



12-2002

The Effects of Dietitian Weight and Self-Disclosure About Weight on Women's Evaluations of Registered Dietitians

Wendy Elizabeth Bounds
University of Tennessee, Knoxville

Recommended Citation

Bounds, Wendy Elizabeth, "The Effects of Dietitian Weight and Self-Disclosure About Weight on Women's Evaluations of Registered Dietitians." PhD diss., University of Tennessee, 2002.
https://trace.tennessee.edu/utk_graddiss/3834

This Dissertation is brought to you for free and open access by the Graduate School at Trace: Tennessee Research and Creative Exchange. It has been accepted for inclusion in Doctoral Dissertations by an authorized administrator of Trace: Tennessee Research and Creative Exchange. For more information, please contact trace@utk.edu.

To the Graduate Council:

I am submitting herewith a dissertation written by Wendy Elizabeth Bounds entitled "The Effects of Dietitian Weight and Self-Disclosure About Weight on Women's Evaluations of Registered Dietitians." I have examined the final electronic copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Human Ecology.

Jean Skinner, Major Professor

We have read this dissertation and recommend its acceptance:

Naima Moustaid Moussa, Michael Zemel, Charles L. Thompson

Accepted for the Council:

Carolyn R. Hodges

Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)

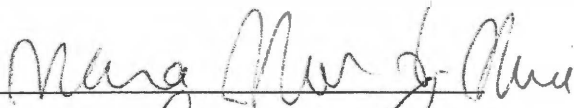
To the Graduate Council:


I am submitting herewith a dissertation written by Wendy Elizabeth Bounds entitled "The Effects of Dietitian Weight and Self-Disclosure About Weight on Women's Evaluations of Registered Dietitians." I have examined the final paper copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Human Ecology.

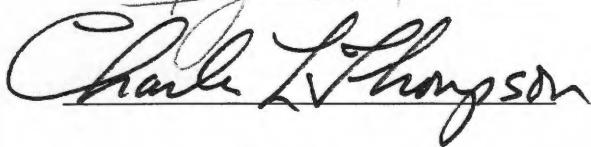


Jean Skinner, Major Professor

We have read this dissertation
and recommend its acceptance:







Charles Thompson

Accepted for the Council:



Vice Provost and Dean of
Graduate Studies

**The Effects of Dietitian Weight and Self-Disclosure About Weight
On Women's Evaluations of Registered Dietitians**

A Dissertation

Presented for the

Doctor of Philosophy

Degree

University of Tennessee, Knoxville

Wendy Elizabeth Bounds

December 2002

Dedication

This dissertation is dedicated to the memory of my grandmother, who valued education so highly and would have been so proud of this accomplishment

Acknowledgements

I would like to acknowledge the many people who have contributed to my educational development. I would like to thank my major professor, Dr. Jean Skinner, for her wisdom, guidance, and unwavering confidence in my abilities. Her support on so many levels has helped to make the completion of my dissertation and degree a possibility. I would also like to thank my committee members, Dr. Naima Moustaid Moussa, Dr. Michael Zemel, and Dr. Charles Thompson, for their time and guidance. Each of these individuals has been and will continue to be a positive role model as I begin my own academic career. In addition, I would like to acknowledge Ann Reed for statistical guidance and patient explanations.

A special thanks goes to Lynn for her willingness to serve as the model for this project. Her friendship and support have been invaluable. I also thank Marsha, Missy, and Helen for their friendship and assistance. I thank Todd for love, patience, and understanding during the process of completing my dissertation.

Finally, I want to express my deep appreciation to my family for their love, encouragement, and support over the years. I am indebted to my mother, who has selflessly sacrificed to make my educational goals a reality. I thank my father for serving as the photographer for this project. I also thank my father, stepmother, and grandfather for their continuous belief in me and pride in my accomplishments.

Financial support for this dissertation was provided by the Eleanora Sense Memorial Scholarship and the Jane V. White Scholarship awarded by the American Dietetic Association Foundation. I greatly appreciate these generous gifts that made the completion of this dissertation a possibility.

Abstract

This study investigated the effects of dietitian weight status, dietitian self-disclosure about personal weight issues, and participant weight status on participants' initial perceptions and evaluations of registered dietitians. The research design was a randomized 2 x 2 x 2 factorial design consisting of 2 dietitian weight status conditions (normal weight and obese), 2 dietitian self-disclosure conditions (absence or presence of self-disclosure about personal weight issues), and 2 participant weight status conditions (normal weight and obese). A simulated nutrition counseling situation was developed in which participants were shown a photograph of a dietitian and then listened to an audio recording of an overview of nutrition counseling supposedly prepared by the dietitian. Participants were subsequently asked to evaluate the dietitian on a variety of dimensions related to nutrition counseling. Results of this study were divided into 3 parts.

In the first part, the outcome measures were participants' ratings of the dietitian's expertness, trustworthiness, and attractiveness, as measured by the Counselor Rating Form. Statistical analyses included multivariate analysis of variance (MANOVA) and analysis of variance (ANOVA) as appropriate. Results indicated that an obese dietitian who self-disclosed about (i.e., verbally acknowledged) her current overweight status was rated as less expert ($p = .0003$) and attractive ($p = .02$) by normal weight participants than an obese dietitian who did not self-disclose. These effects were not observed with obese participants.

In the second part, the outcome measures were participants' ratings of their willingness to begin nutrition counseling with the dietitian, perception of the dietitian's knowledgeability, perception of the dietitian's effectiveness (both general effectiveness

and effectiveness within a variety of specific nutrition counseling contexts), perception of the dietitian's status as a role model, comfort in discussing personal concerns with the dietitian, and perception of the dietitian's ability to relate to their concerns. Analyses again consisted of MANOVA and ANOVA as appropriate.

Results indicated that participants were less willing to begin nutrition counseling with the obese dietitian compared with the normal weight dietitian ($p = .01$). No effects were observed for participants' ratings of the dietitian's knowledgeableability or overall effectiveness as a nutrition counselor. However, the obese dietitian was generally perceived as less effective than the normal weight dietitian in "weight-related" nutrition counseling contexts ($p \leq .05$). The normal weight dietitian who disclosed a past history of overweight was seen as a better role model than the normal weight dietitian who did not self-disclose ($p = .02$). The obese dietitian who acknowledged her current overweight status was seen as a poorer role model than one who did not self-disclose ($p = .0007$). Normal weight participants were more comfortable with the normal weight dietitian than with the obese dietitian ($p = .01$) and also thought that the normal weight dietitian would be better able to relate to their concerns ($p = .005$). Obese participants were equally comfortable with the normal weight or obese dietitian, but thought that the obese dietitian would be better able to relate to their concerns ($p = .009$).

In the third part, the outcome measures were again participants' ratings of the dietitian's expertness, trustworthiness, and attractiveness, as measured by the Counselor Rating Form. For this part, predictive models were developed for each of these dependent variables using multiple regression procedures with stepwise selection method. Potential predictors in each model were participants' internal, powerful others, and

chance health locus of control beliefs, as assessed with the Multidimensional Health Locus of Control (MHLC) Scale. Results indicated that participants' powerful others health locus of control scores were positively related to their evaluations of the dietitian's expertness, trustworthiness, and attractiveness ($p \leq .05$ in each model), while their chance health locus of control scores were negatively related to their evaluations ($p \leq .05$ in each model). These health locus of control dimensions accounted for small, but significant amounts of the variability in each dependent variable (model R^2 values of .05 - .07).

Some overall conclusions may be drawn from the results of this study. First, in no instance was it beneficial for the obese dietitian to verbally acknowledge her current overweight status; acknowledgement of personal overweight consistently resulted in more negative perceptions of the dietitian by participants. Negative effects of dietitian obesity were observed for some of the outcome variables; most notable was that participants were less willing to begin nutrition counseling with the obese dietitian. Otherwise, when dietitian weight status was important in participants' perceptions, the effects appeared to be context-specific and/or dependent upon the weight status of the participants. Thus, in some situations, obese dietitians may face an additional barrier with clients that normal weight dietitians do not face. Finally, a characteristic of the participants, health locus of control orientation, also played an important role in their perceptions of the dietitian. In conclusion, characteristics and behaviors of the dietitians, as well as characteristics of the participants, were important factors in participants' perceptions and evaluations of registered dietitians.

Preface

As an aid to the reader, a description of the organization of this dissertation follows. Part I contains an introduction to the study topic, a review of the relevant literature, and an outline of the study purposes. Part II contains a comprehensive description of the methodology for the overall study. Parts III, IV, and V contain the study results, written in journal style as 3 articles to be submitted for publication. Finally, the appendices provide copies of all materials, instruments, and questionnaires used in the study.

Table of Contents

	Page
Part I: Introduction, Review of the Literature, and Study Purpose	1
Introduction	2
Review of the Literature	4
Study Purpose	17
References	19
Part II: Comprehensive Methodology	25
Research Design	26
Participants	28
Materials	30
Instruments and Questionnaires	33
Data Collection Procedures	37
Statistical Analyses	40
References	41
Part III: Acknowledgement of Personal Overweight by Dietitians Is Related To Women's Evaluations of Registered Dietitians	43
Abstract	44
Introduction	45
Methods	49
Results	56
Discussion	63
References	69
Part IV: Dietitian Weight Status Is Related To Normal Weight and Obese Women's Evaluations of Registered Dietitians	73
Abstract	75
Introduction	77
Methods	80
Results	88
Discussion	100
References	107
Part V: Women's External Health Locus of Control Is Related To Their Evaluations of Registered Dietitians	109
Abstract	110
Introduction	111
Methods	113
Results	117
Discussion	119
References	124

Appendices	128
Appendix A: Recruitment Flyer.....	129
Appendix B: Newspaper Recruitment Advertisement.....	131
Appendix C: Dietitian Photographs and Descriptions.....	133
Appendix D: Scripts for Audio Recordings.....	136
Appendix E: Counselor Rating Form.....	143
Appendix F: Dietitian Rating Questionnaire.....	147
Appendix G: Multidimensional Health Locus of Control Scale.....	151
Appendix H: General Information Questionnaire.....	155
Appendix I: Telephone Script and Pre-Interview Questionnaire.....	160
Appendix J: Informed Consent Form.....	163
Vita	166

List of Tables

Table	Page
Part II: Comprehensive Methodology	
1. Overview of research design and experimental conditions.....	27
Part III: Acknowledgement of Personal Overweight by Dietitians Is Related to Women’s Evaluations of Registered Dietitians	
1. Selected characteristics of the study sample.....	57
2. Means and standard deviations for each of the Counselor Rating Form (CRF) dimensions for each experimental condition.....	59
3. Multivariate analysis of variance (MANOVA) for effects of experimental conditions on the set of Counselor Rating Form dimensions.....	60
4. Univariate analyses of variance (ANOVA) for effects of experimental conditions on each of the Counselor Rating Form (CRF) dimensions.....	62
Part IV: Dietitian Weight Status Is Related to Normal Weight and Obese Women’s Evaluations of Registered Dietitians	
1. Dietitian Rating Questionnaire (DRQ).....	86
2. Means and standard deviations for Dietitian Rating Questionnaire (DRQ) Part I items for each experimental condition.....	91
3. Means and standard deviations for Dietitian Rating Questionnaire (DRQ) Part II items for each experimental condition.....	92
4. Multivariate analysis of variance (MANOVA) for effects of experimental conditions on the set of Dietitian Rating Questionnaire Part I items.....	93
5. Univariate analyses of variance (ANOVA) for effects of experimental conditions on the Dietitian Rating Questionnaire (DRQ) Part I items.....	95
6. Multivariate analysis of variance (MANOVA) for effects of experimental conditions on the set of Dietitian Rating Questionnaire Part II items.....	97
7. Univariate analyses of variance (ANOVA) for effects of experimental conditions on the Dietitian Rating Questionnaire (DRQ) Part II items.....	99

Part V: Women’s External Health Locus of Control Is Related To Their Evaluations of Registered Dietitians

- 1. Means and standard deviations for each Multidimensional Health Locus of Control (MHLC) Scale dimension for the study sample..... 118
- 2. Intercorrelations among Multidimensional Health Locus of Control (MHLC) Scale dimensions..... 120
- 3. Final regression models predicting Counselor Rating Form (CRF) dimensions..... 121

List of Figures

Figure	Page
Part III: Acknowledgement of Personal Overweight by Dietitians Is Related to Women’s Evaluations of Registered Dietitians	
1. Graphs of interactions between dietitian weight status and dietitian self-disclosure status within normal weight participant group for expertness and attractiveness ratings.....	64

Part I:
Introduction, Review of the Literature, and Study Purpose

Introduction

The stigmatization of obese individuals has been well documented within a variety of contexts (1, 2). Puhl and Brownell (2) have reviewed studies about the attitudes of various health professionals, including physicians, nurses, and registered dietitians, toward obese patients or clients. In each case, negative attitudes have been reported. Remarkably, no published studies were identified that investigated the attitudes of patients or clients toward obese health care professionals. This may be particularly relevant with dietitians providing nutrition counseling, which often involves weight-related issues.

Two studies have addressed the attitudes of registered dietitians toward obese clients. Oberrieder et al (3) reported negative attitudes about obesity in both registered dietitians and dietetics students. McArthur and Ross (4) investigated the attitudes of registered dietitians toward overweight clients and toward their own overweight status (referred to as “personal overweight”). Results indicated that registered dietitians who counseled overweight clients expressed an ambivalent attitude toward overweight clients, as compared with the negative attitudes of physicians and nurses that have been reported in other studies. Dietitians who perceived themselves as overweight had both negative and positive attitudes about their personal overweight. In the subset of dietitians who both perceived themselves as overweight and counseled overweight clients, more favorable attitudes were reported toward personal overweight than toward overweight clients. These authors concluded that dietitians’ attitudes about obesity could negatively affect the relationship between dietitian and client in a nutrition counseling context.

Following this line of reasoning, it is assumed that the attitudes of clients about the weight status of a registered dietitian may be of equal importance.

Recent estimates of the prevalence of obesity in the United States indicate that 64.5% of adults are classified as overweight or obese (5). With prevalence of this magnitude, there is no reason to believe that health professionals are not among those who struggle with weight issues. For example, Oberrieder et al (3) found that 14.5% of the 234 dietitians participating in their survey were considered overweight based on body mass index (BMI, kg/m^2) calculated from self-reported height and weight. Other surveys of health professionals that have included information about weight status have reported estimates of overweight (either self-perception of weight status or weight status calculated from self-reported height and weight data) in the range of 10-30% of respondents, who included dietitians (4, 6), physicians (7), and nurses (8). Although these estimates of overweight are lower than in the general population, it is certainly possible for a client to encounter an overweight health care provider. Therefore, it is important to investigate client attitudes toward the weight status of health professionals.

In conclusion, research about the stigma of obesity within a health care context has been remarkably one-sided up to this point. This study will be the first to assess the effects of obesity in a health professional on clients' perceptions of that professional, in this case, a registered dietitian, for whom weight status may be particularly relevant. Following is a review of the published literature relevant to the context of this study.

Review of the Literature

This literature review summarizes research relevant to the current study. The review begins with an introduction of the interpersonal influence model of counseling and a discussion of the application of this model to a nutrition counseling context. In a counseling relationship (psychological or health-related), characteristics of both counselors and clients are important determinants of clients' perceptions of counselors. Following a brief discussion of the general stigmatization of obese persons, characteristics of counselors or health professionals, including weight status, self-disclosure, and modeling of health behaviors, are addressed. Finally, a client characteristic, health locus of control, is addressed. Following the review of the literature, the purpose of the current study is discussed, and specific research questions are outlined.

Counseling as an Interpersonal Influence Process

An important role played by registered dietitians is that of a nutrition counselor. Nutrition counseling is comparable to psychological counseling in many ways. Snetselaar (9) describes nutrition counseling as "a combination of nutrition expertise and psychological skill delivered by a trained nutrition counselor...(p. 3)." Nutrition counselors may work within the same theoretical contexts and utilize many of the same counseling skills and techniques that psychological counselors use (9-15). Goals of nutrition counseling include change in the client's eating attitudes and/or behaviors, just as attitude and/or behavior change is the goal in psychological counseling. Spraggins et al (16) stated that "comparable with psychological counseling, nutrition counseling, to be

effective, requires a strong background in both nutrition concepts and human behavior to facilitate the dietary compliance of clients (p. 244).” Thus, registered dietitians, as nutrition counselors, may benefit from knowledge gained within the field of counseling psychology.

Strong (17) described counseling as an interpersonal influence process, in which the counselor attempts to bring about cognitive and/or behavioral change in the client. Within this conceptualization, characteristics of the counselor as perceived by the client were theorized to play a key role in the counselor’s influence potential. Three counselor characteristics proposed to be important in the client change process were the perceived expertness, trustworthiness, and attractiveness of the counselor. Expertness refers to the perception of the counselor as a source of valid information and assistance. Perception of expertness is influenced by objective evidence of specialized training such as diplomas, titles, etc., behavioral evidence of expertness such as knowledgeable and confident presentation of information, and reputation as an expert. Trustworthiness refers to a counselor’s perceived honesty, sincerity, openness, and lack of self-interest. Perception of trustworthiness is also influenced by the individual’s social role, such as that of counselor, physician, etc. It is important to emphasize that attractiveness within the interpersonal influence model refers to *social* or *interpersonal*, rather than *physical*, attractiveness. Attractiveness in this context includes the extent to which a client feels liking for, compatibility with, and similarity to a counselor.

Strong (17) theorized that counselors who exhibited these 3 characteristics have more influence potential with clients in achieving therapeutic change. LaCrosse (18) found that clients’ initial impressions of counselors’ expertness, trustworthiness, and

attractiveness accounted for 35% of the variance in counseling outcomes, as measured by goal attainment. Other researchers have documented relationships between perceived counselor expertness, trustworthiness, and attractiveness and client satisfaction and/or continuation with counseling (19-21).

The publication of Strong's (17) article in 1968 generated a wealth of research on various factors important in this interpersonal influence process. Much of this research has been summarized in 3 comprehensive reviews (22-24). Both counselor and client variables have been investigated within the context of the interpersonal influence model of counseling, including the interaction of counselor and client variables. Among the counselor characteristics that have been studied are counselor weight status and counselor self-disclosure. These issues will be discussed in later sections of this review.

The existing research on the interpersonal influence process of counseling has focused on a psychological counseling context. No published studies were identified that investigated clients' perceptions of dietitians' expertness, attractiveness, and trustworthiness. Because nutrition counseling is analogous to psychological counseling, it is assumed that the same qualities (expertness, trustworthiness, and attractiveness) that are important for a psychological counselor are also important for a nutrition counselor, or registered dietitian.

General Stigma of Obesity

A wealth of research has investigated the stigmatization of obese individuals in a wide variety of contexts. Obese persons have been described as physically unattractive, undesirable as romantic partners, socially impaired, flawed in personality and/or

character, and personally responsible for their overweight status (25). A study by Cossrow et al (1) reported the results of focus groups conducted with participants about their experiences with weight stigmatization. Results of this study demonstrated that obese persons experience a vast amount of stigmatization in many aspects of their lives. Participants reported stigmatization in a variety of settings, including at home among family members, in social settings among friends or strangers, in work settings, and in interactions with service providers such as waitpersons, salespersons, or health care providers.

Puhl and Brownell (2) have reviewed much of the research on the stigmatization of obese individuals and have documented 3 important areas of living in which stigmatization consistently occurs. These areas are education, employment, and healthcare. Within the educational setting, overweight children may suffer rejection, teasing, and/or negative stereotyping from peers and/or teachers. In addition, overweight students may experience bias in terms of college acceptance and even financial support for college from parents. Within the employment setting, overweight persons may be less likely to be hired, make lower wages, be less likely to be promoted, and be more likely to be terminated. Finally, within the health care setting, obese persons may suffer from the negative attitudes toward obesity of health care professionals. Negative attitudes toward obese patients or clients have been documented in physicians, medical students, nurses, and dietitians. These attitudes may affect clinical judgment and treatment practices, as well as discourage obese persons from obtaining needed health care. Thus, within each of these contexts, there is consistent evidence of stigmatization, and at times even discrimination against obese persons.

Effects of Counselor/Health Professional Weight

Although there is a vast amount of research documenting the stigmatization of obese individuals within a variety of contexts (1, 2), only 2 published studies were identified that specifically examined the effect of counselor weight on client evaluations of the counselor. In the first of these studies, McKee and Smouse (26) investigated the effect of counselor weight, counselor professional status, and client gender on clients' initial perceptions of a psychological counselor's expertness, trustworthiness, and attractiveness. Eighty clients, 40 males and 40 females, requesting counseling from a university counseling service were randomly assigned to treatment conditions consisting of 2 counselor weight conditions (normal weight or overweight) and 2 counselor professional status conditions (high status or low status).

Clients viewed a photograph of either a normal weight or overweight counselor, along with a description of that counselor as either high status (PhD level licensed counseling psychologist) or low status (counselor trainee). The photograph of the overweight counselor was created by photographically imposing the head from the photograph of the normal weight individual onto the body of the photograph of the overweight individual; the photograph of the normal weight counselor was unaltered. The counselors were dressed in similar professional clothing. This resulted in 2 photographs of the same counselor, differing only in weight status. These manipulations were to control for the general physical appearance of the counselors in the photographs.

After viewing the photograph, clients then listened to an audiotaped introduction to counseling supposedly prepared by the counselor in the photograph. After listening to the tape, clients rated their perceptions of the counselor's expertness, trustworthiness, and

attractiveness. Results indicated that clients rated overweight counselors of low professional status as less expert and trustworthy than normal weight counselors of low professional status. These effects for counselor weight were not found for counselors of high professional status. These researchers concluded that "...it may well be that the low status, obese counselor seeking greater efficacy will face the choice of either losing 50 pounds or getting a PhD (p. 337)."

The second study by Wiggins (27) assessed clients' perceptions of the effectiveness of normal weight and overweight counselors. A group of 16 professional counselors, 8 male and 8 female, served as the counselors in this study. Four male and 4 female counselors were of normal weight, and 4 male and 4 female counselors were overweight. Eight counseling graduate students were coached to play the role of clients. Each of the graduate students presented a predetermined concern to each counselor, and then rated each counselor in terms of cognitive effectiveness, affective ability, leadership qualities, and overall global effectiveness. Results indicated that overweight male counselors were perceived as less competent compared with normal weight counselors in terms of cognitive effectiveness, affective ability, leadership qualities, and overall global effectiveness. Overweight female counselors were perceived as less competent compared with normal weight counselors in terms of affective ability, leadership qualities, and overall global effectiveness. In general, clients rated overweight counselors as less competent than normal weight counselors in a wide variety of areas.

Thus, the results of these two studies were not entirely consistent. Wiggins (27) found a general negative effect of counselor overweight status on client perceptions, while McKee and Smouse (26) found that counselor overweight status did not negatively

affect client impressions unless the counselor was also of low professional status. No published studies were identified which addressed the effect of a health professional's weight status on clients' or patients' perceptions of that professional.

Effects of Self-Disclosure

As opposed to the limited research on counselor weight status, counselor self-disclosure is an issue that has been well researched within the psychological counseling literature. Watkins (28) defined self-disclosure as "verbalized, personal revelations...made by the counselor to the client (p. 478)." The results of research on the effects of counselor self-disclosure, much of which has been reviewed by Watkins (28), have been equivocal. This author (28) noted that self-disclosure might be conceptualized along a number of dimensions. These dimensions include positive versus negative, referring to the valence of the information disclosed, personal versus demographic, referring to the intimacy level of the disclosure, and similar versus dissimilar, referring to the similarity of the counselor's disclosed experiences with those of the client. This dimensionality of self-disclosure is one reason that it has been difficult to draw overall conclusions about the efficacy of counselor self-disclosure; studies of the effects of the different types of self-disclosure have produced varying results. Within Strong's (17) original conceptualization of counseling as an interpersonal influence process, self-disclosure should increase attraction to a counselor to the extent that it establishes similarity between counselor and client; some research has supported this position (17, 22-24, 28).

