Effects of Likability of Multiple Layers of Sources on Social Network Sites

DISSERTATION

Presented in Partial Fulfillment of the Requirements for the Degree Doctor of Philosophy in the Graduate School of The Ohio State University

By

Young Shin Lim, M.S.

Graduate Program in Communication

The Ohio State University

2016

Dissertation Committee:

David C. DeAndrea, Advisor

David R. Ewoldsen

Brandon Van Der Heide
Abstract

Message reposting (e.g., sharing on Facebook and retweeting on Twitter) is a common activity on social network sites. For reposted messages, both the original poster and the reploster who passed along the messages can be viewed as sources. This study examined how likability of multiple layers of sources on new media influence people’s message processing by moderating the amount of message-related thinking, biasing the direction of message-related thinking, and serving as heuristic cues. To test the effects of source likability, a web-based experiment was conducted. The results indicate that the likability of an original source influenced the receivers’ attitude toward the idea advocated in the message by affecting the direction of message-related thinking. However, the biasing effects of source likability were not supported for a selecting source who passed along the message. The effects of source likability on the amount of message-related thinking were not supported, and the heuristic effects were partially supported. The detailed findings are discussed with their theoretical implications.
Dedication

To Mom and Dad.
Acknowledgments

First of all, I would like to express my sincere gratitude to my advisor Dr. David DeAndrea for his guidance, encouragement, and patience. Dissertating and job hunting were tough. I would not have been possible to get through the processes without his help. I would also like to thank my committee members, Dr. Brandon Van Der Heide and Dr. David Ewoldsen for their great support and insight. I was truly fortunate to have them on my committee. I am also thankful to Dr. R. Lance Holbert and Dr. Roselyn J. Lee-Won for their kind support and encouragement.

I would like to also thank Elizabeth Winter and David Johnson for their help with coding. I greatly appreciate your time, effort, and kindness last summer.

Much thanks to my fellow graduate students. Thank you for having been around! I would like to especially thank Jayeon Lee, Ji Young Lee, Hyunjin Song, and Kilhoe Na for helping me get through difficult times.

Lastly, I would like to thank my loving family (Mom! Dad! Kyung!), Eun-Hee Park, Chang-Jin Lim, and Kyung-Bin Lim. Mom, dad, thank you so much for your infinite support along the journey, and thanks for always being on my side. This is for you.
Vita

2005 ....................................B.S. Biological Sciences and B.B.A. Business Administration, Seoul National University

2008 ....................................M.S. Business Administration, Seoul National University

2011 ....................................M.S. Information Sciences and Technology, The Pennsylvania State University

Publications


Fields of Study

Major Field: Communication
Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abstract</td>
<td>ii</td>
</tr>
<tr>
<td>Dedication</td>
<td>iii</td>
</tr>
<tr>
<td>Acknowledgments</td>
<td>iv</td>
</tr>
<tr>
<td>Vita</td>
<td>v</td>
</tr>
<tr>
<td>Table of Contents</td>
<td>vi</td>
</tr>
<tr>
<td>List of Tables</td>
<td>viii</td>
</tr>
<tr>
<td>List of Figures</td>
<td>ix</td>
</tr>
<tr>
<td>Chapter 1: Effects of Likability of Multiple Layers of Sources on Message Processing</td>
<td>1</td>
</tr>
<tr>
<td>Introduction</td>
<td>1</td>
</tr>
<tr>
<td>Source Likability and Dual-Process Models</td>
<td>3</td>
</tr>
<tr>
<td>Message Reposting and Multiple Layers of Sources</td>
<td>8</td>
</tr>
<tr>
<td>One Likable/Unlikable Source and One Unknown Source</td>
<td>9</td>
</tr>
<tr>
<td>Likability of Multiple Sources</td>
<td>10</td>
</tr>
<tr>
<td>Chapter 2: Method</td>
<td>14</td>
</tr>
<tr>
<td>Participants</td>
<td>14</td>
</tr>
<tr>
<td>Research Design</td>
<td>14</td>
</tr>
</tbody>
</table>
Stimuli ......................................................................................................................... 15
Procedure .................................................................................................................. 19
Measures .................................................................................................................... 20
Chapter 3: Results ..................................................................................................... 23
Preliminary Analyses ................................................................................................. 23
Tests of Receivers’ Processing of an Original Post ....................................................... 24
Message Processing with One Likable/Unlikable Source and One Unknown Source . 27
Tests of Receivers’ Processing of a Shared Post with Two Known Sources ............. 31
Summary of Key Findings ......................................................................................... 37
Chapter 4: Discussion ............................................................................................... 40
Implications ................................................................................................................ 40
Limitations and Future Research .............................................................................. 47
Conclusion .................................................................................................................. 47
References .................................................................................................................. 48
Appendix A: Summary of Results ............................................................................. 52
List of Tables

