EFFECTS OF CONSUMER MOOD STATES ON PROCESSING OF DISEASE INFORMATION IN DIRECT-TO-CONSUMER ANTIDEPRESSANT ADVERTISING AND PERCEIVED FUTURE RISK OF DEPRESSION

By

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A DISSERTATION PRESENTED TO THE GRADUATE SCHOOL OF THE UNIVERSITY OF FLORIDA IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF DOCTOR PHILOSOPHY

UNIVERSITY OF FLORIDA

2009
To Hearan
ACKNOWLEDGMENTS

I thank my committee members for their insights and advice. I especially thank my advisor and committee chair, Dr. Weigold. For many years Dr. Weigold has been a great mentor, teacher, role model, and motivator. I also thank Dr. Sutherland for teaching me how to live and teach as a graduate student, Dr. Treise for making the graduate program a great learning environment, and Dr. Chang-Hoan Cho for leaving the footsteps for all Korean graduate students to follow in. Without these people I would never have become who I am.

I thank my family and my friends at the University of Florida for supporting and inspiring me over the last four years. Most of all, I extend very special thanks to my wife and life partner, Hearan Kim. Her patience, advice, kindness, and love inspire me to grow as a teacher, researcher, and person.
# TABLE OF CONTENTS

ACKNOWLEDGMENTS .............................................................................................................. 4

LIST OF TABLES .......................................................................................................................... 8

LIST OF FIGURES ........................................................................................................................ 9

ABSTRACT .................................................................................................................................. 10

CHAPTER

1 INTRODUCTION ......................................................................................................................... 11

   History of Direct-to-Consumer Drug Advertising ................................................................. 11
   Effects of DTC Advertising ..................................................................................................... 13
   Limitations of the Current Literature .................................................................................... 15
   Research Purpose .................................................................................................................... 18
   Importance of Mood State ...................................................................................................... 22
   Study Overview ....................................................................................................................... 23
   Special Status of DTC Antidepressant Advertising .............................................................. 24

2 LITERATURE REVIEW ........................................................................................................... 26

   Risk Perception ...................................................................................................................... 26
   Mood State, Information Processing, and Judgment ............................................................ 28
   Mood As Information .............................................................................................................. 33
   Mood As Prime ....................................................................................................................... 37
   Synthesizing the Two Perspectives ...................................................................................... 42
   Perceived Diagnosticity of Internally Retrieved Life Experiences ...................................... 43
   Hypotheses ............................................................................................................................. 46

3 METHODOLOGY .................................................................................................................... 53

   Design .................................................................................................................................... 53
   Participants ............................................................................................................................... 54
   Procedure .................................................................................................................................. 54
   Independent Variables ........................................................................................................... 57
      Mood State ............................................................................................................................ 57
      Diagnosticity .......................................................................................................................... 59
      Opportunity ............................................................................................................................ 60
   Stimulus .................................................................................................................................... 61
   Development of the Stimulus ................................................................................................. 62
   Pilot Study 1 ............................................................................................................................. 63
   Pilot Study 2 ............................................................................................................................. 64
   Dependent Variables ............................................................................................................. 65
4 RESULTS ..............................................................................................................70

   Manipulation Checks ......................................................................................70
   Mood State .......................................................................................................70
   Perceived Diagnosticity of Discomforting Life Experiences ............................72
   Opportunity for Risk and Intention Estimation ...............................................73
   Correlations Among Variables ......................................................................74
   Testing Hypotheses 1a and 1b .......................................................................74
   MANOVA Results for H1a and H1b .................................................................75
   Mixed MANOVA Results for H1a and H1b .....................................................76
   Analyses of Simple Effects .............................................................................77
   Summary of the Test of H1a and H1b ..............................................................80
   Testing Hypotheses H2a and H2b ...................................................................81
   MANOVA Results for H2a and H2b .................................................................81
   Mixed MANOVA Results For H2a and H2b ....................................................82
   Analyses of Simple Effects .............................................................................83
   Summary of the Tests of H2a and H2b ............................................................85
   Testing Hypotheses 3a and 3b .......................................................................86
   Test of H3a .......................................................................................................87
   Test of H3b .......................................................................................................88
   Additional Data Analyses ................................................................................89
   Summary of the Results ...................................................................................92

5 DISCUSSION ....................................................................................................102

   Summary of Findings .......................................................................................102
   H1a and H1b ...................................................................................................102
   H2a and H2b .................................................................................................103
   H3a and H3b .................................................................................................103
   Discussion of Findings ....................................................................................104
   Advertising Theory .........................................................................................104
   Advertising Practice .......................................................................................106
   Consumer Health ............................................................................................113
   Limitations of the Study ...............................................................................116
   Suggestions for Future Research .................................................................117

APPENDIX

A INSTRUMENTAL MANIPULATION OF MOOD ............................................121

   Script for Happiness-Inducing Procedure ....................................................122
   Life Event One ...............................................................................................123
   Life Event Two ...............................................................................................124
   Life Event Three ............................................................................................125
# LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-1.</td>
<td>Factor analysis of risk perception</td>
<td>68</td>
</tr>
<tr>
<td>3-2.</td>
<td>Factor analysis of help-seeking intention</td>
<td>68</td>
</tr>
<tr>
<td>4-1.</td>
<td>One-way ANOVA results for the mood manipulation check</td>
<td>94</td>
</tr>
<tr>
<td>4-2.</td>
<td>Full-factorial ANOVA results for the mood manipulation check</td>
<td>94</td>
</tr>
<tr>
<td>4-3.</td>
<td>One-way ANOVA results for the diagnosticity manipulation check</td>
<td>94</td>
</tr>
<tr>
<td>4-4.</td>
<td>Full-factorial ANOVA results for the diagnosticity manipulation check</td>
<td>94</td>
</tr>
<tr>
<td>4-5.</td>
<td>One-way ANOVA results for the opportunity manipulation check</td>
<td>95</td>
</tr>
<tr>
<td>4-6.</td>
<td>Correlations among variables</td>
<td>95</td>
</tr>
<tr>
<td>4-7.</td>
<td>MANOVA results for risk perception and help-seeking intention when opportunity was low</td>
<td>95</td>
</tr>
<tr>
<td>4-8.</td>
<td>Mixed MANOVA results for risk perception and help-seeking intention when opportunity was low</td>
<td>95</td>
</tr>
<tr>
<td>4-9.</td>
<td>Group means and standard deviations for risk perception when happy-mood and no-mood manipulation conditions were combined</td>
<td>96</td>
</tr>
<tr>
<td>4-10.</td>
<td>Group means and standard deviations for help-seeking intention when happy-mood and no-mood manipulation conditions were combined</td>
<td>96</td>
</tr>
<tr>
<td>4-11.</td>
<td>Group means and standard deviations for risk perception when happy-mood and no-mood manipulation conditions were not combined</td>
<td>96</td>
</tr>
<tr>
<td>4-12.</td>
<td>Group means and standard deviations for help-seeking intention when happy-mood and no-mood manipulation conditions were not combined</td>
<td>97</td>
</tr>
<tr>
<td>4-13.</td>
<td>MANOVA results for risk perception and help-seeking intention when opportunity was high</td>
<td>97</td>
</tr>
<tr>
<td>4-14.</td>
<td>Mixed MANOVA results for risk perception and help-seeking intention when opportunity was high</td>
<td>97</td>
</tr>
<tr>
<td>4-15.</td>
<td>MANOVA results for risk perception and help-seeking intention: All cases included</td>
<td>97</td>
</tr>
<tr>
<td>4-16.</td>
<td>ANOVA results for risk perception and help-seeking intention: All cases included</td>
<td>98</td>
</tr>
<tr>
<td>Figure</td>
<td>Description</td>
<td>Page</td>
</tr>
<tr>
<td>--------</td>
<td>-------------</td>
<td>------</td>
</tr>
<tr>
<td>2-1.</td>
<td>Expected ANOVA results for risk perception when opportunity was low</td>
<td>51</td>
</tr>
<tr>
<td>2-2.</td>
<td>Expected ANOVA results for help-seeking intention when opportunity was low</td>
<td>51</td>
</tr>
<tr>
<td>2-3.</td>
<td>Expected ANOVA results for risk perception when opportunity was low</td>
<td>52</td>
</tr>
<tr>
<td>2-4.</td>
<td>Expected ANOVA results for help-seeking intention when opportunity was high</td>
<td>52</td>
</tr>
<tr>
<td>3-1.</td>
<td>Eigenvalue plot for scree test for risk perception</td>
<td>69</td>
</tr>
<tr>
<td>3-2.</td>
<td>Eigenvalue plot for scree test for help-seeking intention</td>
<td>69</td>
</tr>
<tr>
<td>4-1.</td>
<td>Observed ANOVA results for risk perception when opportunity was low</td>
<td>99</td>
</tr>
<tr>
<td>4-2.</td>
<td>Observed ANOVA results for help-seeking intention when opportunity was low</td>
<td>99</td>
</tr>
<tr>
<td>4-3.</td>
<td>Observed ANOVA results for risk perception when opportunity was high</td>
<td>100</td>
</tr>
<tr>
<td>4-4.</td>
<td>Observed ANOVA results for help-seeking intention when opportunity was high</td>
<td>100</td>
</tr>
<tr>
<td>4-5.</td>
<td>Mediation analysis when opportunity was low</td>
<td>101</td>
</tr>
<tr>
<td>4-6.</td>
<td>Mediation analysis when opportunity was high</td>
<td>101</td>
</tr>
</tbody>
</table>
The purpose of this research is to show that consumers’ mood states affect the way they process health information from consumer-targeted drug advertisements as well as form perceptions of the future risk of diseases and intentions to seek professional help. The results generally supported this perspective, revealing that compared to those in happy moods, individuals undergoing sad moods at the time of the study tended to overrate their future risk of clinical depression and report stronger intentions to seek professional help regarding depression. When consumers had low opportunity for estimating the future risk and help-seeking intentions, the effects of moods were significant regardless of the presence or absence of the information regarding depression self-diagnosis in the antidepressant advertisement. When consumers had high opportunity for risk and intention estimation, the effects of moods were differential depending on whether the advertisement presented self-diagnosis information or not. Findings of this study will be discussed for their implications for the theory and practice of consumer-directed drug advertising.
CHAPTER 1
INTRODUCTION

History of Direct-to-Consumer Drug Advertising

Over the past decade and a half, direct-to-consumer (DTC) pharmaceutical advertising was one of the fastest growing categories of advertising (Davis, 2000). In 1992, only 17 prescription drugs were advertised directly to consumers, a number that increased to 79 five years later (Sasich, 1999). The U.S. expenditure on DTC advertising increased from $25 million in 1988 (Morgan & Levy, 1998) to $1.07 billion in 1996, and to $2.7 billion in 2002 (US General Accounting Office, 2003). By 2000, DTC advertising accounted for 15% of the total promotional budget in the pharmaceutical industry (Brichacek & Sellers, 2001). As a result, DTC advertising constituted 2.5% of the total advertising expenditure in the U.S. market in 2000 (National Institute for Health Care Management Research and Education Foundation, 2001), becoming the fourth largest consumer advertising category (Blankenhorn, Duckwitz, & Kerr, 2001).

DTC prescription drug advertising is defined as “any advertisement developed by the pharmaceutical industry including radio, print, and/or television of prescription medication that targets the consumers/patients” (Allison-Ottey, Ruffin, Allison, & Ottey, 2003, p.121).

According to Calfee (2002), the Food and Drug Administration (FDA) initially expressed the position that DTC advertising is not inherently in violation of FDA regulations (Terzian, 1999). Nevertheless, worried about DTC advertising’s potential adverse influences on the public, the FDA initiated a moratorium on DTC ads in 1982 (Calfee, 2002).

In 1985 the FDA lifted the moratorium because of fears it might conflict with the First Amendment, despite the administration’s previous concerns that DTC advertising is not necessarily in the public interest (Terzian, 1999). The “DTC explosion” occurred after the FDA released guidelines about the requirements for a fair and balanced representation of the drug in
DTC advertising in 1997 and 1999 (Calfee, 2002; Kravitz & Wilkes, 2000). Currently, New Zealand and the U.S. are the only two economically advanced nations that permit DTC advertising (Coney, 2002; Hoek & Gendall, 2002).

Promoting prescription drugs directly to consumers has aroused controversy in the U.S. Opponents argue that DTC advertising does not provide fair and balanced information about the health benefits and risks of a drug (Bell, Wilkes, & Kravitz, 2000; Coney, 2002). They also point out that DTC advertising may substantially increase health care costs (Findlay, 2001), and adversely affect the doctor-patient relationship (Bell, Kravitz, & Wilkes, 1999; Mintzes, Barer, Kravitz, Kazanjian, Bassett, Lexchin, Evans, Pan, & Marion, 2002). Elliott (2003), a physician and bioethics professor, argues the pharmaceutical industry promotes newly constructed disease categories in an effort to increase drug company profits, a practice that may not increase public health. In line with these critical viewpoints, in the race for the 2004 Democratic presidential nomination, candidate Howard Dean called for a ban on DTC advertising as a way to reduce prescription drug costs. Two other candidates, Richard Gephardt and John Edwards, offered similar proposals (Teinowitz, 2003).

In contrast, proponents argue the content of DTC advertising balances benefit and risk information and therefore can educate consumers about diseases and treatments (Calfee, 2002). They further argue DTC advertising can increase awareness and encourage treatment of stigmatized and under-diagnosed illnesses such as hypercholesterolemia and clinical depression (Calfee, 2002; Holmer, 2002). Proponents also point out DTC advertising encourages consumers to search for more information about health conditions and treatments (Allison-Ottey et al., 2003; Perri & Dickson, 1988), increases compliance with doctor-ordered treatments (Donohue, Berndt, Rosenthal, Epstein, & Frank, 2004) and enhances doctor-patient interactions (Holmer,
1999). In fact, when Dean’s pledge to ban DTC advertising received media coverage, Dan Jaffe, executive vice president of the Association for National Advertisers, called the plan “a prescription for disaster” and added that “[DTC] advertising often provides consumers [with] extremely valuable information that can save lives, often avoids serious health problems and in so doing often lowers health costs” (Teinowitz, 2003, p.1).

**Effects of DTC Advertising**

Since the 1990s, empirical studies have focused on either the content of DTC advertising or its impact on consumer behavior. Content-based studies investigated the nature of information presented in DTC advertising, usually in terms of its potential for educating consumers about diseases and treatments. For example, Bell et al. (2000), Kravitz and Wilkes (2000) and Roth (1996) content analyzed DTC advertisements and concluded they had limited value as a source of health information because they did not carry sufficient information about risk factors, the drugs’ mechanism of action, and their success in treating the disease and alternative treatments (Bell et al., 2000). Main, Argo, and Huhmann (2005) pointed out DTC advertising depended more heavily on emotional than rational appeals, even in comparison with advertising for over-the-counter (OTC) drugs or dietary supplements.

Some have argued that in recent years medical consumers have become more likely to seek detailed medical information and to participate in decisions that affect their health (Wolfe, 2002). Simultaneously, researchers have shown an interest in exploring DTC advertising’s impact on consumer attitudes and behaviors about health and medicine. For example, Sumpradt, Fors, and McCormick (2002) found having positive attitudes toward DTC advertising and consumer characteristics, such as having chronic medical conditions, predicted consumers’ willingness to discuss the advertised drugs with doctors. Beltramini (2006) found the perceived believability of
DTC information and consumers’ comprehension of such information predicted their plans to consult doctors about health issues and request prescriptions for drugs seen in the ads.

Research also suggests when doctors refuse to prescribe requested drugs consumers are dissatisfied and may insist on the prescriptions (Bell et al., 1999; Mehta & Purvis, 2003). Kravitz et al. (2005) revealed consumers’ requests for drugs following exposure to DTC advertising increased the likelihood that doctors would prescribe the drugs. Herzenstein, Misra, and Posavac (2005) found favorable attitudes toward DTC advertising resulted in less searching for information about the advertised drugs and an increased likelihood that the requested drugs were prescribed. In summary, research based on individual-level data indicates exposure to DTC advertising is positively associated with consumer intentions to discuss health issues with doctors and request prescriptions for specific drugs.

In turn, research conducted at an industry level indicates DTC advertising may not only predict consumers’ requests for specific drugs but also lead to the market expansion of a drug category, a construct represented by an increase in the number of visits to doctors’ offices to discuss the disease the drug category is designed to treat, the number of diagnoses of the disease, and prescriptions written for the drug category.

For example, combining nationally representative data from National Ambulatory Medical Care Surveys (NAMCS) and TNS Media Intelligence/Competitive Media Reporting (CMR), Zachry, Shepherd, Hinich, Wilson, Brown, and Lawson (2002) revealed the DTC expenditure for antilipemics significantly predicted the number of diagnoses of hyperlipidemia, prescriptions for antilipemics in general, and prescriptions for Zocor. Antilipemics is a drug class used for hyperlipidemia, a disease characterized by a high level of lipids in the bloodstream. Similarly,
the expenditure for allergy medicine advertising was positively associated with the number of prescriptions for Claritin, and allergy medicine brand.

Based on the same sources of data, Iizuka and Jin (2005) found between 1995 and 2000 the pharmaceutical industry’s expenditure on DTC advertising predicted an overall increase in visits to doctors’ offices by consumers. The association was constant across demographic groups, but became stronger after 1997, the year the FDA released a draft of the industry guideline. Donohue, Berndt, Rosenthal, Epstein, and Frank (2004) further revealed that the DTC expenditure for antidepressants was positively associated with an increase in consumers’ requests for antidepressant treatments after being diagnosed with depression.

Donohue and Berndt (2004) similarly found that the DTC expenditure for antidepressants predicted the number of prescriptions for antidepressants. Differentiating from an increase in the requests for specific drugs, they called this expansion of a drug category “a treatment-expanding effect” (Donohue & Berndt, 2004, p.124) of DTC advertising. Although these studies were based on a survey design, and therefore did not establish cause and effect relationships, the findings indicate DTC advertising may expand a drug market.

**Limitations of the Current Literature**

Despite a large body of research, the current DTC literature is limited in scope for a number of reasons. First, research that explores the effects of DTC advertising focuses on how the overall exposure to and attitudes towards DTC advertising explain a limited range of variables such as visits to doctors’ offices, requests for specific drugs, and adherence to treatment guidelines. These are important variables with implications for marketing strategy and consumer health, and therefore deserve attention. However, the literature neither accounts for the psychological processes through which exposure to DTC advertising produces such
consequences nor specifies the content elements in DTC advertising that are likely to produce them.

Second, even though the literature abounds in studies that reveal the themes and content elements that characterize DTC advertising (Bell, Wilkes, & Kravitz, 2000; Huh & Cude, 2004; Kaphingst, Dejong, Rudd, & Daltroy, 2004; Roth, 1996), few studies have illuminated how consumers process such information. This further limits the scope of the DTC literature, because most likely it is consumers’ processing of information in DTC advertising, not their exposure to DTC advertising per se, that produces cognitive and behavioral effects. Further, the ultimate rationale for content-focused research is the possibility that exposure to certain content elements will affect consumers in some ways. Therefore, employing information processing perspectives will contribute to the DTC literature by complementing content-focused studies.

Third, the concept of risk perception is missing from the literature, although research in health behavior and social cognition indicates consumers’ risk perceptions of diseases may underlie DTC advertising’s behavioral influences. Consumers’ risk assessments are influenced by information they receive about the judgment domain (Kahneman & Tversky, 1972; Menon, Block, & Ramanathan, 2002), suggesting DTC advertising may influence risk perceptions of diseases by providing information on the diseases.

Currently few studies have focused on DTC advertising’s impact on risk perceptions of diseases. One possible exception is An (2007), who found a positive association between college students’ recall of DTC antidepressant advertisements and the perceived prevalence of clinical depression in the US. An and Jin (2005) similarly found associations between consumers’ self-reported attention to DTC television advertising in general and perceptions of the prevalence of overactive bladder condition and erectile dysfunction in the US. However, these studies did not
test how consumer recall of advertised pharmaceutical brands and attention to DTC advertising in general predicted their own perceived risk of diseases. Further, because the studies were conducted as surveys, neither established causal relationships or specified the message elements that might have contributed to DTC advertising’s effects on prevalence or risk perceptions. In addition, the studies did not control potentially significant extraneous influences, such as interpersonal experiences with depression. Interpersonal experiences have been shown to be important predictors of the perceived social reality of various social phenomena (Higgins and King, 1981; Shrum and Bischak, 2001; Wyer and Shrull, 1989).

The fourth and last limitation is that the concept of mood state has not been incorporated into the current literature. Consumers’ mood state affects their cognitions of health issues (Salovey & Birnbaum, 1989). Moods also affect consumers’ risk assessments (Johnson & Tversky, 1978; Nygren, Isen, Taylor, & Dulin, 1996), and the way they process judgment-relevant information (Forgas, 1995), suggesting consumer mood state may interact with exposure to information in DTC advertising to determine risk perceptions. Once formed, risk perceptions of diseases can influence engagement in remedial and preventive behaviors, such as undergoing a screening test for breast cancer and consulting doctors to discuss health issues (Block & Keller, 1998; Irwin, Valdiserri, & Holmberg, 1996; Raghubir & Menon 1998; Siegel, Raveis, & Gorey, 1998). Therefore, consumer mood state and exposure to information in DTC advertising may result in changes in health behavior through influencing consumer risk perceptions of health issues. Therefore, the concept of consumer mood state should be incorporated into the literature on the effects of DTC advertising.

Visits to doctors’ offices to discuss a health problem and a screening test for a disease is logically considered a prerequisite of and antecedent to a diagnosis of the disease and
prescription for a drug category designed to treat the disease, which are two indicators of the market expansion of a drug class (Donohue & Berndt, 2004; Donohue et al., 2004; Iizuka & Jin, 2005; Zachry et al., 2002). Therefore, research on the combined effects of consumer mood state and exposure to specific content elements in DTC advertising on the perceived risk of a health problem and intentions to seek professional help to discuss a disease will add a much needed psychological account for why DTC advertising may lead to the market expansion of a drug class.

**Research Purpose**

The current project is designed to address the limitations described above with respect to the DTC literature. It does so by examining potential psychological processes that may be important to the effects of exposure to information in an DTC antidepressant advertisement on consumers’ perceived future risk of depression and intentions to seek professional help to discuss depression.

Among many perspectives in social cognition potentially applicable to the overall research purpose, this project employed the mood-as-information (Schwarz & Clore, 1983) and mood-as-frame (1981) theories. The two perspectives are used to explore how consumer perceptions of the future risk of depression and help-seeking intentions are affected by the three-way interaction of consumer mood state, perceived diagnosticity, defined as consumer perceptions of the degree that a number of discomforting life experiences indicate clinical depression, and opportunity for deliberative risk and intention estimation.

The role of mood state deserves attention because moods influence consumers’ probability and risk assessments (Johnson & Tversky, 1978; Nygren et al., 1996), and processing of judgment-relevant information (Forgas, 1995). Risk perception deserves attention because
research suggests it can influence the likelihood of preventive and remedial health behaviors, including visiting doctors’ offices to discuss health issues.

Understanding what motivates consumers to initiate a discussion with doctors about diseases, drug treatments, and screening tests may be beneficial for DTC marketers and health professionals who intend to motivate consumers to be responsible for their health. Knowing what triggers consumer remedial actions will be especially beneficial for marketers who promote drugs for relatively under-treated diseases, as pharmaceutical companies most heavily advertise drugs for such diseases to spur a market-expanding effect (Iizuke, 2004).

Help-seeking intentions are an important construct for DTC marketers because consumers need to seek professional help if they are to receive a prescription (Donohue & Berndt, 2004; Donohue et al., 2004; Iizuka & Jin, 2005; Zachry et al., 2002). In terms of consumer health, intentions to discuss a health problem deserve attention because detecting a disease is necessary for medical intervention and treatment.

The perceived diagnosticity of internally retrieved life experiences is also a significant factor that determines consumer risk perceptions of diseases. The content of DTC advertisements for antidepressants, such as Prozac (produced by Eli Lilly), Zoloft (Pfizer), Paxil CR (GlaxoSmithKlein, GSK) and Effexor XR (Wyeth) tends to focus on information about the symptoms of depression, including sleeplessness, physical exhaustion, sluggishness, and hopelessness. However, the ad content may or may not offer a diagnostic guideline that pinpoints how consumers may form accurate perceptions of the degree that their experiences of the symptoms actually indicate clinical depression. Such a guideline will be required for one to properly interpret symptom information and make an accurate self-diagnosis of depression.
Some antidepressant ads stipulate that a particular health condition should last each day for two weeks to be considered a symptom of clinical depression (e.g., “These are some symptoms of depression. They must occur each day for at least two weeks and interfere with your daily life,” as stated in a Zoloft advertisement). This diagnostic guideline, almost identical in nature to the diagnostic guideline for depression that American Psychiatric Association (APA) presents in its *Diagnostic and Statistical Manual of Mental Disorders IV* (1994), typically does not appear in advertisements for other antidepressant brands.

This is important because the guideline requiring that symptoms be present nearly every day for two weeks is likely to result in fewer self-diagnoses of depression than a guideline that permits the inference that one is depressed based on observation of the symptoms for a day or a few days. Therefore, exposure to the ad that states a range of discomforting life experiences indicate clinical depression will increase risk perception, while a version that reduces the diagnosticity of such life experiences will reduce risk perceptions.

To develop hypotheses for the study, two contrasting perspectives on the effects of moods on risk estimation, the mood-as-information (Schwartz & Clore, 1983) and mood-as-prime (Bower, 1981; Wyer & Carlston, 1979) theories are reviewed and compared. The two theories present distinct pathways through which affective states influence judgments, often leading to differential, and incompatible, predictions of the effects of mood state on judgments.