Only one published study was identified that investigated the effects of self-disclosure of personal health behaviors by a health professional. Frank et al (29) studied the effects of disclosure of personal health habits by a physician on patients' perceptions of the physician. Study participants included 131 patients in the waiting area of a general medical clinic. Patients were randomly assigned to view one of 2 brief health education videos about improving diet and exercise. In one video, the physician presenting the educational message revealed information about personal healthy dietary and exercise behaviors and had objective evidence of a healthy lifestyle visible (i.e., an apple and bike helmet on the desk). In the control video, the physician did not discuss personal behaviors and the apple and bike helmet were not present.

Results indicated that patients viewing the video of the physician who revealed information about personal healthy behaviors perceived the physician as healthier, more credible, and more motivating than patients viewing the video of the physician who did not self-disclose and demonstrate personal healthy behaviors. In addition, the disclosing physician was rated as more credible and motivating specifically in terms of diet and exercise compared with the physician who did not disclose. Thus, these authors concluded that the demonstration of healthy lifestyles by physicians may help to motivate patients to also implement healthy practices, thereby enhancing traditional methods of counseling about health behaviors.

A recently published study specifically addressed the effects of self-disclosure about obesity. This study was in an entirely different context, but deserves mention as the results have implications for the current study. Hebl and Kleck (30) examined the effects of verbally acknowledging physical stigmas (obesity and physical disability)

within an employment interview context. These researchers found that job applicants who did not verbally acknowledge their obesity or physical disability were not evaluated differently. However, when applicants did verbally acknowledge their stigmas, those who acknowledged obesity were evaluated less positively on several dimensions than those who acknowledged a physical disability.

These authors (30) proposed that it is the perceived controllability of each of the stigmas that is responsible for these results, suggesting that obesity is generally considered to be a controllable condition, while physical disability is considered to be uncontrollable. Research conducted by DeJong (31) also suggested that women who acknowledged obesity but attributed it to a medical condition were rated less negatively than were those who acknowledged obesity without the medical reason for the condition. In addition, a review of the effect of counselor physical disability on evaluations of counselors concluded that counselor disability status had only a limited effect on perceptions of counselors' expertness, trustworthiness, and attractiveness (32). Thus, previous research has suggested that only when a stigmatizing condition is perceived as being controllable does acknowledgement of the condition result in negative evaluations. It is possible that the issue of perceived controllability of obesity may be even more relevant in the current study, if participants think that a dietitian, as a nutrition professional, should be better able than others to control her weight.

Effects of Modeling Health Behaviors

A consideration of the importance of role modeling by health professionals is also relevant. This issue has recently been discussed within the health education literature and

remains controversial. Veach and Cissell (33) asserted that health educators should view role modeling as a professional responsibility, although the emphasis should be on movement toward a healthy lifestyle rather than on any particular endpoint. In addition, all aspects of health must be considered, including physical, emotional, social, and spiritual health. They suggested that “a true role model is one who might struggle like the rest of us to make healthy choices as opposed to one who has reached an inert pinnacle of health (p. 621).” These authors also go on to state that “to encourage a particular behavior pattern while failing to practice it clearly is hypocrisy (p. 622).” Scott and Black (34) emphasized that the important issue to consider is whether role modeling of healthy behaviors by health educators improves professional effectiveness.

Several studies have investigated the relationship between health professionals’ own health behaviors and their counseling patients or clients about similar behaviors. Abramson et al (35) found that physicians who regularly participated in aerobic and/or strength training exercise were more likely to counsel patients on the health benefits of exercise. Other researchers have reported similar results concerning exercise and physical activity promotion (36, 37). Bredfeldt et al (38) found that physicians’ own lifestyle practices influenced the promotion of similar health habits in their patients. Physicians who smoked were less likely to counsel patients about smoking cessation, and physicians who regularly wore seat belts were more likely to recommend seat belt use to patients. In this study, physicians’ personal exercise habits, alcohol use, and weight status did not affect counseling of patients about each of these behaviors. Dalton and Swenson (39) also reported that nurses who did not currently smoke were more likely to counsel clients about smoking. In a survey of female physicians, Frank et al (7) found

that personal dietary behaviors and weight history were related to more frequent counseling about nutrition and weight. For example, those with a personal history of obesity were more likely to engage in frequent weight-related counseling. Thus, although results were not always consistent, there has been a good deal of evidence to suggest that health professionals' personal health habits influence the promotion of similar healthy behaviors to patients or clients.

A few studies have addressed the effects of health professionals' modeling of smoking behaviors. Hanks and Antonuccio (40) found that smoking patients actually smoked more after exposure to a physician model who smoked yet gave advice to quit smoking compared with a physician who smoked and gave no advice about smoking. Thus, patients' smoking behaviors were negatively impacted when the physician model gave advice inconsistent with his own behavior. Olive and Ballard (41) reported that attitudes of patients about smoking by health professionals were related to the patients' own smoking status. Attitudes of current smokers were less negative than were those of patients who did not smoke. Thus, modeling by health professionals (in this case, of smoking) was related to patients' own health behaviors and their attitudes about health professionals.

Smoking is an easily identifiable health behavior, and smoking by health professionals has been shown to affect patients' own smoking behaviors and their attitudes about health professionals. The weight status of a health professional would be similarly obvious to patients or clients. It is possible that a health professional's weight status, like smoking status, may impact client perceptions of health care professionals. No published studies have addressed this potentially important issue. This issue seems

particularly relevant within a nutrition counseling context, in which the health professional is a registered dietitian who often counsels clients about dietary and weight-related concerns.

Health Locus of Control

The previous sections of this literature review have focused on the effects of various characteristics and/or behaviors of counselors or health professionals. This final section will focus on a characteristic of *clients* that may be related to their perceptions of counselors or health professionals. This client characteristic is locus of control, specifically health locus of control.

Locus of control has been used as a cognitive predictor of various health behaviors, including nutrition and dietary behaviors (42). The concept of locus of control began with Rotter's (43) social learning theory. Social learning theory states that the likelihood that an individual will engage in a behavior is determined by the belief that the behavior will result in a particular outcome and the value of that outcome to the individual.

The locus of control construct was defined within this theoretical framework (44). Locus of control orientation may be classified as internal or external. An internal locus of control refers to the belief that outcomes are a result of personal behaviors, while an external locus of control refers to the belief that outcomes are not a consequence of personal actions, instead being controlled by outside forces. External locus of control has been shown to be multidimensional, consisting of the powerful others (outcomes are the

result of the actions of powerful other people) and chance (outcomes are the result of chance, fate, or luck) dimensions (45).

AbuSabha and Achterberg (42) emphasized that locus of control is a domain specific construct. Health is one such domain; health locus of control refers specifically to beliefs about the ability to control health-related outcomes. Health locus of control has also been shown to be a multidimensional construct, consisting of the internal, powerful others (in this case, mainly health care providers), and chance dimensions (46). Theoretically, those with high internal health locus of control beliefs would take an active responsibility for their health, thus engaging in health promoting behaviors (47). On the other hand, those with high chance health locus of control beliefs would be less likely to engage in health promoting behaviors. The importance of high powerful others health locus of control beliefs is less apparent.

Locus of control and/or health locus of control have been examined in relation to a variety of health outcomes and health promoting behaviors (42, 48). Some researchers have reported relationships among these constructs (47, 49, 50), while others have found no relationships (51, 52). The majority of the research on health locus of control and health behaviors has focused on the role of the internal health locus of control dimension, with higher internal beliefs hypothesized to predict performance of various health behaviors (53). Studies of this hypothesis have produced mixed results as well.

It is theoretically plausible that health locus of control may also be a predictor of perceptions of health care professionals. Health locus of control dimensions may individually or collectively represent an attitudinal predisposition toward health care professionals. This predisposition, in turn, may influence the interaction between health

care providers and clients, thus affecting the outcome of health behavior counseling. Heppner and Claiborn (24) have emphasized the importance of considering client characteristics when assessing perceptions of psychological counselors. In addition, Twemlow et al (54) reported that various patient attitudes were related to medical care utilization and satisfaction with care from physicians. Thus, when assessing client perceptions of a health care professional, it is important to consider characteristics of both the professional and the client that may influence these perceptions.

Only one published study was identified that examined the relationship of locus of control or health locus of control to perceptions of a health care professional. Anderson and Dedrick (55) found that degree of trust in a physician was positively associated with the powerful others health locus of control dimension and modestly associated with the internal health locus of control dimension. Trust in a physician was not significantly related to the chance health locus of control dimension. In a related study, Cashwell et al (56) found that clients with a higher internal locus of control orientation (not health-specific) rated a psychological counselor as more trustworthy. No other studies have addressed this potentially important topic.

Study Purpose

The main purpose of this study was to assess the effects of dietitian weight status, dietitian self-disclosure about personal weight issues, and participant weight status on participants' initial perceptions and evaluations of registered dietitians. An additional minor purpose of the study was to examine participants' health locus of control

orientation as a potential predictor of their evaluations of dietitians. Specifically, this study sought to answer the following research questions:

- 1) Does the weight status of a registered dietitian affect participants' initial perceptions and evaluations of the dietitian? If so, how?
- 2) Does self-disclosure about personal weight issues by a dietitian affect participants' initial perceptions and evaluations of the dietitian? If so, how?
- 3) Does the weight status of participants affect their initial perceptions and evaluations of the dietitian? If so, how?
- 4) Do dietitian weight status, dietitian self-disclosure about weight, and/or participant weight status interact to affect participants' initial perceptions and evaluations of the dietitian? If so, what is the nature of these interactions?
- 5) Do participants' health locus of control orientations predict their initial perceptions and evaluations of dietitians? If so, how?

References

1. Cossrow NHF, Jeffery RW, McGuire MT. Understanding weight stigmatization: a focus group study. *J Nutr Educ.* 2001;33:208-214.
2. Puhl R, Brownell KD. Bias, discrimination, and obesity. *Obes Res.* 2001;9:788-805.
3. Oberrieder H, Walker R, Monroe D, Adeyanju M. Attitude of dietetics students and registered dietitians toward obesity. *J Am Diet Assoc.* 1995;95:914-916.
4. McArthur LH, Ross JK. Attitudes of registered dietitians toward personal overweight and overweight clients. *J Am Diet Assoc.* 1997;97:63-66.
5. Flegal KM, Carroll MD, Ogden CL, Johnson CL. Prevalence and trends in obesity among US adults, 1999-2000. *JAMA.* 2002;288:1723-1727.
6. Martin JB, Holcomb JD, Mullen PD. Health promotion and disease prevention beliefs and behaviors of dietetic practitioners. *J Am Diet Assoc.* 1987;87:609-614.
7. Frank E, Wright EH, Serdula MK, Elon LK, Baldwin G. Personal and professional nutrition-related practices of US female physicians. *Am J Clin Nutr.* 2002;75:326-332.
8. Pratt JP, Overfield T, Hilton HG. Health behaviors of nurses and general population women. *Health Values.* 1994;18:41-46.
9. Snetselaar LG. *Nutrition Counseling Skills for Medical Nutrition Therapy.* Gaithersburg, MD: Aspen Publishers, Inc.; 1997.
10. Hoeltzel KE. Counseling methods for dietitians. *Top Clin Nutr.* 1986;1:33-42.

11. Vickery CE, Hodges PAM. Counseling strategies for dietary management: expanded possibilities for effecting behavior change. *J Am Diet Assoc.* 1986;86:924-928.
12. Holli BB. Using behavior modification in nutrition counseling. *J Am Diet Assoc.* 1988;88:1530-1536.
13. Neumark-Sztainer D, Story M. The use of health behavior theory in nutrition counseling. *Top in Clin Nutr.* 1996;11:60-73.
14. Foreyt JP, Poston WSC. The role of the behavioral counselor in obesity treatment. *J Am Diet Assoc.* 1998;98(suppl 2):S27-S30.
15. Rosal MC, Ebbeling CB, Lofgren I, Ockene JK, Ockene IS, Hebert JR. Facilitating dietary change: the patient-centered counseling model. *J Am Diet Assoc.* 2001;101:332-338,341.
16. Spraggins EF, Fox EA, Carey JC. Empathy in clinical dietitians and dietetic interns. *J Am Diet Assoc.* 1990;90:244-249.
17. Strong SR. Counseling: an interpersonal influence process. *J Couns Psychol.* 1968;15:215-224.
18. LaCrosse MB. Perceived counselor social influence and counseling outcomes: validity of the Counselor Rating Form. *J Couns Psychol.* 1980;27:320-327.
19. Zamostny KP, Corrigan JD, Eggert MA. Replication and extension of social influence processes in counseling: a field study. *J Couns Psychol.* 1981;28:481-489.

20. Heppner PP, Heesacker M. Perceived counselor characteristics, client expectations, and client satisfaction with counseling. *J Couns Psychol.* 1983;30:31-39.
21. McNeill BW, May RJ, Lee VE. Perceptions of counselor source characteristics by premature and successful terminators. *J Couns Psychol.* 1987;34:86-89.
22. Corrigan JD, Dell DM, Lewis KN, Schmidt LD. Counseling as a social influence process: a review. *J Couns Psychol.* 1980;27:395-441.
23. Heppner PP, Dixon DN. A review of the interpersonal influence process in counseling. *Pers Guid J.* 1981;59:542-550.
24. Heppner PP, Claiborn CD. Social influence research in counseling: a review and critique. *J Couns Psychol.* 1989;36:365-387.
25. Lewis RJ, Cash TF, Jacobi L, Bubb-Lewis C. Prejudice toward fat people: the development and validation of the Antifat Attitudes Test. *Obes Res.* 1997;5:297-307.
26. McKee K, Smouse AD. Clients' perceptions of counselor expertness, attractiveness, and trustworthiness: initial impact of counselor status and weight. *J Couns Psychol.* 1983;30:332-338.
27. Wiggins JD. Effectiveness ratings of counselors by coached clients related to attractiveness-fitness variables. *AMHCA J.* 1980;2:83-87.
28. Watkins CE. The effects of counselor self-disclosure: a research review. *Couns Psychol.* 1990;18:477-500.
29. Frank E, Breyan J, Elon L. Physician disclosure of healthy personal behaviors improves credibility and ability to motivate. *Arch Fam Med.* 2000;9:287-290.

30. Hebl MR, Kleck RE. Acknowledging one's stigma in the interview setting: effective strategy or liability? *J Appl Soc Psychol.* 2002;32:223-249.
31. DeJong W. The stigma of obesity: the consequences of naïve assumptions concerning the causes of physical deviance. *J Health Soc Behav.* 1980;21:75-87.
32. Strohmer DC, Leierer SJ, Cochran NA, Arokiasamy CV. The importance of counselor disability status: what we know and what we need to know. *Rehabil Couns Bull.* 1996;40:96-115.
33. Veach CC, Cissell WB. Role modeling: a dilemma for the health education specialist. *Health Educ Behav.* 1999;26:621-622.
34. Scott LAB, Black DR. Role modeling: an opportunity for the health education specialist. *Health Educ Behav.* 1999;26:623-624.
35. Abramson S, Stein J, Schaufele M, Frates E, Rogan S. Personal exercise habits and counseling practices of primary care physicians: a national survey. *Clin J Sport Med.* 2000;10:40-48.
36. Taylor RB, Ureda JR, Butler RH, Scott RB, Lambert JB, Moyer FA, Funke RH, Bustin FB, Sharp PC. Aerobic exercise: physician beliefs and practices. *Fam Pract Res J.* 1983;2:239-246.
37. McKenna J, Naylor PJ, McDowell N. Barriers to physical activity promotion by general practitioners and practice nurses. *Br J Sports Med.* 1998;32:242-247.
38. Bredfeldt RC, Brewer ML, Junker JA. Influences upon reported health promotion by family physicians. *Fam Pract Res J.* 1990;9:85-94.
39. Dalton JA, Swenson I. Nurses and smoking: role modeling and counseling behaviors. *Oncol Nurs Forum.* 1986;13:45-48.

40. Hanks DT, Antonuccio DO. Physician modeling influences on patient smokers. *Addict Behav.* 1987;12:257-262.
41. Olive KE, Ballard JA. Attitudes of patients toward smoking by health professionals. *Public Health Rep.* 1992;107:335-339.
42. AbuSabha R, Achterberg C. Review of self-efficacy and locus of control for nutrition- and health-related behavior. *J Am Diet Assoc.* 1997;97:1122-1132.
43. Rotter JB. *Social learning and clinical psychology.* Englewood Cliffs, NJ: Prentice-Hall; 1954.
44. Rotter JB. Generalized expectancies for internal and external control of reinforcement. *Psychol Monogr.* 1966;80:1-28.
45. Levenson H. Activism and powerful others: distinctions within the concept of internal-external control. *J Pers Assess.* 1974;38:377-383.
46. Wallston KA, Wallston BS, DeVellis R. Development of the Multidimensional Health Locus of Control (MHLC) Scales. *Health Educ Monogr.* 1978;6:160-170.
47. Norman P, Bennett P, Smith C, Murphy S. Health locus of control and health behavior. *J Health Psychol.* 1998;3:171-180.
48. Nemcek MA. Health beliefs and preventive behavior: a review of research literature. *AAOHN J.* 1990;38:127-138.
49. Raja SN, Williams S, McGee R. Multidimensional health locus of control beliefs and psychological health for a sample of mothers. *Soc Sci Med.* 1994;39:213-220.

50. Bennett P, Moore L, Smith A, Murphy S, Smith C. Health locus of control and value for health as predictors of dietary behaviour. *Psychol Health*. 1994;10:41-54.
51. Mitchell SE, Newell GK, Schumm WR. Dietary quality and family environment. *Psychol Rep*. 1987; 61:791-801.
52. Schank MJ, Lawrence DM. Young adult women: lifestyle and health locus of control. *J Adv Nurs*. 1993;18:1235-1241.
53. Norman P. Health locus of control and health behaviour: an investigation into the role of health value and behaviour-specific efficacy beliefs. *Person Individ Diff*. 1995;18:213-218.
54. Twemlow SW, Bradshaw SL, Coyne L, Lerma BH. Some interpersonal and attitudinal factors characterizing patients satisfied with medical care. *Psychol Rep*. 1995;77:51-59.
55. Anderson LA, Dedrick RF. Development of the trust in physician scale: a measure to assess interpersonal trust in patient-physician relationships. *Psychol Rep*. 1990;67:1091-1100.
56. Cashwell CS, Skinner A, Lewis JC, Young JS, Cashwell TH. Absolute versus tentative interpretations: mediating effects of client locus of control. *J Contemp Psychother*. 2001;31:141-149.

Part II:
Comprehensive Methodology

Research Design

A simulated nutrition counseling situation was developed in which participants were shown a photograph of a registered dietitian and then listened to an audio recording of an overview of nutrition counseling supposedly prepared by the dietitian. Participants were subsequently asked to evaluate the dietitian on a variety of dimensions related to nutrition counseling. This type of study design is referred to as an analogue methodology. Heppner and Claiborn (1) defined analogue methodologies as “experimental conditions set up to resemble (more or less) the counseling situation (p. 374.)”

The experimental design for this project consisted of 2 dietitian weight conditions (normal weight and obese), 2 dietitian self-disclosure conditions (absence or presence of self-disclosure about personal weight issues), and 2 participant weight conditions (normal weight and obese). Thus, this project was a 2 x 2 x 2 factorial design, resulting in a total of 8 cells or experimental conditions. There were a total of 160 participants, 80 of normal weight and 80 obese, with 20 participants in each of the 8 cells. Normal weight and obese participants were randomly assigned to experimental conditions. Table 1 provides an overview of the experimental design of the study.

Each normal weight and obese participant viewed a photograph of a registered dietitian and listened to an audio recording corresponding to one of the experimental conditions of the study, which consisted of the following 4 conditions:

1. Viewing a photograph of a normal weight dietitian who makes no reference to personal weight issues in the audio recording
 - Normal weight dietitian, no self-disclosure condition

Table 1. Overview of research design and experimental conditions.

RD^a Conditions	No RD Self-Disclosure	RD Self-Disclosure
Normal Weight RD	Normal Weight Participants ^b	Normal Weight Participants
	Obese Participants	Obese Participants
Obese RD	Normal Weight Participants	Normal Weight Participants
	Obese Participants	Obese Participants

^a RD: registered dietitian.

^b n = 20 participants in each of the 8 cells; 160 total participants.

2. Viewing a photograph of an obese dietitian who makes no reference to personal weight issues in the audio recording
 - Obese dietitian, no self-disclosure condition
3. Viewing a photograph of a normal weight dietitian who self-discloses about past history of overweight in the audio recording
 - Normal weight dietitian, self-disclosure condition
4. Viewing a photograph of an obese dietitian who self-discloses about current overweight status in the audio recording
 - Obese dietitian, self-disclosure condition

Participants

Human Subjects Review

This study was reviewed and approved by the University of Tennessee's Institutional Review Board for research involving human subjects. Approval was granted prior to beginning participant recruitment.

Criteria for Participation

Participants consisted of 160 adult Caucasian women, 25 to 50 years of age. By design, 80 participants were of normal weight, and 80 participants were obese. Weight status of participants was defined using the most recent National Institutes of Health guidelines for the classification of overweight and obesity (2). Using these criteria, normal weight participants had a body mass index (BMI, kg/m^2) of 18.5 – 24.9. Obese

participants had a BMI of 30 or greater. Potential participants who were categorized as overweight (BMI of 25.0 to 29.9) were not used in this study, to ensure a potentially greater separation of attitudes between the normal weight and the obese participants.

All women were used to eliminate participant gender as another independent variable, as attitudes about weight and/or body shape have been shown to vary by gender (3-6). All Caucasian women were used to eliminate race/ethnicity as another independent variable, as attitudes about weight and/or body shape have also been shown to vary by racial/ethnic group (4, 5, 7, 8).

Exclusion criteria required that participants were not registered dietitians. In addition, participants were not currently receiving nutrition counseling from a dietitian, and they had not seen a dietitian for nutrition counseling within the past 12 months. This was to ensure that participants' perceptions and evaluations of the dietitian presented in this study were not influenced by current or recent interactions with a registered dietitian.

Recruitment

Participants were recruited from the University of Tennessee campus and from the general Knoxville, Tennessee area by use of flyers, newspaper advertisements, and referrals. The research project was described as a "study about the evaluation of registered dietitians" in the flyers, or as simply a "nutrition study" in the newspaper advertisements. Potential participants were offered an opportunity to receive \$20.00 for the study, which required approximately 30 minutes of their time. Appendix A provides a copy of the flyer used for participant recruitment. Appendix B provides a copy of the newspaper recruitment advertisement. Original recruitment efforts were aimed at

“women of various weight groups,” while later recruitment efforts (after the normal weight participant conditions were filled) specifically solicited “women of above average weight.”

Materials

Photographs

A professional photographer was employed to take high-quality color digital photographs representing the normal weight and the obese dietitian weight conditions. Professional photography equipment, including camera, backdrop, and lighting, were used during the photo session. Two female models were recruited to serve as the normal weight and obese dietitians in the photographs. The model for the normal weight dietitian condition was in reality a registered dietitian; the obese model was not a registered dietitian.