Table 1. Zero-Order Correlations, Means, and Standard Deviations ($N = 576$)............. 24
Table 2. Amount of message-related thinking.......................................................... 52
Table 3. Valence of message-related thinking......................................................... 53
Table 4. Amount of source-related thinking............................................................ 54
Table 5. Valence of source-related thinking............................................................ 55
Table 6. Attitudes toward low-carb diets............................................................... 56
List of Figures

Figure 1. Sample stimulus for likability induction ......................................................... 16

Figure 2. Sample health post ..................................................................................... 19
Chapter 1: Effects of Likability of Multiple Layers of Sources on Message Processing

Introduction

Sources of messages influence how people process and evaluate messages in multiple ways (Petty & Cacioppo, 1984). People often infer the validity or importance of a message by simply considering who is its source. Characteristics of message sources can also affect how people interpret messages by supporting or detracting from the arguments they contain. Source likability, in particular, has received much attention regarding its role as a heuristic cue or shortcut that guides how a message is evaluated (Chaiken, 1980; Eagly & Chaiken, 1993). In addition to functioning as a heuristic shortcut, source likability can influence how people process messages by motivating more or less scrutiny of the content of messages (Roskos-Ewoldsen, Bichsel, & Hoffman, 2002; Sinclair, Moore, Mark, Soldat, & Lavis, 2010). Greater message scrutiny, in turn, can affect how favorably people evaluate and respond to messages (Petty & Cacioppo, 1986a). The purpose of the present study is to explore how source likability affects message processing in the context of social network sites where additional complexity exists regarding the quantity and quality of message sources.

Millions of people are exposed to persuasive messages while checking social network sites as part of their daily routine (Duggan & Smith, 2014). What is unique about social network sites and other new media is that they afford the mass dissemination of information from known sources with whom users have relationships. For instance, on
Facebook and Twitter people can receive messages from friends, family members, and co-workers. In addition, users can receive messages from individuals/entities that they have pre-established attitudes towards (e.g., celebrities, companies, organizations). In both circumstances, social network site users are exposed to messages from known sources who they already have opinions about. As such, source likability should play a central role in people’s processing and evaluation of messages.

An important characteristic of social network sites for persuasion is that users commonly transmit messages that are originally produced by others. For instance, on Facebook people “share” and on Twitter people “retweet” messages that originated from other sources. For this reason, users on social network sites can be viewed as “conduits of information” (Johnson & Perlmutter, 2009, p. 375). When a user reposts or links to content that originates from another source, many social network platforms indicate both who originated the post and who transmitted the post. In such cases, an original source is differentiated from a selecting source—someone who retransmits a message that originated elsewhere (Hu & Sundar, 2010). Accordingly, it is often difficult to identify a single source for information that is shared via new media (Morris & Ogan, 1996; Sundar & Nass, 2001). When multiple sources exist for information that is shared online, how “source” likability affects the processing and evaluation of messages takes on additional complexity—the likability of sources needs to be considered.