Then the literature further points out that the environment in which risk and intentions are estimated, particularly how much opportunity consumers have for deliberative estimation, is expected to determine the relative applicability of the two theories. Opportunity therefore is hypothesized to trigger a particular pathway through which temporary affective states influence information processing and risk estimation. The review further illuminates that once a particular
pathway is activated, it would determine the pattern in which affective states and the perceived diagnosticity of depression-related life experiences would have interactive influences on the perceived risk of depression and help-seeking intentions. An experiment is conducted to illuminate the interactive effects of mood state, perceived diagnosticity, and opportunity for risk and intention estimation on risk perceptions and help-seeking intentions.

From a health education perspective, a key objective for evaluating health information is to evaluate the extent such information helps consumers to make informed decisions about health issues (Peters, Lipkus, & Diefenbach, 2006). Most proponents of DTC advertising argue it advances this goal because it provides additional health information that consumers may not find elsewhere. However, only a limited number of studies have actually examined how people process information in DTC advertising and form attitudes and beliefs about health issues. One exception is Davis (2000), who explored how consumers process risk information in DTC advertising. David (2000) found that consumers evaluated a drug as safer and more appealing when the risk statement in the advertisement for the drug was incomplete rather than complete, suggesting consumers may improperly interpret the number of risks presented as an indicator of the drug’s performance in terms of safety.

Because few studies have used an information processing approach to study the effects of DTC ads, this study may offer new insights about the mechanisms through which DTC advertising can affect consumer perceptions and knowledge about diseases, drugs, and treatments. In particular, this study’s focus on exploring the way consumers process information about depression and form risk perceptions and intentions to seek professional help may contribute to understanding how pharmaceutical marketers can utilize DTC advertising for the
market expansion of a drug category, because intentions to seek professional help for a disease are an antecedent of the market expansion of a drug class designed to treat the disease.

The study’s focus on risk perceptions and help-seeking intentions will contribute to understanding DTC advertising’s implications for consumer health, especially when one considers depression is a seriously under-diagnosed and under-treated disease (Holmer, 2002), and depression is more likely to be addressed if an increasing number of consumers visit doctors’ offices to discuss the disease. The project may further act as a springboard for a discussion about how to lead people to become more informed consumers of information in DTC advertising.

**Importance of Mood State**

The inferences required of consumers in processing DTC advertisements make theories of affect and cognition particularly relevant for analyzing the effects of exposure to an DTC antidepressant advertisement on risk perceptions and help-seeking intentions, because moods may directly influence risk perceptions (Tversky & Johnson, 1978) or indirectly affect risk perceptions through increasing the accessibility of past experiences of negative health conditions in consumer memory (Salovey & Birnbaum, 1989). Further, because moods are reported to influence health cognition, particularly consumers’ subjective experiences with and reporting of negative health conditions (Croyle & Uretsky, 1987; Pettit, Kline, Gencoz & Gencoz, 2001; Salovey & Birnbaum, 1989), mood state may influence the degree to which ad audiences perceive the symptoms presented in DTC ads to be self-relevant.

In addition, Schwarz, Strack, Kommer, and Wagner (1987) found the role of positive and negative mood state as an input for social cognition was greater for a judgment domain where emotional experiences have more relevance, such as subjective judgments of well-being, whereas domain-specific information had more effects on consumer evaluations of specific life-domains, such as job performance. This means mood state may have more effects on consumer
perceptions of depression than on perceptions of other diseases. Compared to other diseases with more tangible physical manifestations, the future risk of depression is a judgment domain where emotional experiences have more relevance. The symptoms of some disease categories, such as allergy, arthritis, asthma, and overactive bladder are more physically tangible than those of depression, because they are based on clearly observable physical manifestations. Moods will have a relatively limited role in a person’s judgment of whether s/he is experiencing such tangible and self-evident physical symptoms as shortness of breath (a symptom of asthma) or rashes in skin (a symptom of allergy).

In comparison, the symptoms of depression involve either relatively intangible and non-salient physical symptoms, such as low physical energy, loss of appetite, changes in weight and insomnia, or experiences interlinked with a person’s affective states, such as feelings of worthlessness and guilt, depressed mood, diminished interest in life activities, irritation, and suicidal ideation (APA, 1994). Therefore, compared to other diseases such as asthma, allergy, or arthritis, moods will be more relevant to judging one’s own experiences of depression symptoms. Therefore, mood state will have stronger effects on the perceived future risk of depression and intentions to seek professional help to discuss depression.

**Study Overview**

An experiment with a 2 (mood state: sad versus happy combined with no-mood-manipulation) × 2 (perceived diagnosticity: low versus high) × 2 (opportunity for risk and intention estimation: low versus high) between-subjects design with a non-factorial control group is used to collect data for this study, for a total of thirteen experimental groups. In the experiment, subjects are either induced to have sad or happy moods or do not receive a mood-induction treatment. Then they are exposed to an antidepressant advertisement that includes
either low- or high-diagnosticity information. Then participants report their perceived future risk of depression and help-seeking intentions under a low- or high-opportunity condition.

Under the low-opportunity condition, mood state will directly influence risk perceptions and help-seeking intentions without intermediary cognitive processes (Forgas, 1995), and therefore without interacting with perceived diagnosticity. Under the high-opportunity condition, the effects of mood state on risk perceptions and help-seeking intentions will occur through intermediary cognitive processes (Forgas, 1995). Therefore, the effects of mood state on risk perceptions and help-seeking intentions will vary depending on whether the ad contained low- or high-diagnosticity information.

Special Status of DTC Antidepressant Advertising

Of many categories of disease and medicine, this study focuses on depression and antidepressants for a number of reasons. First, anti-depressants, such as Paxil CR and Zoloft, are among the most heavily advertised prescription drugs in the DTC market (Rosenthal, Berndt, Donohue, Frank, & Epstein, 2002). In addition, depression and manic-depression are the most common forms of severe mood disorders (Altshuler, Hendrick, & Burt, 1998; Weiss & Lonnquist, 1997).

Second, depression is a largely under-diagnosed disease category (Holmer, 2002). The under-diagnosis and under-treatment of depression suggest that depression is a stigmatized disease (Elliott, 2003; Holmer, 1999, 2002). From a health policy perspective, DTC advertising may be able to play an important role in reducing the under-treatment problem of depression.

Third, symptoms of depression, such as loneliness, feelings of social isolation, inability to concentrate, and difficulty with thinking and making decisions (APA, 1994), suggest that DTC antidepressant advertising targets a potentially vulnerable group of consumers. Hollon (2004) points out special attention is required regarding the effects of DTC advertising aimed at
consumers suffering psychiatric and neurological illnesses, because their decisional capacity may be impaired. Kravitz, Epstein, Feldman, Franz, Azari, Wilkes, Hinton, and Franks (2005) consider DTC advertising a controversial ethical issue for similar reasons. In conclusion, DTC advertising’s impact on risk perception and treatment-related behaviors deserves more attention when it is designed to treat an under-treated disease and targeted toward a psychologically vulnerable group of consumers, including potential users of antidepressants.
CHAPTER 2
LITERATURE REVIEW

This review of the literature first examines the effects of risk perception on health behavior, especially consumer engagement in preventive and remedial actions to address health issues. Next, two theories of the effects of mood state on social judgments, the mood-as-information (Schwarz & Clore, 1983) and mood-as-prime (Bower, 1981) perspectives, are reviewed. The two theories are conceptualized as illuminating the two pathways through which mood state affects consumer judgments. Third, the two theories are compared, with a focus on the factors that determine the relative applicability of the two principles in a given situation. Last, hypotheses (H1a - H3b) are proposed on the interactive effects of mood state, perceived diagnosticity of internally retrieved life experiences, and opportunity for risk and intention estimation on consumers’ perceived future risk of depression and intentions to seek professional help to discuss depression.

Risk Perception

Disease risk perception is defined as the perceived likelihood of being diagnosed with a disease in the future (Rosenstock, 1990). At a time when consumers are increasingly expected to be responsible for their health (Loroz & Lichtenstein, 2004), perceived risk of disease is considered important in health behavior research because of its potential to produce changes in health-related behavior.

Research generally finds that high levels of disease risk perception predict consumer engagement in preventive and remedial behaviors. For example, perceived risk of cancer is positively associated with screening for colorectal (Blalock, DeVellis, Afifi, & Sandler, 1990), breast (Lipkus et al., 1996) and cervical (Seow, Wong, Smith, & Lee, 1995) cancer. Similarly, Croyle and Lerman (1999) found people’s intentions to receive testing for genetic susceptibility
to cancer are strongly influenced by overrated perceptions of cancer risk. Even though a number of motivational (e.g., motives for testing) and affective (e.g., anxiety about a disease) factors may moderate the effects of risk perceptions on health behavioral intentions (Shiloh & Ilan, 2005), a sizable body of studies conceptualize risk perception as a motivator of changes in health behavior (Block & Keller, 1998; Lipkus, Biradavolu, Fenn, Keller, & Rimer, 2001; Menon, Block, & Ramanathan, 2002; Robinson, Rigel, & Amonette, 1998).

Because of the role of risk perceptions in motivating health behaviors, researchers have explored how consumers make risk assessments, with a focus on revealing the psychological processes through which consumers generate estimates for the risk of undergoing stressful and disturbing life experiences in the future, including diseases. Ideally, risk assessments, given the potential to impact health behaviors, should be made from information that is relevant to the particular judgment domain in consideration and diagnostic of the risk of the particular health issue. However, research frequently finds judgments, including probability and risk assessments, are influenced by inputs other than factual and objective information, through mechanisms that are largely unconscious and automatic and therefore uncontrollable. As Epstein (1994) stated:

There is no dearth of evidence in everyday life that people apprehend reality in two fundamentally different ways, one variously labeled intuitive, automatic, natural, nonverbal, narrative, and experiential, and the other analytical, deliberative, verbal, and rational (p. 710).

Whereas experts’ risk perceptions are based on the deliberative thinking mode and guided by the use of statistical rules of probability, non-experts’ risk assessments may depend on more intuitive and automatic ways of knowing (Reventlow, Hvas, & Tulinius, 2001). To this effect, Wilson and Brekke (1994) argued judgment making is often biased due to “mental contamination,” or “the process whereby a person has an unwanted judgment, emotion, or behavior because of mental processing that is unconscious or uncontrollable” (p. 10). In a similar
vein, Kraus, Torbjorn, and Slovic (1992) labeled the biased ways laypeople assess chemical risks as “intuitive toxicology.”

Under the category of intuitive and unconscious influences are metacognitive experiences such as perceptual fluency (Jacoby & Dallas, 1981) and availability (Tversky & Kahneman, 1973) and representativeness (Kahneman & Tversky, 1972) heuristics, and the influence of affect (Bower, 1981; Schwarz & Clore, 1983) on judgments. Particularly relevant to this research, several researchers (Constans & Mathews, 1993; Gasper & Clore, 1998; Nygren et al., 1996) have investigated the effects of consumers’ affective states on the way they process judgment-related information and make judgments, including risk assessments.

More important, risk assessments generally involve probability judgments of emotionally disturbing experiences, and they rarely occur in an affectively neutral context (Johnson & Tversky, 1983). Therefore, the literature on affect and cognition is considered appropriate for the overall purpose of the current project, as it is designed to explore how consumers in various mood states form risk perceptions of depression in the face of an antidepressant advertisement presenting information about the symptoms and accurate diagnosis of depression.

**Mood State, Information Processing, and Judgment**

A prerequisite for a discussion of the literature on mood and judgment is an understanding of how the four conceptually similar constructs of affect, feeling, mood, and emotion are differentiated. No general agreement exists regarding the distinctions among the four concepts (Fiedler & Forgas, 1988; Frijda, 1986). However, Forgas (1992, 1995) presents a reasonable working system of classification. The system defines affect and affective states as general terms to refer to moods and emotions. Moods, in turn, are “low-intensity, diffuse and relatively enduring affective states without a salient antecedent cause and therefore little cognitive content (e.g. feeling good or feeling bad),” whereas emotions “are more intense, short-lived and usually
have a definite cause and clear cognitive content,” (Forgas, 1992, p.230) such as feeling fear, worry, or anger about a target object. Experimentally induced affective states, therefore, are generally referred to as moods. This project focuses on the effects of mood on consumers’ processing of medical information, risk perceptions, and intentions to seek professional help.

The effects of mood on cognition and judgments are well-documented in the literatures on product evaluation, response to advertising, risk and probability estimation, and health-related cognition and decision making. In the context of consumer research, Isen, Clark, Shalker, and Karp (1978) found positive moods led to favorable evaluations of products. Batra and Ray (1986) and Edell and Burke (1987) also revealed advertisement-induced positive moods led to more positive brand evaluations. Similarly, Alpert and Alpert (1990) showed positive moods led to stronger purchase intentions. Mathur and Chattopadhyay (1991) demonstrated positive consumer moods induced by the programming that surrounded an advertisement led to more positive responses to the ad, while negative moods led to more negative responses.

Overall, this body of research indicates that mood state leads consumers to evaluate products and form purchase intentions in mood-congruent ways. In other words, consumers in positive moods respond to advertisements or evaluate products more positively than those undergoing negative moods. Further, this tendency has been observed whether the moods are induced by procedure gift, through advertising content elements, or via the program that surrounds an advertisement.

Recent studies showed the effects of mood state on cognition and product evaluation were moderated by a number of factors, such as conscious monitoring of one’s feelings (Pham, Cohen, Pracejus, & Hughes, 2001) or the order of mood induction in relation to exposure to product attribute information (Yeung & Wyer, 2004). For example, Yeung and Wyer (2004) revealed
consumers’ experimentally induced moods directly influenced product evaluation regardless of the information they subsequently received about product attributes or the criteria they used to evaluate the product. However, this effect was observed only when the moods were induced before, rather than after, consumers generated an affective response to the product’s appearance. The indicated experimentally manipulated moods would be confused in consumers’ mind with the affective state generated by a stimulus only if the manipulated moods existed at the moment of making affective responses to the stimulus.

In addition, a group of researchers suggested the effects of positive moods might be relatively homogeneous, whereas the effects of negative moods would be more heterogeneous. For example, Raghunathan and Pham (1999) found when making job-selection decisions, individuals in sad moods favored options that involved high risk and high reward, whereas anxious individuals favored low-risk/low-reward options. Although Raghunathan and Pham’s (1999) study revealed the heterogeneous effects of the different types of negative moods, this study focuses on sad moods, and does not incorporate the heterogeneous effects of negative moods.

A large body of literature from social cognition and risk communication indicates affective states influence judgments of the likelihood of future events, such as one’s perceived probability of being affected by crimes, natural disasters, terrorisms, and so on. The effects are mood-congruent, in that positive moods lead people to overrate the likelihood of positive future events and underestimate the probabilities of negative events, whereas the reverse is true for those in negative moods.

For example, Wright and Bower (1992) and Constans and Mathews (1993) reported mood state had mood-congruent effects on the perceived likelihood of future events. Nygren et al.
(1996) found that in a gambling situation, people in a positive mood overestimated the chances of winning relative to the chances of losing. Gasper and Clore (1998) reported state anxiety, which was temporarily induced by a mood induction procedure, and trait anxiety, which was permanently rooted in a person’s personality traits, interacted to impact the perceived risk of personally relevant (e.g., conflict with parents, theft, and getting embarrassed in public) and relatively impersonal negative events (e.g., police violence and proliferation of AIDS). Using a survey design, Constans (2001) also revealed state and trait anxiety predicted undergraduate students’ estimation of the risk of poor academic performance.

Reflecting the importance of affective states on consumer risk perceptions across various domains, Slovic, Finucane, Peters, and MacGregor (2004) concluded intuitive feelings were the dominant method by which individuals evaluate risk, labeling the perspective as “risk-as-feelings.” The literature on the effects of mood state on probability and risk assessments is relevant to the current project, because risk perception of a disease, defined as the perceived likelihood of developing a disease in the future (Rosenstock, 1990), can be logically conceptualized as one particular type of probability judgment.

Because consumer assessments of the likelihood of diseases are one form of risk perception, moods should also have mood-congruent effects on the perceived risk of negative health conditions. In fact, Johnson and Tversky (1978) revealed negative moods led individuals to overrate the frequencies of deaths due to leukemia and cancer. Salovey and Birnbaum (1989, study 3) reported the perceived risk of developing negative health conditions (e.g., high blood pressure) in the future was higher among participants in experimentally induced negative moods than those in positive moods. Using a survey design, Lípkus et al. (2000) revealed worries about
developing breast cancer were positively associated with women’s higher breast cancer risk perceptions.

These studies fit in with the large body of research (Dunn & Schweitzer, 2005; Gasper & Clore, 2000; Schwarz & Clore, 1983) that illuminates negative feelings generate a pessimistic point of view regarding various life domains, even when the procedure that actually elicited such feelings may not be logically related to the judgment in question. For example, an individual’s thinking about a sad event at the moment most likely will not determine the actual probability of the person’s developing high blood pressure in the future. However, in Salovey and Birnbaum’s (1989) study, participants in experimentally induced sad moods reported higher risk perceptions of various negative health conditions than those in happy moods.

Why do positive and negative moods affect social judgments, even when the judgment domain in question does not logically pertain to the event that actually elicited the moods? Two well-established frameworks, named mood-as-information (Schwarz & Clore, 1983) and mood-as-prime (Bower, 1981; Wyer & Carlston, 1979) perspectives, present different accounts for the effects of mood state.

The mood-as-information perspective posits that when people make social judgments, affective states function as an information input that directly influences the judgments (Schwartz & Clore, 1983), independent of information from other sources that normatively have more relevance to the judgment domain (Gorn, Goldberg, & Basu, 1993; Plam, 1998). In contrast, the mood-as-prime perspective (Bower, 1981) posits that moods affect social judgments through their impact on cognitive processes, by making mood-congruent constructs more accessible in one’s mind. In general, both approaches suggest moods affect judgments in a mood-congruent
way. Therefore, sad moods tend to generate a pessimistic outlook of the future, whereas happy moods lead to an optimistic outlook.

**Mood As Information**

The mood-as-information perspective emerged in a series of studies conducted by Schwartz and Clore (1983). In their studies, participants’ momentary negative feelings, induced by asking them to write about a recent life event that had made them feel bad, lowered their evaluations of happiness and satisfaction with their life in general. Participants that wrote about a pleasant life event evaluated their lives more positively. The control group, who did not write about a life event, who reported being as happy as participants who wrote about a pleasant event, evaluated their lives as positively as those who received a positive mood induction procedure.

The effects were assumed to occur because people tended to misattribute their momentary feelings to more general aspects of their lives, and as a result incorrectly refer to such feelings when making social judgments. In other words, in addition to the actual quality of their everyday life experiences, feelings became an informational input for participants’ evaluations of their lives in general. In other words, participants in transient positive or negative moods mistook their experimentally induced affective states as their affective reaction to the object being judged, such as the question about their satisfaction with life in general (Schwarz & Clore, 1983).

Support for this interpretation came from findings that the differences in judgments between participants in positive and negative moods tended to disappear after the actual source of the feelings was made salient. For example, Dunn and Schweitzer, (2005), Schwarz and Clore (1983), and Siemer and Reisenzein, (1998) reported the effects of negative feelings disappeared when the actual source of the feelings was made salient. In other words, mood state lost its value as information when participants were made aware of the actual source of their affective state.
Interestingly, judgments of people who received a positive mood-induction procedure may be unaffected by the salience of the actual source of the moods (Schwarz & Clore, 1983), suggesting the informational value of experimentally induced positive and negative moods may be asymmetrical. This asymmetry may occur because the value of a positive or negative induced mood state as information for judgment making may depend on how much the induced moods differ from the average mood state that surrounds most people’s ordinary life experiences. As Schwarz and Clore (1983) explained, the life evaluations of participants in positive induced moods did not drop after the mood was attributed to an experimental procedure, because experimentally manipulated happy moods did not significantly differ from the mood states of the non-factorial control group.

The mood-as-information framework has been frequently employed in research on social cognition and consumer judgments. For example, Schwarz, Strack, Kommer, and Wagner (1987) reported that moods influenced participants’ evaluation of their life in general, but their evaluations of specific life-domains were more affected by domain-specific information. This suggested the informational value of positive and negative moods was high in relatively global, diffuse, and abstract judgment domains, such as evaluation of life in general, satisfaction with social interaction in general, but low in concrete and specific judgment domains, such as evaluation of one’s own job performance for a one-week period or satisfaction with one’s relationship with co-workers.

In addition, Gorn et al. (1993) reported people experiencing happy moods tended to evaluate products more positively than people in sad moods, unaffected by information presented about the products, but this effect disappeared when the actual source of the moods was made salient. Source salience generally lowered the evaluations of participants in the positive mood
condition, while the evaluations of those in the negative induced mood did not change significantly. This result may appear to contradict Schwarz and Clore (1983), in which source salience generally affected the judgments of participants in negative, rather than positive, induced moods.

However, the asymmetry of the informational values of positive and negative induced moods occurred in Schwarz and Clore (1983) because the experimentally induced positive moods were similar to the average mood state of the control group. Therefore, one may judge that the findings of Gorn et al. (1993) did not contradict Schwarz and Clore (1983) as long as the average mood state of the participants before they received a mood induction procedure was similar to the experimentally induced sad, rather than happy, moods. However, this possibility cannot be further explored because Gorn et al. (1993) did not include a non-factorial control group in the study.

Dunn and Schweitzer (2005) also found positive feelings increased and negative feelings decreased participants’ perceived trustworthiness of co-workers, and this effect became non-significant when subject paid attention to the actual source of the affect. This indicated the differences in judgments between people who received a happy versus sad mood procedure disappeared when participants were made aware that the source of their moods had no relation to the issue being judged. Whether the positive or negative mood generally loses its informational value of moods depends on how much the induced moods differ from the average mood state of the participants that do not receive a mood-induction procedure. These findings clearly support the perspective that moods directly influence judgments by means of serving as an information input for judgment making.
A number of researchers further explored conditions that enhance or reduce the
informative function of mood state. For example, Petty, Schumann, Richman, and Strathman
(1993) reported people increasingly used extraneous affect as information in low elaboration
conditions, particularly when motivation for information processing and need for cognition were
low. In a similar vein, Siemer and Reisenzein (1998) revealed the direct effects of feelings were
stronger under conditions that reduced the consumer’s opportunity for deliberate judgment
making or information processing, such as time pressure and cognitive load from competing task
demands, implying the mood-as-information framework represented a heuristic mental process
more likely to be activated under conditions that reduce opportunity for deliberative information
processing.

Siemer and Reisenzein (1998) interpreted the finding as meaning “the effects of mood on
evaluative judgments should be enhanced under such circumstances [that reduce opportunity for
deliberative judgment making]” (p. 786). To be more accurate, however, what the finding really
implied was that the direct, non-cognitively-mediated effects of mood on judgments, as
conceptualized by the mood-as-information perspective, were reduced under conditions of low
cognitive elaboration. Indeed, Petty et al. (1993) found that moods could still influence
judgments under high elaboration conditions through their impact on the valence of participants’
cognitive responses to information about the object being judged, suggesting moods influence
judgments simultaneously through direct and cognitively mediated pathways.

In summary, the mood-as-information literature suggests that moods operate as
information, which informs subsequent judgments. Mood as information has relatively greater
impact to the extent that the source of the mood is less salient (Schwarz & Clore, 1983; Gorn, et
al., 1993), and participants are less motivated for and capable of cognitive information
processing (Petty et al., 1993) and their opportunity for deliberative information processing is temporarily lowered by the existence of time pressure or competing task demands (Siemer & Reisenzein, 1998).

Further, Forgas (1995) proposed the mood-as-information perspective predominantly applies when participants need to simplify the judgment because they are either unmotivated to process information or incapable of engaging in elaborate processing due to circumstantial factors that reduce their cognitive information processing capacity. As Forgas (1995) put it, the mood-as-information account “is most likely to predict mood congruency in circumstances in which quick, simple, heuristic processing is adopted by a judge in response to contextual requirements” (p.44). Siemer & Reisenzein (1998) showed moods directly affected participants’ judgment of satisfaction with their lives, and this effect occurred more prominently under the condition of time pressure, which limited opportunity for deliberative judgment making.

When applied to this study, when consumers estimate risk in an environment that temporarily reduces their opportunity for deliberative information processing, the mood-as-information perspective would suggest moods will have main and un-moderated effects on the perceived risk of developing clinical depression in the future and intentions to seek professional help regarding depression. These effects will be observed whether consumers are exposed to the low- or high-diagnosticity information, that is, whether the advertisement contains the APA diagnostic guideline or not.

**Mood As Prime**

The mood-as-information perspective is not the only model of how affect can influence judgments and decisions. Petty et al. (1993) suggested affective states might influence judgments through an alternative, cognitively mediated pathway even under the condition of high source salience. The “mood-as-prime” perspective accounts for this alternative pathway. The mood-as-
prime framework (Isen et al., 1978; Bower, 1981) posits that moods influence judgments by priming mood-congruent constructs. Once primed, these constructs with mood-consistent affective implications become more accessible in memory (Isen et al., 1978). Because the high accessibility of a construct in memory increases the likelihood that it will be retrieved and used in judgment making (Sherman & Corty, 1984; Shrum & O’Guinn, 1993), the perspective suggests that moods tend to influence judgments in a mood-congruent manner. In other words, positive moods engender a positive outlook of the future by activating positive thoughts in one’s mind, while negative moods increase the accessibility of thoughts with negative affective connotations.