The normal weight model and the obese model were photographed wearing the same clothing in appropriate sizes (i.e., sizes 8-10 for the normal weight model and women’s sizes 18-20 for the obese model). Models wore casual professional attire (i.e., khaki pants and blue shirts), as well as a white lab coat, to reinforce the impression that the models were health professionals. At the time the photographs were taken, the normal weight model measured 64.50 inches tall on a wall-mounted stadiometer, and weighed 134 pounds on a balance-beam scale, for a BMI of 22.64. The obese model measured 64.25 inches tall and weighed 201 pounds, for a BMI of 34.35. Thus, the dietitian models were almost identical in height, while there was a weight difference of 67 pounds and a difference of 11.71 BMI units. An obese versus simply an overweight

model was used to help ensure that participants perceived the obese dietitian as overweight; this assumption was later tested.

Care was taken to ensure that the photographs were similar in all ways, such as the positioning of the model and the distance of the model from the camera. Photographs were nearly full body images, including the area from the head to below the knees. From the numerous proofs taken, the 2 photographs that were the most similar were selected, one of the normal weight model and one of the obese model.

The photograph of the obese model was then computer-modified by a graphic artist at a local professional photography establishment. The head from the photograph of the normal weight model was imposed onto the body of the photograph of the obese model and edited as necessary to appear realistic (i.e., slightly widening the face and blending at the neckline). These manipulations were designed to create images of the same individual at each weight status (i.e., normal weight and obese), thus controlling for the potential confounding effect of the general physical appearance of the dietitian model. A brief description of the dietitian in the photographs was created and placed below the pictures. This description was the same for each of the 2 photographs. Each photograph was described as a picture of a registered dietitian with a Master's degree in nutrition who had 5 years of nutrition counseling experience. Copies of the dietitian photographs and descriptions used in the study are provided in Appendix C.

Audio Recordings

Audio recordings were created to accompany the photographs of the normal weight and obese dietitians to represent the dietitian self-disclosure conditions. The

person who served as the normal weight dietitian model, who was a registered dietitian, recorded the audio scripts. Each audio recording consisted of a brief introduction of the dietitian, and then a general overview of the nutrition counseling process. This overview included a discussion of situations in which a client might receive nutrition counseling from a registered dietitian, assessment of food intake and eating behaviors, setting goals for nutrition counseling, nutrition knowledge and behavioral skill building, barriers to dietary change, evaluation of nutrition counseling progress, and follow-up to nutrition counseling.

There were 3 versions of the audio recording, corresponding to the self-disclosure conditions of the research design. In the first, the dietitian introduced herself and gave an overview of the nutrition counseling process, with no reference to her own weight history or weight status. This version of the audio recording was used for the no self-disclosure condition with photographs of both the normal weight and obese dietitians. The second and third versions were identical to the first, except that the dietitian *did* self-disclose about either her past history of overweight or her current overweight status. The version in which the dietitian referred to a past history of overweight was used for the self-disclosure condition with the photograph of the normal weight dietitian. The version in which the dietitian acknowledged her current overweight status was used for the self-disclosure condition with the photograph of the obese dietitian.

Care was taken to ensure that the 3 versions of the audio recording were as consistent as possible. Audio scripts were recorded at a sound studio at the University of Tennessee library. The 3 versions of the audio recording script were the same, except for the absence or presence of an additional brief paragraph for the self-disclosure

conditions. The original script containing no self-disclosure was recorded first, using a computer system available in the sound studio. Then, the 2 self-disclosure paragraphs (one describing a past history of overweight and one acknowledging current overweight status) were recorded separately. Each of the 2 self-disclosure paragraphs consisted of 6 sentences and was as structurally similar to the other as possible. Computer sound files for each of the brief self-disclosure segments were then inserted at a designated position into the sound file for the original audio recording. This created 3 versions of the audio recording that were identical in every way, except for the self-disclosure sections. The audio recording of the original script was exactly 6:01 minutes in length. The audio recording containing the self-disclosure about past history of overweight was exactly 6:39 minutes in length, and the audio recording containing the self-disclosure about current overweight status was exactly 6:35 minutes in length. Final versions of the 3 audio recordings were saved to compact discs to be used in participant interviews. Copies of the complete scripts used in each of the 3 audio recordings are provided in Appendix D.

Instruments and Questionnaires

Counselor Rating Form

Consistent with the assumption that characteristics important for psychological counselors are also important for nutrition counselors, one set of dependent variables used in this study were the three dimensions of the Counselor Rating Form (CRF). The CRF was developed by Barak and LaCrosse (9) to measure perceived counselor expertness, trustworthiness, and attractiveness, which were characteristics proposed by

Strong (10) to be relevant to the counseling process. The CRF consists of 36 pairs of bipolar adjectives, 12 items for each of the 3 dimensions. Participants (or clients) evaluate a counselor by rating where the counselor falls on a 7-point scale for each of the 36 adjective pairs. Certain items are reverse coded, and then responses for the 12 items in each dimension are summed, creating a score for each of the 3 dimensions for each participant. Potential scores range from 12 to 84 for each dimension. The CRF is provided in Appendix E.

The CRF has been the major instrument used in assessing client perceptions of counselor expertness, trustworthiness, and attractiveness within a psychological counseling context (11). Heppner and Claiborn (1) concluded that the CRF is the best instrument available for measuring these constructs, and that consistent use of the CRF is beneficial in that it allows comparison of studies. As discussed previously, psychological counseling and nutrition counseling are similar in many ways. Therefore, the CRF was chosen as an appropriate dietitian (i.e., nutrition counselor) rating scale for this study.

LaCrosse and Barak (12) reported that the CRF was capable of differentiating both within and between counselors in terms of the dimensions of expertness, trustworthiness, and attractiveness. In addition, reliability coefficients using the Spearman-Brown formula for the 3 CRF scales across different counselors were .87 for expertness, .85 for attractiveness, and .91 for trustworthiness. Higher scores on each of the 3 CRF dimensions have been associated with better counseling outcomes (13).

Dietitian Rating Questionnaire

The dietitian rating questionnaire (DRQ) was a set of additional questions created by the investigator. These questions were designed to assess participants' perceptions and evaluations of dietitian qualities specifically relevant to the research questions of this study; no existing instrument appropriate for these purposes was identified. The items on the DRQ were used as additional dependent variables in this study.

The DRQ consists of 2 parts. Part I of the DRQ included 6 items that assessed the participant's willingness to begin nutrition counseling with the dietitian or refer others to the dietitian, the dietitian's knowledgeability about nutrition and eating behaviors, the dietitian's overall effectiveness as a nutrition counselor, the extent that the dietitian was seen as a good role model, the participant's degree of comfort discussing nutrition concerns with the dietitian, and the extent to which the dietitian was seen as being able to relate to the participant's nutrition problems. All items in Part I were answered on a 6-point scale ranging from *strongly disagree* to *strongly agree*. Part II of the DRQ assessed the participant's evaluations of the dietitian's effectiveness in counseling clients in a variety of nutrition counseling contexts. These contexts included prevention and treatment of heart disease, treatment of high blood pressure, treatment of eating disorders, treatment of diabetes, prevention of cancer risk, treatment of overweight and/or obesity, guidance on nutrition during pregnancy and/or breastfeeding, guidance on infant and/or child feeding, and guidance on nutrition for athletic training and performance. All items in Part II were answered on a 6-point scale ranging from *very ineffective* to *very effective*.

At the end of the DRQ, there were 2 additional items. The first asked the participant to evaluate the weight status of the dietitian in the photograph using a 5-point

scale, with 1 = very underweight, 2 = slightly underweight, 3 = about average, 4 = slightly overweight, and 5 = very overweight. The second asked the participant to estimate the weight in pounds of the dietitian in the photograph. This was designed as a test of the dietitian weight status manipulation in the photographs. The DRQ is provided in Appendix F.

Multidimensional Health Locus of Control Scale

Participants' internal, powerful others, and chance health locus of control beliefs were used as potential independent variables predicting dietitian evaluations in this study. Health locus of control was assessed with the Multidimensional Health Locus of Control (MHLC) Scale (Form B), which was developed to evaluate these 3 dimensions of beliefs about the controllability of health outcomes (14). The MHLC Scale consists of 18 items (6 items for each of the 3 dimensions) with a 6-point response scale ranging from *strongly disagree* to *strongly agree*. Responses for the 6 items in each dimension are summed, creating a score for each of the 3 dimensions for each participant. Potential scores range from 6 to 36 for each dimension. Alpha reliabilities for the 3 dimensions of the MHLC Scale (Form B) were reported as .710 for the internal health locus of control dimension, .691 for the chance health locus of control dimension, and .715 for the powerful others health locus of control dimension (14). The MHLC Scale is provided in Appendix G.

General Information Questionnaire

The general information questionnaire was another set of additional questions created by the investigator. This questionnaire consisted of 3 parts. The first part assessed participants' demographic information, including marital status, occupation of the participant and her spouse (if applicable), level of education of the participant and her spouse (if applicable), and household income. The second part assessed the participant's nutrition counseling history (if applicable). The third part assessed the participant's weight and dieting history. The general information questionnaire is provided in Appendix H.

Data Collection Procedures

Participant eligibility was initially assessed via telephone. When a potential participant called in response to recruitment, the research project was explained as a "study of factors related to the evaluation of registered dietitians by women of different weights." Thus, participants were aware that their own weight status was a factor of interest in the study, but were not aware that *dietitian* weight was an issue. Details about participation in the study were briefly outlined. At that time, if a caller indicated an interest in participating, eligibility to participate was determined. Gender was confirmed, and age, self-reported height, self-reported weight, self-reported race/ethnicity, occupation, and involvement in nutrition counseling with a registered dietitian were assessed. If the caller met eligibility requirements for the study, she was invited to participate, and a data collection interview was scheduled at a time and place convenient

for her. A copy of the complete telephone script and pre-interview questionnaire is provided in Appendix I.

Prior to the data collection interview, participants were classified as normal weight or obese, based on BMI calculated from self-reported height and weight. Also before the data collection interview, participants had been randomly assigned to one of the dietitian weight conditions and self-disclosure conditions described above.

Data were collected during one interview that required approximately 30 minutes. The data collection interviews took place in the participant's home or another private conference setting convenient to the participant. At the beginning of the data collection interview, details of the study were reviewed with the participants, and they were asked to read and sign an informed consent form outlining the study. The participants were provided with a copy of the informed consent form. A copy of the informed consent form is provided in Appendix J.

The participants' height and weight were then measured, and BMI was recalculated to verify participant weight group assignment. Height without shoes was measured with a steel measuring tape using a wall or doorway at the interview site and a square. Weight in street clothes without shoes was measured using a high quality, portable bathroom scale.

After participant weight group assignment was confirmed, participants were shown a photograph reflecting one of the 2 dietitian weight conditions. Participants then listened to an audio recording reflecting one of the dietitian self-disclosure conditions. Participants were told that the dietitian in the photograph prepared the accompanying audio recording. The dietitian photographs and descriptions were framed in standard 8 x

10 frames, which allowed the photograph to remain standing in front of the participants on a table or desk while the audio recording played and while instruments and questionnaires were completed. The audio recordings were played on a small, portable compact disc player, with participants wearing headphones to enhance audibility and filter out noise from the surroundings.

After viewing the photograph and listening to the audio recording, each of the instruments and questionnaires was explained to the participants. For the CRF and the DRQ, participants were asked to evaluate the dietitian seen in the photograph and heard in the audio recording, based on their initial impressions after listening to the script. The MHLC Scale was explained as a questionnaire about participants' own health beliefs, and the general information questionnaire was described as general background information about the participants. Participants then completed all of the instruments and questionnaires, which were presented in a notebook in a predetermined order. Participants first completed the CRF and then the DRQ, followed by the MHLC Scale and the general information questionnaire. The investigator remained accessible, in case the participants had any questions about any of the instruments or questionnaires. After all instruments and questionnaires were completed, data were checked for completeness. At the end of the data collection interview, participants were paid \$20.00 as compensation for completing the data collection interview and thanked for their participation in the study. A signed receipt was obtained, and a copy was given to the participants.

Statistical Analyses

SAS (version 8.2, 1999-2001, SAS Institute Inc., Cary, NC) was used for all statistical analyses. Descriptive statistics, including means, standard deviations, ranges, and frequencies were computed for variables of interest. Simple correlations between variables of interest were also computed. Analysis of variance (ANOVA) was used to test for differences in selected characteristics among the study condition groups.

Multivariate analysis of variance (MANOVA) was used to test for differences in the various sets of dependent variables, including the set of CRF dimensions and the 2 sets of DRQ items, by dietitian weight status, dietitian self-disclosure status, and participant weight status conditions, including all interactions among these factors. MANOVA was used to provide protection against the possibility of a Type I error. Significant multivariate tests were followed by univariate analysis of variance (ANOVA). A probability level of 0.05 was used as the significance level for all tests.

Models predicting each of the 3 CRF dimensions were also developed. Scores on each of the 3 MHLC Scale dimensions were used as potential independent variables predicting each of these dependent variables. Models were created using stepwise regression procedures, and only independent variables significant at a probability level of 0.05 were retained.

References

1. Heppner PP, Claiborn CD. Social influence research in counseling: a review and critique. *J Couns Psychol.* 1989;36:365-387.
2. *Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults – The Evidence Report.* Bethesda, MD: National Heart, Lung, and Blood Institute; September 1998.
3. Tiggeman M, Rothblum ED. Gender differences in social consequences of perceived overweight in the United States and Australia. *Sex Roles.* 1988;18:75-86.
4. Harris MB, Walters LC, Waschull S. Gender and ethnic differences in obesity-related behaviors and attitudes in a college sample. *J Appl Soc Psychol.* 1991;21:1545-1566.
5. Jackson LA, McGill OD. Body type preferences and body characteristics associated with attractive and unattractive bodies by African Americans and Anglo Americans. *Sex Roles.* 1996;35:295-307.
6. Muth JL, Cash TF. Body-image attitudes: what difference does gender make? *J Appl Soc Psychol.* 1997;27:1438-1452.
7. Hebl MR, Heatherton RF. The stigma of obesity in women: the difference is black and white. *Pers Soc Psychol Bull.* 1998;24:417-426.
8. Fitzgibbon ML, Blackman LR, Avellone ME. The relationship between body image discrepancy and body mass index across ethnic groups. *Obes Res.* 2000;8:582-589.

9. Barak A, LaCrosse MB. Multidimensional perception of counselor behavior. *J Couns Psychol.* 1975;22:471-476.
10. Strong SR. Counseling: an interpersonal influence process. *J Couns Psychol.* 1968;15:215-224.
11. Ponterotto JG, Furlong MJ. Evaluating counselor effectiveness: a critical review of rating scale instruments. *J Couns Psychol.* 1985;32:597-616.
12. LaCrosse MB, Barak A. Differential perception of counselor behavior. *J Couns Psychol.* 1976;23:170-172.
13. LaCrosse MB. Perceived counselor social influence and counseling outcomes: validity of the Counselor Rating Form. *J Couns Psychol.* 1980;27:320-327.
14. Wallston KA, Wallston BS, DeVellis R. Development of the Multidimensional Health Locus of Control (MHLC) Scales. *Health Educ Monogr.* 1978;6:160-170.

Part III:
**Acknowledgement of Personal Overweight by Dietitians Is Related
To Women's Evaluations of Registered Dietitians**

Abstract

- **Objective:** To assess the effects of a registered dietitian's weight status and self-disclosure about personal weight issues on normal weight and obese participants' perceptions of the dietitian's expertness, trustworthiness, and attractiveness, 3 characteristics important for counselors.
- **Design:** The research design was a randomized 2 x 2 x 2 factorial design consisting of 2 dietitian weight status conditions (normal weight and obese), 2 dietitian self-disclosure conditions (absence or presence of self-disclosure about personal weight issues), and 2 participant weight status conditions (normal weight and obese). A simulated nutrition counseling situation was developed in which participants were shown a photograph of a dietitian and then listened to an audio recording of an overview of nutrition counseling supposedly prepared by the dietitian. Participants were subsequently asked to evaluate the dietitian.
- **Participants:** A convenience sample of 160 normal weight and obese Caucasian women between the ages of 25 and 50 was recruited from the general community.
- **Main outcome measures:** The dependent variables were participants' ratings of dietitian expertness, trustworthiness, and attractiveness as measured by the Counselor Rating Form.
- **Statistical analyses:** The major analyses were multivariate analysis of variance (MANOVA) and analysis of variance (ANOVA) as appropriate.
- **Results:** An obese dietitian who self-disclosed about (i.e., verbally acknowledged) her current overweight status was rated as less expert ($p = .0003$)

and attractive ($p = .02$) by normal weight participants than an obese dietitian who did not self-disclose; these effects were not observed with obese participants.

- **Application:** Overweight or obese dietitians may be perceived more positively by normal weight clients when the dietitians do not refer to their personal overweight status.

Introduction

An important role played by registered dietitians is that of a nutrition counselor.

Nutrition counseling is comparable to psychological counseling in many ways.

Snetselaar (1) describes nutrition counseling as “a combination of nutrition expertise and psychological skill delivered by a trained nutrition counselor...(p. 3).” Nutrition counselors may work within the same theoretical contexts and utilize many of the same counseling skills and techniques that psychological counselors use (1-7). Goals of nutrition counseling include change in the client’s eating attitudes and/or behaviors, just as attitude and/or behavior change is the goal in psychological counseling. Spraggins et al (8) stated that “comparable with psychological counseling, nutrition counseling, to be effective, requires a strong background in both nutrition concepts and human behavior to facilitate the dietary compliance of clients (p. 244).” Thus, registered dietitians, as nutrition counselors, may benefit from knowledge gained within the field of counseling psychology.

Strong (9) described counseling as an interpersonal influence process, in which the counselor attempts to bring about cognitive and/or behavioral change in the client. Within this conceptualization, characteristics of the counselor as perceived by the client

were theorized to play a key role in the counselor's influence potential. Three counselor characteristics proposed to be important in the client change process were the perceived expertness, trustworthiness, and attractiveness of the counselor. Expertness refers to the perception of the counselor as a source of valid information and assistance.

Trustworthiness refers to a counselor's perceived honesty, sincerity, openness, and lack of self-interest. It is important to emphasize that attractiveness within the interpersonal influence model refers to *social* or *interpersonal*, rather than *physical*, attractiveness.

Attractiveness in this context includes the extent to which a client feels liking for, compatibility with, and similarity to a counselor.

Strong (9) theorized that counselors who exhibited these 3 characteristics have more influence potential with clients in achieving therapeutic change. LaCrosse (10) found that clients' initial impressions of counselors' expertness, trustworthiness, and attractiveness accounted for 35% of the variance in counseling outcomes, as measured by goal attainment. Other researchers have documented relationships between clients' perceptions of these counselor characteristics and their satisfaction and/or continuation with counseling (11-13).

The publication of Strong's (9) article in 1968 generated a wealth of research on various factors important in this interpersonal influence process. Much of the research has been summarized in 3 comprehensive reviews (14-16). Both counselor and client variables have been investigated within the context of the interpersonal influence model of counseling, including the interaction of counselor and client variables.

The effect of counselor weight status on client perceptions of the counselor is one such factor that has been investigated. Although there is a vast amount of research

documenting the stigmatization of obese individuals within a variety of contexts (17, 18), only 2 published studies were identified that specifically examined the effect of counselor weight on client evaluations of the counselor. McKee and Smouse (19) found that clients rated overweight counselors of low professional status as less expert and trustworthy than normal weight counselors of low professional status. These effects for counselor weight were not found for counselors of high professional status. However, Wiggins (20) showed that clients rated overweight counselors as less competent than normal weight counselors in a variety of areas. Thus, the results of these two studies were not entirely consistent. One study (20) found a general negative effect of counselor overweight status on client perceptions, while the other (19) found that counselor overweight status did not negatively affect client perceptions unless the counselor was also of low professional status.

The effect of self-disclosure by the counselor on client perceptions of the counselor is another factor that has been investigated within the interpersonal influence process of counseling. As opposed to counselor weight status, counselor self-disclosure is an issue that has been well researched within the counseling literature. Watkins (21) defined self-disclosure as “verbalized, personal revelations...made by the counselor to the client (p. 478).” The results of research on the effects of counselor self-disclosure, much of which has been reviewed by Watkins (21), have been equivocal. Within Strong’s (9) original conceptualization of counseling as an interpersonal influence process, self-disclosure should increase attraction to a counselor to the extent that it establishes similarity between counselor and client; some research has supported this position (9, 14-16, 21).

The existing research on the interpersonal influence process of counseling has focused on a psychological counseling context. No published studies were identified that investigated clients' perceptions of dietitians' expertness, attractiveness, and trustworthiness. Because nutrition counseling is analogous to psychological counseling, it is assumed that the same qualities (expertness, trustworthiness, and attractiveness) that are important for a psychological counselor are also important for a nutrition counselor, or registered dietitian. The purpose of this study was to extend the conceptualization of counseling as an interpersonal influence process to the context of nutrition counseling. Within this theoretical framework, this study sought to answer the following research questions:

- 1) Does the weight status of a registered dietitian affect participants' perceptions of the dietitian's expertness, trustworthiness, and attractiveness? If so, how?
- 2) Does self-disclosure about personal weight issues by a dietitian affect participants' perceptions of the dietitian's expertness, trustworthiness, and attractiveness? If so, how?
- 3) Does the weight status of participants affect their perceptions of a dietitian's expertness, trustworthiness, and attractiveness? If so, how?
- 4) Do the above factors interact to affect participants' perceptions of a dietitian's expertness, trustworthiness, and attractiveness? If so, what is the nature of these interactions?

Methods

Research Design

A simulated nutrition counseling situation was developed in which participants were shown a photograph of a dietitian and then listened to an audio recording of an overview of nutrition counseling supposedly prepared by the dietitian. Participants were then asked about their perceptions of the dietitian. This type of research design is referred to as an analogue methodology. Heppner and Claiborn (16) defined analogue methodologies as “experimental conditions set up to resemble (more or less) the counseling situation (p. 374).”

The experimental design for this project consisted of 2 dietitian weight conditions (normal weight and obese), 2 dietitian self-disclosure conditions (absence or presence of self-disclosure about weight), and 2 participant weight conditions (normal weight and obese). Thus, this project was a 2 x 2 x 2 factorial design, resulting in a total of 8 cells or experimental conditions. There were a total of 160 participants, 80 of normal weight and 80 obese, with 20 participants in each of the 8 experimental conditions. Normal weight and obese participants were randomly assigned to one of the 4 possible dietitian weight status and dietitian self-disclosure status combinations consisting of 1) normal weight dietitian, no self-disclosure, 2) obese dietitian, no self-disclosure, 3) normal weight dietitian, self-disclosure about past history of overweight, or 4) obese dietitian, self-disclosure about current overweight status.

Participants

Participants consisted of 160 adult Caucasian women, 25 to 50 years of age. The research design required that 80 participants were of normal weight, and 80 participants were obese. Weight status of participants was defined using the most recent National Institutes of Health guidelines for the classification of overweight and obesity (22). Using these criteria, normal weight participants had a body mass index (BMI, kg/m^2) of 18.5 – 24.9. Obese participants had a BMI of 30 or greater.

Exclusion criteria required that participants were not registered dietitians, were not currently receiving nutrition counseling from a dietitian, and had not seen a dietitian for nutrition counseling within the past 12 months. This was to ensure that the participants' impressions and evaluations of the dietitian presented in this study were not influenced by current or recent interactions with a registered dietitian.

Participants were recruited from the University of Tennessee campus and from the general Knoxville, Tennessee area by use of flyers, newspaper advertisements, and referrals. Participants received \$20.00 as compensation for completing the study. The study was approved by the University of Tennessee's Institutional Review Board for research involving human subjects, and participants signed informed consent forms prior to participation in the study.