The current study has several specific aims. First, how the likability of a single, original source affects the processing and evaluation of messages on a social network site is examined. Then, when two sources exist (i.e., an original source and a selecting source), how the likability of each source interacts to affect the processing and evaluation
of messages is investigated. In particular, message processing and evaluation by site users is examined when (a) an attitude exists for one source but not the other, (b) when attitudes towards each source are consistent, and (c) when attitudes toward each source conflict. Thus, the current study investigates how different combinations of attitudes toward original and selecting sources affect message processing and message evaluation online.

Source Likability and Dual-Process Models

Source likability refers to a receiver’s affective evaluation of the communicator (Roskos-Ewoldsen & Fazio, 1992). Although some studies demonstrate how likable sources can increase message acceptance (Chaiken, 1980; Chaiken & Eagly, 1983; Petty, Wegener, & White, 1998), other studies have indicated that likable sources reduce message acceptance under certain circumstances (Roskos-Ewoldsen et al., 2002; Petty et al., 1998). Dual-process models of persuasion help explain why source likability differentially affects message evaluation.

The elaboration likelihood model (ELM: Petty & Cacioppo, 1986b) and the heuristic-systematic model (HSM: Chaiken, 1980; Chaiken, Liberman, & Eagly, 1989) suggest that people’s information processing occurs through two qualitatively different routes/modes of processing: central/systematic processing and peripheral/heuristic processing. The key characteristic of central/systematic processing is extensive consideration of message arguments with careful examination of the content and structure (Petty, Cacioppo, Strathman, & Priester, 2005; Todorov, Chaiken, & Henderson, 2002). When receivers process messages in a central/systematic fashion, they scrutinize the
quality of arguments and change their attitudes based on the conclusion of their careful deliberation (Petty & Cacioppo, 1996). On the other hand, peripheral/heuristic processing mandates less cognitive effort. When engaging in peripheral/heuristic processing, people put less effort into message evaluation and tend to judge the validity of a message based on cues that enable them to make simple, efficient decisions (Todorov et al., 2002; Petty et al., 2005). For instance, people might accept or reject a message based on characteristics of the source, the length of the message, or the amount of arguments the message contains (Petty et al., 2005).

The amount of thought people put into message processing depends on their cognitive ability and motivation to process information (Petty & Cacioppo, 1986b; Todorov et al., 2002). When people have both ability and motivation, they are likely to take a central/systematic route of message processing (Petty & Cacioppo, 1986b). However, when lacking in ability or motivation, people tend to take the peripheral/heuristic route of processing (Petty & Cacioppo, 1986b). Various factors influence receivers’ ability and motivation to process messages. For example, personal involvement and need for cognition are determinants of the motivation to process information (Petty, Cacioppo, & Schumann, 1983; Cacioppo & Petty, 1982; Haugtvedt, Petty, & Cacioppo, 1992). Distraction, repetition, and knowledge germane to the topic are determinants of the ability to process messages (Petty & Wegener, 1999). Collectively, these factors determine elaboration likelihood—the degree to which receivers are likely to think critically about the content of messages (Petty & Cacioppo, 1986b). Variability in how people process messages is important because it affects how source likability influences message evaluation and attitude change.
Source likability has been mostly highlighted for its use as a heuristic cue: People are more likely to accept messages from likable sources and reject messages from unlikable sources when processing messages in a non-critical manner (Chaiken, 1980). However, studies have also demonstrated that, when receivers are initially unmotivated to process messages critically, messages from likable sources can bolster message attention and effortful processing (Roskos-Ewoldsen et al., 2002; Sinclair et al., 2010). This occurs because source likability can signal the importance of a message to receivers (Roskos-Ewoldsen et al., 2002). For instance, an accessible, likable attitude toward a message source can affect how people process counter-attitudinal messages with low topic-relevance (Roskos-Ewoldsen et al., 2002). When receivers have an accessible, favorable attitude about a message source, they scrutinize weak, counterattitudinal messages more carefully and thus agree with them less (Roskos-Ewoldsen et al., 2002). In a related study of mood-persuasion effects, Sinclair et al. (2010) demonstrated that people in a positive mood, who tend to process messages with little elaboration, elaborated more when messages were from a likable source. Thus, it is expected that source likability affects how people process original messages on social network sites.