The notion that moods prime mood-congruent constructs in consumer memory comes from Bower’s (1981) associative network theory:

The semantic-network approach supposes that each distinct emotion ... has a specific node or unit in memory that collects together many other aspects of the emotion that are connected to it by associative pointers ... Each emotion unit is also linked with propositions describing events from one’s life during which that emotion was aroused ... These emotion nodes can be activated by many stimuli - by physiological or symbolic verbal means. When activated above a threshold, the emotion unit transmits excitation to those nodes that produce the pattern of autonomic arousal and expressive behavior commonly assigned to that emotion ... Activation of an emotion node also spreads activation throughout the memory structures to which it is connected, creating subthreshold excitation at those event nodes ... Thus, excitation [of] the sadness node ... will maintain activation of that emotion and thus influence later memories retrieved (p.135).

This process is set in motion in a largely non-controlled, automatic manner (Forgas, 1995). In addition, although Forgas (1992, 1995) differentiated the definitions of emotion and mood, Bower (1981) apparently did not make a clear distinction between the two terms, as the reported studies employed a procedure that resembled a technique researchers typically use to manipulate particular moods in participants.

In summary, the mood-as-prime framework suggests that moods influence judgments in a mood-congruent way through priming and thus enhance the accessibility of mood-congruent
materials in consumer memory. Inducing a sad mood in a consumer’s mind, for example, will prime constructs in memory (e.g., rainy day, poor academic performance, loss of significant others, and illnesses) connected to feelings of sadness. These primed constructs are then more likely to be used in formulating judgments than are un-primed constructs, which are relatively unassociated with sad moods. Therefore, other conditions being equal, people in sad moods will have a more pessimistic outlook of a judgment domain than those in happy moods (Bower, 1981).

Whereas the mood-as-information framework is generally more applicable when consumers have little substantial and detailed information to process or have low opportunity for deliberative information processing (Clore, Schwarz, & Conway, 1994), the mood-as-prime framework better accounts for the effects of mood in the presence of substantial judgment-related information and under conditions of high cognitive elaboration and constructive judgment making (Forgas, 1995). Therefore, when consumers are exposed to substantial information regarding a judgment domain under conditions of high cognitive elaboration, the mood-as-prime framework will generate more accurate predictions than the mood-as-information account.

In addition, even though source salience will remove the direct, non-cognitively-mediated effects of mood state on judgments, the mood-as-prime view would suggest it may still be possible that the cognitively mediated effects of mood state still remain significant, because it may take higher levels of cognitive elaboration to correct for the biasing effects of mood-primed, mood-congruent constructs than the direct biasing effects of the mood as information.

A number of researchers have found support for the mood-as-prime framework, demonstrating that moods enhance the relative accessibility of mood-congruent over non-mood-
congruent information in memory. In an early study, Bower, Monteiro, and Gilligan (1978) reported, after memorizing a list of words with varying affective valences, participants recalled mood-congruent words prior to mood-incongruent words, suggesting experimentally induced moods made mood-congruent words more accessible. Isen et al. (1978) found individuals in a positive mood not only evaluated the products they own more favorably, but also recalled positively-valenced words better than neutral or negative words from a list of vocabulary they had initially memorized. Similarly, Bower, Gilligan, and Monteiro (1981) revealed, following exposure to a narrative story, participants displayed an enhanced recall of the elements congruent with the affect they were experiencing at the moment of the recall test. Riskind (1983) found recall latencies for mood-congruent personal life experience memories were shorter than mood-incongruent memories. This body of research overall points out moods enhance the accessibility of mood-congruent information in memory.

Because moods enhance the accessibility of mood-congruent constructs in memory, positive moods lead to an optimistic outlook of one’s life experiences, whereas negative moods bring a pessimistic outlook. For example, Forgas, Bower, and Kratz (1984) found participants in a positive mood judged their own social interaction more positively than those in other mood states, and this effect weakened in judgments of others’ behavior. Forgas, Bower, and Moylan (1990) further reported participants in a happy mood tended to attribute their own success to stable and internal causes and failure to external causes, and this pattern became less salient when participants judged others’ success and failure. In contrast, participants in a sad mood internally attributed their own failure and externally attributed their own success, whereas a reverse pattern emerged in judgments of others’ success and failure.
Forgas et al. (1990) suggested these effects were observed because happy moods primed positive and self-appraising information whereas sad moods made negative and self-critical information more accessible in memory. Apparently, research overall suggests mood-primed constructs have stronger mood-congruent effects on judgments about one’s own life experiences, rather than others’ experiences. However, using a state-wide sample, Mayer, Gaschke, Braverman, and Evans (1992) found the effects of mood state were observed in judgments regarding non-personal, generalized social events such as perceived chances of an atomic war and a spur in the state-wide divorce rate.

The mood-as-prime framework suggests that moods influence the perceived risk of depression in a mood-congruent way because it primes and thus enhances the accessibility of mood-congruent materials. Therefore, if participants do not receive information about clinical depression, the mood-as-prime framework would suggest that participants in sad moods, compared to those in happy moods, would overrate the risk of depression and have stronger help-seeking intentions. This effect will occur because sad moods will activate other constructs associated with the feeling of sadness, such as various negative affective states (e.g., anxiety, regret, nervousness, and so on) and life experiences with negative affective connotations (e.g., marital conflict, loss of spouse, sleeplessness, physical exhaustion, growing old, and so on), and these constructs will be used for risk estimation.

This account is especially relevant to this study because studies indicate that moods affect health cognition. For example, Croyle and Utretsky (1987) reported induced negative moods led people to generate a more negative evaluation of their health status and report more physical symptoms. Salovey and Birnbaum (1989) found people in a sad mood reported more physical symptoms, such as aches and pains, than those in a happy mood. Pettit et al. (2001) further
reported positive moods reduced people’s perceived experiences of negative health conditions, such as sinus, flu, and sore throat. Therefore, sad moods will prime negative mental and physical experiences associated with a negative mood, and therefore will affect risk perceptions, resulting in the same effects predicted by the mood-as-information perspective.

On the other hand, when participants receive information about the symptoms of clinical depression and the APA diagnostic guideline, consumers may take the information into account to form risk perceptions of depression. The extent to which such information is processed and used for forming a judgment, however, can differ due to a number of factors. For example, under a condition that allows extensive information processing, such as the absence of time pressure, Forgas (1995) suggested that the mood-as-prime framework would apply. Therefore, participants would process the information relatively extensively to construct a risk estimate, and their risk perceptions would reflect both the influences of their mood state and the presence/absence of the diagnostic guideline. In comparison, under a condition that reduces information processing capacity, Forgas (1995) suggested that the mood-as-information principle would predominate. Therefore, moods will have direct effects on risk perceptions, relatively independent of the external information consumers refer to.

**Synthesizing the Two Perspectives**

In summary, the mood-as-information framework focuses on the direct, non-cognitively-mediated effects of mood state on judgment, whereas the mood-as-prime perspective focuses on the cognitive processes that mediate the effects of mood. Despite overall differences in the way the two theories conceptualize the mechanism of the effects, the literature indicates the two perspectives can most accurately be viewed as presenting two complementary accounts of mood effects on judgments. The literature illuminates the two theories’ relative applicability and
predictive validity vary due to differing conditions under which participants are exposed to persuasive communication, process information, and make judgments.

Researchers (Dunn & Schweitzer, 2005; Fedorikhin & Cole, 2004; Petty et al., 1993; Pham et al., 2001; Schwarz & Clore, 1983; Siemer & Reisenzein, 1998) have pinpointed the conditions that determine each perspective’s relative applicability. For example, Pham et al. (2001) and Verplanken, Hofstee, and Janssen (1998) revealed affective-based evaluations of everyday stimuli occurred faster than cognition-based evaluations. Pham et al. (2001) and Siemer and Reisenzein (1998) found the mood-as-information heuristic was more heavily used for judgments under time pressure. In turn, the very finding that affect-based evaluation occurred faster than cognition-based evaluation implies that the latter may apply more when participants have sufficient time to process information and make judgments. Petty et al. (1993) indeed revealed that among participants with relatively higher need for cognition, mood lost its direct effects on judgments but retained its capability to influence judgments through cognitive processes.

**Perceived Diagnosticity of Internally Retrieved Life Experiences**

When opportunity for risk and intention estimations is high, the mood-as-prime perspective suggests that mood state affects risk estimation through cognitive processes. Therefore, sad moods lead to higher risk perceptions by making discomforting life experiences, including common symptoms of depression, more accessible in the consumer memory. In comparison, happy moods will make one’s own experiences with negative affective connotations less retrievable.

However, accessibility is not the only cognitive process that determines risk estimation. Once a negative life experience is retrieved, consumers may differ in their perception of how much it actually indicates they are clinically depressed. Following Raghubir & Menon (2005),
the perceived degree that one’s own experience of a negative life event indicates clinical depression is named in this study “perceived diagnosticity of internally retrieved life experiences,” or “perceived diagnosticity” in short. In summary, a negative life experience should be retrieved and perceived to be diagnostic of depression before it leads to higher risk perceptions and stronger help-seeking intentions.

How do consumers form perceptions of diagnosticity? Because consumers typically do not have sufficient knowledge about clinical depression to internalize their own diagnostic standards, when an external information source provides a diagnostic guideline, they will likely use it to interpret how much their retrieved negative life experiences indicate clinical depression. Raghubir and Menon (2005) reported that exposure to an external information source influenced consumers’ perceived diagnosticity of life experiences.

This study uses the content of an antidepressant advertisement to produce variances in the perceived diagnosticity of internally retrieved life experiences. Of many content elements that frequently appear in DTC antidepressant advertising, such as risk information and mechanisms of drug effects, this study focuses on the American Psychiatric Association’s diagnostic guideline intended for an appropriate application of the information on the symptoms of depression.

The content of DTC advertising for many antidepressants, such as Prozac (produced by Elli Lilly), Zoloft (Pfizer), Paxil CR (GlaxoSmithKlein, GSK) and Effexor XR (Wyeth) tends to focus on information about the symptoms of depression, including sleeplessness, physical exhaustion, sluggishness, and hopelessness. However, the ad content may or may not offer a diagnostic guideline that pinpoints how consumers can properly interpret symptom information in order to make an accurate self-diagnosis of depression. For example, some guidelines stipulate
that a particular health condition should last each day for two weeks to be considered a symptom of clinical depression (e.g., “These are some symptoms of depression. They must occur each day for at least two weeks and interfere with your daily life,” as stated in a Zoloft advertisement).

This diagnostic guideline, almost identical in nature to the diagnostic guideline for depression that American Psychiatric Association (APA) presents in its *Diagnostic and Statistical Manual of Mental Disorders IV* (1994), may or may not appear in antidepressant advertisements for other leading brands. This is important, because the guideline requiring that symptoms be present nearly every day for two weeks is likely to result in fewer self-diagnoses of depression than a guideline that permits the inference that one is depressed based on observation of the symptoms for a day or a few days.

In other words, the presence of the APA diagnostic guideline is important because it influences the perceived diagnosticity of consumers’ internally retrieved past experiences of possible symptoms of depression. In particular, if consumers receive the instruction that a particular life experience should persist two weeks before it can be accurately interpreted as a symptom of depression, they will be less likely to infer that having a life experience resembling a depression symptom for a day or a few days would indicate they might be clinically depressed.

In summary, the presence of the diagnostic guideline is expected to reduce the perceived diagnosticity of the participants’ internally retrieved experiences of the symptoms of depression, while the absence of the guideline has the opposite effects. By varying the presence/absence of the APA guideline in the advertisement, one can manipulate the participants’ perceived diagnosticity of past experiences as indicators of depression. Once a symptom-related past experience is perceived as a diagnostic input, it is likely to be perceived as an indicator of clinical depression and therefore increase the participant’s risk perceptions of depression and
help-seeking intentions. If a past experience is perceived as less diagnostic, it is less likely to be referred to as a signal for clinical depression.

Hypotheses

Overall, the literature on the mood-as-information and mood-as-prime frameworks, especially a body of literature (Forgas, 1992, 1995; Petty et al., 1993; Siemer & Reisenzein, 1998) that compares the relative applicability of the two complementary perspectives in varying situations, suggests that an environment reducing one’s opportunity for deliberative risk and intention estimation is more conducive to the activation of a mood-as-information process. In contrast, an environment encouraging deliberative estimation is more likely to trigger a mood-as-prime process.

In the experiment, participants’ mood state (sad versus happy), opportunity for risk and intention estimation (low versus high), and the perceived diagnosticity of life experiences (low versus high) will be manipulated. Then the perceived risk of depression and help-seeking intentions will be measured. When consumers do not have high opportunity for deliberation, the mood-as-information framework, rather than mood-as-prime, will predominate, producing only the main effects of mood state on risk perceptions without interacting with perceived diagnosticity. Therefore, sad-mood individuals will perceive the risk of depression to be higher than happy-mood individuals, regardless of the level of perceived diagnosticity.

• **H1a**: When opportunity is low, sad-mood participants will report higher perceived future risk of depression than happy-mood participants, whether perceived diagnosticity is low or high.

  Because risk perceptions are a major determinant of behavioral intentions for preventive and remedial actions, mood state will have similar effects on help-seeking intentions.

• **H1b**: When opportunity is low, sad-mood participants will have stronger help-seeking intentions, whether perceived diagnosticity is low or high.
H1a and H1b suggest that under the low opportunity condition, there will not be an interaction between mood state and perceived diagnosticity. Figure 2-1 and Figure 2-2 represent the expected results for risk perceptions and help-seeking intentions under the low-opportunity condition. These results will be observed if H1a and H1b are supported.

When consumers have high opportunity for deliberation, the mood-as-prime perspective will be more applicable, leading to a significant interaction of mood state and perceived diagnosticity. Under the high-opportunity condition, participants will be able to engage in substantive information processing to form risk perceptions. Forgas (1995) suggested that when participants did not have to simplify their judgment due to the conditions that allowed extensive information processing, the mood-as-prime principle would dominate. Siemer and Reisenzein (1998) also reported that the effects of mood-as-information applied more prominently when participants made judgments under time pressure.

Similarly, Petty et al. (1993) found that among participants with relatively low need for cognition, the mood-as-information principle dominated. Among participants with high need for cognition, mood states influenced judgments through influencing the thoughts generated about the judgment domain. To the extent that need for cognition can be considered as a referent to a person’s trait cognitive capacity, the findings of Petty et al. (1993) may be considered as implying that the mood-as-prime perspective would apply better under the conditions that allow extensive information processing, such as the high-opportunity condition.

In the current study, when participants have opportunity for deliberative risk estimation, they will engage in cognitive processing of information they received from the advertisement, whether perceived diagnosticity is low or high. Because moods will make mood-congruent experiences more accessible in memory, sad-mood participants will perceive the symptoms
presented in the advertisement to be more reflective of their life experiences than happy-mood participants. Further, participants who receive high-diagnosticity information will perceive their own internally retrieved experiences of the depression symptoms to be indicative of clinical depression.

On the other hand, participants who receive low-diagnosticity information, namely the APA-type diagnostic guideline, will be less likely to perceive their experiences of depression symptoms to be indicative of depression. This will be the case because participants’ awareness of the guideline will make it less likely to judge that a person may be depressed based on observation of the symptoms for a day or two. In other words, participants under the low-diagnosticity condition will perceive their experiences with the symptoms presented in the advertisement as less indicative of their being clinically depressed, because, by definition, it is much harder to experience the symptoms each day for two consecutive weeks than to simply experience them for some time in their recent life.

However, it is emphasized that the presence of an APA-type guideline will have more effects on the perceived diagnosticity among sad-mood participants than among happy-mood participants. Compared to sad-mood participants, happy subjects will initially have reported a substantially lower level of experiences of depression symptoms. If one rarely experienced a particular discomforting life event, chances will be already low that his/her experience of the event would be perceived to be indicative of depression. Therefore, when a symptom is perceived to be rarely experienced, exposure to the APA guideline would have limited capacity to further reduce the perceived degree that the experience indicates depression.

• **H2a**: When opportunity is high, exposure to the low-diagnosticity information will reduce perceived risk of depression significantly more among sad-mood participants than among happy-mood participants.
Because risk perception is a major determinant of behavioral intentions for preventive and remedial actions, the following hypothesis is generated.

- **H2b**: When opportunity is high, exposure to the low-diagnosticity information will reduce help-seeking intentions significantly more among sad-mood participants than among happy-mood participants.

Figure 2-3 and Figure 2-4 represent the expected results for risk perceptions and help-seeking intentions under the high-opportunity condition. These results will be observed if H2a and H2b are supported.

H1a and H1b suggested that under the low-opportunity condition, mood state and perceived diagnosticity would not interact to influence risk perceptions and intentions to seek professional help. Therefore, mood state would directly influence risk perceptions independent of the level of perceived diagnosticity. This was hypothesized to occur because under the low-opportunity condition, participants’ information processing capacity would be significantly reduced and become less extensive, and the mood-as-information principle would dominate. Therefore, participants under the low-opportunity condition would directly refer to their current mood state to form an estimate of future depression risk in a simplified way (Forgas, 1995; Siemer & Reisenzein, 1998).

Further, studies that reveal the association between risk perceptions and changes in health behavior or behavioral intentions (Block & Keller, 1998; Lipkus et al., 2001; Menon et al., 2002; Robinson et al., 1998) share the assumption that variations in risk perceptions cause changes in behavior, not the other way round. Therefore, the effects of mood manipulation and perceived diagnosticity on help-seeking intentions under the low-opportunity condition will be moderated by their impact on the perceived future risk of depression.

- **H3a**: When opportunity is low, the effects of mood state on help-seeking intentions will be mediated by the perceived future risk of depression.
H2a and H2b indicated that under the high-opportunity condition, there would be an interaction between mood state and perceived diagnosticity on risk perceptions and intentions to seek professional help. This was expected to occur because under the high-opportunity condition, participants would engage in substantive information processing to form risk perceptions, and the mood-as-prime perspective would operate. Because risk perceptions are conceptualized as a determinant of changes in health behavior or behavioral intentions (Block & Keller, 1998; Lipkus et al., 2001; Menon et al., 2002; Robinson et al., 1998) the following hypothesis is generated about the role of risk perception as a mediator of the interactive effects of mood state and perceived diagnosticity on help-seeking intentions under the high-opportunity condition.

- **H3b**: When opportunity is high, the interactive effects of mood state and perceived diagnosticity on help-seeking intentions will be mediated by the perceived future risk of depression.
Figure 2-1. Expected ANOVA results for risk perception when opportunity was low

Figure 2-2. Expected ANOVA results for help-seeking intention when opportunity was low
Figure 2-3. Expected ANOVA results for risk perception when opportunity was low

Figure 2-4. Expected ANOVA results for help-seeking intention when opportunity was high
CHAPTER 3
METHODOLOGY

Design

The objective of this study is to explore the effects of mood state, opportunity for risk estimation, and perceived diagnosticity of internally retrieved disease-related life experiences on the consumer’s perceived future risk of depression and intentions to seek professional help to discuss depression.

To achieve this research purpose, an experiment was conducted with a 2 (evoked mood: sad versus happy combined with no-mood-manipulation) × 2 (diagnosticity: low versus high) × 2 (opportunity: low versus high) between-subjects experimental design with a non-factorial control group, producing thirteen experimental groups in total. Students enrolled in introductory advertising classes were recruited as participants. It is emphasized that the no-mood-manipulation condition is distinct from the non-factorial control group. Participants in the former condition did not receive mood manipulation, but were exposed to the diagnosticity and opportunity manipulations. The control group did not receive any manipulation but completed the dependent measures.

Because a moderate correlation was expected between risk perceptions and help-seeking intentions, multivariate analysis of variance (MANOVA) was used as a primary statistical method of testing the three manipulated variables’ effects on the linear combination of the two dependent variables. If the three independent variables had significantly different effects on risk perceptions and help-seeking intentions, separate analyses of variance (ANOVAs) would be used to test how risk perceptions and help-seeking intentions were influenced respectively. Last, analyses of simple effects were conducted to test if statistically significant mean differences were observed among experimental groups as predicted by the six hypotheses.
Participants

Undergraduate students \((N = 269)\) enrolled in introductory advertising classes at the University of Florida participated in the study in return for course credit. The class curricula did not include topics that might have sensitized subjects to the true purpose of the study. Though less preferable than a random sample from the general population, college students were considered as an appropriate sample for this study, considering depression is increasingly observed among young adults (Kessler, Avenevoli, & Merikangas, 2001). However, homogeneity of the sample might yield results that differ from those observed in the general population.

Approximately 68 percent \((n = 184)\) of the participants were females. Participants ranged in age from 17 to 29 \((M = 20.15, SD = 1.80)\), and included non-Hispanic whites \((n = 172)\), Hispanics \((n = 40)\), African Americans \((n = 26)\), and Asian Americans \((n = 18)\). A total of 22 participants \((8.20\%)\) reported that they had previously been diagnosed as clinically depressed. A number of participants also had vicarious experiences with depression. For example, a total of 161 participants \((59.9\%)\) reported that their close others, such as family members, close relatives, or friends, had suffered from depression. Further, 155 participants \((57.6\%)\) were aware that their close others had sought professional help to treat depression, and 157 \((58.4\%)\) knew of close others who had taken antidepressant medication. Only 24 percent \((n = 65)\) reported none of these vicarious experiences. A total of 15 participants \((n = 15)\) reported they had previously been diagnosed as having attention deficit hyperactivity disorder (ADHD).

Procedure

Subjects signed up for participation in class and were invited to a computer laboratory where the experiment was conducted. Sessions were run with groups of 15 to 24. Upon arrival at the laboratory, the informed consent was secured, and the participants were randomly assigned to
one of thirteen experimental groups. Then participants were instructed that the purpose of the research was to explore how people represent their autobiographical memories (disguised as Study One), and how students understand consumer-targeted antidepressant advertisements (disguised as Study Two). Constructs were manipulated and measured using computer software named MediaLab. The software offers functions vital for experimental studies, such as presenting experimental stimuli in a controlled manner, recording response times, and measuring variables.

Participants who received mood manipulation proceeded in the order of mood induction, mood manipulation check, exposure to the advertisement, diagnosticity manipulation check, opportunity manipulation, opportunity manipulation check, and measurement of dependent variables. Participants who did not receive mood manipulation but received the other two manipulations, named the no-mood-manipulation participants, first completed the mood scale, and proceeded in the same order of events. Participants who did not receive any manipulation, named the non-factorial control group, first completed the mood scale and then the dependent measures. Both the no-mood-manipulation and control groups received additional filler tasks after they completed the dependent measures, so that all the thirteen experimental groups spent approximately the same amount of time in each session.

The mood induction procedure and mood manipulation check were disguised as “Study One.” Participants were informed in writing that their responses would be used to explore how people construct autobiographical memories. Exposure to the DTC antidepressant advertisement and the measurement of dependent variables were disguised as “Study Two,” which was ostensibly designed to explore college students’ evaluation of an early draft of an antidepressant advertisement. Much research on the effects of mood on social cognition uses similar study
procedures to alleviate participants’ suspicion about the true purpose of research (Schwarz & Clore, 1983; Raghunathan & Pham, 1999; Siemer & Reisenzein, 1998).

Two trained experimenters administered sessions. Each session consisted of the mood induction procedure, disguised as “Study One,” and exposure to the stimulus and completion of dependent measures, disguised as “Study Two.” The two experimenters were ostensibly in charge of the two “separate” studies.

To give the impression that the procedures represented two separate studies, two informed consents were secured. For the same purpose, the experimenters told participants that “although we conduct two separate studies, we run them in one session for the sake of convenience.” Further, after completing the mood induction procedure, participants were instructed in writing that “this is the end of Study One. To proceed to Study Two, please click on Continue.” Detailed instruction of the two procedures was presented only in writing, because participants in different experimental groups proceeded in different orders of events.

During each session, the primary experimenter ensured that participants sat apart from each other and did not talk with each other, so that they completed the instrument independently in an orderly environment. To help differentiate clinical depression from short periods of sadness, participants were informed in writing that “clinical depression is defined in this project as a form of medical illness that may require doctor’s intervention for treatment.” The instruction did not include symptoms of depression, because information about depression symptoms and a guideline about how to interpret them for the self-diagnosis of depression would be used to manipulate diagnosticity.

In summary, participants were randomly assigned to one of thirteen experimental groups determined by induced mood state (sadness versus happiness versus no-mood- manipulation),
perceived diagnosticity of recalled life experiences (low versus high diagnosticity), and
opportunity for risk and intention estimation (low versus high opportunity) in addition to a non-
factorial control group that did not receive any manipulation but only completed dependent
variable measures. Each session took about 25 minutes to complete, regardless of experimental
groups. After the dependent variables were measured, participants were debriefed and thanked.

Independent Variables

The three manipulated variables of this study included mood state, diagnosticity of
internally retrieved depression-related life events, and opportunity for risk and intention
estimation. Mood state was manipulated by requiring participants to write about life events that
had evoked very sad or happy moods in the past. Diagnosticity was manipulated by exposing
participants to a fictitious antidepressant advertisement that reduced or increased the perceived
degree that a list of discomforting life experiences indicated clinical depression. Opportunity was
manipulated by requiring participants to either estimate and report their risk perceptions and
help-seeking intentions as fast as possible or take as much time as they needed to estimate and
report them.

Mood State

Sad and happy moods were manipulated using the typical mood-induction technique
suggested by Schwarz and Clore (1983). To manipulate sad moods, participants were required to
describe past life events that had made them very sad in the past. To manipulate happy moods,
participants wrote about happy life events.

In the mood manipulation procedure, disguised as a study about college students’
autobiographical memories, participants first received the following general instruction.

People experience many types of life events. Study One is designed to build a life-event
inventory and explore how people represent their autobiographical memories. For that
purpose, you will be asked to describe three life events that made you sad [happy]. Click on “Continue” to proceed.