Materials

Photographs

Photographs were taken to represent the normal weight and obese dietitian weight conditions. Two female models were recruited to serve as the normal weight and obese

dietitians in the photographs. The model for the normal weight dietitian condition was in reality a registered dietitian; the obese model was not a registered dietitian. The normal weight model and the obese model were photographed wearing the same clothing in appropriate sizes. Models wore casual professional attire, including a white lab coat to emphasize that they were health professionals. Photographs were nearly full body images, including the area from the head to below the knees. When the photographs were taken, the normal weight model measured 64.50 inches tall and weighed 134 pounds, for a BMI of 22.64. The obese model measured 64.25 inches tall and weighed 201 pounds, for a BMI of 34.35.

The photograph of the obese model was then computer-modified. The head from the photograph of the normal weight model was imposed onto the body of the photograph of the obese model and edited as necessary to appear realistic (i.e., slightly widening the face and blending at the neckline). This resulted in images of the same individual at each weight status (i.e., normal weight and obese), thus controlling for the potential confounding effect of the general physical appearance of the dietitian model. A brief description of the dietitian in the photographs was created and placed below the pictures. This description was the same for each of the two photographs. Each photograph was described as a picture of a registered dietitian with a Master's degree in nutrition who had 5 years of nutrition counseling experience.

Audio Recordings

Audio recordings were created to accompany the photographs of the normal weight and obese dietitians to represent the dietitian self-disclosure conditions. Each

audio recording consisted of a brief introduction of the dietitian, and then a general overview of the nutrition counseling process. This overview included a discussion of situations in which a client might receive nutrition counseling from a registered dietitian, assessment of food intake and eating behaviors, setting goals for nutrition counseling, nutrition knowledge and behavioral skill building, barriers to dietary change, evaluation of nutrition counseling progress, and follow-up to nutrition counseling.

There were 3 versions of the audio recording, corresponding to the self-disclosure conditions of the research design. In the first, the dietitian introduced herself and gave an overview of the nutrition counseling process, with no reference to her own weight history or weight status. This version of the audio recording was used for the no self-disclosure condition with photographs of both the normal weight and obese dietitians. The second and third versions were identical to the first, except that the dietitian *did* self-disclose about either her past history of overweight or her current overweight status. The version in which the dietitian referred to a past history of overweight was used for the self-disclosure condition with the photograph of the normal weight dietitian. The version in which the dietitian acknowledged her current overweight status was used for the self-disclosure condition with the photograph of the obese dietitian.

The 3 versions of the audio recording script were identical, except for the absence or presence of an additional brief paragraph for the self-disclosure conditions. Use of computer sound files allowed the recordings of the self-disclosure paragraphs to be inserted into the recording of the original script. The audio recording of the original script was approximately 6 minutes in length; the audio recordings for the 2 self-

disclosure conditions were each approximately 6 ½ minutes in length. Final versions of the 3 audio recordings were saved to compact discs to be used in participant interviews.

Instruments and Questionnaires

Counselor Rating Form

Consistent with the assumption that characteristics important for psychological counselors are also important for nutrition counselors, the dependent measures used in this study were the three dimensions of the Counselor Rating Form (CRF). The CRF was developed by Barak and LaCrosse (23) to measure perceived counselor expertness, trustworthiness, and attractiveness, which were the characteristics proposed by Strong (9) to be relevant to the counseling process. The CRF consists of 36 pairs of bipolar adjectives, 12 items for each of the 3 dimensions. Participants (or clients) evaluate a counselor by rating where the counselor falls on a 7-point scale for each of the 36 adjective pairs. Certain items are reverse coded, and then responses for the 12 items in each dimension are summed, creating a score for each of the 3 dimensions for each participant. Potential scores range from 12 to 84 for each dimension.

The CRF has been the major instrument used in assessing client perceptions of counselor expertness, trustworthiness, and attractiveness within a psychological counseling context (24). Heppner and Claiborn (16) concluded that the CRF is the best instrument available for measuring these constructs, and that consistent use of the CRF is beneficial in that it allows comparison of studies. As discussed previously, psychological counseling and nutrition counseling are similar in many ways. Therefore, the CRF was chosen as an appropriate dietitian (i.e., nutrition counselor) rating scale for this study.

LaCrosse and Barak (25) reported that the CRF was capable of differentiating both within and between counselors in terms of the dimensions of expertness, trustworthiness, and attractiveness. In addition, reliability coefficients using the Spearman-Brown formula for the 3 CRF scales across different counselors were .87 for expertness, .85 for attractiveness, and .91 for trustworthiness. Higher scores on each of the 3 CRF dimensions have been associated with better counseling outcomes (10).

General Information Questionnaire

The general information questionnaire was a set of additional questions created by the investigator. This questionnaire consisted of 3 parts. The first part assessed demographic information, including level of education and household income of the participants. The second part assessed the participant's nutrition counseling history (if applicable). The third part assessed the participant's weight and dieting history.

Data Collection Procedures

Participant eligibility was initially assessed via telephone. If the caller met eligibility requirements for the study, she was invited to participate, and a data collection interview was scheduled. Prior to the interview, participants were categorized as normal weight or obese, based on BMI calculated from self-reported height and weight. Also before the interview, participants had been randomly assigned to one of the dietitian weight conditions and self-disclosure conditions described above.

Data were collected during one interview that required approximately 30 minutes. The interviews took place in the participant's home or another private conference setting

convenient to the participant. After obtaining informed consent, the participants' height and weight were measured, and BMI was recalculated to verify weight classification.

After their weight classification was confirmed, participants were shown a framed 8 x 10 photograph reflecting one of the two dietitian weight conditions. Participants then listened to an audio recording reflecting one of the dietitian self-disclosure conditions. The audio recordings were played on a small, portable compact disc player, with participants wearing headphones to enhance audibility and filter out noise from the surroundings. Participants were told that the dietitian in the photograph prepared the accompanying audio recording.

After viewing the photograph and listening to the audio recording, participants completed each of the instruments and questionnaires. For the CRF, participants were asked to evaluate the dietitian seen in the photograph and heard in the audio recording, based on their initial impressions after listening to the script. After completing the CRF, participants were asked 2 additional questions designed to assess the effectiveness of the dietitian weight status manipulation in the photographs. First, participants were asked to rate the weight status of the dietitian in the photograph using a 5-point scale, with 1 = very underweight, 2 = slightly underweight, 3 = about average, 4 = slightly overweight, and 5 = very overweight. Then, participants were asked to estimate the weight in pounds of the dietitian in the photograph. Following these assessments, participants completed the general information questionnaire.

Statistical Analyses

SAS (version 8.2, 1999-2001, SAS Institute Inc., Cary, NC) was used for all statistical analyses. Means and standard deviations were computed for variables of interest. Analysis of variance (ANOVA) was used to test for differences in selected characteristics among the study condition groups.

A multivariate analysis of variance (MANOVA) was then performed, with the three dimensions of the Counselor Rating Form (expertness, trustworthiness, and attractiveness) as dependent variables. The MANOVA tested for differences in this set of dependent variables by dietitian weight status, dietitian self-disclosure status, and participant weight status conditions, including all interactions among these factors. MANOVA was used to provide protection against the possibility of a Type I error. Significant multivariate tests were followed by univariate analysis of variance (ANOVA). A probability level of 0.05 was used as the significance level for all tests.

Results

Participant Characteristics

Table 1 presents selected characteristics of the total sample, and characteristics by participants' weight status group. As planned, the obese participants had a significantly higher BMI than did the normal weight participants ($p < .0001$). In addition, the obese participants were significantly older ($p < .0001$) and had a significantly lower level of education ($p = .0002$) than did the normal weight participants. There were no differences in annual household income between the 2 groups.

Table 1. Selected characteristics of the study sample.

Characteristic	Total Sample (n = 160)	Normal Weight Participants (n = 80)	Obese Participants (n = 80)	P Value ^a
BMI (kg/m ²)	29.72 ± 8.40	22.20 ± 1.86	37.25 ± 4.89	< .0001
Age (years)	36.68 ± 7.85	33.90 ± 7.53	39.46 ± 7.19	< .0001
Level of Education ^b	5.79 ± 1.03	6.09 ± 0.98	5.50 ± 0.99	.0002
Household Income ^c	4.60 ± 2.66	4.93 ± 2.89	4.28 ± 2.38	.12

^a P values correspond to the test of difference between normal weight and obese participants for each characteristic.

^b Level of education was measured using a 1 to 7 scale, ranging from 1 = less than 7th grade education to 7 = graduate school or professional training.

^c Household income was measured using a 1 to 11 scale, ranging from 1 = below \$10,000 per year to 11 = over \$100,000 per year.

Effectiveness of Dietitian Weight Status Manipulation

The mean estimated weight for the normal weight dietitian was 133.95 ± 12.54 pounds, which was virtually identical to her actual weight of 134 pounds. Using the 5-point scale to estimate weight status, with 1 = very underweight, 2 = slightly underweight, 3 = about average, 4 = slightly overweight, and 5 = very overweight, the mean estimated weight category for the normal weight dietitian was 3.06 ± 0.29 . Thus, the normal weight dietitian was viewed as being of “about average” weight. The mean estimated weight for the obese dietitian was 181.98 ± 27.82 pounds. This was lower than her actual weight of 201 pounds, but there was much more variability in the estimates than for the normal weight dietitian. Using the 5-point scale to estimate weight status, the mean estimated weight category for the obese dietitian was 4.16 ± 0.54 . Thus, the obese dietitian was generally viewed as being “slightly overweight.”

Although the obese dietitian was viewed as less overweight than she was in reality, she *was* viewed as overweight. The obese dietitian was seen as significantly heavier than the normal weight dietitian ($p < .0001$) and was rated as being in a significantly higher weight category ($p < .0001$). Therefore, the dietitian weight manipulation was considered successful for the purposes of this study.

Effects of Experimental Conditions

Table 2 presents means and standard deviations for each of the CRF dimensions, expertness, trustworthiness, and attractiveness, for each of the experimental conditions. Table 3 presents results of the MANOVA for the set of CRF dimensions by dietitian weight status, dietitian self-disclosure status, and participant weight status conditions,

Table 2. Means^a and standard deviations for each of the Counselor Rating Form (CRF) dimensions for each experimental condition^b.

Participant Weight Status	RD ^c Weight Status	RD Self-Disclosure Status	CRF Dimensions		
			Expertness	Trustworthiness	Attractiveness
Normal	Normal	No	74.00 ± 5.50	73.30 ± 7.33	64.55 ± 9.38
		Yes	74.75 ± 6.42	75.35 ± 7.51	69.20 ± 6.14
	Obese	No	76.90 ± 6.76	75.55 ± 8.14	69.45 ± 8.37
		Yes	68.90 ± 7.64	72.45 ± 7.12	63.40 ± 8.65
Obese	Normal	No	75.40 ± 7.13	72.80 ± 9.27	66.15 ± 10.84
		Yes	74.55 ± 6.55	73.85 ± 9.56	63.50 ± 9.73
	Obese	No	74.05 ± 7.06	74.75 ± 6.83	65.00 ± 10.13
		Yes	73.75 ± 7.85	73.60 ± 8.48	65.15 ± 11.32

^a Potential scores ranged from 12 to 84 for each dimension, with higher scores indicating a higher level of each CRF dimension.

^b n = 20 for each of the 8 experimental conditions, with 160 participants total.

^c RD: registered dietitian.

Table 3. Multivariate analysis of variance (MANOVA) for effects of experimental conditions on the set of Counselor Rating Form dimensions.

Effect	F Value^a	P Value
RD ^b Weight Status (RDWT)	1.64	.18
RD Self-Disclosure Status (RDSD)	2.76	.04
Participant Weight Status (PWT)	2.07	.11
RDWT x RDSD	1.17	.33
RDWT x PWT	0.10	.96
RDSD x PWT	1.82	.15
RDWT x RDSD x PWT	4.00	.009

^a Wilks' Lambda criterion was used.

^b RD: registered dietitian.

including all interactions among these factors. Results of the multivariate tests showed a significant main effect for dietitian self-disclosure status ($F = 2.76, p = .04$). No other main effects or 2-way interactions were significant. The 3-way interaction between dietitian weight status, dietitian self-disclosure status, and participant weight status was also significant ($F = 4.00, p = .009$). Because dietitian self-disclosure status was contained in the significant 3-way interaction, the main effect for self-disclosure status was not interpreted for variables in which the 3-way interaction was significant. Univariate ANOVAs were then conducted to determine for which variables the significant 3-way interaction existed. Table 4 presents the ANOVAs for each of the CRF dimensions. The 3-way interaction was significant for the variables expertness ($F = 4.54, p = .03$) and attractiveness ($F = 5.11, p = .03$). Neither the 3-way interaction nor the main effect for dietitian self-disclosure was significant for the variable trustworthiness.

In order to assess the nature of this 3-way interaction for the variables expertness and attractiveness, a series of follow-up tests were conducted. Data were divided by participant weight category, and the 2-way interaction between dietitian weight status and dietitian self-disclosure status was examined within each participant weight category for each of the 2 variables. ANOVAs conducted within each participant weight category revealed significant 2-way interactions between dietitian weight status and dietitian self-disclosure status for expertness ($F = 8.72, p = .004$) and for attractiveness ($F = 8.46, p = .005$) within the normal weight participant group, but not in the obese participant group.

Data were then divided by dietitian weight status within the normal weight participant group to determine where significant differences existed by dietitian self-disclosure status for the variables expertness and attractiveness. These interactions

Table 4. Univariate analyses of variance (ANOVA) for effects of experimental conditions on each of the Counselor Rating Form (CRF) dimensions.

Effect	CRF Dimensions					
	Expertness		Trustworthiness		Attractiveness	
	F Value	P Value	F Value	P Value	F Value	P Value
RD ^b Weight Status (RDWT)	1.37	.24	0.04	.84	0.00	.95
RD Self-Disclosure Status (RDSD)	3.71	.06	0.05	.82	0.43	.51
Participant Weight Status (PWT)	0.54	.46	0.10	.75	1.30	.26
RDWT x RDSD	3.53	.06	2.07	.15	1.75	.19
RDWT x PWT	0.03	.85	0.21	.65	0.05	.82
RDSD x PWT	1.95	.16	0.03	.85	0.03	.85
RDWT x RDSD x PWT	4.54	.03	0.33	.56	5.11	.03

^b RD: registered dietitian.

between dietitian weight status and dietitian self-disclosure status within the normal weight participant group are presented graphically in Figure 1. Results indicated that there was a significant difference in expertness rating between dietitian self-disclosure categories within the obese dietitian group ($F = 14.58, p = .0003$), but not in the normal weight dietitian group ($F = 0.13, p = .72$). An obese dietitian who self-disclosed about her current overweight status to normal weight participants was rated less expert than one who did not self-disclose (means of 68.90 and 76.90, respectively). There was also a significant difference in attractiveness rating between dietitian self-disclosure categories within the obese dietitian group ($F = 5.41, p = .02$). An obese dietitian who self-disclosed to normal weight participants was rated less attractive than one who did not self-disclose (means of 63.40 and 69.45, respectively). Within the normal weight dietitian group, although not statistically significant at a probability level of 0.05, there was a trend toward the opposite relationship ($F = 3.19, p = .08$). That is, a normal weight dietitian who self-disclosed about a past history of overweight to normal weight participants was rated as more attractive than one who did not (means of 69.20 and 64.55, respectively).

Discussion

Results of this study indicated that when an obese dietitian verbally acknowledged her current overweight status to normal weight participants, she was rated as significantly less expert and attractive than an obese dietitian who did not self-disclose about her weight. These effects were not observed with obese participants, who rated dietitians similarly regardless of dietitian weight status and/or self-disclosure status.

Figure 1(a).

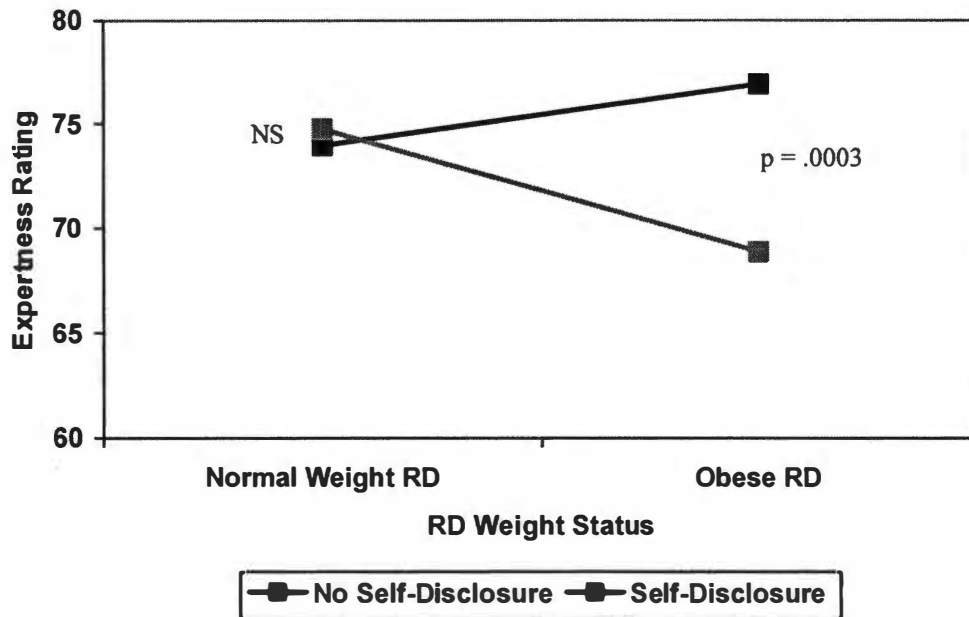


Figure 1(b).

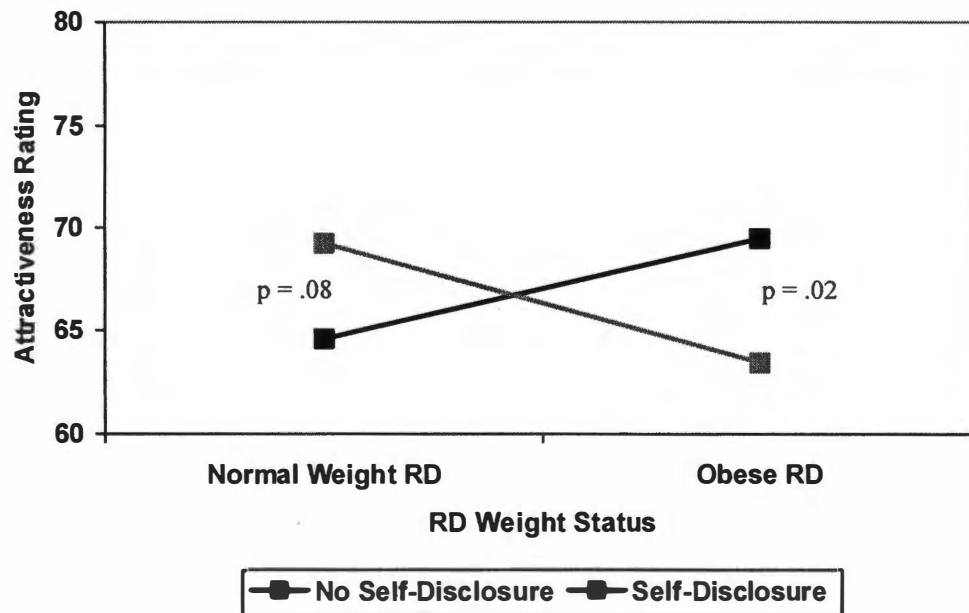


Figure 1. Graphs of interactions between dietitian weight status and dietitian self-disclosure status within normal weight participant group for expertness (a) and attractiveness (b) ratings.

Wiggins (20) reported that clients rated overweight counselors as generally less competent than normal weight counselors. In contrast, findings of this study showed that dietitian weight status was only important in terms of perceived dietitian expertness and attractiveness when dietitian self-disclosure status and participant weight status were also considered. Likewise, McKee and Smouse (19) found that counselor weight status was only perceived negatively when another factor was also considered. In their study, counselor overweight status did not negatively affect client perceptions of counselor expertness and trustworthiness unless the counselor was also of low professional status.

Regarding the effects of self-disclosure, results of this study were also inconsistent with some previous reports. Within the conceptualization of counseling as an interpersonal influence process (9), counselor self-disclosure has been shown to increase a client's attraction to a counselor (i.e., increase the perceived attractiveness of the counselor), theoretically because self-disclosure demonstrates similarity between counselor and client (9, 14-16, 21). In the current study, there were no effects of dietitian self-disclosure within the obese participant group, who might be expected to perceive weight-related self-disclosure positively. However, self-disclosure about (i.e., acknowledgement of) current overweight status by an obese dietitian was perceived negatively by normal weight participants. It may be that self-disclosure by a currently obese dietitian accentuated the *dissimilarity* between the normal weight participants and the dietitian and emphasized the dietitian's inability to address her own weight-related issues, thus decreasing perceptions of the dietitian's attractiveness and expertness.

A recent study of stigma acknowledgement within an entirely different context reported results strikingly similar to those reported for the normal weight participant

group in the current study. Hebl and Kleck (26) examined the effects of verbally acknowledging physical stigmas (obesity and physical disability) within an employment interview context. These researchers found that job applicants who did not verbally acknowledge their obesity or physical disability were not evaluated differently. However, when applicants did verbally acknowledge their stigmas, those who acknowledged obesity were evaluated less positively on several dimensions than those who acknowledged a physical disability.

These authors (26) proposed that it is the perceived controllability of each of the stigmas that is responsible for these results, suggesting that obesity is generally considered to be a controllable condition, while physical disability is considered to be uncontrollable. Research conducted by DeJong (27) also suggested that women who acknowledged obesity but attributed it to a medical condition were rated less negatively than were those who acknowledged obesity without the medical reason for the condition. In addition, a review of the effect of counselor physical disability on evaluations of counselors concluded that counselor disability status had only a limited effect on perceptions of counselors' expertness, trustworthiness, and attractiveness (28). Thus, previous research has suggested that only when a stigmatizing condition is perceived as being controllable does acknowledgement of the condition result in negative evaluations. It is possible that the issue of perceived controllability of obesity was even more relevant in the current study, if normal weight participants believed that a dietitian, as a nutrition professional, should be better able than others to control her weight.

Results of this study do not explain why effects for dietitian weight status and dietitian self-disclosure status were found only within the normal weight participant

group. The obese participants were significantly older and less educated than the normal weight participants. These differences are consistent with demographic characteristics that have been associated with obesity. Weight and obesity prevalence have been shown to increase with age (29, 30). In addition, a lower educational level has been associated with an increased risk of obesity (31-33). However, while the differences in age and educational level between the normal weight and obese participants in this study were statistically significant, the relatively small magnitudes of the differences (i.e., age 34 versus 39 and “college degree” versus “some college” for the normal weight and obese participants, respectively) are unlikely to be of practical significance.

This study extended the conceptualization of counseling as an interpersonal influence process to include the context of nutrition counseling. A strength of this study was a research design which resulted in a high degree of experimental control. This allowed various factors potentially affecting the evaluation of registered dietitians to be studied, while minimizing potential confounding factors. However, the nature of the research design was also a limitation of this study. This study relied on a counseling analogue methodology, as has much of the research reported within the interpersonal influence literature. Studies utilizing analogue methodologies, the current study included, have limited generalizability beyond the research setting. Other limitations of this study include that the participants were all Caucasian women between the ages of 25 and 50. Thus, results may not be generalized to men, those of a different race/ethnicity, or other age groups. Finally, although the total sample for this study included 160 participants, the sample size in each of the 8 cells ($n=20$) was relatively small.

Future research should focus on assessing the relevance and importance of perceived dietitian expertness, trustworthiness, and attractiveness within an actual nutrition counseling context. It will be important to study the perceptions of dietitians by real clients involved in longer-term nutrition counseling and determine if these dietitian characteristics are related to outcome variables, such as client satisfaction or goal attainment.

