spaces on each scale to best describe YOU.

15. How knowledgeable are you about proper grease disposal in your household?


16. A proper way to dispose of grease within your household is to take it outside and pour it in a compost area in your yard.


17. A proper way to dispose of grease within your household is to let it cool, pour it into a container, and throw it in the trash.


18. A proper way to dispose of grease is to pour it down the drain while running hot water in the sink.


19. A proper way to dispose of grease is to let it remain on surfaces of dishes and utensils to be cleaned in the sink or dishwasher.

20. Improper disposal of household grease can damage sewer lines.

Strongly Disagree :___:___:___:___:___:___:___: Strongly Agree

21. Improper disposal of household grease can negatively impact water quality.

Strongly Disagree :___:___:___:___:___:___:___: Strongly Agree

22. Improper disposal of household grease can cause sewer overflows.

Strongly Disagree :___:___:___:___:___:___:___: Strongly Agree

23. How important to you is proper grease disposal in your household?

Not Very Important :___:___:___:___:___:___:___: Very Important

24. How often do you dispose of grease properly in your household?

Never :___:___:___:___:___:___:___: Always

25. On how many days over the course of this past month have you had to dispose of grease within your household?

Number of days____

26. Please estimate how often you have had to dispose of grease within your household over the course of the past month.

Never :___:___:___:___:___:___:___: Every Day

27. In the future, how likely are you to dispose of grease properly within your household?

Extremely Unlikely :___:___:___:___:___:___:___: Extremely Likely
28. I plan to dispose of grease properly within my household on every occasion possible.

   Strongly Disagree :____:____:____:____:____:____: Strongly Agree

29. For me to dispose of grease properly on every occasion within my household is

   Harmful :____:____:____:____:____:____: Beneficial

   Pleasant :____:____:____:____:____:____: Unpleasant

   Good :____:____:____:____:____:____: Bad

   Worthless :____:____:____:____:____:____: Valuable

   Enjoyable :____:____:____:____:____:____: Unenjoyable

30. Most people who are important to me would think that

   I should :____:____:____:____:____:____: I should not
   dispose of grease properly on every occasion within my household.

31. The people in my life whose opinions I value would

   Approve :____:____:____:____:____:____: Disapprove
   of my disposing of grease properly on every occasion within my household.

32. Most people who are important to me dispose of grease properly within their households on every occasion.

   Completely True :____:____:____:____:____:____: Completely False

33. The people in my life whose opinions I value

   Properly Dispose :____:____:____:____:____:____: Improperly Dispose
   of grease within their households on every occasion.

34. For me to properly dispose of grease within my household on every occasion would be

   Impossible :____:____:____:____:____:____: Possible
35. If I wanted to, I could properly dispose of grease within my household on every occasion.

   Definitely True :____:____:____:____:____:____:____: Definitely False

36. How much control do you have over disposing of grease properly on every occasion within your household?

   No Control :____:____:____:____:____:____:____: Complete Control

37. It is mostly up to me whether or not I dispose of grease properly within my household on every occasion.

   Strongly Disagree :____:____:____:____:____:____:____: Strongly Agree

38. My disposing of grease properly within my household on every occasion will help prevent clogs in my drain.

   Extremely Unlikely :____:____:____:____:____:____:____: Extremely Likely

39. Preventing clogs in my drain is

   Extremely Bad :____:____:____:____:____:____:____: Extremely Good

40. My family thinks that

   I should :____:____:____:____:____:____:____: I should not
dispose of grease properly within my household on every occasion.

41. Generally speaking, how much do you want to do what your family thinks you should do?

   Not at all :____:____:____:____:____:____:____: Very Much

42. My friends think that

   I should :____:____:____:____:____:____:____: I should not
dispose of grease properly within my household on every occasion.

43. Generally speaking, how much do you want to do what your friends think you should do?

   Not at all :____:____:____:____:____:____:____: Very Much
44. The government and regulatory agencies think that

I should :_____:_____:_____:_____:_____:_____:_____: I should not
dispose of grease properly within my household on every occasion.

45. Generally speaking, how much do you want to do what the government and regulatory agencies think you should do?

Not at all :_____:_____:_____:_____:_____:_____:_____: Very Much

46. I do not feel as though I know how to dispose of grease properly within my household.

Strongly Disagree :_____:_____:_____:_____:_____:_____:_____: Strongly Agree

47. Not knowing how to dispose of grease properly would make it

Much more difficult :_____:_____:_____:_____:_____:_____:_____: Much easier
to dispose of grease properly within my household on every occasion.

48. Disposing of grease properly within my household is an inconvenience to me.

Strongly Disagree :_____:_____:_____:_____:_____:_____:_____: Strongly Agree

49. The inconvenience of proper grease disposal would make it

Much more difficult :_____:_____:_____:_____:_____:_____:_____: Much easier
to dispose of grease properly within my household on every occasion.

50. I do not have a container or the means to dispose of grease properly within my household.

Strongly Disagree :_____:_____:_____:_____:_____:_____:_____: Strongly Agree

51. Not having a proper container or the means to discard used grease would make it

Much more difficult :_____:_____:_____:_____:_____:_____:_____: Much easier
for me to dispose of grease properly within my household on every occasion.

You’re almost done!
Please turn the page to complete your background information.
Background Customer Information

Please tell us specifically about YOU by providing the following background, biographical information. Simply place a checkmark (or an “x”) in the appropriate space on the scale, or fill in the blank with the appropriate information that best describes you. Your answers and your information will remain confidential and will not be used for any reason other than research purposes. You will not be contacted by the Macon Water Authority or solicited by any organization as a result of your completing this background and biographical information. Thank you again for completing this questionnaire for the MWA, so we might inform and serve you better.

52. Gender: Male_____ Female_____ 
53. Your age: ____________
54. Ethnicity: Caucasian_____ African American_____ Hispanic_____
    Asian American_____ Other_____
55. Education: Some High School_____ High School Graduate or GED_____
    Some College______ College_____ Advanced Degree_____
56. Household Income: $0-$25,000_____ $25,001-$50,000_____
    $50,001-$75,000_____ $75,001-$100,000______ $100,000+_____
57. How often do you prepare the meals/cook for yourself/your family in your household? 
    Never :_____:_____:_____:_____:_____:_____:_____: Every Day
58. How often do you clean up after meals for yourself/your family in your household? 
    Never :_____:_____:_____:_____:_____:_____:_____: Every Day
59. By what method of payment are you most likely to use to pay your Macon Water Authority monthly bill? 
   Please check one
   Cash at the MWA office_____ Check taken to the MWA office_____ 
   Check mailed to the MWA office_____ Money Order paid by mail_____
   Money Order paid in person_____ Credit Card paid by phone_____
   Credit Card paid in person_____ Direct Draft from my bank account_____
   Online Bill Pay_____
   Other_____ 

Your Name ______________________________________

Please provide consent that you willingly participated in this research project:
Signed \ Initials____________________________________________