The instruction had two versions. The sad-mood version was directed to participants in the sad-mood condition, whereas the happy-mood version was delivered to those in the happy-mood condition. Otherwise, the two versions of general instruction had the same wording.

After the general instruction, participants were instructed on the manner in which they were encouraged to describe the events. In particular, following the suggestion of Dunn and Schweitzer (2005), participants were requested to write about the sadness (versus happiness)-inducing life events as realistically as possible.

Please describe a life event that made you very sad [happy] as realistically as possible, such that a person reading the description would become sad [happy] just from hearing about the situation. Please spend five minutes for this situation. After five minutes, the screen will automatically proceed to the next step.

Similar to the general instruction, the script was adjusted to the particular mood state (sadness versus happiness) that it was designed to manipulate. A manipulation check followed the mood-induction procedure. A pretest, named Pilot Study One, was conducted prior to the main study to ensure that the mood manipulation was effective.

Participants in the no-mood-manipulation condition did not undergo a mood-induction procedure. Instead, they only reported their current moods, received diagnosticity and opportunity manipulations, and completed the dependent measures. Then they received a directed writing procedure as a filler task. Similar to the mood induction procedure, the filler task required participants to write about three life events that made them feel very sad or happy in the past. However, the task was conducted after all the measures, including the mood check scale, were completed. Therefore, the writing filler task could not affect the participants’ responses to the mood scale and the dependent measures in any way. The task was conducted for the sole
purpose of making no-mood-manipulation participants spend as much time as participants in the sad-mood or happy-mood condition did.

The no-mood-manipulation condition was differentiated from the non-factorial control group, in which participants did not receive any manipulation but simply completed risk perception and help-seeking intention measures. The control group also received a directed writing procedure as a filler task after they completed dependent measures. Therefore, all thirteen experimental groups spent approximately the same amount of time in each session.

**Diagnosticity**

Diagnosticity was defined as the degree that participants perceived their own experiences of sleeplessness, feeling low in physical energy, depressed mood, and difficulty making decisions indicated clinical depression. The diagnosticity manipulation procedure was disguised as “Study Two,” which was ostensibly separate from “Study One,” or the mood-induction procedure. The manipulation was introduced as a study of consumer responses to advertising. Participants were instructed that the study was an advertising copy test, designed to explore how consumers responded to an early version of a print advertisement for an antidepressant recently launched in the market.

Diagnosticity was manipulated by exposing participants to two discrete versions of the antidepressant advertisement (Appendix B). The top half of the ad listed the four life experiences typically considered as common symptoms of depression, including low energy, depressed mood, sleep problems, and difficulty making decisions. Then, at the start of the bottom half, the high-diagnosticity version indicated that these life experiences were symptoms of depression.

These [listed experiences] are symptoms of depression. Some may say it’s “just in your head.” But depression is a real disease with real medical causes. While the cause is unknown, depression may be related to an imbalance of chemicals in the brain. Clinical studies show Serexa CR can effectively correct this imbalance and relieve symptoms of depression.
In contrast, the low-diagnosticity version suggested at the start of the bottom half that consumers needed to be cautious in concluding that the listed life experiences actually indicated clinical depression. To that effect, they were given the following instruction.

These [listed experiences] are symptoms of depression only if they last nearly every day for two weeks. Some may say it’s “just in your head.” But depression is a real disease with real medical causes. While the cause is unknown, depression may be related to an imbalance of chemicals in the brain. Clinical studies show Serexa CR can effectively correct this imbalance and relieve symptoms of depression.

The APA guideline, or the instruction that the life experiences should occur nearly every day for two weeks to be considered as symptoms of depression, was presented in a light blue color. The procedure ended with a manipulation check.

The rationale for this manipulation was that the APA guideline requiring that the listed problems be present nearly every day for two weeks to be considered as indicative of depression was likely to reduce consumer perceptions of the degree that their own experiences of the problems indicated they were clinically depressed. In contrast, simply stating that the problems are depression symptoms, as the low-diagnosticity copy did, would permit the inference that one is depressed based on observation of the experiences for a day or a few days. A pretest, named Pilot Study Two, was conducted to ensure that the manipulation was effective.

Opportunity

After exposure to the advertisement, risk perceptions and help-seeking intentions were measured. Opportunity was manipulated by giving participants two discrete instructions for completing the measures for risk perceptions and help-seeking intentions. Before they received the dependent variable measures, participants in the low-opportunity condition were instructed they needed to complete the measures as fast as possible.

Read this instruction VERY carefully. What follows is a questionnaire on your life and depression. In the real world, consumers often make quick judgments while they are busy.
To make this study as realistic as possible, please complete the following three questions AS FAST AS YOU CAN.

Then participants in the low-opportunity condition were reminded of the instruction when they received and completed dependent measures. For example, to complete the first measurement item for risk perceptions, they were given the following instruction.

In you thinking, what are the chances that you will suffer from clinical depression in the near future? AS FAST AS YOU CAN, report in percentage between 0% and 100%. Then click “Continue” to proceed.

In contrast, participants in the high-opportunity condition were encouraged to take as much time as they needed for deliberation. The following is the instruction presented before they received dependent variable measures.

Read this instruction VERY carefully. What follows is a questionnaire on your life and depression. Researchers point out that having accurate ideas about a disease is important for preventing or treating the disease. So please take AS MUCH TIME AS YOU NEED to deliberate sufficiently.

Then when the participants in the high-opportunity condition received and completed the measures for risk perceptions and help-seeking intentions, they were further reminded.

In you thinking, what are the chances that you will suffer from clinical depression in the near future? Take AS MUCH TIME AS YOU NEED, and report in percentage between 0% and 100%. Then click “Continue” to proceed.

To check the opportunity manipulation, the amount of time participants took to answer each of the risk perception and intention measurement items was automatically recorded by Medialab, the software used for this study. Mean differences in response time across the two opportunity conditions were used to check the manipulation.

Stimulus

To manipulate the perceived diagnosticity of depression-related life experiences, two versions of a DTC print advertisement for a fictitious antidepressant brand named Serexa CR were created (Appendix B). Both versions of the advertisement included a visual illustration of a
dark, cloudy sky, with a ray of sunshine streaming through the cloud onto the sea. Around the sunray, four common symptoms of depression were listed, including low energy, depression, sleep problems, and difficulty making decisions. This top half section remained the same across all experimental groups.

The bottom half included body copy with the diagnosticity manipulation. The high-diagnosticity version stated that the listed negative life experiences were common symptoms of depression. In contrast, the low-diagnosticity version emphasized that the experiences were considered as symptoms of depression only if they lasted nearly every day for two weeks. The remaining copy was equivalent across the two versions. It included further information about the advertised drug, such as side effects, safety warning, and mechanism of action. The copy and layout of the advertisement were designed to resemble real antidepressant advertisements.

**Development of the Stimulus**

A pretest was conducted to select depression symptoms to be included in the advertisement. The purpose was to determine a list of potential symptoms of clinical depression frequently experienced by undergraduates. The rationale was that diagnosticity would be more effectively manipulated if frequently, rather than infrequently, experienced discomforting life events were presented as potential symptoms of depression.

Exposure to the APA guideline was expected to reduce the degree that a participant perceived his/her experience of a discomforting life event, such as sleep problems or low physical energy, to be diagnostic of depression. This is because the guideline would inform participants that an experience should last nearly every day for two weeks to be considered diagnostic of depression, and therefore would prohibit the inference that one is depressed based on observation of the experience for a day or a few days.
If one rarely experienced a particular discomforting life event, chances will be already low that his/her experience of the event would be perceived to be indicative of depression. Therefore, when a rarely experienced symptom is presented, exposure to the APA guideline would have limited capacity to further reduce the perceived degree that the experience indicates depression.

A total of 29 symptoms were compiled from two widely accepted measures of depression with established validity and reliability (APA 1994; Zung 1965). The four frequent symptoms thus selected were sleep disorder, feeling tired for no reason, difficulty with thinking and making decisions, and depressed feelings. These four symptoms were presented in the advertisement as “sleep problems,” “low energy,” “difficulty making decisions,” “and depressed,” considering how these selected symptoms were represented in actual DTC antidepressant advertising campaigns.

**Pilot Study 1**

A pilot study was conducted to ensure that the mood induction procedure manipulated current mood state. To induce happiness or sadness, 72 participants completed a directed writing task designed to create sad or happy moods. Similar to the mood-induction procedure typically used to manipulate affective states (Lerner & Keltner, 2001; Schwarz & Clore, 1983; Strack, Schwarz, & Gschneidinger, 1985), the writing task required participants to describe three life events that made them very happy (versus sad) in the past as realistically as possible. Then participants reported their current moods on the following three-item, seven-point semantic differential scale: item (a) “1 = gloomy, 7 = joyful”; item (b) “1 = sad, 7 = happy; and item (c) “1 = upset, 7 = elated.”

The three check items were internally consistent (α = .94) and therefore were averaged into a single scale. Collected data supported the prediction that the participants who wrote about happiness-evoking life events would report a happier mood state on the average \( t(70) = 6.59, p \)
The mood-induction procedure was equally effective for male \([t(24) = 5.15, p < .001]\) and female \([t(44) = 4.56, p < .001]\) participants. This finding was confirmed by analysis of variance (ANOVA), which showed the mood \(\times\) gender interaction was not significant \([F(1, 68) = .51, p > .05]\). Males and females also did not differ in their reported moods \([t(70) = .96, p > .05]\).

**Pilot Study 2**

Pilot study 2 was designed to ensure that exposure to the APA guideline would reduce the perceived diagnosticity of one’s own experience of common depression symptoms. If the manipulation was successful, participants only exposed to depression symptoms should perceive their own experiences of the symptoms to be more indicative of clinical depression, compared to those exposed to the symptoms and the APA guideline. In other words, exposure to the APA guideline would reduce the perceived diagnosticity of one’s own recalled experiences of the symptoms presented in the advertisement.

A total of 42 participants were recruited from an introductory advertising class, and were assigned to either the low-diagnosticity (with the APA guideline) or the high-diagnosticity (without the APA guideline) condition. Participants were first exposed to an antidepressant advertisement that contained four depression symptoms, including low energy, depressed mood, sleep problems, and difficulty making decisions. Except of the diagnosticity manipulation, the ad was equal across the two diagnosticity conditions. Then participants reported on a seven-point scale \(1 = \text{never}, 7 = \text{nearly every day}\) how often they experienced the symptoms during the last two weeks. Then, for each symptom, the participants reported on a seven-point scale \(1 = \text{not indicative at all}, 7 = \text{very indicative}\) the degree that their reported experience of the symptom was indicative of clinical depression (Raghubir & Menon, 2005).
Responses to the four check items were internally consistent ($\alpha = .95$). Therefore, the items were averaged into a single scale. The diagnosticity manipulation was successful. The perceived diagnosticity of one’s own experiences of depression-related symptoms was higher among the participants who did not receive the APA guideline than among those who received the APA guideline [$t(46) = 2.20, p < .05$, $M_{low-diagnosticity} = 2.88$, $SD = 2.02$, $M_{high-diagnosticity} = 4.15$, $SD = 2.00$]. ANOVA revealed the manipulation was equally effective among male and female participants, because the gender $\times$ diagnosticity interaction was not significant [$F(1, 43) = 1.80$, $p > .05$].

**Dependent Variables**

**Perceived Future Risk of Depression**

A three-item measure of perceived future risk of depression was used, as suggested by Levy, Shea, Williams, Quistberg, and Armstrong (2006). Participants first answered in percentage the following single-item question: item (a), “In your thinking, what are the chances that you will suffer from clinical depression in the near future? Please report in percentage between 0% (no chance of depression) and 100% (definitely will develop depression).” Similar measures of perceived absolute risk have been frequently applied in the literature (Loroz & Lichtenstein, 2004; Raghubir & Menon, 2001; Levy, Shea, Williams, Quistberg, & Armstrong, 2006 for a review). The second item asked participants to respond on a seven-point scale (1 = very low, 7 = very high) to the following statement: item (b), “In your thinking, your risk of suffering from clinical depression in the near future will be ________.” Last, by checking a seven-point scale (1 = much lower, 7 = much higher), participants answered the following question: item (c), “In your thinking, compared to people of your age, your risk of developing clinical depression in the near future will be ________.”
Reponses to the three items were Z-transformed and then summated into a single index score representing the participants’ perceived future risk of clinical depression ($M = .00, SD = 2.67$). After Z-transformation, the three items were internally consistent ($\alpha = .82$). To check the dimensionality of the three Z-transformed risk measurement items, they were factor-analyzed using a principal axis factoring extraction method with Varimax rotation. One factor was extracted. The factor accounted for 74% of the variance, with an Eigenvalue of 2.22. Table 3-1 shows factor loadings. The lowest factor loading was .66, which was for item (c). The scree plot shows that the three Z-transformed risk perception items were summarized into one factor. The high internal consistency ($\alpha = .82$) further confirmed that only one underlying dimension existed for the three Z-transformed risk perception items (Figure 3-1).

**Intentions to Seek Professional Help**

To measure intentions to seek professional help to discuss depression, participants reported on a three-item, seven-point scale (1 = strongly disagree, 7 = strongly agree) their agreement with the following three statements: item (a), “If the University Health Services offered a free screening day for depression, I would intend to participate”; item (b), “If the University Health Services offered a free educational program about depression, I would intend to participate”; and item (c), “If the University Health Services offered an opportunity to consult doctors about depression, I would intend to participate.” This scale was modified and expanded from the single-item scale used by Raghubir and Menon (2005). Responses to the three items were averaged into a single index score ($M = 2.63, SD = 1.01$).

To explore the underlying factor structure of the three intention measurement items, a principal axis factor analysis with Varimax rotation was conducted for the three items. One factor was extracted, and it accounted for 75.56% of the variance, with an Eigenvalue of 2.27. Table 3-2 shows factor loadings. The lowest factor loading was .74, which was for item (a). The
scree plot shows that the three measurement items fell into one factor (Figure 3-2). The high internal consistency revealed in Pilot study 2 ($\alpha = .92$) as well as the main study ($\alpha = .84$) further confirmed the finding that only one dimension existed for the three measurement items.
<table>
<thead>
<tr>
<th>Item</th>
<th>Factor loadings</th>
<th>Cronbach’s α if deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item (a): Risk in percentage</td>
<td>.82</td>
<td>.73</td>
</tr>
<tr>
<td>Item (b): Non-comparative risk</td>
<td>.87</td>
<td>.70</td>
</tr>
<tr>
<td>Item (c): Relative risk</td>
<td>.66</td>
<td>.83</td>
</tr>
</tbody>
</table>

Table 3-2. Factor analysis of help-seeking intention (α = .84)

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor loadings</th>
<th>Cronbach’s α if deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item (a): Risk in percentage</td>
<td>.74</td>
<td>.81</td>
</tr>
<tr>
<td>Item (b): Non-comparative risk</td>
<td>.82</td>
<td>.76</td>
</tr>
<tr>
<td>Item (c): Relative risk</td>
<td>.83</td>
<td>.75</td>
</tr>
</tbody>
</table>
Figure 3-1. Eigenvalue plot for scree test for risk perception

Figure 3-2. Eigenvalue plot for scree test for help-seeking intention
CHAPTER 4
RESULTS

This chapter reports the results of the study described in Chapter 3. The chapter begins by presenting the manipulation checks for the three independent variables. Then correlations among a list of variables are presented as a preliminary analysis. The results of hypothesis testing are then reported, followed by a summary of additional data analyses to explore unexpected but theoretically meaningful relationships among variables. The chapter concludes with a summary of research findings.

Manipulation Checks

Mood State

Following mood induction, participants reported their current mood state on the following three-item, seven-point semantic differential scale: item (a), “1 = gloomy, 7 = joyful”; item (b), “1 = sad, 7 = happy”; and item (c), “1 = upset, 7 = elated.” The no-mood-manipulation group did not receive a mood-induction procedure but reported their current mood state. The three items were internally consistent ($\alpha = .95$), and therefore were averaged into a single mood scale ($M = 4.38, SD = 1.39$).

For manipulation check, the single mood scale was submitted to one-way ANOVA, treating mood manipulation as the sole independent factor. As Table 4-1 shows, significant mean differences existed among the sad-mood, happy-mood, and no-mood-manipulation conditions $[F(2, 247) = 52.62, p < .01, M_{sad} = 3.28, SD = 1.35, M_{happy} = 4.96, SD = 1.10, M_{no-mood-manipulation} = 4.84, SD = 1.08]$. Table 4-1 also shows the ANOVA results for the three measurement items that constitute the single mood scale ($\alpha = .95$).

Bonferonni post-hoc test revealed that participants in the sad-mood condition differed significantly in the average mood state from those in the happy-mood ($M_{sad} = 3.28, SD = 1.35$, $M_{happy} = 4.96, SD = 1.10$).
$M_{\text{happy}} = 4.96, SD = 1.01, p < .01$) and the no-mood-manipulation ($M_{\text{sad}} = 3.28, SD = 1.35, M_{\text{no-mood-manipulation}} = 4.84, SD = 1.06, p < .01$) conditions. This suggested that sad-mood participants would significantly differ in the perceived future risk of depression and help-seeking intentions from those in the two other mood conditions.

In contrast, participants in the happy-mood and no-mood-manipulation conditions did not significantly differ in their mood state ($M_{\text{happy}} = 4.96, SD = 1.01, M_{\text{no-mood-manipulation}} = 4.84, SD = 1.06, p > .05$), as typically reported in prior research on mood and social cognition (Schwarz & Clore, 1983). This suggested the two mood conditions would not lead to significant mean differences in risk perceptions and help-seeking intentions. Further, in using MANOVA for hypothesis testing, the happy-mood and no-mood-manipulation conditions were combined into a “combined-mood” condition. The sad-mood and combined-mood participants were significantly different in their current mood states ($M_{\text{sad}} = 3.28, SD = 1.35, M_{\text{combined-mood}} = 4.90, SD = 1.09, p < .01$).

If the mood manipulation was successful, it would be the only factor of the three independent variables that significantly affected participants’ current mood state, and the effects would not be moderated by other independent variables. To test these requirements, the current mood state was submitted to a 2 (mood state: sad versus combined-mood) $\times$ 2 (diagnosticity: low versus high) $\times$ 2 (opportunity: low versus high) ANOVA. As Table 4-2 shows, the mood manipulation was the sole independent factor that significantly influenced the current mood state [$F(1, 242) = 101.16, p < .01, \eta_p^2 = .295$]. No other independent variables or their interactions were significant. Therefore, the mood manipulation was successful.
Perceived Diagnosticity of Discomforting Life Experiences

On a four-item, seven-point (1 = never, 7 = nearly everyday) scale, participants reported how often they underwent each of the following four discomforting life experiences for the last two weeks: low energy, feeling depressed, sleep problems, and difficulty making decisions. The experiences are typically considered as common symptoms of depression. Then participants indicated on a four-item, seven-point (1 = not at all likely, 7 = very likely) scale the likelihood that their own reported experience of low energy, depressed mood, sleep problems, and difficulty making decisions would indicate they were clinically depressed. The four items were internally consistent (α = .88), and therefore were averaged into a single scale representing perceived diagnosticity (M = 3.02, SD = 1.56).

Perceived diagnosticity was submitted to one-way ANOVA, entering the diagnosticity manipulation as the sole independent factor. As Table 4-3 shows, the mean difference was significant between the low and high diagnosticity conditions [F(1,248) = 7.35, p < .01, M_{low-diagnosticity} = 2.79, SD = 1.52, M_{high-diagnosticity} = 3.31, SD = 1.55]. Table 4-3 also shows the ANOVA results for the four items that constituted the diagnosticity scale.

Further, to test if the diagnosticity manipulation was the sole factor of the three independent variables that affected perceived diagnosticity and no other independent variables moderated the effects, perceived diagnosticity was submitted to a 2 (mood state: sad versus combined-mood) × 2 (diagnosticity: low versus high) × 2 (opportunity: low versus high) ANOVA. As Table 4-4 shows, the diagnosticity manipulation was the sole independent factor that significantly affected perceived diagnosticity [F(1, 242) = 6.86, p < .01, η^2_p = .028]. No other independent variables or their interactions had significant effects.
Opportunity for Risk and Intention Estimation

The opportunity manipulation was checked by measuring the amount of time participants spent responding to the three risk perception measurement items and the three help-seeking intention measurement items. Medialab recorded response times by millisecond, and the unit was later transformed into seconds.

The response times for the three risk perception measurement items were submitted to separate ANOVAs, with the opportunity manipulation entered as the sole independent factor. As Table 4-5 shows, statistically significant mean differences in response time were observed for item (a) \([F(1, 248) = 57.84, \quad p < .01, \quad M_{\text{high-opportunity}} = 22.73, \quad SD = 10.77, \quad M_{\text{low-opportunity}} = 14.75, \quad SD = 4.55]\), item (b) \([F(1, 248) = 26.24, \quad p < .01, \quad M_{\text{high-opportunity}} = 12.82, \quad SD = 4.82, \quad M_{\text{low-opportunity}} = 9.86, \quad SD = 4.28]\), and item (c) \([F(1, 248) = 17.24, \quad p < .01, \quad M_{\text{high-opportunity}} = 10.65, \quad SD = 5.25, \quad M_{\text{low-opportunity}} = 8.28, \quad SD = 3.61]\). However, it was noticeable that the mean difference was greatest for item (a), and then dropped as participants proceeded to item (b) and item (c). Especially, the response times of the high-opportunity participants were gradually reduced and became closer to the response times of the low-opportunity participants.

The response times for the three intention measurement items were also submitted to separate ANOVAs. As Table 4-5 shows, the two opportunity conditions led to significant mean differences on item (a) \([F(1, 248) = 9.89, \quad p < .01, \quad M_{\text{low-opportunity}} = 9.50, \quad SD = 3.54, \quad M_{\text{high-opportunity}} = 10.97, \quad SD = 3.80]\) and item (b) \([F(1, 248) = 5.83, \quad p < .02, \quad M_{\text{low-opportunity}} = 7.35, \quad SD = 2.61, \quad M_{\text{high-opportunity}} = 8.44, \quad SD = 4.27]\). However, the mean difference on item (c) was not significant \([F(1, 248) = .00, \quad p > .05, \quad M_{\text{low-opportunity}} = 7.43, \quad SD = 3.55, \quad M_{\text{high-opportunity}} = 7.41, \quad SD = 4.22]\). It was observed that the mean difference dropped as participants proceeded from item (a) to item (b) and item (c). Especially, the response times of the high-opportunity participants became gradually reduced. This implied that in this study moods might have similar effects on risk
perceptions and help-seeking intentions across the two opportunity groups, because variances in opportunity were hypothesized to cause the mood state to affect social judgments differentially.

**Correlations Among Variables**

Before hypotheses were tested, correlations among a number of variables were explored (Table 4-6). Age or gender was not significantly related with any other variable. Vicarious experience of clinical depression was positively related with perceived future risk of depression ($r = .23, p < .01$) and help-seeking intentions ($r = .23, p < .01$).

This confirmed Park and Grow’s (2008) finding that the more vicarious experience of clinical depression one has, the higher risk perceptions and the stronger help-seeking intentions they tended to report. In addition, risk perceptions and help-seeking intentions were also positively correlated ($r = .40, p < .01$). This confirmed that it was appropriate to use MANOVA, rather than separate ANOVAs, as a primary method of testing H1a through H2b.

**Testing Hypotheses 1a and 1b**

Hypotheses 1a and 1b were designed to examine the effects of mood state and perceived diagnosticity on risk perceptions and help-seeking intentions when the opportunity for risk and intention estimation was low. The two hypotheses predicted that under the low-opportunity condition, sad-mood participants would report higher risk perceptions (H1a) and stronger help-seeking intentions (H1b) than happy-mood participants, whether perceived diagnosticity was low or high.

MANOVA was used as a primary method of testing the two hypotheses, because it is a “dependence technique that measures the differences for two or more metric variables based on a set of categorical (non-metric) variables” (Hair, Anderson, Tatham, & Black, 1998, p. 326). In dealing with multiple dependent variables, using MANOVA instead of separate ANOVAs reduces the probability of making a Type I error as well as increases the statistical model’s
power to detect significant group differences, especially when the dependent variables are correlated (Hair et al., 1998). This further suggested MANOVA should be used to test H1a and H1b, because risk perceptions and help-seeking intentions were significantly correlated ($r = .40, p < .01$, Table 4-6).

H1a and H1b would be supported if the multivariate analysis indicated that when opportunity was low, mood had main effects on the linear combination of risk perceptions (H1a) and help-seeking intentions (H1b), and the effects were not moderated by perceived diagnosticity. The two hypotheses would be further supported if analyses of simple effects revealed, under the low-opportunity condition, sad-mood participants reported significantly higher risk perceptions (H1a) and stronger help-seeking intentions (H1b) than happy-mood participants, whether perceived diagnosticity was low or high.

**MANOVA Results for H1a and H1b**

To test H1a and H1b, risk perceptions and help-seeking intentions for low-opportunity participants were submitted to a 2 (mood state: sad versus combined-mood) × 2 (perceived diagnosticity: low versus high) MANOVA. Because the happy-mood and no-mood-manipulation participants did not differ in their mood state, the two conditions were combined. In addition, H1a and H1b predicted the main effects of mood state when opportunity was low. Therefore, experimental groups under the high-opportunity condition were deleted from this analysis.