The results of this study have important implications for registered dietitians who are overweight or obese. On a positive note, this study did not find an overall negative effect for dietitian obesity in terms of client perceptions of dietitian expertness, trustworthiness, and attractiveness. Perceptions of dietitian expertness and attractiveness were more negative only when current obesity was verbally acknowledged to normal weight women. Otherwise, a registered dietitian who was presented as well educated, experienced, professionally attired, and well spoken was perceived as generally expert, trustworthy, and attractive.

Results of this study indicate that overweight or obese dietitians, in initial interactions with normal weight clients, may be better served by not referring to their personal overweight status. Obese participants rated dietitians similarly regardless of weight status and/or self-disclosure about personal weight issues. This is especially relevant because overweight and/or obese individuals are more likely to be involved in weight-related nutrition counseling. In conclusion, initial perceptions of a dietitian may be most positive when an overweight or obese dietitian does not verbally acknowledge personal overweight to normal weight clients. Weight status of the dietitian may not be a concern for obese clients, at least in initial interactions.

References

1. Snetselaar LG. *Nutrition Counseling Skills for Medical Nutrition Therapy*. Gaithersburg, MD: Aspen Publishers, Inc.; 1997.
2. Hoeltzel KE. Counseling methods for dietitians. *Top Clin Nutr*. 1986;1:33-42.
3. Vickery CE, Hodges PAM. Counseling strategies for dietary management: expanded possibilities for effecting behavior change. *J Am Diet Assoc*. 1986;86:924-928.
4. Holli BB. Using behavior modification in nutrition counseling. *J Am Diet Assoc*. 1988;88:1530-1536.
5. Neumark-Sztainer D, Story M. The use of health behavior theory in nutrition counseling. *Top Clin Nutr*. 1996;11:60-73.
6. Foreyt JP, Poston WSC. The role of the behavioral counselor in obesity treatment. *J Am Diet Assoc*. 1998;98(suppl 2):S27-S30.
7. Rosal MC, Ebbeling CB, Lofgren I, Ockene JK, Ockene IS, Hebert JR. Facilitating dietary change: the patient-centered counseling model. *J Am Diet Assoc*. 2001;101:332-338,341.
8. Spraggins EF, Fox EA, Carey JC. Empathy in clinical dietitians and dietetic interns. *J Am Diet Assoc*. 1990;90:244-249.
9. Strong SR. Counseling: an interpersonal influence process. *J Couns Psychol*. 1968;15:215-224.
10. LaCrosse MB. Perceived counselor social influence and counseling outcomes: validity of the Counselor Rating Form. *J Couns Psychol*. 1980;27:320-327.

11. Zamostny KP, Corrigan JD, Eggert MA. Replication and extension of social influence processes in counseling: a field study. *J Couns Psychol.* 1981;28:481-489.
12. Heppner PP, Heesacker M. Perceived counselor characteristics, client expectations, and client satisfaction with counseling. *J Couns Psychol.* 1983;30:31-39.
13. McNeill BW, May RJ, Lee VE. Perceptions of counselor source characteristics by premature and successful terminators. *J Couns Psychol.* 1987;34:86-89.
14. Corrigan JD, Dell DM, Lewis KN, Schmidt LD. Counseling as a social influence process: a review. *J Couns Psychol.* 1980;27:395-441.
15. Heppner PP, Dixon DN. A review of the interpersonal influence process in counseling. *Pers Guid J.* 1981;59:542-550.
16. Heppner PP, Claiborn CD. Social influence research in counseling: a review and critique. *J Couns Psychol.* 1989;36:365-387.
17. Cossrow NHF, Jeffery RW, McGuire MT. Understanding weight stigmatization: a focus group study. *J Nutr Educ.* 2001;33:208-214.
18. Puhl R, Brownell KD. Bias, discrimination, and obesity. *Obes Res.* 2001;9:788-805.
19. McKee K, Smouse AD. Clients' perceptions of counselor expertness, attractiveness, and trustworthiness: initial impact of counselor status and weight. *J Couns Psychol.* 1983;30:332-338.
20. Wiggins JD. Effectiveness ratings of counselors by coached clients related to attractiveness-fitness variables. *AMHCA J.* 1980;2:83-87.

21. Watkins CE. The effects of counselor self-disclosure: a research review. *Couns Psychol.* 1990;18:477-500.
22. *Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults – The Evidence Report.* Bethesda, MD: National Heart, Lung, and Blood Institute; September 1998.
23. Barak A, LaCrosse MB. Multidimensional perception of counselor behavior. *J Couns Psychol.* 1975;22:471-476.
24. Ponterotto JG, Furlong MJ. Evaluating counselor effectiveness: a critical review of rating scale instruments. *J Couns Psychol.* 1985;32:597-616.
25. LaCrosse MB, Barak A. Differential perception of counselor behavior. *J Couns Psychol.* 1976;23:170-172.
26. Hebl MR, Kleck RE. Acknowledging one's stigma in the interview setting: effective strategy or liability? *J Appl Soc Psychol.* 2002;32:223-249.
27. DeJong W. The stigma of obesity: the consequences of naïve assumptions concerning the causes of physical deviance. *J Health Soc Behav.* 1980;21:75-87.
28. Strohmer DC, Leierer SJ, Cochran NA, Arokiasamy CV. The importance of counselor disability status: what we know and what we need to know. *Rehabil Couns Bull.* 1996;40:96-115.
29. Flegal KM, Carroll MD, Ogden CL, Johnson CL. Prevalence and trends in obesity among US adults, 1999-2000. *JAMA.* 2002;288:1723-1727.
30. Rothacker DQ and Blackburn GL. Obesity prevalence by age group and 5-year changes in adults residing in rural Wisconsin. *J Am Diet Assoc.* 2000;100:784-790.

31. Wardle J, Waller J, Jarvis MJ. Sex differences in the association of socioeconomic status with obesity. *Am J Public Health.* 2002;92:1299-1304.
32. Sundquist J, Johansson SE. The influence of socioeconomic status, ethnicity, and lifestyle on body mass index in a longitudinal study. *Int J Epidemiol.* 1998;27:57-63.
33. Gutierrez-Fisac JL, Regidor E, Rodriguez C. Trends in obesity differences by educational level in Spain. *J Clin Epidemiol.* 1996;49:351-354.

Part IV:
Dietitian Weight Status Is Related to Normal Weight and Obese Women's
Evaluations of Registered Dietitians

Abstract

- **Objective:** To assess the effects of a registered dietitian's weight status and self-disclosure about personal weight issues on normal weight and obese participants' evaluations of the dietitian on a variety of dimensions relevant to nutrition counseling.
- **Design:** The research design was a randomized 2 x 2 x 2 factorial design consisting of 2 dietitian weight status conditions (normal weight and obese), 2 dietitian self-disclosure conditions (absence or presence of self-disclosure about personal weight issues), and 2 participant weight status conditions (normal weight and obese). A simulated nutrition counseling situation was developed in which participants were shown a photograph of a dietitian and then listened to an audio recording of an overview of nutrition counseling supposedly prepared by the dietitian. Participants were subsequently asked to evaluate the dietitian.
- **Participants:** A convenience sample of 160 normal weight and obese Caucasian women between the ages of 25 and 50 was recruited from the general community.
- **Main outcome measures:** The dependent variables were participants' ratings of their willingness to begin nutrition counseling with the dietitian, perception of the dietitian's knowledgeability, perception of the dietitian's effectiveness (both general effectiveness and effectiveness within a variety of specific nutrition counseling contexts), perception of the dietitian's status as a role model, comfort in discussing personal nutrition concerns with the dietitian, and perception of the dietitian's ability to relate to their concerns.

- **Statistical analyses:** The major analyses were multivariate analysis of variance (MANOVA) and analysis of variance (ANOVA) as appropriate.
- **Results:** Participants were less willing to begin nutrition counseling with the obese dietitian compared with the normal weight dietitian ($p = .01$). No effects were observed for participants' ratings of the dietitian's knowledgeability or overall effectiveness as a nutrition counselor. However, the obese dietitian was generally perceived as less effective than the normal weight dietitian in "weight-related" nutrition counseling contexts ($p \leq .05$). The normal weight dietitian who disclosed a past history of overweight was seen as a better role model than the normal weight dietitian who did not self-disclose ($p = .02$). However, the obese dietitian who acknowledged her current overweight status was seen as a poorer role model than one who did not self-disclose ($p = .0007$). Normal weight participants were more comfortable with the normal weight dietitian than with the obese dietitian ($p = .01$) and also thought that the normal weight dietitian would be better able to relate to their concerns ($p = .005$). Obese participants were equally comfortable with the normal weight or obese dietitian, but thought that the obese dietitian would be better able to relate to their concerns ($p = .009$).
- **Application:** There were some negative attitudes expressed toward obese dietitians; most notable was that participants were less willing to begin nutrition counseling with the obese dietitian. Otherwise, when dietitian weight status was important to participants, the effect appeared to be context-specific and/or dependent upon the weight status of the participants. In some situations, obese

dietitians may face an additional barrier with clients that normal weight dietitians do not face.

Introduction

The stigmatization of obese individuals has been well documented within a variety of contexts (1, 2). Puhl and Brownell (2) have reviewed studies about the attitudes of various health professionals, including physicians, nurses, and registered dietitians, toward obese patients or clients. In each case, negative attitudes have been reported. Remarkably, no published studies were identified that investigated the attitudes of patients or clients toward obese health professionals. Client attitudes about the weight status of registered dietitians, who often counsel clients about weight-related issues, may be particularly relevant.

Two studies have addressed the attitudes of registered dietitians toward obese clients. Oberrieder et al (3) reported negative attitudes about obesity in both registered dietitians and dietetics students. McArthur and Ross (4) found that registered dietitians who counseled overweight clients expressed an ambivalent attitude toward overweight clients, as compared with the negative attitudes of physicians and nurses that have been reported in other studies. These authors concluded that dietitians' attitudes about obesity could negatively affect the relationship between dietitian and client in a nutrition counseling context. Following this line of reasoning, it is assumed that the attitudes of clients about the weight status of a registered dietitian may be of equal importance.

Within this context, a consideration of the importance of role modeling by health professionals is relevant. This issue has recently been discussed within the health

education literature and remains controversial. Veach and Cissell (5) asserted that health educators should view role modeling as a professional responsibility, although the emphasis should be on movement toward a healthy lifestyle rather than on any particular endpoint. They suggested that “a true role model is one who might struggle like the rest of us to make healthy choices as opposed to one who has reached an inert pinnacle of health (p. 621).” Scott and Black (6) emphasized that the important issue to consider is whether role modeling of healthy behaviors by health educators improves professional effectiveness.

A few studies have addressed the effects of health professionals’ modeling of smoking behaviors. Hanks and Antonuccio (7) found that patients’ smoking behaviors were negatively impacted when they were exposed to a physician model who gave advice about smoking cessation that was inconsistent with his own behavior. Olive and Ballard (8) reported that attitudes of patients about smoking by health professionals were related to the patients’ own smoking status, with attitudes of current smokers being less negative than those of patients who did not smoke. Thus, modeling by health professionals (in this case, of smoking) was related to patients’ own health behaviors and their attitudes about health professionals.

Smoking is an easily identifiable health behavior; weight status is similarly obvious. It is possible that a health professional’s weight status, like smoking status, may impact client perceptions of health care professionals. No published studies have addressed this potentially important issue, which seems especially relevant within a nutrition counseling context.

Only one published study was identified that investigated the effects of self-disclosure of personal health behaviors by a health professional. Frank et al (9) studied the effects of disclosure of personal health habits by physicians in a brief health education video about healthy diet and exercise. Results indicated that patients viewing the video of the physician who revealed information about personal healthy dietary and exercise behaviors and had objective evidence of a healthy lifestyle visible (i.e., an apple and bike helmet on the desk) perceived the physician as healthier, more credible, and more motivating than patients viewing the video of the physician who did not self-disclose and demonstrate personal healthy behaviors. Thus, these authors concluded that the demonstration of healthy lifestyles by physicians may help to motivate patients to also implement healthy practices, thereby enhancing traditional methods of counseling about health behaviors. It is possible that self-disclosure about personal weight issues by dietitians may also affect clients' perceptions of the dietitians.

Recent estimates of the prevalence of obesity in the United States indicate that 64.5% of adults are classified as overweight or obese (10). With prevalence of this magnitude, there is no reason to believe that health professionals are not among those who struggle with weight issues. For example, Oberrieder et al (3) found that 14.5% of the 234 dietitians participating in their survey were considered overweight based on body mass index (BMI, kg/m^2) calculated from self-reported height and weight. Other surveys of health professionals that have included information about weight status have reported estimates of overweight (either self-perception of weight status or weight status calculated from self-reported height and weight data) in the range of 10-30% of respondents, who included dietitians (4, 11), physicians (12), and nurses (13). Although

these estimates of overweight are lower than in the general population, it is certainly possible for a client to encounter an overweight health care provider. Therefore, it is important to investigate client attitudes toward the weight status of health professionals.

The purpose of this study was to investigate the effects of dietitian weight status, dietitian self-disclosure about personal weight issues, and participant weight status on participants' initial perceptions and evaluations of registered dietitians within the context of nutrition counseling. Specifically, this study sought to answer the following research questions:

- 1) Does the weight status of a registered dietitian affect participants' perceptions and evaluations of the dietitian in a nutrition counseling situation? If so, how?
- 2) Does self-disclosure about personal weight issues by a dietitian affect participants' perceptions and evaluations of the dietitian in a nutrition counseling situation? If so, how?
- 3) Does the weight status of participants affect their perceptions and evaluations of the dietitian in a nutrition counseling situation? If so, how?
- 4) Do the above factors interact to affect participants' perceptions and evaluations of the dietitian in a nutrition counseling situation? If so, what is the nature of these interactions?

Methods

Research Design

A simulated nutrition counseling situation was developed in which participants were shown a photograph of a dietitian and then listened to an audio recording of an

overview of nutrition counseling supposedly prepared by the dietitian. Participants were subsequently asked to evaluate the dietitian on a variety of measures relevant to a nutrition counseling context. A study design of this type is termed an analogue methodology. Heppner and Claiborn (14) described analogue methodologies as “experimental conditions set up to resemble (more or less) the counseling situation (p. 374).”

The research design for this study was a randomized 2 x 2 x 2 factorial experiment. The factors studied were dietitian weight status (normal weight and obese), dietitian self-disclosure status (absence or presence of self-disclosure about weight), and participant weight status (normal weight and obese). This design resulted in a total of 8 cells or experimental conditions, with 20 participants in each of the 8 cells. Normal weight and obese participants were randomly assigned to one of the 4 possible combinations of dietitian weight status and dietitian self-disclosure status, which included 1) normal weight dietitian, no self-disclosure, 2) obese dietitian, no self-disclosure, 3) normal weight dietitian, self-disclosure about past history of overweight, or 4) obese dietitian, self-disclosure about current overweight status.

Participants

The sample for this study consisted of 160 adult Caucasian women between the ages of 25 and 50. By design, 80 participants were of normal weight, and 80 participants were obese, as defined using the most recent National Institutes of Health guidelines for the classification of overweight and obesity based on body mass index (BMI, kg/m²)

(15). Normal weight participants had a BMI of 18.5 – 24.9, while obese participants had a BMI greater than or equal to 30.

Criteria for exclusion required that participants were not registered dietitians. Additionally, participants were not currently involved in nutrition counseling with a dietitian, and they had not received nutrition counseling from a dietitian within the past year. These exclusion criteria were included to ensure that current or recent interactions with a dietitian did not bias perceptions of the dietitian presented in this study.

Participants were solicited by use of newspaper advertisements, flyers, and referrals from the University of Tennessee campus and from the general Knoxville, Tennessee area. Participants were paid \$20.00 as compensation for taking part in the study. The study protocol was approved by the University of Tennessee's Institutional Review Board, and participants signed informed consent forms prior to participating in the study.

Materials

Photographs

Photographs corresponding to the normal weight and obese dietitian weight conditions were taken. Two female models, one of normal weight and one obese, were used to represent the normal weight and obese dietitian weight conditions. Both models wore the same casual professional attire in appropriate sizes, including a white lab coat to reinforce the impression that they were health care professionals. Photographs included the area from the head to below the knees. At the time the photographs were taken, the normal weight model measured 64.50 inches tall and weighed 134 pounds, for a BMI of

22.64. The obese model measured 64.25 inches tall and weighed 201 pounds, for a BMI of 34.35.

Computer editing allowed the head from the photograph of the normal weight model to be imposed onto the body of the photograph of the obese model, creating realistic photographs of the same person at each weight status (i.e., normal weight and obese). Thus, the general physical appearance of the dietitian model was controlled in this study. Both photographs contained the same description of the dietitian below the picture. Each photograph was described as a picture of a registered dietitian with a Master's degree in nutrition and 5 years of nutrition counseling experience.

Audio Recordings

Audio recordings corresponding to the self-disclosure conditions of the research design were created to accompany the photographs of the normal weight and obese dietitians. Each audio recording included a brief introduction of the dietitian, followed by a general overview of the nutrition counseling process. This overview included a discussion of situations in which a client might receive nutrition counseling from a registered dietitian, assessment of food intake and eating behaviors, setting goals for nutrition counseling, nutrition knowledge and behavioral skill building, barriers to dietary change, evaluation of nutrition counseling progress, and follow-up to nutrition counseling.

There were 3 versions of the audio recording, corresponding to the self-disclosure conditions of the study. The first version included the dietitian introduction and the overview of nutrition counseling with no reference by the dietitian to personal weight

issues. The second and third versions were identical, except that the dietitian did self-disclose about either her past history of overweight or her current overweight status. The version including self-disclosure about a past history of overweight accompanied the photograph of the normal weight dietitian in the self-disclosure condition. The version including acknowledgement of current overweight status accompanied the photograph of the obese dietitian in the self-disclosure condition.

The 3 versions of the audio recording script were the same, other than the absence or presence of an additional brief paragraph for the self-disclosure conditions. Computer recording and editing of sound files allowed the original script to be recorded first, subsequently recording and inserting the self-disclosure segments into the original script. This resulted in 3 copies of the audio recording that were identical, except for the self-disclosure sections. The audio recording of the original script was approximately 6 minutes in length; the audio recordings for the 2 self-disclosure conditions were each approximately 6 ½ minutes in length. Final versions of the 3 audio recordings were copied to compact discs to be played in interviews with study participants.

Questionnaires

Dietitian Rating Questionnaire

The dietitian rating questionnaire (DRQ) was a set of questions created for use in this study. These questions were designed to assess participants' perceptions and evaluations of dietitian qualities specifically relevant to the research questions of this study; no existing instrument appropriate for these purposes was identified. Items on the DRQ were used as the dependent variables in this study. The DRQ consists of 2 parts;

the complete questionnaire is provided in Table 1. Part I of the DRQ included 6 items that assessed the participant's willingness to begin nutrition counseling with the dietitian or refer others to the dietitian, the dietitian's knowledgeability about nutrition and eating behaviors, the dietitian's overall effectiveness as a nutrition counselor, the extent that the dietitian was seen as a good role model, the participant's degree of comfort discussing nutrition concerns with the dietitian, and the extent to which the dietitian was seen as being able to relate to the participant's nutrition problems. All items in Part I were answered on a 6-point scale ranging from *strongly disagree* to *strongly agree*. Part II of the DRQ assessed the participant's evaluations of the dietitian's effectiveness in counseling clients in a variety of nutrition counseling contexts. All items in Part II were answered on a 6-point scale ranging from *very ineffective* to *very effective*.

At the end of the DRQ, there were 2 additional items. The first asked the participant to evaluate the weight status of the dietitian in the photograph using a 5-point scale, with 1 = very underweight, 2 = slightly underweight, 3 = about average, 4 = slightly overweight, and 5 = very overweight. The second asked the participant to estimate the weight in pounds of the dietitian in the photograph. This was designed as a test of the dietitian weight status manipulation in the photographs.

General Information Questionnaire

The general information questionnaire consisted of a set of questions assessing demographic information about the participants, the participants' nutrition counseling history (if applicable), and the participants' weight and dieting history.

Table 1. Dietitian Rating Questionnaire (DRQ).

DRQ Part I ^a : Cronbach's α = .79	
Item 1:	I would be willing to begin nutrition counseling with this dietitian or would be willing to refer my family and/or friends to this dietitian.
Item 2:	This dietitian is knowledgeable about nutrition and eating behaviors.
Item 3:	This dietitian would be an effective nutrition counselor in terms of helping clients to reach their dietary goals.
Item 4:	This dietitian is a good role model for healthy eating behaviors.
Item 5:	I would feel comfortable discussing my eating habits and dietary concerns with this dietitian.
Item 6:	This dietitian would be able to relate to my nutrition and dietary problems.
DRQ Part II ^b : Cronbach's α = .89	
Item 7:	How effective do you think this dietitian would be in counseling clients in each of the following circumstances?
7a:	Prevention and treatment of heart disease
7b:	Treatment of high blood pressure
7c:	Treatment of eating disorders
7d:	Treatment of diabetes
7e:	Prevention of cancer risk
7f:	Treatment of overweight and/or obesity
7g:	Guidance on nutrition during pregnancy and/or breastfeeding
7h:	Guidance on infant and/or child feeding
7i:	Guidance on nutrition for athletic training and performance

^a All items in Part I were answered on a 6-point scale ranging from 1 = strongly disagree to 6 = strongly agree.

^b All items in Part II were answered on a 6-point scale ranging from 1 = very ineffective to 6 = very effective.

Data Collection Procedures

Participant eligibility was initially determined in a telephone interview. If the caller was eligible to participate in the study, a data collection interview was scheduled. Prior to the data collection interview, participants were classified as normal weight or obese, based on BMI calculated from height and weight data reported in the telephone screening. Participants had also been randomly assigned to one of the dietitian weight status and dietitian self-disclosure status conditions before the data collection interview took place.

Data collection required one interview lasting approximately 30 minutes. Participants were interviewed in their homes or other private conference settings. Informed consent was obtained, and then participants' height and weight were measured. Participants' BMI was then recalculated to verify that weight group classification was correct.

Once weight status was confirmed, participants were shown a framed 8 x 10 photograph of either the normal weight or obese dietitian. Participants then listened to an audio recording on compact disc reflecting one of the dietitian self-disclosure conditions. Audio recordings were played using a small, portable compact disc player with participants wearing headphones to improve audibility and decrease background noise. Participants were told that the dietitian in the photograph prepared the accompanying audio recording.

After viewing the photograph and listening to the audio recording, participants completed each of the instruments and questionnaires. In completing the DRQ, participants were asked to evaluate the dietitian seen in the photograph and heard in the

audio recording, based on their initial impressions after listening to the script. After completing the DRQ, participants completed the general information questionnaire.

Statistical Analyses

All statistical analyses were performed using SAS (version 8.2, 1999-2001, SAS Institute, Inc., Cary, NC). Descriptive statistics were calculated for variables of interest. Differences in selected characteristics among the study condition groups were tested with analysis of variance (ANOVA). Internal consistencies for the 2 parts of the DRQ were assessed by computing a Cronbach's alpha for each set of variables.

Two multivariate analyses of variance (MANOVAs) were then performed. The first MANOVA was for the set of 6 variables from Part I of the DRQ, and the second MANOVA was for the set of 9 variables from Part II of the DRQ. MANOVA was used to provide protection against the possibility of a Type I error. The MANOVAs tested for differences in the sets of dependent variables by dietitian weight status, dietitian self-disclosure status, and participant weight status conditions, including all interactions among these factors. Only multivariate tests that were significant were pursued with univariate analyses of variance (ANOVAs). A probability level of 0.05 was used as the criterion for significance for all tests.

Results

Participant Characteristics

By design, the obese participants had a significantly higher BMI than did the normal weight participants (means of 37.25 versus 22.20, respectively, $p < .0001$). The

average age of the total sample was 36.68 ± 7.85 years. The obese participants were significantly older compared with the normal weight participants (means of 39.46 years versus 33.90 years, respectively, $p < .0001$). The study sample was generally college educated, but the obese participants had a significantly lower mean level of education than did the normal weight participants (“some college” versus “college degree,” respectively, $p = .0002$). Average annual household income in this sample was approximately \$40,000 per year; obese and normal weight participants did not differ in income.

Effectiveness of Dietitian Weight Status Manipulation

Participants who viewed the normal weight dietitian estimated her weight at 133.95 ± 12.54 pounds on average, which was nearly identical to her actual weight of 134 pounds. Using the 5-point scale to estimate weight status, with 1 = very underweight, 2 = slightly underweight, 3 = about average, 4 = slightly overweight, and 5 = very overweight, the average reported weight category for the normal weight dietitian was 3.06 ± 0.29 . This indicates that the normal weight dietitian was considered as being of “about average” weight. Participants who viewed the obese dietitian estimated her weight at 181.98 ± 27.82 pounds on average. This estimate was lower than her actual weight of 201 pounds, but there was more variability in weight estimates than for the normal weight dietitian. Using the 5-point scale to estimate weight status, the average reported weight category for the obese dietitian was 4.16 ± 0.54 . This indicates that the obese dietitian was considered as being “slightly overweight.”

Although the obese dietitian was not perceived as being as overweight as she actually was in reality, she *was* considered overweight. The obese dietitian was seen as significantly heavier than the normal weight dietitian ($p < .0001$) and was rated as being in a significantly higher weight category ($p < .0001$). Therefore, the dietitian weight status manipulation was considered successful for the purposes of this study.

Internal Consistency of the Dietitian Rating Questionnaire

Table 1 presents Parts I and II of the DRQ, as well as the Cronbach's α for each of the 2 parts. Cronbach's α was computed as a measure of the internal consistency of each set of items. The Cronbach's α was .79 for Part I of the DRQ, and was .89 for Part II. Thus, both sets of items demonstrated strong internal consistency.

Effects of Experimental Conditions

Means and standard deviations for each of the DRQ items for each of the 8 experimental conditions are presented in Tables 2 (Part I) and 3 (Part II). Potential scores for each item ranged from 1 to 6. Table 4 presents results of the MANOVA for the set of 6 variables from Part I of the DRQ by dietitian weight status, dietitian self-disclosure status, and participant weight status conditions, including all interactions among these factors. Results of the multivariate test showed a significant main effect for dietitian weight status ($F = 17.80, p < .0001$). Two 2-way interaction effects were significant. The interaction between dietitian weight status and participant weight status was significant ($F = 3.30, p = .005$), as was the interaction between dietitian weight status and dietitian self-disclosure status ($F = 3.45, p = .003$). Since dietitian weight status was

Table 2. Means and standard deviations^a for Dietitian Rating Questionnaire (DRQ) Part I items for each experimental condition^b.

DRQ Item	Normal Weight Participants				Obese Participants			
	Normal Weight RD ^c		Obese RD		Normal Weight RD		Obese RD	
	No Self-Disclosure	Self-Disclosure	No Self-Disclosure	Self-Disclosure	No Self-Disclosure	Self-Disclosure	No Self-Disclosure	Self-Disclosure
1. Willingness to see	5.00 ± 0.65	5.10 ± 0.72	4.80 ± 1.06	4.05 ± 1.15	4.65 ± 0.93	5.00 ± 0.92	4.60 ± 1.10	4.70 ± 1.17
2. Knowledgeable	5.10 ± 0.45	5.30 ± 0.57	5.30 ± 0.73	4.95 ± 0.83	5.10 ± 0.64	5.25 ± 0.55	5.25 ± 0.44	5.35 ± 0.59
3. Effective	5.00 ± 0.46	5.15 ± 0.59	5.10 ± 0.72	4.75 ± 0.79	5.20 ± 0.62	5.05 ± 0.60	4.95 ± 0.60	4.90 ± 0.85
4. Good role model	4.95 ± 0.60	5.30 ± 0.57	4.40 ± 1.05	3.05 ± 1.23	4.95 ± 0.76	5.30 ± 0.66	4.10 ± 0.85	3.65 ± 1.31
5. Comfortable with	5.25 ± 0.79	5.60 ± 0.60	5.20 ± 0.70	4.60 ± 1.31	5.25 ± 1.02	5.05 ± 1.10	5.40 ± 0.60	5.30 ± 1.03
6. Ability to relate to	4.85 ± 0.67	4.95 ± 0.83	4.40 ± 1.35	4.05 ± 1.19	4.55 ± 1.10	5.00 ± 0.97	5.35 ± 0.49	5.30 ± 0.98

^a All items were answered on a 6-point scale ranging from 1 = strongly disagree to 6 = strongly agree.

^b n = 20 for each of the 8 experimental conditions, with 160 participants total.

^c RD: registered dietitian.

Table 3. Means and standard deviations^a for Dietitian Rating Questionnaire (DRQ) Part II items for each experimental condition^b.

DRQ Item	Normal Weight Participants				Obese Participants			
	Normal Weight RD ^c		Obese RD		Normal Weight RD		Obese RD	
	No Self-Disclosure	Self-Disclosure	No Self-Disclosure	Self-Disclosure	No Self-Disclosure	Self-Disclosure	No Self-Disclosure	Self-Disclosure
7a. Heart Disease	5.20 ± 0.52	5.10 ± 0.55	5.20 ± 0.52	4.95 ± 0.89	5.15 ± 0.67	4.95 ± 0.39	5.15 ± 0.37	5.15 ± 0.37
7b. High Blood Pressure	5.25 ± 0.44	5.05 ± 0.51	5.20 ± 0.52	5.00 ± 0.86	5.10 ± 0.85	5.05 ± 0.39	5.00 ± 0.46	5.20 ± 0.41
7c. Eating Disorders	4.90 ± 0.79	5.05 ± 0.89	4.90 ± 1.07	4.45 ± 1.23	5.10 ± 0.91	5.25 ± 0.55	4.50 ± 1.32	5.05 ± 1.19
7d. Diabetes	5.25 ± 0.44	5.10 ± 0.45	5.10 ± 0.64	4.90 ± 0.85	5.20 ± 0.77	5.10 ± 0.31	4.90 ± 0.79	5.20 ± 0.52
7e. Cancer Prevention	4.85 ± 0.49	5.00 ± 0.73	5.00 ± 0.73	4.80 ± 0.77	4.80 ± 1.01	5.00 ± 0.46	4.85 ± 0.81	5.10 ± 0.45
7f. Overweight/Obesity	5.30 ± 0.66	5.60 ± 0.50	4.75 ± 0.79	3.95 ± 1.28	4.75 ± 1.12	5.30 ± 0.57	4.45 ± 1.39	4.80 ± 1.28
7g. Pregnancy/Breastfeeding	5.45 ± 0.51	5.35 ± 0.59	5.30 ± 0.47	4.90 ± 0.64	5.30 ± 0.57	4.90 ± 0.55	5.05 ± 0.39	4.95 ± 0.51
7h. Infant/Child Feeding	5.10 ± 0.31	5.15 ± 0.75	5.05 ± 0.69	4.85 ± 0.59	5.20 ± 0.62	5.00 ± 0.56	5.00 ± 0.32	5.00 ± 0.56
7i. Sports Nutrition	5.05 ± 0.60	4.90 ± 0.55	4.65 ± 1.04	4.20 ± 1.15	5.20 ± 0.70	5.10 ± 0.55	4.15 ± 1.18	4.50 ± 1.28

^a All items were answered on a 6-point scale ranging from 1 = very ineffective to 6 = very effective.

^b n = 20 for each of the 8 experimental conditions, with 160 participants total.

^c RD: registered dietitian.

Table 4. Multivariate analysis of variance (MANOVA) for effects of experimental conditions on the set of Dietitian Rating Questionnaire Part I items.

Effect	F Value^a	P Value
RD ^b Weight Status (RDWT)	17.80	< .0001
RD Self-Disclosure Status (RDSD)	1.03	.41
Participant Weight Status (PWT)	2.02	.07
RDWT x RDSD	3.45	.003
RDWT x PWT	3.30	.005
RDSD x PWT	1.48	.19
RDWT x RDSD x PWT	1.03	.41

^a Wilks' Lambda criterion was used.

^b RD: registered dietitian.

contained in both of the significant 2-way interactions, the main effect for dietitian weight status was not interpreted for variables in which either of the 2-way interactions were significant. Only those effects with significant multivariate tests were pursued in the univariate ANOVAs for these 6 variables.

Table 5 presents the univariate ANOVAs for each of the DRQ Part I variables for which significant effects existed. No significant effects existed for any of the experimental conditions for the ratings of the dietitian's knowledgeability about nutrition and eating behaviors or for the ratings of the dietitian's overall effectiveness as a nutrition counselor.

There was a significant main effect for dietitian weight status for the rating of the participant's willingness to begin nutrition counseling with the dietitian or refer family and/or friends to the dietitian ($F = 6.69, p = .01$). For this variable, participants were significantly less willing to begin nutrition counseling with the obese dietitian compared with the normal weight dietitian (means of 4.54 and 4.94, respectively).

There was a significant interaction effect for the rating of the dietitian's status as a good role model for healthy eating behaviors. The 2-way interaction between dietitian weight status and dietitian self-disclosure status was significant ($F = 18.50, p < .0001$). The normal weight dietitian who did self-disclose (i.e., acknowledge a past history of overweight) was rated as a significantly better role model ($F = 5.92, p = .02$) than the normal weight dietitian who did not self-disclose (means of 5.30 and 4.95, respectively). The opposite was true for obese dietitians. The obese dietitian who self-disclosed (i.e., acknowledged current overweight status) was rated as a significantly poorer role model

Table 5. Univariate analyses of variance (ANOVA) for effects of experimental conditions on the Dietitian Rating Questionnaire (DRQ) Part I items.

Effect	DRQ Part I Items							
	Willingness to See		Good Role Model		Comfortable With		Ability to Relate to	
	F Value	P Value	F Value	P Value	F Value	P Value	F Value	P Value
RD ^a Weight Status (RDWT)	6.69	.01	83.13	< .0001	1.23	.27	0.16	.69
RD Self-Disclosure Status (RDSD)	0.10	.75	3.58	.06	0.88	.35	0.06	.81
Participant Weight Status (PWT)	0.00	1.000	0.27	.61	0.36	.55	9.83	.002
RDWT x RDSD	3.16	.08	18.50	< .0001	2.11	.15	2.33	.13
RDWT x PWT	2.12	.15	0.27	.61	6.13	.01	15.52	.0001
RDSD x PWT	3.16	.08	2.40	.12	0.01	.93	1.09	.30
RDWT x RDSD x PWT	0.94	.33	2.40	.12	3.22	.07	0.01	.94

^aRD: registered dietitian.

($F = 12.56$, $p = .0007$) than the obese dietitian who did not self-disclose (means of 3.35 and 4.25, respectively).

There were also significant interaction effects for the rating of the participant's comfort in discussing eating habits and dietary concerns with the dietitian and for the ratings of the dietitian's ability to relate to the nutrition and dietary problems of the participants. For both of these variables, there was a significant 2-way interaction between dietitian weight status and participant weight status ($F = 6.13$, $p = .01$ and $F = 15.52$, $p < .0001$, for the participant's comfort with the dietitian and the dietitian's ability to relate to the participant's concerns, respectively). Normal weight participants rated themselves as being significantly more comfortable with the normal weight dietitian than with the obese dietitian ($F = 6.58$, $p = .01$; means of 5.43 and 4.90, respectively). Obese participants were equally comfortable with the normal weight and obese dietitians. In addition, normal weight participants perceived the normal weight dietitian as being significantly better able to relate to their nutrition concerns compared with the obese dietitian ($F = 8.40$, $p = .005$; means of 4.90 and 4.23, respectively). On the other hand, obese participants perceived the obese dietitian as being better able to relate to their nutrition concerns compared with the normal weight dietitian ($F = 7.18$, $p = .009$; means of 5.33 and 4.78, respectively).

Table 6 presents results of the MANOVA for the set of 9 variables from Part II of the DRQ by dietitian weight status, dietitian self-disclosure status, and participant weight status conditions, including all interactions among these factors. Results of the multivariate test showed significant main effects for dietitian weight status ($F = 4.44$, $p < .0001$), dietitian self-disclosure status ($F = 2.44$, $p = .01$), and participant weight status (F

Table 6. Multivariate analysis of variance (MANOVA) for effects of experimental conditions on the set of Dietitian Rating Questionnaire Part II items.

Effect	F Value^a	P Value
RD ^b Weight Status (RDWT)	4.44	< .0001
RD Self-Disclosure Status (RDSD)	2.44	.01
Participant Weight Status (PWT)	2.27	.02
RDWT x RDSD	1.71	.09
RDWT x PWT	2.25	.02
RDSD x PWT	1.07	.39
RDWT x RDSD x PWT	0.55	.84

^a Wilks' Lambda criterion was used.

^b RD: registered dietitian.

= 2.27, $p = .02$). Only the 2-way interaction between dietitian weight status and participant weight status was significant ($F = 2.25$, $p = .02$). Since dietitian self-disclosure status and participant weight status were contained in the significant 2-way interaction, the main effects for dietitian weight status and participant weight status were not interpreted for variables in which the 2-way interaction was significant. Only those effects with significant multivariate tests were pursued in the univariate ANOVAs for these 9 variables.

Table 7 presents the univariate ANOVAs for each of the DRQ Part II variables for which significant effects existed. No significant effects existed for any of the experimental conditions for the ratings of the dietitian's effectiveness in counseling clients in the following contexts: heart disease, high blood pressure, diabetes, cancer prevention, and infant/child feeding.

There were significant main effects for dietitian weight status for the rating of the dietitian's effectiveness in counseling clients about eating disorders and athletic training and performance ($F = 4.68$, $p = .03$ and $F = 21.93$, $p < .0001$ for eating disorders and sports nutrition, respectively). For each of these variables, participants rated the obese dietitian as being significantly less effective compared with the normal weight dietitian (means of 4.73 and 5.08 and 4.38 and 5.06, for eating disorders and sports nutrition, respectively).

There was a significant interaction effect for the rating of the dietitian's effectiveness in counseling clients for the treatment of overweight/obesity. The 2-way interaction between dietitian weight status and participant weight status was significant ($F = 4.84$, $p = .03$). Normal weight participants rated the normal weight dietitian as being

Table 7. Univariate analyses of variance (ANOVA) for effects of experimental conditions on the Dietitian Rating Questionnaire (DRQ) Part II items.

Effect	DRQ Part II Items							
	Eating Disorders		Overweight/ Obesity		Sports Nutrition		Pregnancy/ Breastfeeding	
	F Value	P Value	F Value	P Value	F Value	P Value	F Value	P Value
RD ^a Weight Status (RDWT)	4.68	.03	22.24	< .0001	21.93	< .0001	5.60	.02
RD Self-Disclosure Status (RDSD)	0.38	.54	0.40	.53	0.36	.55	8.76	.004
Participant Weight Status (PWT)	0.86	.36	0.22	.64	0.07	.80	5.60	.02
RDWT x RDSD	0.10	.76	4.18	.04 ^b	0.07	.80	0.00	1.00
RDWT x PWT	0.10	.76	4.84	.03	0.88	.35	1.40	.24
RDSD x PWT	2.39	.12	4.84	.03 ^b	2.10	.15	0.00	1.00
RDWT x RDSD x PWT	2.39	.12	2.00	.16	1.63	.20	3.15	.08

^a RD: registered dietitian.

^b These univariate effects were not interpreted because the corresponding multivariate tests were not significant.

significantly more effective than the obese dietitian in weight management counseling ($F = 29.96, p < .0001$; means of 5.45 and 4.35, respectively). Obese participants did not rate the normal weight and obese dietitians differently; both were perceived as equally effective in weight management counseling.

All 3 main effects were significant for the rating of the dietitian's effectiveness in counseling clients within the context of guidance on nutrition during pregnancy and breastfeeding. For this variable, normal weight participants rated the dietitian as being significantly more effective than did the obese participants ($F = 5.60, p = .02$; means of 5.25 and 5.05, respectively). Participants rated the obese dietitian as being significantly less effective compared with the normal weight dietitian ($F = 5.60, p = .02$; means of 5.05 and 5.25, respectively). Finally, a dietitian who self-disclosed was rated as being significantly less effective than one who did not self-disclose ($F = 8.76, p = .004$; means of 5.03 and 5.28, respectively).

Discussion

This was the first study to assess the effects of a dietitian's weight status and self-disclosure about personal weight issues on normal weight and obese participants' perceptions of the dietitian in a nutrition counseling context. Results of this study indicated that a dietitian's knowledgeability about nutrition and overall effectiveness as a nutrition counselor were rated similarly regardless of dietitian weight status, self-disclosure about weight, or participant weight status. However, although there were no differences due to these factors in perceived general counseling effectiveness, differences did emerge when specific nutrition counseling contexts were considered. There were no

differences associated with dietitian weight status, self-disclosure about weight, or participant weight status in perceptions of a dietitian's effectiveness in counseling about heart disease, high blood pressure, diabetes, cancer prevention, and infant/child feeding. However, dietitian weight was a relevant factor when rating the dietitian's effectiveness in what may be considered the "weight-related" counseling contexts. These contexts included eating disorders, sports nutrition, and overweight/obesity.

Obese dietitians were perceived as less effective than normal weight dietitians when counseling clients about eating disorders and sports nutrition. For counseling about overweight/obesity, both dietitian weight status and participant weight status were relevant. In this case, only normal weight participants perceived the overweight dietitian as being less effective when counseling about overweight/obesity. Obese participants did not rate the normal weight and obese dietitians differently in terms of effectiveness.

These results regarding the perceptions of obese participants about a dietitian's effectiveness in counseling for overweight/obesity are consistent with those reported by Olive and Ballard (8) within a smoking context. Their results indicated that current smokers perceived smoking by health professionals less negatively than did those who did not currently smoke. Thus, in both the current study and the Olive and Ballard (8) study, participants' personal situation was relevant in predicting their attitudes towards a health professional. In both cases, participants were less critical when assessing a health professional in relation to an issue with which they also struggled. On the other hand, Crandall and Biernat (16) reported that "being fat" (i.e., a higher BMI) in women was uncorrelated with the women's "anti-fat" attitudes; with men, BMI and "anti-fat" attitudes were positively, but modestly, related. These authors concluded that there was

little evidence to suggest that attitudes toward obesity were based on an individual's personal situation. Results of this study suggested that obese women were more tolerant of an obese dietitian.

Frank et al (9) assessed the effects of physician self-disclosure about personal diet and exercise habits within the context of educating patients about these same issues. These authors reported that physicians who disclosed healthy dietary and exercise behaviors of their own in a health education video were perceived by patients as more credible and motivating both overall and specifically in regards to diet and exercise compared with physicians who did not disclose these behaviors. Results of the current study are consistent with these "context-specific" effects of modeling. Dietitian weight status (and also participant weight status in the case of counseling for weight management) was generally only relevant when considering weight-related nutrition counseling contexts.

The only inconsistent results of this study were those observed for perceived effectiveness in counseling within the context of pregnancy and/or breastfeeding. Normal weight dietitians were rated as more effective than obese dietitians within this context. Dietitians who did not self-disclose about weight were also rated as more effective than those who did self-disclose. Finally, normal weight participants rated dietitians as more effective than did obese participants. These results are interesting, but inexplicable within the context of this study. It is possible that the parity status and/or breastfeeding history of participants may be relevant to these results; this information was not obtained.

In terms of role modeling, a normal weight dietitian who self-disclosed about a previous history of overweight was rated as a significantly better role model for healthy eating behaviors than a normal weight dietitian who did not self-disclose about personal weight issues. On the other hand, an obese dietitian who verbally acknowledged her current overweight status was rated as a poorer role model than one who did not acknowledge her current overweight. This lends some support to the suggestion by Veach and Cissell (5) that perhaps those who struggle like everyone else to achieve a healthy lifestyle are the true role models. Apparently, however, a dietitian needs to have overcome personal weight difficulties in order to be perceived as a better role model for healthy eating behaviors; acknowledging a current struggle with weight was not beneficial. In the study by Frank et al (9), disclosure of healthy behaviors by physicians improved patients' perceptions of the physicians; that study did not also assess the effects of "negative" self-disclosure by a physician. Results for perceptions of the dietitians as role-models were also consistent with results reported in Part III of this dissertation about perceptions of dietitians' characteristics relevant to counseling. In both cases, obese dietitians who verbally acknowledged their current overweight status were perceived more negatively.

Two affective dimensions assessed in this study included participants' comfort in discussing dietary concerns with the dietitian and their perception of the dietitian's ability to relate to their nutrition problems. Normal weight participants were more comfortable with the normal weight dietitian and also thought that the normal weight dietitian would be better able to relate to their nutrition concerns. Obese participants were equally

comfortable with the normal weight or obese dietitian, but thought that the obese dietitian would be better able to relate to their concerns.

The ability to relate to a client's concerns is a component of dietitian empathy, which is vital to the nutrition counseling process (17). Squier (18) describes empathy, in part, as "the ability to take another person's point of view (p. 327)." Squier (18) reviewed the role of empathetic understanding in the relationship between health professionals and patients, and concluded that perceived empathy is necessary for creating patient compliance with health behavior changes. Both participants' comfort with dietitians and participants' perceptions of dietitians' ability to relate to their concerns are components of the interpersonal relationship between the dietitian and client. A more effective counseling interaction may result when clients are comfortable with a dietitian and think that the dietitian understands their personal concerns. In the case of these affective dimensions, the weight status of both the dietitian and the participants were relevant.

The most troubling result of this study is the effect of dietitian weight status on the willingness of participants to begin nutrition counseling with a dietitian or refer others to the dietitian. Participants were less willing to begin nutrition counseling with an obese dietitian compared with a normal weight dietitian. This is an important area in which overweight dietitians may face an initial barrier with both normal weight and obese clients.

This was the first study to assess the effects of obesity in a health professional on client perceptions of that professional. Research about the stigma of obesity within a health care context has been remarkably one-sided up to this point. For this reason, there

was limited research with which to compare results of the current study. Future research should continue to explore effects of the weight status of health professionals (dietitians and others) on clients' or patients' perceptions of the professionals. Future studies should also focus on relating clients' initial perceptions of dietitians to nutrition counseling outcomes. Finally, it will be important to investigate potential ways of moderating the initial negative effects of dietitian overweight status in circumstances where negative perceptions exist.

The research design for this study resulted in a large degree of experimental control, which strengthened the assessment of the independent effects of dietitian weight status and self-disclosure about weight on participants' perceptions of dietitians. On the other hand, the analogue methodology used in this study is also a limitation. Results may not be generalizable from the research setting to actual nutrition counseling situations. Another limitation of the current study is the quite homogenous participant sample. All of the participants in this study were Caucasian women between the ages of 25 and 50, who were generally well educated with adequate household incomes. Thus, results may not be representative for men, other racial/ethnic groups, other age groups, and/or those of lower socioeconomic status. A final limitation of the current study is the relatively small sample size. Although the total sample consisted of 160 participants, there were only 20 participants in each of the 8 experimental conditions.

In conclusion, results of this study have important implications for registered dietitians who are overweight or obese. A dietitian's weight status may not always be a relevant factor in client perceptions of the dietitian. When dietitian weight status is related to client perceptions of the dietitian, the perception is likely to be context-specific

and/or dependent upon the weight status of the client. Overweight individuals are more likely to be involved in weight-related nutrition counseling with a dietitian, and it appears that dietitian weight status may matter least to these clients. In fact, perceptions of dietitian empathy may be increased when both the dietitian and client are overweight. Additionally, dietitians who have been previously overweight and lost weight may be perceived as better role models by both normal weight and obese clients.