The multivariate results supported H1a and H1b. As Table 4-7 shows, mood state had significant main effects on the linear combination of risk perceptions and help-seeking intentions [Wilks $\Lambda = .91, F(2, 119) = 5.59, p < .01, \eta^2_p = .086$]. Further in support of the two hypotheses, the effects of neither diagnosticity [Wilks $\Lambda = .99, F(2, 119) = .35, p > .05, \eta^2_p = .006$] nor the mood × diagnosticity interaction [Wilks $\Lambda = .99, F(2, 119) = .37, p > .05, \eta^2_p = .006$] was
significant. Figure 4-1 and 4-2 show that the main effects of mood state on risk perceptions and help-seeking intentions were approximately equivalent whether perceived diagnosticity was low or high. Homogeneity of variance-covariance matrices was not violated [Box’s $M = 17.30$, $F(9, 51231.81) = 1.86$, $p > .05$].

**Mixed MANOVA Results for H1a and H1b**

The MANOVA results in support of H1a and H1b would be invalidated if mood state had significantly different effects on risk perceptions and help-seeking intentions. If the effects were differential, conducting separate ANOVAs would be more appropriate than a MANOVA for testing the two hypotheses. To rule out this possibility, a three-way mixed MANOVA was designed. The model included mood state (sad versus combined-mood) and perceived diagnosticity (low versus high) as between-subjects factors and treated risk perceptions and help-seeking intentions as a within-subjects factor. To make the scores on each of the two dependent variables comparable, the scales for risk perceptions and help-seeking intentions were Z-transformed. Only groups under the low-opportunity condition were included in the analysis.

As Table 4-8 shows, the multivariate results indicted that the interaction of mood state and the within-subject factor was not statistically significant [Wilks $\Lambda = .98$, $F(1, 120) = 2.51$, $p > .05$, $\eta_p^2 = .020$]. This ruled out the possibility that mood state might have had differential effects on risk perceptions and help-seeking intentions and therefore the MANOVA results should be invalidated. The within-subjects factor also did not moderate the effects of either perceived diagnosticity or the mood state × perceived diagnosticity interaction. Therefore, the previous MANOVA results in support of H1a and H1b were valid, and follow-up ANOVAs were not necessary. Box’s test revealed that the covariance matrices were homogeneous across groups [$M = 17.30$, $F(9, 51231.81) = 1.86$, $p > .05$].
Analyses of Simple Effects

As a second test of H1a and H1b, analyses of simple effects were conducted. Similar to the multivariate analysis, the happy-mood and no-mood-manipulation conditions were combined. H1a and H1b would be supported if, when opportunity was low, sad-mood participants reported higher risk perceptions and stronger help-seeking intentions than combined-mood participants. The two hypotheses would be further supported if the significant mean differences between sad-mood and combined-mood participants were observed whether perceived diagnosticity was low or high.

Risk perceptions. Table 4-9 summarizes the group means and standard deviations of risk perception. Levene’s test showed that variances were equivalent across the groups \([F(8, 260) = .68, p > .05]\). Simple effects tests revealed that when opportunity was low and perceived diagnosticity was high, sad-mood participants reported higher risk perceptions than combined-mood participants \([t(260) = 3.00, p < .01, M_{sad-mood&high-diagnosticity} = 1.88, SD = 2.35, M_{combined-mood&high-diagnosticity} = .03, SD = 2.03]\), supporting H1a. The mean difference was insignificant when perceived diagnosticity was low \([t(260) = 1.69, p > .05, M_{sad-mood&low-diagnosticity} = 1.15, SD = 2.34, M_{combined-mood&low-diagnosticity} = .03, SD = 2.36]\). Therefore, mood state predicted risk perceptions only for high-diagnosticity participants. This failed to support H1a, because the hypothesis predicted that sad moods would cause higher risk perceptions for both the levels of perceived diagnosticity. However, the effects of mood on risk perceptions under the low-diagnosticity condition were marginally significant \((p < .10)\). Therefore, the analyses of simple effects did not completely fail to support H1a.

Analyses of simple effects also revealed that perceived diagnosticity had no significant effects on risk perceptions for participants in either the sad-mood \([t(260) = .98, p > .05, M_{sad-mood&high-diagnosticity} = 1.88, SD = 2.35 M_{sad-mood&low-diagnosticity} = 1.15, SD = 2.34]\) or the combined-
mood \[ t(260) = -.01, p > .05, M_{\text{combined-mood\&high-diagnosticity}} = .03, SD = 2.30, M_{\text{combined-mood\&low-diagnosticity}} = .03, SD = 2.36 \] condition. This supported the predictions made in H1a.

Planned contrasts overall revealed that when opportunity was low, mood state was the only factor that produced a significant mean difference in the perceived future risk of depression. However, the effects of mood state were significant only when perceived diagnosticity was high. The effects were only marginally significant \( p < .10 \) when diagnosticity was low. Therefore, the results only moderately supported H1a.

**Help-seeking intentions.** Planned contrasts were also used to explore mean differences in help-seeking intentions. Table 4-10 summarizes the group means and standard deviations of help-seeking intentions when the happy-mood and no-mood-manipulation conditions were combined. Levene’s test showed that variances were not equivalent across groups \[ F(8, 260) = 2.48, p < .05 \].

Planned contrasts revealed that the sad-mood condition did not lead to significantly higher help-seeking intentions whether diagnosticity was high \[ t(27.39) = 1.38, p > .05, M_{\text{sad-mood\&high-diagnosticity}} = 2.95, SD = 1.24, M_{\text{combined-mood\&high-diagnosticity}} = 2.56, SD = .68 \] or low \[ t(43.19) = .64, p > .05, M_{\text{sad-mood\&low-diagnosticity}} = 2.75, SD = .94, M_{\text{combined-mood\&low-diagnosticity}} = 2.58, SD = 1.06 \], failing to support H1b. Because planned contrasts supported H1a but failed to support H1b, one may conclude that the effects of mood state were stronger on risk perception than on help-seeking intentions. However, the reduction of the effects of mood state was not considered statistically significant, because the previous mixed MANOVA results revealed that the effects of mood state were equivalent on risk perceptions and help-seeking intentions \[ \text{Wilks } \Lambda = .98, F(1, 120) = 2.51, p > .05, \eta^2_p = .020 \].
The effects of perceived diagnosticity were also not significant on help-seeking intentions whether participant were under the sad-mood $[t(38.79) = .60, p > .05, M_{sad-mood&high-diagnosticity} = 2.95, SD = 1.24, M_{sad-mood&low-diagnosticity} = 2.75, SD = .94]$ or the combined-mood condition $[t(59.27) = -.07, p > .05, M_{combined-mood&high-diagnosticity} = 2.56, SD = .68, M_{combined-mood&low-diagnosticity} = 2.58, SD = 1.06]$, in support of the predictions made in H1b. Overall, planned contrasts failed to support H1b.

**Simple effects when the happy-mood and no-mood-manipulation conditions were not combined.** Table 4-11 and 4-12 summarize the group means and standard deviations of risk perceptions and help-seeking intentions when the happy-mood and no-mood-manipulation conditions were separate. Levene’s test showed that variances were equivalent across groups for risk perceptions $[F(12, 256) = .62, p > .05]$, but not for help-seeking intentions $[F(12, 256) = 1.91, p < .05]$. The results largely confirmed the previous analyses of simple effects conducted after the happy-mood and no-mood-manipulation conditions were combined. Further, it was noticeable that no significant mean differences in risk perceptions and help-seeking intentions were observed between participants under the happy-mood and no-mood-manipulation conditions. The mean difference in risk perceptions was not significant whether diagnosticity was high $[t(256) = -.32, p > .05, M_{happy-mood&high-diagnosticity} = -.10, SD = 2.65, M_{no-mood-manipulation&high-diagnosticity} = .13, SD = 2.04]$ or low $[t(256) = -.12, p > .05, M_{happy-mood&low-diagnosticity} = -.02, SD = 2.12, M_{no-mood-manipulation&low-diagnosticity} = .08, SD = 2.64]$. The mean difference in intentions was also insignificant whether diagnosticity was high $[t(36.42) = -.25, p > .05, M_{happy-mood&high-diagnosticity} = 2.53, SD = .77, M_{no-mood-manipulation&high-diagnosticity} = 2.59, SD = .63]$ or low $[t(31.95) = .32, p > .05, M_{happy-mood&low-diagnosticity} = 2.63, SD = .93, M_{no-mood-manipulation&low-diagnosticity} = 2.52, SD = 1.21]$.
These results confirmed the expectation that participants under the happy-mood and no-mood-manipulation conditions would not significantly differ in their risk perceptions and help-seeking intentions because they did not differ in their mood states.

**Summary of the Test of H1a and H1b**

The MANOVA results supported H1a and H1b, as the main effects of mood state were significant [Wilks $\Lambda = .91$, $F(2, 119) = 5.59$, $p < .01$, $\eta^2_p = .086$], and neither perceived diagnosticity [Wilks $\Lambda = .99$, $F(2, 119) = .35$, $p > .05$, $\eta^2_p = .006$] nor the mood × diagnosticity interaction [Wilks $\Lambda = .99$, $F(2, 119) = .37$, $p > .05$, $\eta^2_p = .006$] had significant effects on the linear combination of risk perceptions and help-seeking intentions. The mixed MANOVA results indicated that the effects of mood state were equivalent on risk perceptions and help-seeking intentions [Wilks $\Lambda = .98$, $F(1, 120) = 2.51$, $p > .05$, $\eta^2_p = .020$]. Because MANOVA was a primary method of testing H1a and H1b, it was concluded that the two hypotheses were supported.

Planned contrasts moderately supported H1a but failed to support H1b. A significant mean difference in risk perceptions was observed between sad-mood and combined-mood participants when diagnosticity was high [$t(260) = 3.00$, $p < .01$, $M_{\text{sad-mood&high-diagnosticity}} = 1.88$, $SD = 2.35$, $M_{\text{combined-mood&high-diagnosticity}} = .03$, $SD = 2.03$], supporting H1a. However, the difference was only marginally significant when diagnosticity was low [$t(260) = 1.69$, $p < .10$, $M_{\text{sad-mood&low-diagnosticity}} = 1.15$, $SD = 2.34$, $M_{\text{combined-mood&low-diagnosticity}} = .03$, $SD = 2.36$], failing to support H1a. No significant mean differences were observed for help-seeking intentions, failing to support H1b.

The reason why H1a was only moderately supported and H2a was not supported the opportunity manipulation was suboptimal. When opportunity was low, moods were hypothesized to directly affect judgments without undergoing a cognitive route because time pressure would prevent the
cognitive process from interfering with the mood states’ direct effects on judgments. It was judged that the time pressure produced by requiring the subjects to report as fast as possible was not sufficient for the direct, informative effects of moods to be observed. Instead, a more powerful method of manipulating low opportunity would be forcing the low-opportunity subjects to report within a short time frame.

**Testing Hypotheses H2a and H2b**

Predictions made in hypotheses 2a and 2b were confined to the experimental groups under the high-opportunity condition. When opportunity was high, it was expected that exposure to low-diagnosticity information would reduce risk perceptions (H2a) and help-seeking intentions (H2b) significantly more among participants in the sad-mood condition than among those in the happy-mood condition.

H2a and H2b would be supported if the MANOVA results indicated that when opportunity was high, the mood state × perceived diagnosticity interaction had significant effects on the linear combination of the perceived future risk of depression and help-seeking intentions to discuss depression, and the interaction had equivalent effects on the two dependent variables. H2a and H2b would be further supported if planned contrasts revealed that exposure to low-diagnosticity information significantly reduced risk perceptions and help-seeking intentions among sad-mood participants, whereas the effects would be reduced to insignificance among happy-mood participants.

**MANOVA Results for H2a and H2b**

To test H2a and H2b, risk perceptions and help-seeking intentions for participants under the high-opportunity condition were submitted to a 2 (mood state: sad-mood versus combined-mood) × 2 (perceived diagnosticity: high versus low) MANOVA. The happy-mood and no-mood-manipulation conditions were combined. Only experimental groups under the high-
opportunity condition were included in the analysis, because H2a and H2b predicted the effects of mood state and perceived diagnosticity when opportunity was high.

The multivariate results supported H2a and H2b. As Table 4-13 shows, the mood state × perceived diagnosticity interaction was significant for the linear combination of risk perceptions and help-seeking intentions [Wilks Λ = .92, F(2,121) = 5.50, p < .01, ηp² = .083]. In addition, mood state [Wilks Λ = .87, F(2,121) = 9.26, p < .01, ηp² = .133] and perceived diagnosticity [Wilks Λ = .92, F(2,121) = 5.59, p < .01, ηp² = .085] showed significant main effects. Variance-covariance matrices were homogeneous across groups [Box’s M = 10.94, F(9, 52927.27) = 1.18, p > .05].

As Figure 4-3 and 4-4 show, the effects of perceived diagnosticity on risk perceptions and help-seeking intentions were stronger among sad-mood participants than among combined-mood participants. The interaction occurred in a pattern predicted in H2a and H2b. Exposure to low-diagnosticity information significantly reduced risk perceptions (Figure 4-3) and help-seeking intentions (Figure 4-4) among participants in the sad-mood condition, whereas it did not have significant effects under the combined-mood condition.

**Mixed MANOVA Results For H2a and H2b**

To rule out the possibility that the mood state × perceived diagnosticity interaction might have had significantly different effects on risk perceptions and help-seeking intentions, a three-way mixed MANOVA was conducted. The model entered mood (sad versus combined mood) and perceived diagnosticity (low versus high) as between-subjects factors and treated risk perceptions and help-seeking intentions as a within-subjects factor. To make the scores on the two dependent variables comparable, the single measures for risk perceptions and help-seeking
intentions were Z-transformed. The analysis only included groups under the high-opportunity condition.

As Table 4-14 shows, the multivariate results revealed that the mood state × perceived diagnosticity × within subject factor interaction was not significant [Wilks Λ = 1.00, F(1, 122) = .03, p > .05, ηp² = .000]. This suggested that the mood state × perceived diagnosticity interaction equally affected risk perceptions and help-seeking intentions. Further, the within-subject factor did not moderate the effects of mood state or diagnosticity. Therefore, the previous MANOVA results in support of H2a and H2b were valid. Box’s test revealed that the covariance matrices were equal across groups [M = 10.95, F(9, 52927.27) = 1.18, p > .05].

Analyses of Simple Effects

Planned contrasts were used to test if the group mean differences in risk perceptions and help-seeking intentions confirmed the MANOVA results in support of H1a and H2b. The happy-mood and no-mood-manipulation conditions were combined.

Risk perceptions. Table 4-10 summarizes the group means and standard deviations of risk perceptions when the happy-mood and no-mood-manipulation conditions were combined. Levene’s test showed that variances were equivalent across groups [F(8, 260) = .68, p > .05]. When opportunity was high and the induced mood state was sadness, participants who received the high-diagnosticity information reported higher mean risk perception than those who received the low-opportunity information [t(260) = 3.03, p < .01, M_{sad-mood&high-diagnosticity} = 1.72, SD = 2.46, M_{sad-mood&low-diagnosticity} = -.48, SD = 2.77]. This supported the prediction made in H2a that exposure to the low-diagnosticity information would significantly reduce risk perceptions among participants in the sad-mood condition.
In contrast, the mean difference in risk perception between the high and low-diagnosticity conditions was insignificant among participants in the combined-mood condition \[ t(260) = -.45, p > .05, M_{\text{combined-mood\&high-diagnosticity}} = -1.17, SD = 2.26, M_{\text{combined-mood\&low-diagnosticity}} = -.93, SD = 2.16 \]. This supported the prediction made in H2a that exposure to the low-diagnosticity information would not significantly reduce risk perceptions among happy-mood participants. As a result, the mean difference in risk perception between sad-mood participants and combined-mood participants was significant when perceived diagnosticity was high \[ t(260) = 4.76, p < .01, M_{\text{sad-mood\&high-diagnosticity}} = 1.72, SD = 2.46, M_{\text{combined-mood\&high-diagnosticity}} = -1.17, SD = 2.26 \], but insignificant when diagnosticity was low \[ t(260) = .69, p > .05, M_{\text{sad-mood\&low-diagnosticity}} = -.48, SD = 2.77, M_{\text{combined-mood\&low-diagnosticity}} = -.93, SD = 2.16 \].

**Help-seeking intentions.** Similar results were observed for help-seeking intentions (Table 4-10). When opportunity was high and sadness was induced, participants who received the high-diagnosticity information reported stronger help-seeking intentions than those assigned to the low-diagnosticity information \[ t(35.63) = 3.46, p < .01, M_{\text{sad-mood\&high-diagnosticity}} = 3.35, SD = .85, M_{\text{sad-mood\&low-diagnosticity}} = 2.39, SD = .97 \]. The mean difference between the high and low-diagnosticity conditions became insignificant among participants in the combined-mood condition \[ t(76.34) = .40, p > .05, M_{\text{combined\&high-diagnosticity}} = 2.38, SD = .98, M_{\text{combined\&low-diagnosticity}} = 2.30, SD = .87 \].

These results supported the prediction that the effects of perceived diagnosticity on help-seeking intentions would be stronger among participants in the sad-mood condition than among those in the combined-mood condition. As a result, the mean difference in intentions between participants in the sad-mood condition and the combined-mood condition was significant when perceived diagnosticity was high \[ t(58.73) = 4.2, p < .01, M_{\text{sad-mood\&high-diagnosticity}} = 3.35, SD = .85 \].
combined-mood&high-diagnosticity = 2.38, SD = .98], but insignificant when diagnosticity was low
\[t(31.75) = .32, p > .05, M_{\text{sad-mood&low-diagnosticity}} = 2.39, SD = .97, M_{\text{combined-mood&low-diagnosticity}} = 2.30, SD = .87\]. This further supported H2b. Therefore, planned contrasts strongly supported H2a and H2b.

**Simple effects when the happy-mood and no-mood-manipulation conditions were not combined.** Table 4-11 and 4-12 summarize the group means and standard deviations of risk perceptions and help-seeking intentions when the happy-mood and no-mood-manipulation conditions were separate. Levene’s test showed that variances were equivalent across groups for risk perception \[F(12, 256) = .50, p > .05\] and help-seeking intentions \[F(12, 256) = 1.54, p > .05\].

The mean difference in risk perceptions between the happy-mood and no-mood-manipulation participants was not significant whether diagnosticity was high \[t(256) = 1.15, p > .05, M_{\text{happy-mood&high-diagnosticity}} = -.74, SD = 2.45, M_{\text{no-mood-manipulation&high-diagnosticity}} = -1.62, SD = 2.00\] or low \[t(256) = -.30, p > .05, M_{\text{happy-mood&low-diagnosticity}} = -1.04, SD = 2.20, M_{\text{no-mood-manipulation&low-diagnosticity}} = -.82, SD = 2.18\]. Similarly, the happy-mood and no-mood-manipulation conditions did not lead to a significant mean difference in help-seeking intentions whether diagnosticity was high \[t(36.05) = .32, p > .05, M_{\text{happy-mood&high-diagnosticity}} = 2.43, SD = 1.09, M_{\text{no-mood-manipulation&high-diagnosticity}} = 2.33, SD = .87\] or low \[t(39.74) = -.23, p > .05, M_{\text{happy-mood&low-diagnosticity}} = 2.27, SD = .85, M_{\text{no-mood-manipulation&low-diagnosticity}} = 2.33, SD = .92\]. The results supported the expectation that the two mood conditions would not lead to significant mean differences in risk perceptions and help-seeking intentions.

**Summary of the Tests of H2a and H2b**

The MANOVA results supported H2a and H2b, because the mood state × perceived diagnosticity interaction was significant for the linear combination of risk perceptions and help-
seeking intentions [Wilks $\Lambda = .92, F(2,121) = 5.50, p < .01, \eta_p^2 = .083$]. The effects of diagnosticity on risk perceptions and help-seeking intentions were stronger under the sad-mood condition than under the combined-mood condition (Figure 4-3 and 4-4). The result of mixed MANOVA revealed that the mood $\times$ diagnosticity interaction equally affected risk perceptions and help-seeking intentions [Wilks $\Lambda = 1.00, F(1, 122) = .03, p > .05, \eta_p^2 = .000$].

Analyses of simple effects also revealed that when the induced mood was sadness, exposure to the low-diagnosticity information significantly reduced risk perceptions [$t(260) = 3.03, p < .01, M_{sad-mood\&high-diagnosticity} = 1.72, SD = 2.46, M_{sad-mood\&low-diagnosticity} = -.48, SD = 2.77$] and help-seeking intentions [$t(35.63) = 3.46, p < .01, M_{sad-mood\&high-diagnosticity} = 3.35, SD = .85, M_{sad-mood\&low-diagnosticity} = 2.39, SD = .97$]. In contrast, under the combined-mood condition, exposure to the low-diagnosticity information did not significantly lower risk perceptions [$t(260) = -.45, p > .05, M_{combined-mood\&high-diagnosticity} = -1.17, SD = 2.26, M_{combined-mood\&low-diagnosticity} = -.93, SD = 2.16$] or help-seeking intentions [$t(76.34) = .40, p > .05, M_{combined-mood\&high-diagnosticity} = 2.38, SD = .98, M_{combined-mood\&low-diagnosticity} = 2.30, SD = .87$]. The results of MANOVA and analyses of simple effects strongly supported H2a and H2b.

Testing Hypotheses 3a and 3b

H3a and H3b predicted that risk perceptions would mediate the effects of mood on help-seeking intentions. When opportunity was low, H3a predicted that risk perceptions would mediate the main effects of mood state on help-seeking intentions. When opportunity was high, H3b predicted that risk perceptions would mediate the effects of the mood $\times$ diagnosticity interaction on help-seeking intentions.

Baron and Kenny (1986) suggested that to conclude significant mediation effects occurred, one needs to confirm the following four requirements: requirement (a), the predictor is
significantly related to the outcome; requirement (b), the predictor is significantly related to the mediator; requirement (c), the mediator is significantly related to the outcome after the predictor is controlled; and requirement (d), after the mediator is controlled, the predictor should be significantly less related to the outcome than before the mediator is controlled.

**Test of H3a**

Hypothesis H3a predicted that when opportunity was low, the perceived future risk of depression would mediate the effects of mood state on help-seeking intentions. The hypothesis conceptualized manipulated mood as the predictor, help-seeking intentions as the outcome, and the perceived future risk of depression as the mediator. To test H3a, three regression models were built, as suggested by Baron and Kenny (1986). Similar to the multivariate tests of H1a and H1b, the regression analyses included participants under the low-opportunity condition, because H3a predicted the mediating role of risk perceptions under the low-opportunity condition. Also similar to the previous analyses, the happy-mood and no-mood-manipulation conditions were combined.

Figure 4-5 summarizes the results of the four-step mediation analysis. In the first regression model, help-seeking intentions were regressed on mood state. The coefficient for mood state was negative, suggesting that participants in the combined-mood condition tended to report lower help-seeking intentions. However, the relationship was not statistically significant ($B = -0.29, p > .05$). Therefore, Requirement (a) was not satisfied. In the second regression model, perceived future risk of depression was regressed on mood state. The coefficient for mood state was significant ($B = -1.51, p < .01$), revealing that sad moods resulted in higher risk perceptions. Therefore, Requirement (b) was satisfied.

In the third regression model, help-seeking intentions were regressed on risk perceptions. Mood state was entered as a control variable. Risk perceptions were significantly related with
intentions \((B = .18, p < .01)\). Therefore, Requirement (c) was satisfied. To test Requirement (d), the coefficient for mood state in the first regression model \((B = -.29, p > .05)\) was compared with the coefficient in the third model \((B = -.02, p > .05)\). The comparison revealed that the size of mood state’s relationship with help-seeking intentions dropped as risk perception was controlled. Sobel’s (1982) test, a method of testing the indirect effects of an independent variable on the dependent variable, showed that the drop was statistically significant \((Z = 2.90, p < .01)\). Although Requirements (b), (c), and (d) were satisfied, the rejection of Requirement (a) suggested there were no significant effects of mood state on help-seeking intentions to be mediated. Therefore, the four-step analysis failed to support H3a.

Test of H3b

Figure 4-6 summarizes the results of the four-step mediation analysis conducted to test H3b. Hypothesis 3b conceptualized the mood state \(\times\) perceived diagnosticity interaction as the predictor, help-seeking intentions as the outcome variable, and the perceived future risk of depression as the mediator. To test H3a, three regression models were built. Similar to the multivariate and univariate tests of H2a and H2b, only responses made under the high-opportunity condition were included in the analyses.

In the first regression model, help-seeking intentions were regressed on mood, diagnosticity, and the mood \(\times\) diagnosticity interaction. The interaction was significantly correlated with intentions \((B = -.88, p < .05)\), satisfying Requirement (a). In the second regression model, risk perceptions were regressed on mood, diagnosticity, and the mood \(\times\) diagnosticity interaction. The coefficient for the interaction term was significant \((B = -2.43, p < .01)\), satisfying Requirement (b).

In the third model, help-seeking intentions were regressed on risk perceptions, entering mood state, perceived diagnosticity, and the mood state \(\times\) perceived diagnosticity interaction as
control variables. The coefficient for risk perception was significant ($B = .11$, $p < .01$).

Therefore, Requirement (e) was satisfied. To test Requirement (d), the coefficient for the mood $\times$ diagnosticity interaction in the first regression model ($B = -.88$, $p < .05$) was compared with the coefficient in the third model ($B = -.62$, $p > .05$). The comparison showed that the interaction effects on help-seeking intentions were reduced as risk perceptions were controlled. Sobel’s test showed that the reduction was statistically significant ($Z = 16.49$, $p < .01$).

The four requirements for establishing mediation effects were all confirmed. Therefore, H3b was supported. In addition, because the predictor’s (e.g., mood state) relationship with the outcome (e.g., help-seeking intentions) became statistically insignificant after controlling the mediator (e.g., risk perceptions), it was concluded that a complete, rather than partial, mediation occurred.