There *were* negative attitudes expressed toward obese dietitians in this study. Notably, obese dietitians were rated less effective in counseling clients in weight-related contexts. Most troublesome was the fact that clients may be less willing to begin nutrition counseling with an obese dietitian. In these situations, overweight or obese dietitians may face an additional barrier in initial interactions with clients that normal weight dietitians do not face. In general, however, the attitudes toward obesity in this study were not as negative and/or pervasive as those that have been reported previously in a variety of contexts.

References

1. Cossrow NHF, Jeffery RW, McGuire MT. Understanding weight stigmatization: a focus group study. *J Nutr Educ.* 2001;33:208-214.
2. Puhl R, Brownell KD. Bias, discrimination, and obesity. *Obes Res.* 2001;9:788-805.
3. Oberrieder H, Walker R, Monroe D, Adeyanju M. Attitude of dietetics students and registered dietitians toward obesity. *J Am Diet Assoc.* 1995;95:914-916.
4. McArthur LH, Ross JK. Attitudes of registered dietitians toward personal overweight and overweight clients. *J Am Diet Assoc.* 1997;97:63-66.
5. Veach CC, Cissell WB. Role modeling: a dilemma for the health education specialist. *Health Educ Behav.* 1999;26:621-622.
6. Scott LAB, Black DR. Role modeling: an opportunity for the health education specialist. *Health Educ Behav.* 1999;26:623-624.
7. Hanks DT, Antonuccio DO. Physician modeling influences on patient smokers. *Addict Behav.* 1987;12:257-262.
8. Olive KE, Ballard JA. Attitudes of patients toward smoking by health professionals. *Public Health Rep.* 1992;107:335-339.
9. Frank E, Breyan J, Elon L. Physician disclosure of healthy personal behaviors improves credibility and ability to motivate. *Arch Fam Med.* 2000;9:287-290.
10. Flegal KM, Carroll MD, Ogden CL, Johnson CL. Prevalence and trends in obesity among US adults, 1999-2000. *JAMA.* 2002;288:1723-1727.

11. Martin JB, Holcomb JD, Mullen PD. Health promotion and disease prevention beliefs and behaviors of dietetic practitioners. *J Am Diet Assoc.* 1987;87:609-614.
12. Frank E, Wright EH, Serdula MK, Elon LK, Baldwin G. Personal and professional nutrition-related practices of US female physicians. *Am J Clin Nutr.* 2002;75:326-332.
13. Pratt JP, Overfield T, Hilton HG. Health behaviors of nurses and general population women. *Health Values.* 1994;18:41-46.
14. Heppner PP, Claiborn CD. Social influence research in counseling: a review and critique. *J Couns Psychol.* 1989;36:365-387.
15. *Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults – The Evidence Report.* Bethesda, MD: National Heart, Lung, and Blood Institute; September 1998.
16. Crandall C, Biernat M. The ideology of anti-fat attitudes. *J Appl Soc Psychol.* 1990;20:227-243.
17. Spraggins EF, Fox EA, Carey JC. Empathy in clinical dietitians and dietetic interns. *J Am Diet Assoc.* 1990;90:244-249.
18. Squier RW. A model of empathic understanding and adherence to treatment regimens in practitioner-patient relationships. *Soc Sci Med.* 1990;30:325-339.

Part V:
Women's External Health Locus of Control Is Related
To Their Evaluations of Registered Dietitians

Abstract

- **Objective:** To determine if participants' health locus of control beliefs were significant predictors of participants' perceptions of registered dietitians.
- **Design:** A simulated nutrition counseling situation was developed in which participants were shown a photograph of a dietitian and then listened to an audio recording of an overview of nutrition counseling supposedly prepared by the dietitian. Participants were subsequently asked to evaluate the dietitian. Participants' internal, powerful others, and chance health locus of control beliefs were assessed with the Multidimensional Health Locus of Control (MHLC) Scale. Participants' MHLC Scale scores were then used as potential predictors of their evaluations of dietitians.
- **Participants:** A convenience sample of 160 normal weight and obese Caucasian women between the ages of 25 and 50 was recruited from the general community.
- **Main outcome measures:** The dependent variables were participants' ratings of the dietitian's expertness, trustworthiness, and attractiveness as measured by the Counselor Rating Form.
- **Statistical analyses:** Predictive models for each of the dependent variables were developed using stepwise regression procedures. Potential independent variables for each model were participants' scores on the internal, powerful others, and chance dimensions of the MHLC Scale.
- **Results:** Participants' powerful others health locus of control scores were positively related to their evaluations of the dietitian's expertness, trustworthiness, and attractiveness ($p \leq .05$ in each model), while their chance health locus of

control scores were negatively related to their evaluations ($p \leq .05$ in each model).

These dimensions accounted for small, but significant amounts of the variability in each dependent variable (model R^2 values of .05 - .07).

- **Application:** Client characteristics play an important role in their perceptions of dietitians. Understanding the role of client characteristics in the nutrition counseling relationship may lead to more effective counseling interventions and better outcomes.

Introduction

Locus of control has been used as a cognitive predictor of various health behaviors, including nutrition and dietary behaviors (1). The concept of locus of control began with Rotter's (2) social learning theory. Social learning theory states that the likelihood that an individual will engage in a behavior is determined by the belief that the behavior will result in a particular outcome and the value of that outcome to the individual.

The locus of control construct was defined within this theoretical framework (3). Locus of control orientation may be classified as internal or external. An internal locus of control refers to the belief that outcomes are a result of personal behaviors, while an external locus of control refers to the belief that outcomes are not a consequence of personal actions, instead being controlled by outside forces. External locus of control has been shown to be multidimensional, consisting of the powerful others (outcomes are the result of the actions of powerful other people) and chance (outcomes are the result of chance, fate, or luck) dimensions (4).

AbuSabha and Achterberg (1) emphasized that locus of control is a domain specific construct. Health is one such domain; health locus of control refers specifically to beliefs about the ability to control health-related outcomes. Health locus of control has also been shown to be a multidimensional construct, consisting of the internal, powerful others (in this case, mainly health care providers), and chance dimensions (5).

Theoretically, those with high internal health locus of control beliefs would take an active responsibility for their health, thus engaging in health promoting behaviors (6). On the other hand, those with high chance health locus of control beliefs would be less likely to engage in health promoting behaviors. The importance of high powerful others health locus of control beliefs is less apparent.

Locus of control and/or health locus of control have been examined in relation to a variety of health outcomes and health promoting behaviors (1, 7). Some researchers have reported relationships among these constructs (6, 8, 9), while others have found no relationships (10, 11).

It is theoretically plausible that health locus of control orientation may also be a predictor of perceptions of health care professionals. Health locus of control dimensions may individually or collectively represent an attitudinal predisposition toward health care professionals. This predisposition, in turn, may influence the interaction between health care providers and clients, thus affecting the outcome of health behavior counseling. Heppner and Claiborn (12) have emphasized the importance of considering client characteristics when assessing perceptions of psychological counselors. In addition, Twemlow et al (13) reported that various patient attitudes were related to medical care utilization and satisfaction with care from physicians. Thus, when assessing client

perceptions of a health care professional, it is important to consider characteristics of both the professional and the client that may influence these perceptions.

Only one published study was identified that examined the relationship of locus of control or health locus of control to perceptions of a health care professional. Anderson and Dedrick (14) found that degree of trust in a physician was positively associated with the powerful others health locus of control dimension ($r = .38, p < .01$) and modestly associated with the internal health locus of control dimension ($r = .17, p < .05$). Trust in a physician was not significantly related to the chance health locus of control dimension. In a related study, Cashwell et al (15) found that clients with a higher internal locus of control orientation (not health-specific) rated a psychological counselor as more trustworthy. No other studies have addressed this potentially important topic.

The purpose of this study was to determine if participants' health locus of control beliefs were significant predictors of their perceptions of a health professional, in this case a registered dietitian. The research question was as follows: Do participants' internal, powerful others, and chance health locus of control beliefs significantly predict their evaluations of registered dietitians?

Methods

Participants

This study was part of a larger study investigating the effects of dietitian weight status, dietitian self-disclosure about personal weight issues, and participant weight status on evaluations of registered dietitians (see Part III and Part IV of this dissertation for results of the larger study). The sample for the study included 160 Caucasian women

between the ages of 25 and 50. Eighty of the women were of normal weight, and 80 were obese, as specified by the research design for the larger study. Participants were not registered dietitians, were not currently receiving nutrition counseling from a dietitian, and had not seen a dietitian for counseling within the past year.

Participants were recruited from the Knoxville, Tennessee area by newspaper advertisements, flyers, and referrals. Participants received \$20.00 for taking part in the study. The University of Tennessee Institutional Review Board approved the study protocol, and participants signed informed consent forms prior to beginning the study.

Instruments and Questionnaires

Multidimensional Health Locus of Control Scale

In this study, participants' internal, powerful others, and chance health locus of control orientations were used as potential independent variables predicting dietitian evaluations. Health locus of control was assessed with the Multidimensional Health Locus of Control (MHLC) Scale (Form B), which was developed to evaluate these three dimensions of beliefs about the controllability of health outcomes (5). The MHLC Scale consists of 18 items (6 items for each of the 3 dimensions) with a 6-point response scale ranging from *strongly disagree* to *strongly agree*. Responses for the 6 items in each dimension are summed, creating a score for each of the three dimensions for each participant. Potential scores range from 6 to 36 for each dimension. Alpha reliabilities for the 3 dimensions of the MHLC Scale (Form B) were reported as .71 for the internal health locus of control dimension, .69 for the chance health locus of control dimension, and .72 for the powerful others health locus of control dimension (5).

Counselor Rating Form

The dependent variables in this study were participants' perceptions of dietitian expertness, attractiveness, and trustworthiness. These three characteristics were assessed with the Counselor Rating Form (CRF) (16). The CRF consists of 36 pairs of bipolar adjectives, 12 items for each of the 3 dimensions. Participants (or clients) evaluate a counselor by rating the counselor on a 7-point scale for each of the 36 adjective pairs. Responses for the 12 items in each dimension are summed, producing a score for each of the 3 dimensions for each participant. Potential scores range from 12 to 84 for each dimension. Reliability coefficients for each of the three CRF dimensions were .87 for expertness, .85 for attractiveness, and .91 for trustworthiness (17).

Strong (18) has described each of the characteristics measured by the CRF. Expertness refers to the perception of the counselor as a source of valid information and assistance. Trustworthiness refers to a counselor's perceived honesty, sincerity, openness, and lack of self-interest. Attractiveness, as measured by the CRF, refers to *social or interpersonal*, rather than *physical*, attractiveness. Attractiveness in this perspective includes a client's perceived liking for, compatibility with, and similarity to a counselor. Clients' initial perceptions of these qualities in counselors have been investigated, and higher counselor scores on each of these dimensions were associated with better counseling outcomes (19). Relationships between perceived counselor expertness, trustworthiness, and attractiveness and client satisfaction and/or continuation with counseling have also been reported (20-22).

The CRF has been used in many studies assessing client perceptions of counselor characteristics within a psychological counseling context. Dietitians often play the role

of nutrition counselors, and nutrition counseling is similar in many ways to psychological counseling. Dietitians may work within the same theoretical contexts and utilize many of the same techniques that psychological counselors use (23-29). Assuming that the characteristics shown to be important for a psychological counselor are also important for a registered dietitian, or nutrition counselor, the CRF was chosen as an appropriate rating instrument for this study.

Data Collection Procedures

Data were collected during a single interview that lasted approximately 30 minutes. During the interview, participants were presented with a photograph of a registered dietitian. In accordance with the larger study design, participants saw a photograph of either a normal weight or obese dietitian. Participants then listened to a short audio recording in which the dietitian provided a general overview of the nutrition counseling process. The overview included a discussion of situations in which a client might receive nutrition counseling from a registered dietitian, assessment of food intake and eating behaviors, setting goals for nutrition counseling, nutrition knowledge and behavioral skill building, barriers to dietary change, evaluation of nutrition counseling progress, and follow-up to nutrition counseling. Also in accordance with the larger study design, some participants heard a version of the audio recording that also contained self-disclosure about personal weight issues by the dietitian.

After observing the dietitian photograph and listening to the audio recording, participants completed each of the instruments. The MHLC was explained as a questionnaire about participants' health beliefs. In completing the CRF, participants

were asked to rate the dietitian seen in the photograph and heard in the audio recording, based on their initial impressions after listening to the script.

Statistical Analyses

SAS (version 8.2, 1999-2001, SAS Institute Inc., Cary, NC) was used for all statistical analyses. Means and standard deviations were computed for each of the MHLC Scale dimensions and other variables of interest. Correlations among the MHLC Scale dimensions were also calculated. Predictive models were developed using dietitian expertness, trustworthiness, and attractiveness as measured by the CRF as 3 separate dependent variables. Potential independent variables predicting these dietitian qualities were scores on the internal, powerful others, and chance dimensions of the MHLC Scale. Models were created using stepwise regression procedures, and only independent variables significant at a probability level of 0.05 were retained.

Results

Participant Characteristics

The average age of the women in this study was 36.68 ± 7.85 years of age. The participants were generally well educated, with some college experience on average. The average annual household income was approximately \$40,000 per year. Table 1 provides mean scores for each of the MHLC Scale dimensions for the total study sample, and for the normal weight and obese participant groups. Normal weight and obese participants did not differ significantly on scores for any of the 3 dimensions.

Table 1. Means and standard deviations for each Multidimensional Health Locus of Control (MHLC) Scale dimension for the study sample.

MHLC Scale Dimension	Total Sample (n = 160)	Normal Weight Participants (n = 80)	Obese Participants (n = 80)	P Value^a
Internal	27.43 ± 3.60	27.66 ± 3.66	27.19 ± 3.55	.41
Powerful Others	19.05 ± 4.63	18.58 ± 4.68	19.53 ± 4.55	.19
Chance	16.54 ± 4.52	16.03 ± 4.46	17.06 ± 4.55	.15

^a P values correspond to the test of difference between normal weight and obese participants for each characteristic.

Correlations

Table 2 presents the intercorrelations among the MHLC Scale dimensions. The internal and chance dimensions were negatively correlated. The chance and powerful others dimensions were positively correlated. Both of these relationships were modest but significant. The internal and powerful others dimensions were not significantly correlated.

Predictive Models

Table 3 presents the final models predicting dietitian expertness, trustworthiness, and attractiveness. Models for each of these dependent variables contained the same two predictors. In each case, participants' powerful others health locus of control score was positively related to dietitian evaluations ($p \leq .05$ in each model). Participants' chance health locus of control score was negatively related to dietitian evaluations ($p \leq .05$ in each model). Thus, a higher belief in the importance of powerful others in determining health outcomes and a lower belief in the importance of chance was related to higher ratings of dietitian expertness, attractiveness, and trustworthiness. The predictive models for expertness, attractiveness, and trustworthiness had R^2 values of 0.06, 0.05, and 0.07, respectively.

Discussion

This study was the first to examine perceptions of a registered dietitian as a function of participants' health locus of control orientation. Results of this study indicated that the external dimensions of health locus of control, powerful others and

Table 2. Intercorrelations among Multidimensional Health Locus of Control (MHLC) Scale dimensions.

MHLC Scale Dimensions	Internal	Powerful Others	Chance
Internal	---	$r = (+) .09$ $p = .25$	$r = (-) .23$ $p = .003$
Powerful Others	---	---	$r = (+) .21$ $p = .008$
Chance	---	---	---

Table 3. Final regression models predicting Counselor Rating Form (CRF) dimensions.

Dependent Variable: Expertness		
Model R² = .0592		
Independent Variables	β	P Value
Participant Powerful Others HLC ^a Score	(+) 0.27	.03
Participant Chance HLC Score	(-) 0.33	.009
Dependent Variable: Attractiveness		
Model R² = .0535		
Independent Variables	β	P Value
Participant Powerful Others HLC Score	(+) 0.43	.01
Participant Chance HLC Score	(-) 0.32	.05
Dependent Variable: Trustworthiness		
Model R² = .0703		
Independent Variables	β	P Value
Participant Powerful Others HLC Score	(+) 0.27	.05
Participant Chance HLC Score	(-) 0.44	.002

^a HLC: health locus of control.

chance, were significant predictors of participants' perceptions of registered dietitians' expertness, attractiveness, and trustworthiness. In each case, a higher score on the powerful others dimension was related to more positive evaluations of the dietitian, while a higher score on the chance dimension was related to more negative evaluations of the dietitian. Internal health locus of control was not significant in any of the predictive models. Thus, dietitians were perceived most positively in terms of expertness, attractiveness, and trustworthiness by participants who scored higher on the powerful others dimension and lower on the chance dimension. Each of these predictive models accounted for a relatively small amount of the variability in dietitian expertness, attractiveness, and trustworthiness, with only 5 to 7% of the variance explained. Independent variables not investigated in this study obviously account for most of the variability in each of these dependent variables. AbuSabha and Achterberg (1) have also emphasized that locus of control, used as the sole cognitive predictor of health behaviors, will not predict a large percentage of behavioral outcomes.

Results of this study are consistent with portions of a previously reported study. Anderson and Dedrick (14) found that patients' powerful others health locus of control orientation was positively related to their degree of trust in a physician. However, these authors also reported that patients' internal health locus of control orientation was positively related to degree of trust in a physician. In a related study of clients' perceptions of psychological counselors, Cashwell et al (15) found that clients with more of an internal locus of control orientation (not health-specific) rated a counselor higher in trustworthiness. Results of the current study do not support a relationship between internal health locus of control orientation and evaluation of a registered dietitian.

The majority of the research using the MHLC Scale to assess the relationship between health locus of control and health behaviors has focused on the role of the internal health locus of control dimension, with higher internal beliefs hypothesized to predict performance of various health behaviors (30). Studies of this hypothesis have produced mixed results. In the context of the present study, only the *external* health locus of control dimensions were significant predictors of evaluations of registered dietitians.

A limitation of this study is the analogue design, which refers to an experimental study set up to resemble a counseling situation (12). Participants were not actual clients involved in nutrition counseling with a registered dietitian, and no nutrition counseling outcomes were examined. This limits the generalizability of results beyond the research setting. In addition, the participants were all Caucasian women, 25-50 years of age, who were, on average, well educated with adequate household incomes. Thus, results of this study cannot be generalized to other groups.

The main conclusion of this study is that a characteristic of participants, specifically external health locus of control orientation, played a significant role in their perceptions of registered dietitians. These results suggest that clients' health locus of control orientation may potentially affect nutrition counseling outcomes via its affect on perceptions of dietitians. Future research should focus on further defining the role of client characteristics, dietitian characteristics, and the interaction of the two on nutrition counseling outcomes. Understanding the role of client characteristics in the nutrition counseling relationship may lead to more effective counseling interventions and better outcomes.

References

1. AbuSabha R, Achterberg C. Review of self-efficacy and locus of control for nutrition- and health-related behavior. *J Am Diet Assoc.* 1997;97:1122-1132.
2. Rotter JB. *Social learning and clinical psychology.* Englewood Cliffs, NJ: Prentice-Hall; 1954.
3. Rotter JB. Generalized expectancies for internal and external control of reinforcement. *Psychol Monogr.* 1966;80:1-28.
4. Levenson H. Activism and powerful others: distinctions within the concept of internal-external control. *J Pers Assess.* 1974;38:377-383.
5. Wallston KA, Wallston BS, DeVellis R. Development of the Multidimensional Health Locus of Control (MHLC) Scales. *Health Educ Monogr.* 1978;6:160-170.
6. Norman P, Bennett P, Smith C, Murphy S. Health locus of control and health behavior. *J Health Psychol.* 1998;3:171-180.
7. Nemcek MA. Health beliefs and preventive behavior: a review of research literature. *AAOHN J.* 1990;38:127-138.
8. Raja SN, Williams S, McGee R. Multidimensional health locus of control beliefs and psychological health for a sample of mothers. *Soc Sci Med.* 1994;39:213-220.
9. Bennett P, Moore L, Smith A, Murphy S, Smith C. Health locus of control and value for health as predictors of dietary behaviour. *Psychol Health.* 1994;10:41-54.
10. Mitchell SE, Newell GK, Schumm WR. Dietary quality and family environment. *Psychol Rep.* 1987; 61:791-801.

11. Schank MJ, Lawrence DM. Young adult women: lifestyle and health locus of control. *J Adv Nurs*. 1993;18:1235-1241.
12. Heppner PP, Claiborn CD. Social influence research in counseling: a review and critique. *J Couns Psychol*. 1989;36:365-387.
13. Twemlow SW, Bradshaw SL, Coyne L, Lerma BH. Some interpersonal and attitudinal factors characterizing patients satisfied with medical care. *Psychol Rep*. 1995;77:51-59.
14. Anderson LA, Dedrick RF. Development of the trust in physician scale: a measure to assess interpersonal trust in patient-physician relationships. *Psychol Rep*. 1990;67:1091-1100.
15. Cashwell CS, Skinner A, Lewis JC, Young JS, Cashwell TH. Absolute versus tentative interpretations: mediating effects of client locus of control. *J Contemp Psychother*. 2001;31:141-149.
16. Barak A, LaCrosse MB. Multidimensional perception of counselor behavior. *J Couns Psychol*. 1975;22:471-476.
17. LaCrosse MB, Barak A. Differential perception of counselor behavior. *J Couns Psychol*. 1976;23:170-172.
18. Strong SR. Counseling: an interpersonal influence process. *J Couns Psychol*. 1968;15:215-224.
19. LaCrosse MB. Perceived counselor social influence and counseling outcomes: validity of the Counselor Rating Form. *J Couns Psychol*. 1980;27:320-327.

20. Zamostny KP, Corrigan JD, Eggert MA. Replication and extension of social influence processes in counseling: a field study. *J Couns Psychol.* 1981;28:481-489.
21. Heppner PP, Heesacker M. Perceived counselor characteristics, client expectations, and client satisfaction with counseling. *J Couns Psychol.* 1983;30:31-39.
22. McNeill BW, May RJ, Lee VE. Perceptions of counselor source characteristics by premature and successful terminators. *J Couns Psychol.* 1987;34:86-89.
23. Hoeltzel KE. Counseling methods for dietitians. *Top Clin Nutr.* 1986;1:33-42.
24. Vickery CE, Hodges PAM. Counseling strategies for dietary management: expanded possibilities for effecting behavior change. *J Am Diet Assoc.* 1986;86:924-928.
25. Holli BB. Using behavior modification in nutrition counseling. *J Am Diet Assoc.* 1988;88:1530-1536.
26. Neumark-Sztainer D, Story M. The use of health behavior theory in nutrition counseling. *Top Clin Nutr.* 1996;11:60-73.
27. Snetselaar LG. *Nutrition Counseling Skills for Medical Nutrition Therapy.* Gaithersburg, MD: Aspen Publishers, Inc.; 1997.
28. Foreyt JP, Poston WSC. The role of the behavioral counselor in obesity treatment. *J Am Diet Assoc.* 1998;98(suppl 2):S27-S30.
29. Rosal MC, Ebbeling CB, Lofgren I, Ockene JK, Ockene IS, Hebert JR. Facilitating dietary change: the patient-centered counseling model. *J Am Diet Assoc.* 2001;101:332-338,341.

30. Norman P. Health locus of control and health behaviour: an investigation into the role of health value and behaviour-specific efficacy beliefs. *Person Individ Diff.* 1995;18:213-218.

Appendices

Appendix A:
Recruitment Flyer

Study Participants Needed

UT Department of Nutrition

Women of various weight groups are needed to participate in a study about the evaluation of Registered Dietitians.

Make \$20 for about 30 minutes of your time!