**Additional Data Analyses**

Hypotheses 1a through 2b implied that the interaction of mood state and perceived diagnosticity would significantly affect perceived future risk of depression and help-seeking intentions to discuss depression when opportunity was high (H2a and H2b), whereas the interaction effects would be reduced and become insignificant when opportunity was low. The four hypotheses were supported by the MANOVA results, and received moderate support from analyses of simple effects. These results indicated that mood, diagnosticity, and opportunity would have three-way interaction effects on risk perceptions and help-seeking intentions.

**MANOVA results.** To test the three-way interaction, risk perceptions and help-seeking intentions were submitted to a 2 (mood state: sad versus combined mood) $\times$ 2 (diagnosticity: high versus low) $\times$ 2 (opportunity: high versus low) MANOVA. Again, the happy-mood and no-mood-manipulation conditions were combined, as the two mood conditions did not lead to significantly different mood states. This analysis included all experimental groups, except for the
non-factorial control group that did not receive any manipulation. The assumption of homogeneous variance-covariance matrices was satisfied [Box’s $M = 30.66, F(21, 89626.61) = 1.42, p > .05$].

Table 4-15 summarizes the multivariate results. The three-way interaction did not have significant effects on the linear combination of risk perceptions and help-seeking intentions [Wilks $\Lambda = .99, F(2, 241) = 1.31, p > .05, \eta_p^2 = .011$]. This implied that even though the effects of the mood state $\times$ perceived diagnosticity were statistically significant when opportunity was high and insignificant when opportunity was low, the reduction of the interaction effects was not statistically significant.

**ANOVA results.** Follow-up ANOVAs were conducted to check if the three-way interaction of mood, diagnosticity, and opportunity significantly affected risk perceptions and help-seeking intentions respectively. Levene’s test revealed that variances were homogeneous for risk perceptions [$F(7, 242) = .27, p > .05$] and help-seeking intentions [$F(7, 242) = 1.61, p > .05$]. Table 4-16 summarizes the ANOVA results. The univariate results revealed that the three-way interaction did not have significant effects on risk perceptions [$F(1, 242) = 1.85, p > .05, \eta_p^2 = .008$] or help-seeking intentions [$F(1, 242) = 1.73, p > .05, \eta_p^2 = .007$]. The ANOVA results confirmed that multivariate results, suggesting that opportunity did not significantly determine the effects of the mood state $\times$ perceived diagnosticity interaction.

**Comparison with the non-factorial group.** Analyses of simple effects revealed that exposure to an antidepressant ad could lead to higher risk perceptions. For example, when opportunity was high, the group that received a sadness-inducing procedure and the high-diagnosticity information reported higher risk perceptions than the non-factorial control group [$t(256) = 3.64, p < .01, M_{sad-mood\&high-diagnosticity\&high-opportunity} = 1.72, SD = 2.46, M_{control} = -.93, SD$]
= 3.00], defined as the participants who received no manipulations but completed dependent measures. In contrast, the mean risk perception of sad-mood participants who received the low-diagnosticity information were not significantly higher than that of the non-factorial control group \([t(256) = .58, p > .05, M_{\text{sad-mood&low-diagnosticity&high-opportunity}} = -.48, \text{SD} = 2.77, M_{\text{control}} = -.93, \text{SD} = 3.00}\].

When opportunity was low, sad-mood participants reported higher risk perceptions than the non-factorial control group, whether diagnosticity was high \([t(256) = 3.72, p < .01, M_{\text{sad-mood&high-diagnosticity&low-opportunity}} = 1.89, \text{SD} = 2.35, M_{\text{control}} = -.93, \text{SD} = 3.00]\) or low \([t(256) = 2.70, p < .01, M_{\text{sad-mood&low-diagnosticity&low-opportunity}} = 1.15, \text{SD} = 2.35, M_{\text{control}} = -.93, \text{SD} = 3.00}\].

Therefore, exposure to DTC advertising may result in the market expansion of a drug class by presenting information on the symptoms of a disease without a guideline about how such information should be interpreted. Given the powerful effects of sad moods in increasing risk perception, one may argue that the market expansion of a drug category could also occur because drug advertising campaigns effectively put consumers into negative mood states and induce high risk perceptions of diseases.

**Comparison of males and females.** It was noticeable that male and female participants did not differ in their risk perceptions \([F(1,267) = .73, p > .05, M_{\text{male}} = -.20, \text{SD} = 2.71, M_{\text{female}} = .10, \text{SD} = 2.52]\] and help-seeking intentions \([F(1,267) = .46, p > .05, M_{\text{male}} = 2.56, \text{SD} = 1.00, M_{\text{female}} = 2.65, \text{SD} = 1.01]\], replicating the findings of Park and Grow (2008). Epidemiological studies show that the lifetime risk of depression is approximately 13 percent for men and 20 to 25 percent for women (Kessler et al., 1993, 1994; NCS, 2003). Therefore, it was possible that the male participants overrated their future risk of depression or the female participants underrated their risk.
Summary of the Results

This chapter reported the results of the study described in Chapter 3. The study was designed to explore how consumer mood state and perceived diagnosticity, defined as the degree that consumers perceived a list of discomfrting life events to be indicative of clinical depression, affect the perceived future risk of depression and intentions to seek professional help to discuss depression. Opportunity, defined as how much constraint consumers had in estimating risk perceptions and help-seeking intentions, was conceptualized as a factor that determines how mood state and diagnosticity affect the two dependent variables.

In particular, when consumers had low opportunity for risk and intention estimation, it was predicted that sad moods would lead to higher risk perceptions (H1a) and stronger help-seeking intentions (H1b), whether perceived diagnosticity was low or high. The MANOVA results supported H1a and H1b, showing when opportunity was low, mood state was the only factor that significantly affected risk perceptions and intentions. However, the two hypotheses received weak support from planned contrasts, because, when opportunity and diagnosticity were both low, sad moods did not lead to higher risk perceptions. Further, when opportunity was low, sad moods did not result in stronger help-seeking intentions than happy-moods.

When consumers had high opportunity for risk and intention estimation, it was hypothesized that exposure to the diagnosticity-reducing information would reduce risk perceptions (H2a) and help-seeking intentions (H2b) significantly more among sad-mood participants than among happy-mood participants. The MANOVA results strongly supported H2a and H2b. The two hypotheses also received strong support from analyses of simple effects. When opportunity was high, exposure to the low-diagnosticity information significantly reduced risk perceptions and help-seeking intentions among sadness-induced participants, whereas the
exposure did not have significant effects among those in the happy-mood and no-mood-manipulation conditions.

Further, risk perceptions were conceptualized as a mediator of the effects of mood state and perceived diagnosticity on help-seeking intentions. Therefore, when opportunity was low, risk perceptions were hypothesized to mediate the main effects of mood state on help-seeking intentions (H3a). Application of Baron and Kenny (1986)’s four-step analysis of mediation failed to support this hypothesis, because mood state did not significantly affect help-seeking intentions and therefore there were no main effects to be mediated.

When high opportunity was given, risk perceptions were hypothesized to mediate the effects of the mood × diagnosticity interaction on help-seeking intentions (H3b). This hypothesis was supported. Risk perceptions completely mediated the effects of the mood × diagnosticity interaction on intentions, because, after risk perceptions were controlled, the interaction was no longer significantly related with help-seeking intention.
Table 4-1. One-way ANOVA results for the mood manipulation check

<table>
<thead>
<tr>
<th></th>
<th>Sad-mood</th>
<th>Happy-mood</th>
<th>No-manipulation</th>
<th>(F)</th>
<th>df1</th>
<th>df2</th>
<th>(p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Gloomy - joyful</td>
<td>3.25</td>
<td>1.41</td>
<td>4.98</td>
<td>1.22</td>
<td>4.89</td>
<td>1.17</td>
<td>49.45</td>
</tr>
<tr>
<td>(b) Sad - happy</td>
<td>3.28</td>
<td>1.58</td>
<td>5.09</td>
<td>1.20</td>
<td>5.01</td>
<td>1.29</td>
<td>47.46</td>
</tr>
<tr>
<td>(c) Upset - elated</td>
<td>3.32</td>
<td>1.27</td>
<td>4.81</td>
<td>1.11</td>
<td>4.61</td>
<td>1.03</td>
<td>42.26</td>
</tr>
<tr>
<td>Average ((\alpha = .95))</td>
<td>3.28</td>
<td>1.35</td>
<td>4.96</td>
<td>1.01</td>
<td>4.84</td>
<td>1.08</td>
<td>52.62</td>
</tr>
</tbody>
</table>

For each item, a 7-point scale was used (1 = gloomy, sad, upset, 7 = joyful, happy, elated).

Table 4-2. Full-factorial ANOVA results for the mood manipulation check

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>(F)</th>
<th>df1</th>
<th>df2</th>
<th>(p)</th>
<th>(\eta_p^2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mood</td>
<td>101.16</td>
<td>1</td>
<td>242</td>
<td>.00</td>
<td>.295</td>
</tr>
<tr>
<td>Diagnosticity</td>
<td>.55</td>
<td>1</td>
<td>242</td>
<td>.46</td>
<td>.002</td>
</tr>
<tr>
<td>Opportunity</td>
<td>.55</td>
<td>1</td>
<td>242</td>
<td>.46</td>
<td>.002</td>
</tr>
<tr>
<td>Mood (\times) diagnosticity</td>
<td>.00</td>
<td>1</td>
<td>242</td>
<td>.96</td>
<td>.000</td>
</tr>
<tr>
<td>Mood (\times) opportunity</td>
<td>.00</td>
<td>1</td>
<td>242</td>
<td>.99</td>
<td>.000</td>
</tr>
<tr>
<td>Diagnosticity (\times) opportunity</td>
<td>.96</td>
<td>1</td>
<td>242</td>
<td>.33</td>
<td>.004</td>
</tr>
<tr>
<td>Mood (\times) diagnosticity (\times) opportunity</td>
<td>.28</td>
<td>1</td>
<td>242</td>
<td>.60</td>
<td>.001</td>
</tr>
</tbody>
</table>

Table 4-3. One-way ANOVA results for the diagnosticity manipulation check

<table>
<thead>
<tr>
<th></th>
<th>Low-diagnosticity</th>
<th>High-diagnosticity</th>
<th>(F)</th>
<th>df1</th>
<th>df2</th>
<th>(p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low energy</td>
<td>2.77</td>
<td>1.75</td>
<td>2.97</td>
<td>1.66</td>
<td>.85</td>
<td>1</td>
</tr>
<tr>
<td>Depressed</td>
<td>2.58</td>
<td>1.57</td>
<td>3.16</td>
<td>1.74</td>
<td>7.47</td>
<td>1</td>
</tr>
<tr>
<td>Sleep problems</td>
<td>2.91</td>
<td>1.93</td>
<td>3.59</td>
<td>2.06</td>
<td>7.31</td>
<td>1</td>
</tr>
<tr>
<td>Difficulty making decisions</td>
<td>2.88</td>
<td>1.72</td>
<td>3.53</td>
<td>1.90</td>
<td>7.98</td>
<td>1</td>
</tr>
<tr>
<td>Average ((\alpha = .88))</td>
<td>2.79</td>
<td>1.52</td>
<td>3.31</td>
<td>1.55</td>
<td>1</td>
<td>248</td>
</tr>
</tbody>
</table>

For each item, a 7-point scale was used to report the likelihood that the symptom indicated clinical depression (1 = not at likely, 7 = very likely).

Table 4-4. Full-factorial ANOVA results for the diagnosticity manipulation check

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>(F)</th>
<th>df1</th>
<th>df2</th>
<th>(p)</th>
<th>(\eta_p^2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mood</td>
<td>.14</td>
<td>1</td>
<td>242</td>
<td>.81</td>
<td>.000</td>
</tr>
<tr>
<td>Diagnosticity</td>
<td>16.35</td>
<td>1</td>
<td>242</td>
<td>.01</td>
<td>.028</td>
</tr>
<tr>
<td>Opportunity</td>
<td>2.28</td>
<td>1</td>
<td>242</td>
<td>.33</td>
<td>.004</td>
</tr>
<tr>
<td>Mood (\times) diagnosticity</td>
<td>.10</td>
<td>1</td>
<td>242</td>
<td>.84</td>
<td>.000</td>
</tr>
<tr>
<td>Mood (\times) opportunity</td>
<td>.27</td>
<td>1</td>
<td>242</td>
<td>.74</td>
<td>.000</td>
</tr>
<tr>
<td>Diagnosticity (\times) opportunity</td>
<td>1.02</td>
<td>1</td>
<td>242</td>
<td>.51</td>
<td>.002</td>
</tr>
<tr>
<td>Mood (\times) diagnosticity (\times) opportunity</td>
<td>1.22</td>
<td>1</td>
<td>242</td>
<td>.48</td>
<td>.002</td>
</tr>
</tbody>
</table>
Table 4-5. One-way ANOVA results for the opportunity manipulation check

<table>
<thead>
<tr>
<th></th>
<th>Low-opportunity</th>
<th>High-opportunity</th>
<th>F</th>
<th>df1</th>
<th>df2</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time: risk 1</td>
<td>14.75</td>
<td>4.55</td>
<td>22.73</td>
<td>10.77</td>
<td>57.84</td>
<td>1</td>
</tr>
<tr>
<td>Time: risk 2</td>
<td>9.86</td>
<td>4.28</td>
<td>12.82</td>
<td>4.82</td>
<td>26.24</td>
<td>1</td>
</tr>
<tr>
<td>Time: risk 3</td>
<td>8.28</td>
<td>3.61</td>
<td>10.65</td>
<td>5.25</td>
<td>17.23</td>
<td>1</td>
</tr>
<tr>
<td>Time: intention 1</td>
<td>9.50</td>
<td>3.54</td>
<td>10.97</td>
<td>3.80</td>
<td>9.89</td>
<td>1</td>
</tr>
<tr>
<td>Time: intention 2</td>
<td>7.35</td>
<td>2.61</td>
<td>8.44</td>
<td>4.27</td>
<td>5.82</td>
<td>1</td>
</tr>
<tr>
<td>Time: intention 3</td>
<td>7.43</td>
<td>3.55</td>
<td>7.41</td>
<td>4.22</td>
<td>.001</td>
<td>1</td>
</tr>
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</table>

Table 4-6. Correlations among variables

<table>
<thead>
<tr>
<th></th>
<th>Age</th>
<th>Gender</th>
<th>Vicarious experience</th>
<th>Risk perception</th>
<th>Help-seeking Intention</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>r</td>
<td>p</td>
<td>r</td>
<td>p</td>
<td></td>
</tr>
<tr>
<td>Age</td>
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<td></td>
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<td></td>
</tr>
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<td>Gender</td>
<td>-.26</td>
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</tr>
<tr>
<td>Vicarious experience</td>
<td>.04</td>
<td>.54</td>
<td>.08</td>
<td>.22</td>
<td></td>
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<td>.05</td>
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<td>.05</td>
<td>.39</td>
<td>.00</td>
</tr>
<tr>
<td>Help-seeking intention</td>
<td>.04</td>
<td>.53</td>
<td>.04</td>
<td>.50</td>
<td>.00</td>
</tr>
</tbody>
</table>

Table 4-7. MANOVA results for risk perception and help-seeking intention when opportunity was low

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>Wilks Lambda</th>
<th>F</th>
<th>H df</th>
<th>Error df</th>
<th>p</th>
<th>ηp²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mood</td>
<td>.91</td>
<td>5.59</td>
<td>2</td>
<td>119</td>
<td>.01</td>
<td>.086</td>
</tr>
<tr>
<td>Diagnosticity</td>
<td>.99</td>
<td>.35</td>
<td>2</td>
<td>119</td>
<td>.71</td>
<td>.006</td>
</tr>
<tr>
<td>Mood × diagnosticity</td>
<td>.99</td>
<td>.37</td>
<td>2</td>
<td>119</td>
<td>.69</td>
<td>.006</td>
</tr>
</tbody>
</table>

Table 4-8. Mixed MANOVA results for risk perception and help-seeking intention when opportunity was low

<table>
<thead>
<tr>
<th>Effect</th>
<th>Wilks Lambda</th>
<th>F</th>
<th>H df</th>
<th>Error df</th>
<th>p</th>
<th>ηp²</th>
</tr>
</thead>
<tbody>
<tr>
<td>ws</td>
<td>.96</td>
<td>5.25</td>
<td>1</td>
<td>120</td>
<td>.02</td>
<td>.042</td>
</tr>
<tr>
<td>ws × mood</td>
<td>.98</td>
<td>2.51</td>
<td>1</td>
<td>120</td>
<td>.12</td>
<td>.020</td>
</tr>
<tr>
<td>ws × diagnosticity</td>
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<td>.06</td>
<td>1</td>
<td>120</td>
<td>.81</td>
<td>.000</td>
</tr>
<tr>
<td>ws × mood × diagnosticity</td>
<td>1.00</td>
<td>.03</td>
<td>1</td>
<td>120</td>
<td>.86</td>
<td>.000</td>
</tr>
</tbody>
</table>

ws is a within-subjects factor including risk perception and help-seeking intention.
Table 4-9. Group means and standard deviations for risk perception when happy-mood and no-mood manipulation conditions were combined

<table>
<thead>
<tr>
<th></th>
<th>Sad</th>
<th>Combined-mood</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low-diagnosticity</td>
<td>High-diagnosticity</td>
</tr>
<tr>
<td>Low-opportunity</td>
<td>n = 20</td>
<td>n = 22</td>
</tr>
<tr>
<td></td>
<td>M = 1.15</td>
<td>M = 1.88</td>
</tr>
<tr>
<td></td>
<td>SD = 2.34</td>
<td>SD = 2.35</td>
</tr>
<tr>
<td>High-opportunity</td>
<td>n = 19</td>
<td>n = 26</td>
</tr>
<tr>
<td></td>
<td>M = -.48</td>
<td>M = 1.72</td>
</tr>
<tr>
<td></td>
<td>SD = 2.77</td>
<td>SD = 2.46</td>
</tr>
</tbody>
</table>

Table 4-10. Group means and standard deviations for help-seeking intention when happy-mood and no-mood manipulation conditions were combined

<table>
<thead>
<tr>
<th></th>
<th>Sad</th>
<th>Combined-mood</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low-diagnosticity</td>
<td>High-diagnosticity</td>
</tr>
<tr>
<td>Low-opportunity</td>
<td>n = 20</td>
<td>n = 22</td>
</tr>
<tr>
<td></td>
<td>M = 2.75</td>
<td>M = 2.95</td>
</tr>
<tr>
<td></td>
<td>SD = .94</td>
<td>SD = 1.24</td>
</tr>
<tr>
<td>High-opportunity</td>
<td>n = 19</td>
<td>n = 26</td>
</tr>
<tr>
<td></td>
<td>M = 2.39</td>
<td>M = 3.35</td>
</tr>
<tr>
<td></td>
<td>SD = .97</td>
<td>SD = .85</td>
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</table>

Table 4-11. Group means and standard deviations for risk perception when happy-mood and no-mood manipulation conditions were not combined

<table>
<thead>
<tr>
<th></th>
<th>Sad</th>
<th>Happy</th>
<th>No manipulation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low-diagnosticity</td>
<td>High-diagnosticity</td>
<td>Low-diagnosticity</td>
</tr>
<tr>
<td>Low-opportunity</td>
<td>n = 20</td>
<td>n = 22</td>
<td>n = 19</td>
</tr>
<tr>
<td></td>
<td>M = 1.15</td>
<td>M = 1.88</td>
<td>M = -.02</td>
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<tr>
<td></td>
<td>SD = 2.34</td>
<td>SD = 2.35</td>
<td>SD = 2.12</td>
</tr>
<tr>
<td>High-opportunity</td>
<td>n = 19</td>
<td>n = 26</td>
<td>n = 21</td>
</tr>
<tr>
<td></td>
<td>M = -.48</td>
<td>M = 1.72</td>
<td>M = -1.04</td>
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<tr>
<td></td>
<td>SD = 2.77</td>
<td>SD = 2.46</td>
<td>SD = 2.20</td>
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</table>
### Table 4-12. Group means and standard deviations for help-seeking intention when happy-mood and no-mood manipulation conditions were not combined

<table>
<thead>
<tr>
<th></th>
<th>Sad</th>
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<th>Happy</th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low DIAG</td>
<td>High DIAG</td>
<td>Low DIAG</td>
<td>High DIAG</td>
<td>Low DIAG</td>
<td>High DIAG</td>
</tr>
<tr>
<td>Low-opportunity</td>
<td>n = 20</td>
<td>n = 22</td>
<td>n = 19</td>
<td>n = 20</td>
<td>n = 18</td>
<td>n = 25</td>
</tr>
<tr>
<td>M</td>
<td>2.75</td>
<td>2.95</td>
<td>2.63</td>
<td>2.53</td>
<td>2.52</td>
<td>2.59</td>
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<tr>
<td>SD</td>
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<td>1.24</td>
<td>.93</td>
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<td>.63</td>
</tr>
<tr>
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<td>n = 26</td>
<td>n = 21</td>
<td>n = 20</td>
<td>n = 21</td>
<td>n = 19</td>
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<td>2.27</td>
<td>2.43</td>
<td>2.33</td>
<td>2.33</td>
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<td>.85</td>
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</table>

### Table 4-13. MANOVA results for risk perception and help-seeking intention when opportunity was high

<table>
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<th>Wilks Lambda</th>
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<th>H df</th>
<th>Error df</th>
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<th>η²</th>
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<td>.000</td>
<td>.133</td>
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<td>Diagnosticity</td>
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<td>5.59</td>
<td>2</td>
<td>121</td>
<td>.000</td>
<td>.085</td>
</tr>
<tr>
<td>Mood × Diagnosticity</td>
<td>.92</td>
<td>5.50</td>
<td>2</td>
<td>121</td>
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<td>.083</td>
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### Table 4-14. Mixed MANOVA results for risk perception and help-seeking intention when opportunity was high

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<th>H df</th>
<th>Error df</th>
<th>p</th>
<th>η²</th>
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</thead>
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<td>ws</td>
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<td>.003</td>
</tr>
<tr>
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<td>.39</td>
<td>1</td>
<td>122</td>
<td>.54</td>
<td>.003</td>
</tr>
<tr>
<td>ws × Diagnosticity</td>
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<td>.47</td>
<td>1</td>
<td>122</td>
<td>.50</td>
<td>.004</td>
</tr>
<tr>
<td>ws × Mood × Diagnosticity</td>
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<td>.03</td>
<td>1</td>
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<td>.000</td>
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</table>

ws is a within-subjects factor including risk perception and help-seeking intention.

### Table 4-15. MANOVA results for risk perception and help-seeking intention: All cases included

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>Wilks Lambda</th>
<th>F</th>
<th>H df</th>
<th>Error df</th>
<th>p</th>
<th>η²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mood</td>
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<td>13.82</td>
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<td>241</td>
<td>.00</td>
<td>.103</td>
</tr>
<tr>
<td>Diagnosticity</td>
<td>.97</td>
<td>3.92</td>
<td>2</td>
<td>241</td>
<td>.02</td>
<td>.032</td>
</tr>
<tr>
<td>Opportunity</td>
<td>.96</td>
<td>5.00</td>
<td>2</td>
<td>241</td>
<td>.01</td>
<td>.040</td>
</tr>
<tr>
<td>Mood × diagnosticity</td>
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<td>4.12</td>
<td>2</td>
<td>241</td>
<td>.02</td>
<td>.033</td>
</tr>
<tr>
<td>Mood × opportunity</td>
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<td>.46</td>
<td>2</td>
<td>241</td>
<td>.63</td>
<td>.004</td>
</tr>
<tr>
<td>Diagnosticity × opportunity</td>
<td>.99</td>
<td>1.52</td>
<td>2</td>
<td>241</td>
<td>.22</td>
<td>.012</td>
</tr>
<tr>
<td>Mood × diagnosticity × opportunity</td>
<td>.99</td>
<td>1.31</td>
<td>2</td>
<td>241</td>
<td>.27</td>
<td>.011</td>
</tr>
</tbody>
</table>
Table 4-16. ANOVA results for risk perception and help-seeking intention: All cases included

<table>
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<th>Dependent variable</th>
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<th>df2</th>
<th>$p$</th>
<th>$\eta_p^2$</th>
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</thead>
<tbody>
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<td>242</td>
<td>.00</td>
<td>.095</td>
</tr>
<tr>
<td></td>
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<td>1</td>
<td>242</td>
<td>.00</td>
<td>.041</td>
</tr>
<tr>
<td>Diagnosticity</td>
<td>Risk perception</td>
<td>4.56</td>
<td>1</td>
<td>242</td>
<td>.03</td>
<td>.018</td>
</tr>
<tr>
<td></td>
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<td>1</td>
<td>242</td>
<td>.01</td>
<td>.024</td>
</tr>
<tr>
<td>Opportunity</td>
<td>Risk perception</td>
<td>9.94</td>
<td>1</td>
<td>242</td>
<td>.00</td>
<td>.039</td>
</tr>
<tr>
<td></td>
<td>Help-seeking intention</td>
<td>.72</td>
<td>1</td>
<td>242</td>
<td>.40</td>
<td>.003</td>
</tr>
<tr>
<td>Mood × diagnosticity</td>
<td>Risk perception</td>
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<td>1</td>
<td>242</td>
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<td>.026</td>
</tr>
<tr>
<td></td>
<td>Help-seeking intention</td>
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<td>1</td>
<td>242</td>
<td>.03</td>
<td>.019</td>
</tr>
<tr>
<td>Mood × opportunity</td>
<td>Risk perception</td>
<td>.08</td>
<td>1</td>
<td>242</td>
<td>.77</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>Help-seeking intention</td>
<td>.92</td>
<td>1</td>
<td>242</td>
<td>.34</td>
<td>.004</td>
</tr>
<tr>
<td>Diagnosticity × opportunity</td>
<td>Risk perception</td>
<td>.96</td>
<td>1</td>
<td>242</td>
<td>.33</td>
<td>.004</td>
</tr>
<tr>
<td></td>
<td>Help-seeking intention</td>
<td>2.90</td>
<td>1</td>
<td>242</td>
<td>.09</td>
<td>.012</td>
</tr>
<tr>
<td>Mood × diagnosticity × opportunity</td>
<td>Risk perception</td>
<td>1.85</td>
<td>1</td>
<td>242</td>
<td>.18</td>
<td>.008</td>
</tr>
<tr>
<td></td>
<td>Help-seeking intention</td>
<td>1.73</td>
<td>1</td>
<td>242</td>
<td>.19</td>
<td>.007</td>
</tr>
</tbody>
</table>
Figure 4-1. Observed ANOVA results for risk perception when opportunity was low

Figure 4-2. Observed ANOVA results for help-seeking intention when opportunity was low
Figure 4-3. Observed ANOVA results for risk perception when opportunity was high

Figure 4-4. Observed ANOVA results for help-seeking intention when opportunity was high
Figure 4-5. Mediation analysis when opportunity was low. Note: *Coefficient when risk perception was not controlled **Coefficient when risk perception was controlled

Figure 4-6. Mediation analysis when opportunity was high. Note: *Coefficient when risk perception was not controlled **Coefficient when risk perception was controlled
CHAPTER 5
DISCUSSION

This chapter presents the theoretical and practical implications of the results of the study described in Chapter 4. First, a summary of the research findings is presented. Then the chapter proceeds to the findings’ implications for advertising theory and practice and consumer health. The chapter will conclude by presenting the limitations of the study and suggestions for future research.

Summary of Findings

While consumers’ perceived future risk of a disease and intentions to engagement in preventive and remedial actions are multiply determined, this study focused on how consumers process health information from a direct-to-consumer prescription drug advertisement and form perceptions of the future risk of depression and intentions to seek professional help to discuss depression. In particular, because moods influence consumers’ subjective experiences with negative health conditions (Croyle & Uretsky, 1987; Pettit, Kline, Gencoz & Gencoz, 2001; Salovey & Birnbaum, 1989), this study explored the possibility that consumers’ current moods might influence the way they process information from a drug advertisement and further determine their perceived future risk of a disease.

H1a and H1b

Hypotheses 1a and 1b predicted that when opportunity was low, sad-mood participants would report higher risk perceptions (H1a) and stronger help-seeking intentions (H1b) than happy-mood participants, regardless of the level of perceived diagnosticity. The MANOVA results supported H1a and H1b. When opportunity was low, mood state had significant main effects on risk perceptions and help-seeking intentions. Neither perceived diagnosticity nor the mood state × perceived diagnosticity interaction was significant. The mixed MANOVA results
indicated that mood state equally affected the two dependent variables. Analyses of simple effects supported H1a but failed to support H1b.

**H2a and H2b**

Hypotheses 2a and 2b posited that when opportunity was high, consumer mood state and perceived diagnosticity would have interactive effects on risk perceptions (H2a) and help-seeking intentions (H2b). Specifically, exposure to the low-diagnosticity information would reduce risk perceptions and help-seeking intentions significantly more when the induced mood was sadness, than when happiness was induced. The multivariate results supported these two hypotheses by showing that when opportunity was high, the mood \times diagnosticity interaction significantly affected the linear combination of risk perceptions and help-seeking intentions. Simple effects tests showed that risk perceptions and help-seeking intentions were lower in the low- versus high-diagnosticity conditions only for sad-mood participants. Diagnosticity was not a predictor of risk perceptions or intentions for happy-mood participants. Therefore, H2a and H2b were strongly supported.

**H3a and H3b**

H3a predicted that when opportunity was low, consumer mood state’s effects on help-seeking intentions would be mediated by risk perceptions. Baron and Kenny’s (1986) four-step mediation analysis was conducted, entering mood state as the predictor, risk perceptions as the mediator, and help-seeking intentions as the outcome variable.

The results failed to support H3a. Mood state, the hypothesized predictor, was significantly related with risk perceptions, the hypothesized mediator. Risk perceptions significantly predicted help-seeking intentions, the hypothesized outcome. Further, when intentions, the hypothesized outcome variable, were regressed on mood state, the coefficient for mood state significantly dropped when risk perception was controlled, compared to when risk perceptions were not
controlled. Although these requirements for mediation were satisfied, mood state was not significantly associated with intentions, suggesting there were no significant effects of the predictor to be mediated in the first place.

H3b posited that when opportunity was high, the interactive effects of mood state and perceived diagnosticity on help-seeking intentions would be mediated by risk perceptions. Baron and Kenny’s (1986) four-step analysis was conducted, entering the mood × diagnosticity interaction as the predictor, risk perceptions as the mediator, and help-seeking intentions as the outcome variable. The results strongly supported H3b, because the four requirements of mediation effects were all satisfied. In addition, risk perceptions completely mediated the mood × diagnosticity interaction’s effects on help-seeking intentions, because the interaction was no longer significantly related with intentions when risk perceptions were controlled.

Discussion of Findings

Advertising Theory

Despite a large body of research, the current literature on DTC advertising generally focuses on drug advertising’s impact on the way consumers seek health information and interact with doctors to get specific drugs, focusing on variables such as consumer awareness and attitudes regarding DTC advertising, visits to doctors’ offices, and requests for specific drugs. Exploring the role of advertising in constructing consumer perceptions of diseases is important, because consumer decisions about health behavior are based on how health issues are perceived. Despite its importance, this research area remains largely unexplored in the advertising literature.

This study was designed to contribute to the DTC advertising literature by illuminating the social cognitive effects of DTC advertising. The study revealed that exposure to drug advertising could influence consumer perceptions of the future risk of a disease, and the effects were stronger when consumers were in sad moods and the opportunity for risk estimation was limited.
This indicated that DTC advertising might influence the way consumers perceive the social reality of diseases.

Further, although much research exists on the “effects” of DTC advertising, the use of survey methodologies has limited scholars’ efforts to make causal inferences. For example, Bell et al. (1999) reported that exposure to DTC advertising was associated with visits to doctors’ offices and consumer insistence on the prescription of specific drugs, but they could not conclude DTC advertising caused consumers to seek professional help. In addition, the relationships reported in the literature are often not based on the application of theories, suggesting the observed relationships might have been spurious or occurred by chance.

The current study overcame these shortcomings by producing psychological accounts for why exposure to DTC advertising might lead consumers to visit doctors’ offices and under what circumstances such associations would likely be observed. Research on the effects of DTC advertising should make use of theories to better organize and expand knowledge, and stimulate and guide further research (Infante & Wormack, 1993).

In addition, the extant literature on DTC advertising often does not reveal how consumers actually process information, and how content elements may account for the cognitive and attitudinal effects of a drug advertising campaign. Due to this neglect, the literature does not produce insights for drug advertising practitioners. The current study addressed this limitation. For example, the study revealed that excluding the guideline about how information about the symptoms of a disease should be interpreted might result in raising consumer awareness of the future risk of a disease. The effects were strengthened when consumers were in sad moods. This may inform creative strategists and media planners that, if increasing awareness of the disease’s risk is the primary objective of a drug advertising campaign, diagnosticity information needs to
be deleted and creative elements and media planning strategy should be utilized to induce sad moods.

Last, this study incorporated the concept of consumer mood state into the DTC drug advertising literature. This is an important contribution, because experiencing a disease and thinking about treatment options likely entail negative affective states. Processing information in a negative affective state is expected to be typical, rather than atypical, of consumers who seek information on depression, cancer, attention disorder, sexually transmitted diseases, and many other health issues. The concept of mood state, therefore, should not be left out in the DTC literature. However, the construct has not received much attention. This study revealed that consumers in sad moods processed information and formed risk perceptions and help-seeking intentions differently from the way happy consumers did. Future researchers are strongly encouraged to apply and extend this perspective and find out how other mood states, such as anxiety and anger, may affect consumer perceptions of health issues.

**Advertising Practice**

The findings of this study also have significant implications for building effective strategy for a drug advertising campaign. Especially, the findings add insights into whether a drug advertising campaign should focus on category or brand expansion. The findings also have implications for building effective creative and media strategy. This section begins with the findings’ implications for category versus brand expansion.

**Category versus brand expansion.** Putsis and Dhar (2001) suggested brand promotions might result in expanding a new product category, in addition to leading consumers to switch brands. This perspective appears to receive empirical support, because research based on industry data indicated DTC advertising might lead to the market expansion of a drug category, characterized by increasing numbers of consumer visits to doctors’ offices to discuss the disease
the drug category is designed to treat, doctors’ diagnoses of the disease, and prescriptions written for the drug category (Donohue & Berndt, 2004; Zachry, et. al., 2002).

The findings of this study present a psychological explanation for why DTC advertising could cause the market expansion of a drug class. In particular, this study revealed that exposure to the high-diagnosticity information in a DTC drug advertisement, such as an antidepressant advertisement that does not include the APA guideline about when discomforting life experiences might or might not indicate clinical depression, tended to increase consumer perceptions of the future risk of depression. This tendency was observable especially among participants who had sufficient opportunity for risk estimation and were in sad, rather than happy, moods.

The results in support of H3b further suggested that once formed, high risk perceptions could lead to stronger intentions to seek professional help to discuss depression, a likely antecedent of the market expansion of the antidepressant drug category. This tendency was observed when participants had high opportunity for risk estimation. The results in support of H3b suggested that when a drug ad carries high-diagnosticity information and targets consumers who are undergoing discomforting life events or sad moods, it could lead to the market expansion of a drug class by increasing the perceived risk of the problem.

This interpretation receives empirical support from prior research. Research on health behavior shows consumers’ risk assessment of a health problem may produce attitudinal and behavioral changes, such as engaging in preventive and remedial behaviors (Block & Keller, 1998; Raghubir & Menon 1998), including consultation with doctors. Therefore, changes in risk perception triggered by DTC advertising may drive consumers to visit doctors’ offices to discuss depression and/or request antidepressant treatment.
However, the current study suggests this interpretation should be appreciated with caution, because the effects of mood state on help-seeking intentions and the mediating role of risk perceptions were not established when opportunity was low, rejecting H3a. Caution is further needed, because simple effects tests revealed that help-seeking intentions of the non-factorial control group were not lower than those of the sad-mood participants who received the high-diagnosticity information, whether opportunity was high or low.

This study revealed that DTC advertising might lead to the market expansion of a drug class. Then the key decision for an advertising strategist to make will be, between category expansion and brand expansion, which should be prioritized. Arens, Weigold, & Arens (2008) suggested that when a product category is introduced to the market, a limited number of consumers know about the product and its benefits, and therefore it is more important to trigger a primary demand, defined as consumer demand for the product category. The relative emphasis may shift to selective demand, defined as demand for a specific brand, as the product enters the growth or maturity stage.

This perspective suggests that when launching a campaign for a drug that treats a relatively unfamiliar disease, pharmaceutical companies may consider using marketing tools to make consumers more aware of the symptoms and risk of the relevant disease, because this may lead to the market expansion of the drug category. This may be even more important than emphasizing the drug’s competitive advantages, considering that a limited market size is one of the major reasons that the introduction of a new product fails. As consumers become more familiar with the disease, more emphasis may be placed on points of difference between brands in a drug category.
This cycle appears to characterize DTC advertising campaigns for antidepressants. Campaigns for early market leaders, such as Prozac and Zoloft, conveyed the message that clinical depression is common, while campaigns for brands launched at a later stage emphasized points of difference. For example, Paxil CR was positioned as a social anxiety disorder treatment, while Wellbutrin XL was positioned as the first antidepressant without sexual side effects. Further, unlike Prozac and Zoloft, all DTC advertisements for Effexor XR and Wellbutrin XL feature female models, implying the two brands are targeted at women.

Creative execution. Building an effective creative strategy is a requirement for a great advertising campaign (Arens et al., 2008). Given that DTC drug advertising could lead to the market expansion of a drug category, one may wonder how practitioners could build creative strategy to trigger the process. The results of this study suggest a range of potential strategies.

First, the results of this study in support of H2a suggested that including high-diagnosticity information could increase risk perceptions. Therefore, presenting uncomfortable but frequently experienced problems and emphasizing they are typical symptoms of a disease could lead to higher risk perceptions. The results in support of H3b further suggested that once formed, higher risk perceptions would lead to stronger intentions to deal with the particular health problem. This may lead to the market expansion of the drug.

The results also revealed that of the three independent factors explored in this study, mood state was the strongest determinant of risk perceptions and help-seeking intentions. The results in support H1a revealed that when opportunity was low, mood state explained 8.6 percent of the variances in risk perceptions. When opportunity was high, moods explained 10.5 percent of the variances in risk perceptions and 4.1 percent of the variances in help-seeking intentions. This
indicates that it is important for advertising practitioners to induce particular mood states that maximize the effects of a drug advertising campaign.

The study induced sad moods by making participants write about life events with negative affective connotations. Applying the psychological literature on mood and social cognition to consumer research, Gardner (1985) suggested that marketing practitioners had largely four commercially applicable approaches to influencing consumer mood states, including service procedures and interactions, point-of-purchase stimuli, the content of the advertising campaign, and the context of the advertising campaign.

Combining Gardner’s (1985) perspective with the results of this study produces a number of implications for practitioners. For example, if raising consumer awareness of the risk of a disease is the core objective of a drug advertising campaign, practitioners may utilize the content elements of the ad to temporarily induce negative mood states. Several anti-depressant advertising campaigns indeed have placed emphasis on visual and textual elements that are apparently capable of inducing sad moods. For example, a Zoloft advertisement (Appendix E - Zoloft Ad) depicts a figure resembling an egg with a downhearted look under a waning moon against a pitch-dark backdrop. A Paxil ad (Appendix E - Paxil Ad 1) depicts a woman with an empty, worried look in the midst of anonymous people. Another Paxil ad (Appendix E - Paxil Ad 2) displays a list of depression symptoms as if they are visually separating a woman with an empty or worried look from her loved ones.

This is no surprise, given that one of advertising’s basic goals is to raise awareness of an uncomfortable situation and present the product as a means to bring a desired situation. The results of this study accounted for why the approach might be effective for drug advertising. The approach is effective because it puts consumers into negative mood states, and as a result
increases their perceived risk of the problem. The results also suggested that inducing a negative mood state through advertising appeals should be used primarily when the goal of the ad campaign is to induce consumers to form high risk perceptions of the health problem.

**Media planning.** Given that media costs constitute approximately 80 percent of the advertising budget (Kelley & Jugenheimer, 2008), it is crucial to the success of an advertising campaign to deliberate sufficiently on how the selection and purchase of the media space and time may serve the objectives of the campaign. The results of this study and the literature on the social cognitive effects of mood state have implications for making effective media plans.

Garder (1985) suggested that consumer moods might be manipulated by the content as well as context of an advertising campaign. The context is defined as the surroundings in which consumers encounter and process an advertising stimulus. The media context of an ad influences consumers’ affective states, and further determines how they respond to the ad. For example, Goldberg and Gorn (1987) found the affective valence of the media content in which the ad is placed affects consumer processing of the ad. In particular, they found that watching a happy, rather than sad, TV program led to more positive mood state, greater perceived effectiveness of the ad, more positive cognitive responses to the ad, and better recall of the content of the ad.

Goldberg and Gorn’s (1987) study suggests that the media strategy for a drug advertising campaign may affect consumers’ moods by determining the media context of an advertising campaign, and further affects how they respond to the ad. The results of this study revealed that, once formed, consumers’ mood states affected their perceptions of the future risk of a disease and intentions to seek professional help. Therefore, media planners need to develop plans to place a drug ad in a media context appropriate to the purpose of the campaign.
For example, consumers will process a drug advertisement in a negative affective state if the ad is inserted next to the programming or editorial content that evokes sad moods. Therefore, if the objective of the campaign is to increase the perceived future risk of a disease, the media planner should find ways to place it around media time or space capable of triggering negative mood states, such as a news story about terrorism, a feature about people suffering from a natural disaster, a sadness-evoking movie, or a special report about infamous crimes.

In contrast, if the campaign has a different key objective, such as enhancing consumer memory of the drug’s benefits and competitive advantages, reducing the perceived probability of experiencing side effects, or enhancing self-efficacy, the media planner should consider placing the ad around a media context conducive to happy moods. Many researchers (Goldberg & Gorn, 1987; Mathur & Chattopadhyay, 1991) revealed that a positive mood state led to a better recall of favorable information and higher perceived probability of positive outcomes. Similarly, Salovey and Birnbaum (1989) reported happy moods led to increased self-efficacy. In fact, this is why most research on the effects of mood state on advertising effectiveness suggested that ads should be placed in a happiness-inducing media context to achieve optimum effects.

In addition, consumers may experience periodic mood swings along the time of the day. For example, on the average, consumers may be in more negative mood states in the nighttime than in the daytime. Therefore, if increasing risk perception is the key objective of a campaign, the media planner may place the campaign during late-night television shows that may evoke sad moods. If enhancing self-efficacy is the key objective, a different time period may be selected.

Another possibility is that consumers who are chronically in sad moods may tend to view late-night television shows. This implies, in addition to inserting commercials during late-night shows to target this audience, media planners may track down the late-night viewers’ media use
patterns and place ads in other media vehicles used by the audience. This strategy will be especially effective if the disease category is extremely unfamiliar and therefore it is important to remind the audience repeatedly of the risk of the disease.

**Consumer Health**

The findings also have implications for health promotion. First, the results of this study may indicate that consumers do not always process health and disease information and make judgments in a “rational” manner. Neither are they aware of the psychological mechanism in which the communication campaign persuades them. Researchers found (Mathur & Chattopadhyay, 1991) that consumers typically did not think that the mood-induction procedure might have influenced their cognitive responses to the ad, although the procedure significantly affected their responses. Therefore, given that an important objective of a health communication campaign would be helping consumers process information and make health decisions in an informed manner (Peters et al., 2006), the results of this study may lead one to question whether or how consumers need to be informed or educated about how the content and the context of a drug advertising campaign affect their thoughts and decisions about health issues.

In addition, if DTC advertising influences consumer perceptions of the future risk of depression, as the findings of this study suggested, what impact will the phenomenon have on consumer health? To that end, the following three hypothetical situations may be conceptualized.

**Situation 1:** Consumers may largely have underrated risk perception, and exposure to the ad results in more realistic risk perception.

**Situation 2:** Consumers may largely have overrated risk perception, and exposure to the ad results in further inflated risk perception.

**Situation 3:** Consumers may have risk perceptions more or less evenly split around the realistic risk estimates presented by the epidemiological data, and exposure to the ad results in more realistic risk perception for some members and more inflated perception for other members.
Increasing risk perceptions may benefit consumers in the first situation, whereas the second situation may not. The third presents a more complex picture. However, given that depression has been a largely under-diagnosed and stigmatized disease, some may argue that even the second situation, in which consumers are led to have further inflated risk perceptions, may have positive behavioral consequences, such as encouraging depressed people to visit a doctor’s office (Donohue et al., 2004). However, it may also have negative behavioral influences, such as leading consumers to make unnecessary visits to the doctor’s office and therefore driving up health costs (Findlay, 2001). Future researchers may conduct a study to determine which of the following three situations holds true. Noticeably male and female participants were equal in their risk perceptions and help-seeking intentions, replicating Park and Grow (2008). Considering the lifetime risk of depression is approximately 13 percent for men and 20 to 25 percent for women (Kessler et al., 1993, 1994; NCS, 2003), the male participants could have overrated their future risk of depression, or it was also possible that the female participants could have underrated their risk.

However, one may argue that even if the second scenario were true, meaning even if a sizeable number of consumers were to initially have overrated perceptions of the risk of depression and DTC advertising further inflated their risk perceptions, DTC advertising could still be more beneficial than harmful to society. This perspective is based on the assumption that the social costs of misdiagnosing non-depressive persons as clinically depressed and prescribing antidepressant medication are not as substantial as the costs of failing to detect and medicate clinical depression patients. This perspective may be all the more convincing, considering depression is a largely under-diagnosed and under-treated disease and failing to treat it might result in serious consequences including social isolation and suicidal attempts. On the contrary,
the consequences of misdiagnosing and mis-medicating non-depressive persons would only include unnecessary visits to the doctor’s office and the risk of undergoing the prescribed drug’s side effects. Therefore, it would make sense for society to put more emphasis on detecting and treating depression patients than on discouraging non-depressive persons from seeking treatment.

The findings of this study also have implications for the business ethics of pharmaceutical advertising. Public criticism is mounting against DTC advertising, as opponents contend that consumers are misled by DTC advertising. At FDA hearings they suggested the possibility of placing a ban or moratorium on DTC advertising. To defend DTC advertising, GlaxoSmithKline sent 8,000 sales representatives out to manage the public policy issue in its favor (Thomaselli, 2006). The pharmaceutical industry’s professional association, the Pharmaceutical Research Manufacturers of America (PhRMA), has been strong proponents of DTC advertising. To that end, in August 2005, PhRMA introduced codes of conduct aimed at providing advertisers with guideline for DTC advertising (PhRMA, 2005, Appendix F).

What are the potential implications of PhRMA’s principles for the ethics of pharmaceutical advertising, especially regarding the research findings of this study? The preamble to the principles states that a “strong empirical record demonstrates that DTC communications about prescription medicines serve the public health” by increasing awareness of diseases (PhRMA, 2005). Therefore, PhRMA encourages drug companies to promote disease awareness through DTC advertising (Principle 9 in Appendix F). However, none of the principles refers to the possibility that exposure to DTC advertising for a disease may result in leading consumers to have overrated perceptions of the risk of the disease.

PhRMA (2005) also emphasizes DTC advertising should be designed to “responsibly educate the consumer about that medicine, and, where appropriate, the condition for which it
may be prescribed.” Given risk perception’s potentiality to produce behavioral consequences (Block & Keller, 1998; Irwin et al., 1996; Raghubir & Menon, 1998; Siegel et al., 1998), PhRMA may consider encouraging drug companies to include in DTC advertising information on the risk of developing the relevant disease. Such an initiative will increase the educational value of DTC advertising, with higher potentiality to “responsibly” increase consumers’ awareness about diseases and medicine and discourage them from overrating their vulnerability to the diseases.

**Limitations of the Study**

The current study has a number of conceptual and methodological limitations. First, this study was conducted in a laboratory. Some may argue because it was conducted in an artificial environment, the study lacks an ecological validity. However, that limitation is inherent in all non-quasi experiments designed to control external influences and establish causal relationships.

Second, participants in this study might not reflect the general population. Participants were undergraduate students enrolled in introductory advertising classes at the University of Florida, and therefore were demographically, geographically, and psycho-graphically more homogeneous than the general US population. Therefore, the results of this study may not apply to the general population.

However, it will be unrealistic to argue that an experiment needs to be conducted with a nationally representative sample of participants. A more realistic approach will be to conduct future studies to explore how the results may be replicated or varied across different segments of the population (e.g., young versus senior people), research settings (e.g., laboratory experiment versus field experiment), and cultures (e.g., Asian Americans, Hispanic-Americans, versus white Americans). This approach will enhance the external validity of the findings.
Third, some may argue it would be more recommendable if the study design had included a post-experiment demand characteristic check. Because this study involved deception, making participants believe the session consisted of two separate studies instead of one research project, a post-experimental check could have been conducted to ensure that the participants did not guess the true purpose of the study. The literature on the effects of mood consists of studies that did not include a demand characteristic check (Edell & Burke, 1987; Fedorikhin & Cole, 2004) and those that included a check (Goldberg & Gorn, 1987; Mathur & Chattopadhyay, 1991). Those with a demand characteristic check found that no participants accurately guessed the predictions made in the studies.

The last limitation of the study was the failure to find significant effects of the mood × diagnosticity × opportunity interaction on either risk perceptions or help-seeking intentions, or their linear combination. This was a perplexing result, because the mood × diagnosticity interaction was not significant when opportunity was low, as hypothesized in H1a and H1b, and significant when opportunity was high, as hypothesized in H2a and H2b. This might have occurred because the manipulation of opportunity was less than optimal. Especially, one of the three response time measures for intention showed the manipulation was not optimal. Since opportunity was hypothesized to determine the effects of the mood × diagnosticity interaction, a more effective manipulation of the construct may have generated a significant three-way interaction.

Suggestions for Future Research

This study showed consumer mood state influenced the perceived future risk of a disease and intentions to seek professional help to discuss it. Mood state was manipulated by requiring participants to write about sad or happy life events. The findings would be more commercially applicable if mood state was manipulated in other ways. Gardner (1985) suggested particular
mood states might be induced by varying the content of the ad or the context surrounding the ad. Therefore, future researchers may expose participants to a happiness or sadness-inducing media context, such as a magazine report or television show, and explore how consumers process information from a drug advertisement.

Another research idea would be to see if manipulated moods would affect consumer cognitions about aspects of the disease or drug other than risk perceptions or help-seeking intentions. For example, a future study may be designed to explore if different moods lead to different expectations of the drug’s success rate, the probability of experiencing side effects, the severity of the side effects, recall of the drug’s competitive advantages, and so on. In fact, Salovey and Birnbaum (1989) found that happy moods led to higher self-efficacy regarding health issues. A future study may replicate this finding in the context of DTC drug advertising.

In addition, this study does not take into account the perspective that various specific affective states might exist under the broad categories of “negative” and “positive” mood states. For example, Raghunathan, Pham, and Corfman (2006) and Raghunathan and Pham (1999) found that anxiety led to risk-aversive behavior whereas sadness caused risk-taking behavior, revealing that specific negative mood states tended to have heterogeneous effects on judgment and decision making process. Therefore, it will be worthwhile to explore if different types of positive and negative mental states would produce the same affects as were observed in this study.