If you meet the following requirements, call Wendy at 974-XXXX for more information.

- Female
- Age 25 – 50 years

Appendix B:
Newspaper Recruitment Advertisement

Newspaper Recruitment Advertisement

UT Nutrition Department seeks women of various weights, ages 25-50, to participate in a nutrition study. Make \$20.00 for 30 minutes of your time! Call Wendy at 974-XXXX.

Appendix C:
Dietitian Photographs and Descriptions

Faint, illegible text, possibly a signature or watermark.



The woman in this photograph is a Registered Dietitian with a Master's degree in nutrition. She has 5 years of nutrition counseling experience. In the audio recording you are about to hear, this dietitian will introduce herself to you and give you a brief overview of nutrition counseling.



The woman in this photograph is a Registered Dietitian with a Master's degree in nutrition. She has 5 years of nutrition counseling experience. In the audio recording you are about to hear, this dietitian will introduce herself to you and give you a brief overview of nutrition counseling.

Appendix D:
Scripts for Audio Recordings

Script for Audio Recording Containing No Dietitian Self-Disclosure

[To be used with the photographs of both the normal weight and obese dietitians in the no self-disclosure condition]

Hello. I would like to take a few minutes to introduce myself to you and tell you a little about what is involved in the nutrition counseling process. My name is _____, and I am a Registered Dietitian with a Master's degree in nutrition. I have been providing nutrition counseling for the past 5 years, trying to help people change their eating habits in ways that promote better health and quality of life.

There are many reasons why clients might consult a dietitian for nutrition counseling. Clients may receive nutrition counseling for the prevention or treatment of heart disease, treatment of high blood pressure, or treatment of diabetes. They may be interested in learning how to reduce cancer risk through diet. Clients may seek nutrition counseling for the treatment of overweight, or, on the other end of the spectrum, for the treatment of eating disorders. Clients may be interested in learning about healthy eating during pregnancy or breastfeeding, or about how to feed their infants, children, or families better. Athletes may want nutrition counseling in the hopes of improving athletic training and performance. Finally, clients may receive nutrition counseling about dietary changes that are necessary as a result of specific diseases or problems, such as intestinal or kidney diseases.

Regardless of the reason a client is involved in nutrition counseling, the goal of the nutrition counseling process is to help clients make and maintain positive changes in their eating habits. During the nutrition counseling process, the dietitian provides a

temporary support system that encourages clients to make behavior changes, with the clients ultimately accepting personal responsibility for their eating behavior and maintaining permanent dietary lifestyle changes.

So what happens when a client is involved in nutrition counseling? I begin nutrition counseling with an assessment of the client's health status, lifestyle, and current eating behaviors, as well as the client's thoughts and feelings about food. It is important for me to understand what the client is eating and why he or she chooses those foods. There are usually many things that influence what people eat, including things in the environment that prompt eating and what people are thinking and feeling. For example, people may eat in response to a commercial on TV or they may eat when they are bored or depressed. In general, clients are not simply eating in response to hunger.

In order to help the client make dietary changes, it is important for me to understand what his or her current eating behavior is like and why. During this stage of counseling, the client is typically asked to monitor his or her usual food intake, as well as the circumstances surrounding eating. This monitoring includes recording not only what and how much food was eaten, but also where food was eaten, who was present when the food was eaten, what other activities the client was participating in while eating, how hungry the client was before, during, and after eating, and any other emotions the client was experiencing before, during, and after eating. I try to understand the client's whole experience with food from his or her own point of view, including thoughts, feelings, and behaviors about food. Once I have gathered all of this information from the client about his or her health needs, lifestyle, and current eating behaviors, I can help the client determine what type of dietary program would be best.

Next, the client and I work together to decide on reasonable goals for dietary change. Goals may address changes in eating behaviors or changes in thoughts and feelings about food. It is important for the client to have an active role in this goal-setting process. I try to help clients set dietary goals that are specific, realistic, and attainable, but still meaningful. In addition, it is important that any dietary program that I recommend to a client be tailored to fit his or her own current lifestyle as much as possible.

Once the goals for dietary change are set, I help the client gain both the knowledge and skills necessary to meet those goals. I don't just give advice or give clients a diet regimen to follow. I make sure that clients have all of the nutrition knowledge that they need to make positive dietary changes for better health. Then I also ensure that they have the skills necessary to actually make the changes in their eating behaviors. It is difficult for clients to change eating habits that have been in place usually for years. Changing eating behaviors takes time, thought, and practice.

[Insert self-disclosure statement here, if applicable]

As the client works on making dietary behavior changes, we explore barriers that are preventing him or her from making changes and meeting goals that were set. Many things can be barriers to dietary change. For example, one common barrier that clients often face is a perceived lack of support for dietary changes from friends or family members. Another example is difficulty making healthy food choices when dining out or in social settings. The client and I work together as problem-solvers, trying different

strategies to address these barriers to behavior change until we identify what works for that particular client. Over time, the client is hopefully able to make and maintain positive changes in his or her eating habits, meeting the goals that were set at the beginning of nutrition counseling. As nutrition counseling comes to an end, the client and I evaluate the progress that has been made. After the nutrition counseling is completed, I follow-up with the client for a while in the “real world” to help ensure that he or she maintains the dietary changes that been made.

**Script for Audio Recording Containing Dietitian Self-Disclosure
About Past History of Overweight**

[To be used with the photograph of the normal weight dietitian in the self-disclosure condition]

This script was the same as the original script, except that the following self-disclosure statement was inserted where indicated:

I know from personal experience just how difficult it can be for clients to make changes in eating habits. For example, although I am currently at a healthy weight, I was overweight in the past. In fact, although I've maintained my current weight for about 3 years now, at my heaviest weight I weighed about 65 pounds more than what I do now. Being a dietitian, I know how to eat a healthy diet. However, I recognize that knowing what to do and actually doing it are two entirely different matters. I know that it takes time and a lot of hard work to change dietary behaviors and then actually maintain the new eating habits.

**Script for Audio Recording Containing Dietitian Self-Disclosure
About Current Overweight Status**

[To be used with the photograph of the obese dietitian in the self-disclosure condition]

This script was the same as the original script, except that the following self-disclosure statement was inserted where indicated:

I know from personal experience just how difficult it can be for clients to make changes in eating habits. For example, I am currently overweight, and have actually struggled with my weight for most of my adult life. Being a dietitian, I know how to eat a healthy diet. However, I recognize that knowing what to do and actually doing it are two entirely different matters. Sometimes I have difficulty following through on making healthy choices, although I am always trying to improve my eating behaviors. So, I deal with some of the same problems that many of my clients face on a daily basis.

Appendix E:
Counselor Rating Form

Counselor Rating Form (Revised Form)

Listed below are several scales that contain word pairs at either end of the scale and seven spaces between the pairs. Please rate the counselor you just saw on each of the scales.

If you feel that the counselor very closely resembles the word at one end of the scale, place a check mark as follows:

fair ___ : ___ : ___ : ___ : ___ : ___ : X unfair

OR

fair X : ___ : ___ : ___ : ___ : ___ : ___ unfair

If you think that one end of the scale quite closely describes the counselor, then make your check mark as follows:

rough ___ : X : ___ : ___ : ___ : ___ : ___ smooth

OR

rough ___ : ___ : ___ : ___ : ___ : X : ___ smooth

If you feel that one end of the scale only slightly describes the counselor, then check the scale as follows:

active ___ : ___ : X : ___ : ___ : ___ : ___ passive

OR

active ___ : ___ : ___ : ___ : X : ___ : ___ passive

If both sides of the scale seem equally associated with your impression of the counselor or if the scale is irrelevant, then place a check mark in the middle space:

hard ___ : ___ : ___ : X : ___ : ___ : ___ soft

Your first impression is the best answer.

PLEASE NOTE: PLACE CHECK MARKS IN THE MIDDLE OF THE SPACES

Counselor Rating Form

agreeable ___ : ___ : ___ : ___ : ___ : ___ : ___ disagreeable

unalert ___ : ___ : ___ : ___ : ___ : ___ : ___ alert

analytic ___ : ___ : ___ : ___ : ___ : ___ : ___ diffuse

unappreciative ___ : ___ : ___ : ___ : ___ : ___ : ___ appreciative

attractive ___ : ___ : ___ : ___ : ___ : ___ : ___ unattractive

casual ___ : ___ : ___ : ___ : ___ : ___ : ___ formal

cheerful ___ : ___ : ___ : ___ : ___ : ___ : ___ depressed

vague ___ : ___ : ___ : ___ : ___ : ___ : ___ clear

distant ___ : ___ : ___ : ___ : ___ : ___ : ___ close

compatible ___ : ___ : ___ : ___ : ___ : ___ : ___ incompatible

unsure ___ : ___ : ___ : ___ : ___ : ___ : ___ confident

suspicious ___ : ___ : ___ : ___ : ___ : ___ : ___ believable

undependable ___ : ___ : ___ : ___ : ___ : ___ : ___ dependable

indifferent ___ : ___ : ___ : ___ : ___ : ___ : ___ enthusiastic

inexperienced ___ : ___ : ___ : ___ : ___ : ___ : ___ experienced

inexpert ___ : ___ : ___ : ___ : ___ : ___ : ___ expert

unfriendly ___ : ___ : ___ : ___ : ___ : ___ : ___ friendly

honest ___ : ___ : ___ : ___ : ___ : ___ : ___ dishonest

informed ___ : ___ : ___ : ___ : ___ : ___ : ___ ignorant

insightful ___ : ___ : ___ : ___ : ___ : ___ : ___ insightless

stupid ___ : ___ : ___ : ___ : ___ : ___ : ___ intelligent

unlikeable ___ : ___ : ___ : ___ : ___ : ___ : ___ likeable

logical ___ : ___ : ___ : ___ : ___ : ___ : ___ illogical

open ___ : ___ : ___ : ___ : ___ : ___ : ___ closed

prepared ___ : ___ : ___ : ___ : ___ : ___ : ___ unprepared

unreliable ___ : ___ : ___ : ___ : ___ : ___ : ___ reliable

disrespectful ___ : ___ : ___ : ___ : ___ : ___ : ___ respectful

irresponsible ___ : ___ : ___ : ___ : ___ : ___ : ___ responsible

selfless ___ : ___ : ___ : ___ : ___ : ___ : ___ selfish

sincere ___ : ___ : ___ : ___ : ___ : ___ : ___ insincere

skillful ___ : ___ : ___ : ___ : ___ : ___ : ___ unskillful

sociable ___ : ___ : ___ : ___ : ___ : ___ : ___ unsociable

deceitful ___ : ___ : ___ : ___ : ___ : ___ : ___ straightforward

trustworthy ___ : ___ : ___ : ___ : ___ : ___ : ___ untrustworthy

genuine ___ : ___ : ___ : ___ : ___ : ___ : ___ phony

warm ___ : ___ : ___ : ___ : ___ : ___ : ___ cold

Appendix F:
Dietitian Rating Questionnaire

Dietitian Rating Questionnaire

Instructions: Please respond to each of the following statements or questions about the registered dietitian you just saw in the photograph and heard in the recording. Circle the number that corresponds to your opinion. Your first impression is the best answer.

- 1. I would be willing to begin nutrition counseling with this dietitian or would be willing to refer my family and/or friends to this dietitian.**

1	2	3	4	5	6
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

- 2. This dietitian is knowledgeable about nutrition and eating behaviors.**

1	2	3	4	5	6
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

- 3. This dietitian would be an effective nutrition counselor in terms of helping clients to reach their dietary goals.**

1	2	3	4	5	6
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

- 4. This dietitian is a good role model for healthy eating behaviors.**

1	2	3	4	5	6
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

- 5. I would feel comfortable discussing my eating habits and dietary concerns with this dietitian.**

1	2	3	4	5	6
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

6. This dietitian would be able to relate to my nutrition and dietary problems.

1	2	3	4	5	6
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

7. How effective do you think this dietitian would be in counseling clients in each of the following circumstances?

a. Prevention and treatment of heart disease

1	2	3	4	5	6
Very Ineffective	Ineffective	Slightly Ineffective	Slightly Effective	Effective	Very Effective

b. Treatment of high blood pressure

1	2	3	4	5	6
Very Ineffective	Ineffective	Slightly Ineffective	Slightly Effective	Effective	Very Effective

c. Treatment of eating disorders

1	2	3	4	5	6
Very Ineffective	Ineffective	Slightly Ineffective	Slightly Effective	Effective	Very Effective

d. Treatment of diabetes

1	2	3	4	5	6
Very Ineffective	Ineffective	Slightly Ineffective	Slightly Effective	Effective	Very Effective

e. Prevention of cancer risk

1	2	3	4	5	6
Very Ineffective	Ineffective	Slightly Ineffective	Slightly Effective	Effective	Very Effective

f. Treatment of overweight and/or obesity

1	2	3	4	5	6
Very Ineffective	Ineffective	Slightly Ineffective	Slightly Effective	Effective	Very Effective

g. Guidance on nutrition during pregnancy and/or breastfeeding

1	2	3	4	5	6
Very Ineffective	Ineffective	Slightly Ineffective	Slightly Effective	Effective	Very Effective

h. Guidance on infant and/or child feeding

1	2	3	4	5	6
Very Ineffective	Ineffective	Slightly Ineffective	Slightly Effective	Effective	Very Effective

i. Guidance on nutrition for athletic training and performance

1	2	3	4	5	6
Very Ineffective	Ineffective	Slightly Ineffective	Slightly Effective	Effective	Very Effective

8. How would you describe the weight of the dietitian in the photograph?

- Very underweight
 Slightly underweight
 About average
 Slightly overweight
 Very overweight

9. Please estimate the weight of this dietitian: _____ pounds

Appendix G:
Multidimensional Health Locus of Control Scale (Form B)

Multidimensional Health Locus of Control Scale (Form B)

1. If I become sick, I have the power to make myself well again.

1	2	3	4	5	6
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

2. Often I feel that no matter what I do, if I am going to get sick, I will get sick.

1	2	3	4	5	6
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

3. If I see an excellent doctor regularly, I am less likely to have health problems.

1	2	3	4	5	6
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

4. It seems that my health is greatly influenced by accidental happenings.

1	2	3	4	5	6
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

5. I can only maintain my health by consulting health professionals.

1	2	3	4	5	6
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

6. I am directly responsible for my health.

1	2	3	4	5	6
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

7. Other people play a big part in whether I stay healthy or become sick.

1	2	3	4	5	6
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

8. Whatever goes wrong with my health is my own fault.

1	2	3	4	5	6
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

9. When I am sick, I just have to let nature run its course.

1	2	3	4	5	6
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

10. Health professionals keep me healthy.

1	2	3	4	5	6
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

11. When I stay healthy, I'm just plain lucky.

1	2	3	4	5	6
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

12. My physical well-being depends on how well I take care of myself.

1	2	3	4	5	6
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

13. When I feel ill, I know it is because I have not been taking care of myself properly.

1	2	3	4	5	6
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

14. The type of care I receive from other people is what is responsible for how well I recover from an illness.

1	2	3	4	5	6
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

15. Even when I take care of myself, it's easy to get sick.

1	2	3	4	5	6
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

16. When I become ill, it's a matter of fate.

1	2	3	4	5	6
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

17. I can pretty much stay healthy by taking good care of myself.

1	2	3	4	5	6
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

18. Following doctor's orders to the letter is the best way for me to stay healthy.

1	2	3	4	5	6
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

Appendix H:
General Information Questionnaire

General Information Questionnaire

Instructions: Please respond to each of the following questions by checking or writing in the answer as indicated.

Part I. Demographic Questions:**1. What is your marital status (check one)?**

- Single
- Married
- Separated
- Divorced
- Widowed

2. What is the highest level of education you have completed (check one)?

- Less than 7th grade
- Junior high school
- Some high school
- High school graduate
- Some college or specialized training
- College graduate
- Graduate school or professional training

3. What is your occupation?

4. What is the highest level of education your spouse (if applicable) has completed (check one)?

- Less than 7th grade
- Junior high school
- Some high school
- High school graduate
- Some college or specialized training
- College graduate
- Graduate school or professional training

5. What is your spouse's (if applicable) occupation? _____

6. What is your current gross household income per year (check one)?

- Below \$10,000
- \$10,001 to \$20,000
- \$20,001 to \$30,000
- \$30,001 to \$40,000
- \$40,001 to \$50,000
- \$50,001 to \$60,000
- \$60,001 to \$70,000
- \$70,001 to \$80,000
- \$80,001 to \$90,000
- \$90,001 to \$100,000
- Over \$100,000
-

Part II. Nutrition Counseling History Questions:

7. Have you ever received nutrition counseling from a registered dietitian?

_____ Yes _____ No

If YES, continue to the next question. If NO, skip to Question # 12.

8. When did you receive nutrition counseling from this dietitian?

_____ Month _____ Year

9. Why were you receiving nutrition counseling from this dietitian?

10. How satisfied were you with your interactions with this dietitian (check one)?

_____ Very satisfied

_____ Satisfied

_____ Neutral

_____ Dissatisfied

_____ Very dissatisfied

11. How would you describe the weight of this dietitian (check one)?

_____ Very underweight

_____ Slightly underweight

_____ About average

_____ Slightly overweight

_____ Very overweight

Part III. Dieting and Weight History Questions:

12. How would you describe your current weight (check one)?

- Very underweight
 Slightly underweight
 About average
 Slightly overweight
 Very overweight

13. What is/was your lowest weight as an adult?

_____ pounds

14. What is/was your highest weight as an adult?

_____ pounds

15. Have you ever tried to lose weight by following a weight-reduction diet of any kind?

Yes No

If YES, continue to the next question. If NO, the questionnaire is complete.

16. Please estimate the number of times that you have tried to lose weight as an adult (check your best estimate).

- 1 to 3 times
 4 to 6 times
 7 to 9 times
 10 or more times

17. Are you currently trying to lose weight by following a weight-reduction diet of any kind?

Yes No

Appendix I:
Telephone Script and Pre-Interview Questionnaire

Telephone Pre-Interview Script and Questionnaire

Hello. Thank you for calling. My name is Wendy Bounds, and I am a doctoral student in the Department of Nutrition at the University of Tennessee. I am doing a study about factors related to the evaluation of registered dietitians by women of different weights. Women who take part in this study will meet with me for an interview that will take approximately one hour and will be paid \$20.00 for completing the study.

Are you interested in hearing more about the study? Yes No

If YES, proceed to the following:

During the interview, participants' height and weight will be measured. Then, participants will be shown a photograph and description of a registered dietitian. After viewing the photograph, participants will listen to a brief audio recording that includes an introduction of the dietitian and a discussion about what happens during nutrition counseling. After listening to the audio recording, participants will be asked to evaluate the dietitian they saw in the photograph and heard in the audio recording. They will also be asked about their own health beliefs. Finally, participants will be asked some general questions about marital status, level of education, occupation, income, experience with nutrition counseling, and weight and dieting history.

Are you interested in participating in the study? Yes No

To make sure that you qualify to participate in the study, I need to ask you a few more questions. Ask the questions below.

1. Confirm gender. Female Male

2. What is your age? _____ Years

3. What is your height? _____ Feet _____ Inches

4. What is your weight? _____ Pounds

Calculated BMI: _____ kg/m²

5. Are you currently pregnant? Yes No

6. How do you describe your race or ethnicity? _____

7. What is your occupation? _____

8. Have you been involved in nutrition counseling with a registered dietitian within the past 12 months (including currently)? Yes No

Is the caller eligible to participate in the study? Yes No

If caller is eligible to participate in the study, schedule the data collection interview. If the caller is not eligible to participate after responding to the preliminary questionnaire, relay this to her and thank her for her time.

Interview Day and Date: M T W R F Sa Su _____

Interview Time: _____ am / pm

Interview Place (address and directions if applicable): _____

Name: _____

Contact Phone Number: () _____ day / evening

Appendix J:
Informed Consent Form

INFORMED CONSENT STATEMENT

Factors Related to the Initial Impression and Evaluation of Registered Dietitians

INTRODUCTION

You are invited to participate in a research study. The purpose of this study is to investigate how characteristics and behaviors of registered dietitians are related to the way women of different weights evaluate the dietitians.

INFORMATION ABOUT PARTICIPANTS' INVOLVEMENT IN THE STUDY

Your participation in this study involves one interview that will take approximately one hour. During this interview, your height and weight will be measured. You will then be shown a photograph and description of a registered dietitian. After viewing the photograph, you will listen to a brief audio recording that includes an introduction of the dietitian and a discussion about what happens during nutrition counseling. After listening to the audio recording, you will be asked to complete 2 questionnaires in which you evaluate the dietitian you saw in the photograph and heard in the audio recording. You will then be asked to complete a questionnaire about your own health beliefs. Finally, you will be asked some general questions about your marital status, level of education, occupation, income, experience with nutrition counseling, and weight and dieting history.

RISKS

The risks associated with participation in this research study are minimal. No risks greater than those ordinarily encountered in daily life are anticipated.

BENEFITS

There are no real benefits of participation in this research project other than contributing to the body of knowledge in the area of nutrition counseling. Results of this study will provide information about how clients perceive registered dietitians. A better understanding of these perceptions may provide a basis for improving the quality of interactions between dietitians and clients.

CONFIDENTIALITY

All records relating to your participation in this study will be treated with strict confidence. A code number will be assigned to each participant, and code numbers rather than names will be used on data forms. The coding sheet linking individual names with code numbers will be destroyed within 6 months of the completion of the study. All data forms will be stored in a locked file cabinet in Room 101 of The Graduate Center for Human Ecology. Data will be made available only to the principal investigator and the faculty advisor unless you specifically give permission in writing to do otherwise. Oral

or written reports of study results will be for group data only and will not be linked in any way to individual participants.

COMPENSATION

You will receive \$20.00 for completing this study. You will be paid at the completion of the data collection interview. You will be asked to sign a receipt and will be given a copy of the receipt.

EMERGENCY MEDICAL TREATMENT

The University of Tennessee does not “automatically” reimburse participants for medical claims. If physical injury is suffered in the course of research, please notify the investigator in charge, Wendy Bounds, at (865) 974-4205.

CONTACT INFORMATION

If you have questions at any time about the study or the procedures, or if you experience adverse effects as a result of participating in this study, you may contact the principal investigator, Wendy Bounds, at Room 101 of The Graduate Center for Human Ecology or by phone at (865) 974-4205. You may also contact the faculty advisor, Dr. Jean Skinner, at Room 213 of the Jessie Harris Building or by phone at (865) 974-6244. If you have questions about your rights as a participant, contact the Compliance Section of the Office of Research at (865) 974-3466.

PARTICIPATION

Your participation in this study is voluntary; you may decline to participate without penalty. If you decide to participate, you may withdraw from the study at any time without penalty and without loss of benefits to which you are otherwise entitled. If you withdraw from the study before data collection is completed, your data will be returned to you or destroyed.

CONSENT

I have read the above information. I have received a copy of this form. I agree to participate in this study.

Participant's signature _____ Date _____

Investigator's signature _____ Date _____

Vita

Wendy Elizabeth Bounds attended primary and secondary schools in Blount County, Tennessee and graduated from Heritage High School in 1987. She received a Bachelor of Arts degree in psychology from Carson-Newman College in 1991, followed by a Master of Science degree in psychology from Memphis State University (now the University of Memphis) in 1993.

Wendy received a Master of Science degree in nutrition from the University of Tennessee, Knoxville in 1998. She also completed the dietetic internship at the University of Tennessee, and received her Registered Dietitian credential in 1998. Throughout her graduate school career, Wendy worked as a research assistant and subsequently served as project coordinator for a longitudinal children's nutrition study. Wendy received her Doctor of Philosophy degree from the University of Tennessee in December, 2002. Following graduation, she will be pursuing an academic career in nutrition.