As discussed in the limitation section, this study failed to find significant effects of the thee-way interaction of mood, diagnosticity, and opportunity. Because the manipulation checks revealed that mood and diagnosticity were successfully manipulated and opportunity manipulation was less than optimal, the failure is likely attributable to the way opportunity was
manipulated. Therefore, it will be worthwhile to test if an alternative method of manipulating opportunity, such as forcing high-opportunity participants to spend a certain amount of time before responding and low-opportunity participants to respond within a limited time frame, would generate significant three-way interaction.

In addition, the mood and social cognition literature suggests that happy-moods facilitate processing and recall of information with a positive affective connotation, whereas sad moods enhance recall of negative information. This may indicate the effects of informational ads with negatively originated motives versus transformational ads with positively originated motives may have differential effects on the way consumer think and feel about the disease and the drug. A future study may be designed to explore how the interaction between mood and information versus transformational motives affects consumer responses to the advertisement.

Another future research area may emerge from the perspective that individuals have varying levels of information processing capacity, which may determine the way moods affect social judgments. For example, Petty et al. (1993) revealed that consumers with high need for cognition, a likely correlate of high information processing capacity, were less affected by induced mood states in judgment making than those with low need for cognition. Therefore, consumers with high processing capacity, an umbrella concept that could be operationally defined as high need for cognition, high numeracy, or high level of education among others, may be less influenced by mood states in forming estimates of the future risk of diseases and help-seeking intentions. This is even more probable when one considers that processing the APA diagnostic guideline and forming future risk perceptions require numerical and probabilistic thinking.
In addition, mood states were temporarily manipulated in this study. Research (Schwartz & Clore, 1983) generally found that experimentally induced moods tended to be short-lived. If induced moods are transient, how long will their effects on risk perceptions and help-seeking intentions last? If consumer judgments are as transient as their determinants are, the practical implications of this study will be seriously limited. A future study may be conducted to explore if consumer risk perceptions and help-seeking intentions, once there are formed in an experimental setting, mold their future health behavior.

Last, it will contribute to the DTC literature to explore how the effects of mood, diagnosticity, and opportunity may differ across various diseases. This study revealed the three independent variables’ interactive effects on consumer perceptions of depression. It will be worthwhile to explore whether the effects are replicated for other diseases, such as attention disorder, sleep problems, or seasonal allergy. A disease may have aspects that set it apart from other diseases. For example, restless leg syndrome likely differs from depression in the sense that the perceived risk of experiencing is lower, the symptoms are less ambiguous and less intense, and consumers are less knowledgeable about the disease. Then it will be worthwhile to explore if the three independent variables have the same effects on consumer perceptions of restless leg syndrome and help-seeking intentions. It will be further worthwhile to explore how one can categorize diseases, and how the effects of drug advertising appeals may change depending on the category of diseases. Such research will contribute valuable insights to the practitioners in charge of building creative strategy for various drug campaigns.
APPENDIX A
INSTRUMENTAL MANIPULATION OF MOOD
Script for Happiness-Inducing Procedure

Instruction: People experience many types of life events. This study is designed to build a life-event inventory and explore how people represent their autobiographical memories. For that purpose, you will be asked to describe three life events that made you very happy. Please describe your life events as realistically as possible, such that a person reading the description would become happy just from hearing about the situation. Please spend five minutes for each situation.
Life Event One

Please describe a life event that made you very happy as realistically as possible, such that a person reading the description would become happy just from hearing about the situation (5 minutes).
Life Event Two

Please describe a life event that made you very happy as realistically as possible, such that a person reading the description would become happy just from hearing about the situation (5 minutes).
Life Event Three

Please describe a life event that made you very happy as realistically as possible, such that a person reading the description would become happy just from hearing about the situation (5 minutes).
The following is a questionnaire on your current mood state. For each of the following items, please check a scale that best represents the feelings you are currently undergoing.

<table>
<thead>
<tr>
<th>Gloomy</th>
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<th>☐</th>
<th>☐</th>
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<th>☐</th>
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<th>☐</th>
<th>Joyful</th>
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</thead>
<tbody>
<tr>
<td>Sad</td>
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<td>Happy</td>
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<tr>
<td>Upset</td>
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<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>Elated</td>
</tr>
</tbody>
</table>

126
Script for Sadness-Inducing Procedure

People experience many types of life events. This study is designed to build a life-event inventory and explore how people represent their autobiographical memories. For that purpose, you will be asked to describe three life events that made you very sad. Please describe your life events as realistically as possible, such that a person reading the description would become sad just from hearing about the situation. Please spend five minutes for each situation.
Life Event One

Please describe a life event that made you very sad as realistically as possible, such that a person reading the description would become sad just from hearing about the situation (5 minutes).
Life Event Two

Please describe a life event that made you very sad as realistically as possible, such that a person reading the description would become sad just from hearing about the situation (5 minutes).
Life Event Three

Please describe a life event that made you very sad as realistically as possible, such that a person reading the description would become sad just from hearing about the situation (5 minutes).
The following is a questionnaire on your current mood state. For each of the following items, please check a scale that best represents the feelings you are currently undergoing.

<table>
<thead>
<tr>
<th>Gloomy</th>
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<th>☐</th>
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<th>☐</th>
<th>☐</th>
<th>Joyful</th>
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</thead>
<tbody>
<tr>
<td>Sad</td>
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<td>Happy</td>
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<tr>
<td>Upset</td>
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<td>☐</td>
<td>☐</td>
<td>Elated</td>
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</tbody>
</table>
APPENDIX B
INSTRUMENTAL MANIPULATION OF PERCEIVED DIAGNOSTICITY

High-Diagnosticity Version of the Antidepressant Advertisement

These are symptoms of depression. Some may say it’s "just in your head." But depression is a serious illness with real medical causes.

While the cause is not known, depression may be related to an imbalance of chemicals in the brain. Clinical studies show Serexa CR can effectively correct this imbalance and relieve symptoms of depression.

Serexa CR is not for everyone. It is approved for adults 18 and over. People taking MAOIs should not take Serexa CR. Side effects may include dry mouth, constipation, dizziness, delayed ejaculation, diarrhea, and sleepiness. Serexa CR is a prescription drug. Talk to your doctor about Serexa CR.

Get a free educational DVD about depression and Celsta by calling 1-800-2-SEREXA, or visiting www.Back2Life.com.

Important Safety Information: Antidepressants increased the risk of suicidal thinking and behavior in children and teenagers. Patients on therapy should be observed closely for clinical worsening, suicidality or unusual changes in behavior.
Low-Diagnosticity Version of the Antidepressant Advertisement

Serexa CR®
Sertraline HCl

Low Energy
Depressed
Sleep Problems
Difficulty Making Decisions

These are symptoms of depression only if they occur nearly every day for two weeks. Some may say it’s “just in your head.” But depression is a serious illness with real medical causes.

Serexa CR®
Welcome Back

While the cause is not known, depression may be related to an imbalance of chemicals in the brain. Clinical studies show Serexa CR can effectively correct this imbalance and relieve symptoms of depression.

Serexa CR is not for everyone. It is approved for adults 18 and over. People taking MAOIs should not take Serexa CR. Side effects may include dry mouth, constipation, dizziness, delayed ejaculation, diarrhea, and sleepiness. Serexa CR is a prescription drug. Talk to your doctor about Serexa CR.

Get a free educational DVD about depression and Cela by calling 1-800-2-SEREXA, or visiting www.BacktoLife.com

Important Safety Information: Antidepressants increased the risk of suicidal thinking and behavior in children and teenagers. Patients in therapy should be observed closely for clinical worsening, suicidality or unusual changes in behavior.
APPENDIX C
INSTRUMENTAL MANIPULATION OF OPPORTUNITY

Instruction for Participants Under the Low-Opportunity Condition

Read this instruction VERY carefully. What follows is a questionnaire on your life and depression. In the real world, consumers often make quick judgments while they are busy. To make this study as realistic as possible, please complete the following three questions AS FAST AS YOU CAN.

Instruction for Participants Under the High-Opportunity Condition

Read this instruction VERY carefully. What follows is a questionnaire on your life and depression. Researchers point out that having accurate ideas about a disease is important for preventing or treating the disease. So please take AS MUCH TIME AS YOU NEED to deliberate sufficiently.
APPENDIX D
QUESTIONNAIRE AND THE INSTRUMENTAL MANIPULATION OF OPPORTUNITY

High-Opportunity Version

The primary focus of this questionnaire is to explore your understanding of the advertisement you just saw. In answering the questions, try as best as you can to report your own thoughts about the ad. Please note that “clinical depression” is defined in this project as a form of medical illness that may require doctor’s intervention for treatment.

A-1) For the last two weeks, how often did you have the following feeling/experience?

<table>
<thead>
<tr>
<th>Feeling/Experience</th>
<th>Never</th>
<th>Nearly everyday</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sleep problems</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A-2) According to the ad, how likely is it that your reported experience with sleep problems would indicate you are clinically depressed?

<table>
<thead>
<tr>
<th>Likelihood</th>
<th>Not at all</th>
<th>Very likely</th>
</tr>
</thead>
<tbody>
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<td></td>
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<td></td>
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</tbody>
</table>

B-1) For the last two weeks, how often did you have the following feeling/experience?

<table>
<thead>
<tr>
<th>Feeling/Experience</th>
<th>Never</th>
<th>Nearly everyday</th>
</tr>
</thead>
<tbody>
<tr>
<td>Difficulty making decisions</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

B-2) According to the ad, how likely is it that your reported experience with difficulty making decisions indicates you are clinically depressed?

<table>
<thead>
<tr>
<th>Likelihood</th>
<th>Not at all</th>
<th>Very likely</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

C-1) For the last two weeks, how often did you have the following feeling/experience?

<table>
<thead>
<tr>
<th>Feeling/Experience</th>
<th>Never</th>
<th>Nearly everyday</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depressed mood</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
C-2) According to the ad, how likely is it that your reported experience with depressed mood indicates you are clinically depressed?

<table>
<thead>
<tr>
<th>Not at all</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>Very likely</th>
</tr>
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<td>□</td>
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<td>□</td>
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</tr>
</tbody>
</table>

D-1) For the last two weeks, how often did you have the following feeling/experience?

<table>
<thead>
<tr>
<th>Low physical energy</th>
<th>Never</th>
<th></th>
<th></th>
<th></th>
<th>Nearly everyday</th>
</tr>
</thead>
<tbody>
<tr>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

D-2) According to the ad, how likely is it that your reported experience with low physical energy indicates you are clinically depressed?

<table>
<thead>
<tr>
<th>Not at all</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>Very likely</th>
</tr>
</thead>
<tbody>
<tr>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

E-1) In you thinking, what are the chances that you will suffer from clinical depression in the near future? ____________% Take AS MUCH TIME AS YOU NEED, and report in percentage between 0% and 100%. Then click “Continue” to proceed.

E-1-1) If you have ever been diagnosed of clinical depression, please check here:

________________

F) In your thinking, your risk of suffering from clinical depression in the near future will be… Take AS MUCH TIME AS YOU NEED, and check the scale that best represents your perception. Then click “Continue” to proceed.

<table>
<thead>
<tr>
<th>Very low</th>
<th></th>
<th>Moderate</th>
<th></th>
<th></th>
<th>Very high</th>
</tr>
</thead>
<tbody>
<tr>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

G) Compared to people of your age, your risk of suffering from depression in the near future will be… Take AS MUCH TIME AS YOU NEED, and check the scale that best represents your perception. Then click “Continue” to proceed.

<table>
<thead>
<tr>
<th>Much lower</th>
<th></th>
<th>Neither lower nor higher</th>
<th></th>
<th></th>
<th>Much higher</th>
</tr>
</thead>
<tbody>
<tr>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>
H) Please check the scale that best reflects your agreement with each of the following items. Take AS MUCH TIME AS YOU NEED, and check the scale that best represents agreement.

<table>
<thead>
<tr>
<th></th>
<th>Very Strongly Disagree</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
<th>Very Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>If the University Health Services offered a free screening test for depression, I would intend to receive it.</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
</tr>
<tr>
<td>If the University Health Services offered a free educational program about depression, I would intend to participate.</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
</tr>
<tr>
<td>If the University Health Services offered an opportunity to consult doctors about depression, I would intend to participate.</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
</tr>
</tbody>
</table>

I-1) Has anyone among your family members, relatives or close friends ever suffered from depression?  Yes______  No______  Don’t know ______

I-2) Has anyone among your family members, relatives, or close friends ever sought professional help to deal with depression?  Yes ______  No______  Don’t know ______

I-3) Has anyone among your family members, relatives, or close friends taken antidepressant medication?  Yes ______  No______  Don’t know ______

I-4) Have you ever been diagnosed with ADHD (attention deficit hyperactivity disorder)?

J-1) Please check your gender.  Male_____  Female_____  

J-2) How old are you?   ______ years old

J-3) What is your ethnic background?  
White, not Hispanic ______  Hispanic, of any race ______  Black, not Hispanic ______
Asian or Pacific Islander ______  American Indian, Eskimo, or Aleut ______
Other ______

J-4) Which class do you consider your family to be among the following five categories?  
Working Class_______  Lower Middle Class_______  Middle Class_______
Upper Middle Class_______  Upper Class _________
Debriefing Statements
Debriefing Statement for Session A: The procedure you completed in Session A might have caused you to feel happy or sad. Researchers have demonstrated that the moods created by this type of procedure typically disappear within a short period of time.

Debriefing Statement for Session B: The ad presented in this study was developed for the purpose of research, and does not represent a real brand. However, the information in the ad accurately describes clinical depression.
**Low-Opportunity Version**

The primary focus of this questionnaire is to explore your understanding of the advertisement you just saw. In answering the questions, try as best as you can to report your own thoughts about the ad. Please note that “clinical depression” is defined in this project as a form of medical illness that may require doctor’s intervention for treatment.

A-1) For the last two weeks, how often did you have the following feeling/experience?

<table>
<thead>
<tr>
<th>Feeling/Experience</th>
<th>Never</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>Nearly everyday</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sleep problems</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

A-2) According to the ad, how likely is it that your reported experience with sleep problems would indicate you are clinically depressed?

<table>
<thead>
<tr>
<th>Likelihood</th>
<th>Not at all</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>Very likely</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>□</td>
<td>□</td>
<td></td>
<td></td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

B-1) For the last two weeks, how often did you have the following feeling/experience?

<table>
<thead>
<tr>
<th>Feeling/Experience</th>
<th>Never</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>Nearly everyday</th>
</tr>
</thead>
<tbody>
<tr>
<td>Difficulty making decisions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

B-2) According to the ad, how likely is it that your reported experience with difficulty making decisions indicates you are clinically depressed?

<table>
<thead>
<tr>
<th>Likelihood</th>
<th>Not at all</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>Very likely</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>□</td>
<td>□</td>
<td></td>
<td></td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

C-1) For the last two weeks, how often did you have the following feeling/experience?

<table>
<thead>
<tr>
<th>Feeling/Experience</th>
<th>Never</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>Nearly everyday</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depressed mood</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

C-2) According to the ad, how likely is it that your reported experience with depressed mood indicates you are clinically depressed?
D-1) For the last two weeks, how often did you have the following feeling/experience?

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>Nearly everyday</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low physical energy</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

D-2) According to the ad, how likely is it that your reported experience with low physical energy indicates you are clinically depressed?

<table>
<thead>
<tr>
<th></th>
<th>Not at all</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>Very likely</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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<td></td>
</tr>
</tbody>
</table>

E-1) In your thinking, what are the chances that you will suffer from clinical depression in the near future? __________% AS FAST AS YOU CAN, report in percentage between 0% and 100%. Then click “Continue” to proceed.

E-1-1) If you have ever been diagnosed of clinical depression, please check here:

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F) In your thinking, your risk of suffering from clinical depression in the near future will be…

AS FAST AS YOU CAN, check the scale that best represents your perception. Then click “Continue” to proceed.

<table>
<thead>
<tr>
<th>Very low</th>
<th></th>
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G) Compared to people of your age, your risk of suffering from depression in the near future will be... AS FAST AS YOU CAN, check the scale that best represents your perception. Then click “Continue” to proceed.

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H) Please check the scale that best reflects your agreement with each of the following items. AS FAST AS YOU CAN, check the scale that best represents your agreement. Then click continue to proceed.

<table>
<thead>
<tr>
<th>If the University Health Services offered a free screening test for depression, I would intend to receive it.</th>
<th>Very Strongly Disagree</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
<th>Very Strongly Agree</th>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>If the University Health Services offered a free educational program about depression, I would intend to participate.</th>
<th></th>
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<td></td>
</tr>
</tbody>
</table>

I-1) Has anyone among your family members, relatives or close friends ever suffered from depression?  Yes_____ No_____ Don’t know _____

I-2) Has anyone among your family members, relatives, or close friends ever sought professional help to deal with depression?  Yes_____ No_____ Don’t know _____

I-3) Has anyone among your family members, relatives, or close friends taken antidepressant medication?  Yes_____ No_____ Don’t know _____

I-4) Have you ever been diagnosed with ADHD (attention deficit hyperactivity disorder)?

J-1) Please check your gender.  Male_____ Female_____

141
J-2) How old are you? ______ years old

J-3) What is your ethnic background?
   White, not Hispanic _____   Hispanic, of any race _____   Black, not Hispanic _____
   Asian or Pacific Islander ________   American Indian, Eskimo, or Aleut _______
   Other _____

J-4) Which class do you consider your family to be among the following five categories?
   Working Class _______   Lower Middle Class _______   Middle Class _______
   Upper Middle Class_______   Upper Class _________

Thank you very much for your participation

Debriefing Statement for Session A: The procedure you completed in Session A might have caused you to feel happy or sad. Researchers have demonstrated that the moods created by this type of procedure typically disappear within a short period of time.

Debriefing Statement for Session B: The ad presented in this study was developed for the purpose of research, and does not represent a real brand. However, the information in the ad accurately describes clinical depression.
Zoloft Ad

You know when you’re not feeling like yourself.
You’re tired all the time.
You may feel sad, hopeless...
and lose interest in things you once loved.
You may feel anxious and can’t even sleep.
Your daily activities and relationships suffer.

You know when you just don’t feel right.

Now here’s something you may not know. These are some symptoms of depression (symptoms interfere with daily functioning every day for at least two weeks). Depression is a serious medical condition affecting over 20 million Americans. While the cause is unknown, depression may be related to an imbalance of naturally occurring chemicals between nerve cells in the brain.

Zoloft, a prescription medicine, works to correct this imbalance.

Only your doctor can diagnose depression. Zoloft is not for everyone. Zoloft is approved for adults 18 and over. People taking tricyclics, called MAOIs, shouldn’t take Zoloft. Side effects may include dry mouth, insomnia, sexual side effects, diarrhea, nausea, and sleeplessness. Zoloft is not habit forming. Please use the following page for additional information about Zoloft 25mg, 50mg, and 100mg tablets.

Talk to your doctor about Zoloft, the #1 prescribed brand of its kind.

Call 1-800-HELP-4-DOCTOR or visit www.zoloft.com.

When you know more about what’s wrong, you can help make it right.”
Millions suffer from chronic anxiety.

Millions could be helped by Paxil®

Chronic anxiety can be overwhelming. But it can also be overcome. If you’re one of the 10 million people who live with uncontrollable worry, anxiety, muscle tension, irritability, restlessness, fatigue, and sleep disturbances for six months or more, you could be suffering from Generalized Anxiety Disorder. The good news is that it is treatable.

Paxil, the most prescribed medication of its kind for generalized anxiety, works to correct the chemical imbalance believed to cause the problem. Paxil can help bring down your level of anxiety, even if you’ve been suffering for years.

Prescription Paxil® is not for everyone. Tell your doctor if you’re pregnant or nursing, or if you’ve had certain conditions or problems. Paxil is generally well tolerated. As with many medications, there can be side effects. Side effects may include decreased appetite, dry mouth, sweating, nausea, constipation, sexual side effects, increased fatigue or dizziness. Most people who experience side effects are not bothered enough to stop taking Paxil. Anxiety from exercise, stress, or social situations usually doesn’t need medicine. Talk to your doctor about non-habit-forming help today. So you can see someone you haven’t seen in a while “Youself.”

Call 1-800-454-8163 or visit www.paxil.com

Your Life is Waiting. PAXIL PAROXETINE HCl
What's standing between you and your life?

Depressed Mood
Loss of Interest
Sleep Problems
Difficulty
Concentrating
Agitation
Restlessness

Life is too precious to let another day go by feeling not quite “yourself.” If you’ve experienced some of these symptoms of depression nearly every day, for at least two weeks, a chemical imbalance could be to blame. And life can feel difficult ALL DAY. That’s why you need relief ALL DAY.

NOW THERE’S PAXIL CR CONTROLLED-RELEASE TABLETS.

Paxil CR is a time-release tablet from the makers of Paxil. The CR means Controlled Release for Continuous Relief. Symptom relief usually requires two or more weeks of daily treatment. Prescription Paxil CR is not for everyone.

Tell your doctor what medicines you’re taking. People taking MAOIs or thioridazine should not take Paxil CR. Paxil CR is generally well tolerated. Side effects may include nausea, diarrhea, constipation, dizziness, sweating, tremor, sexual side effects, injury, yawning, abnormal vision or sleepiness. Patients should not stop taking Paxil CR before talking to their doctor. Feeling balanced, more like “yourself,” is within reach. Call 1-866-PAXIL-CR or visit www.paxilcr.com. Please see product information on following page.
APPENDIX F

PHRMA’S GUIDING PRINCIPLES FOR DIRECT-TO-CONSUMER ADVERTISING

To express the commitment of PhRMA members to deliver DTC communications that serve as valuable contributors to public health, PhRMA has established the following voluntary guiding principles.

**Principle 1.** These Principles are premised on the recognition that DTC advertising of prescription medicines can benefit the public health by increasing awareness about diseases, educating patients about treatment options, motivating patients to contact their physicians and engage in a dialogue about health concerns, increasing the likelihood that patients will receive appropriate care for conditions that are frequently under-diagnosed and under-treated, and encouraging compliance with prescription drug treatment regimens.

**Principle 2.** In accordance with FDA regulations, all DTC information should be accurate and not misleading, should make claims only when supported by substantial evidence, should reflect balance between risks and benefits, and should be consistent with FDA approved labeling.

**Principle 3.** DTC television and print advertising which is designed to market a prescription drug should also be designed to responsibly educate the consumer about that medicine and, where appropriate, the condition for which it may be prescribed.

**Principle 4.** DTC television and print advertising of prescription drugs should clearly indicate that the medicine is a prescription drug to distinguish such advertising from other advertising for non-prescription products.

**Principle 5.** DTC television and print advertising should foster responsible communications between patients and health care professionals to help patients achieve better health and a more complete appreciation of both the health benefits and the known risks associated with the medicine being advertised.

**Principle 6.** In order to foster responsible communication between patients and health care professionals, companies should spend an appropriate amount of time to educate health professionals about a new medicine or a new therapeutic indication before commencing the first DTC advertising campaign. In determining what constitutes an appropriate time, companies should take into account the relative importance of informing patients of the availability of a new medicine, the complexity of the risk-benefit profile of that new medicine and health care professionals’ knowledge of the condition being treated. Companies should continue to educate health care professionals as additional valid information about a new medicine is obtained from all reliable sources.

**Principle 7.** Working with the FDA, companies should continue to responsibly alter or discontinue a DTC advertising campaign should new and reliable information indicate a serious previously unknown safety risk.

**Principle 8.** Companies should submit all new DTC television advertisements to the FDA before releasing these advertisements for broadcast.
**Principle 9.** DTC television and print advertising should include information about the availability of other options such as diet and lifestyle changes where appropriate for the advertised condition.

**Principle 10.** DTC television advertising that identifies a product by name should clearly state the health conditions for which the medicine is approved and the major risks associated with the medicine being advertised.

**Principle 11.** DTC television and print advertising should be designed to achieve a balanced presentation of both the benefits and the risks associated with the advertised prescription medicine. Specifically, risks and safety information in DTC television advertising should be presented in clear, understandable language, without distraction from the content, and in a manner that supports the responsible dialogue between patients and health care professionals.

**Principle 12.** All DTC advertising should respect the seriousness of the health conditions and the medicine being advertised.

**Principle 13.** In terms of content and placement, DTC television and print advertisements should be targeted to avoid audiences that are not age appropriate for the messages involved.

**Principle 14.** Companies are encouraged to promote health and disease awareness as part of their DTC advertising.

**Principle 15.** Companies are encouraged to include information in all DTC advertising, where feasible, about help for the uninsured and underinsured.
REFERENCES


Gasper, K., & Clore, G. L. (2000). Do you have to pay attention to your feelings to be influenced by them? *Personality and Social Psychology Bulletin, 26*(6), 698-711.


BIOGRAPHICAL SKETCH

Jin Seong Park is a fifth year doctoral candidate specializing in advertising at the University of Florida’s College of Journalism and Communications. In August 2002, he received his master’s degree in mass communications with emphasis on advertising from Marquette University in Milwaukee, Wisconsin. In February 2002, he was awarded his bachelor’s degree in journalism and mass communications from Korea University in Seoul, South Korea.

As a graduate student, Jin Seong Park has presented a number of papers at conferences, including the annual conventions of the Association for Education in Journalism and Mass Communication, American Academy of Advertising, and International Communication Association. After graduation, he plans to move to Philadelphia, Pennsylvania, where he will teach Introduction to Advertising, Advertising Media Planning, and Quantitative Advertising Research as an assistant professor at Temple University’s Department of Advertising.