H1: The more a source of an original message is liked, the greater the amount of message-related thinking by receivers.

With a greater amount of message-related thinking and careful processing of a message, people are more likely to be influenced by the content of a message (Briñol & Petty, 2006). Message elaboration involves active attempts to understand and critically evaluate message topics and arguments in relation to receivers’ prior knowledge (Bohner, Moskowitz, & Chaiken, 1995; Petty & Cacioppo, 1996). Thus, when people engage in
central/systematic processing, message factors such as argument quality influence attitudes (Ziegler & Diehl, 2001). Because increased source likability prompts greater message elaboration, the quality of messages from liked sources becomes more important in determining whether a message is accepted or rejected. Indeed, past research indicates that receivers are less likely to accept weak, counter-attitudinal messages from likable sources due to increased message scrutiny (Roskos-Ewoldsen et al., 2002). Following the above logic, receivers should be more likely to accept strong, pro-attitudinal messages from likable sources due to increased message elaboration. (In order to keep the focus of this study on how source likability affects message processing and message evaluation, message strength will be held constant).

H2: The more receivers generate message-related thoughts, the more favorably receivers’ evaluate the position advocated by the source [for strong, pro-attitudinal messages].

In addition to affecting how messages are processed, source likability can also function as a heuristic cue. As previously noted, heuristic cues are mental shortcuts or simple rules of thumb people use to guide judgments (Tversky & Kahneman, 1974). Likability heuristics play a critical role in social influence (Cialdini, 2001) and are influential because receivers assume that “people I like are usually right” (Ziegler & Diehl, 2001, p. 255). When people employ likability heuristics, they infer the validity of a message based on the likability of the source—the more the source is liked, the more they are inclined to accept the message (Chaiken, 1980).

H3: The more a source of an original message is liked, the more favorably receivers’ evaluate the position advocated by the source.
In addition to affecting the *amount* of message elaboration (H1) and functioning as a heuristic cue (H3), source likability may also affect the *nature* of the message elaboration. The sixth postulate of the ELM suggests that certain variables (e.g., initial attitudes, prior knowledge, and mood) can lead receivers to process message content in a biased manner (Petty & Cacioppo, 1986a). Such variables may motivate receivers to generate message-related thoughts in a particular direction or to argue against the message. Thus, a greater amount of thinking does not always result in more objective message processing. Previous research indicates that source factors, in particular, can bias central/systematic processing by motivating more positive or negative thinking (Bohner, Erb, & Siebler, 2008; Chaiken & Maheswaran, 1994; Tormala, Briñol, & Petty, 2006). For example, in Chaiken and Maheswaran’s study, source credibility affected attitudes not only directly through heuristic processing, but also by influencing the valence of thoughts that receivers generated (1994). Similarly, Petty, Schuman, Richman, and Strathman (1993) demonstrated that under high elaboration conditions, individuals in positive moods generated a greater proportion of positive thoughts about message arguments than individuals in negative moods. Whereas, positive mood directly influenced attitudes in the low elaboration conditions, the effect was indirect and was mediated through the valence of the cognitive responses in the high elaboration conditions. Source likability has been proposed as a potential factor that biases the valence of cognitive responses that receivers generate (Petty et al., 1998; Roskos-Ewoldsen et al, 2002), but not much research has empirically demonstrated its biasing effect.
H4: The more a source of an original message is liked, the more receivers generate positive message-related thoughts.

H5: The more receivers generate positive message-related thoughts, the more positive are their attitudes toward the position advocated in the message.

Message Reposting and Multiple Layers of Sources

Building upon the typology established by Sundar and Nass (2001), Hu and Sundar (2010) proposed a two-layer typology of online health information sources: original sources and selecting sources. Their work indicated that variation in the nature of both original and selecting sources affected how people perceived the credibility of health messages and health-related behavioral intentions. In particular, the nature of the selecting source affected people’s intentions to act upon, recommend, and forward health advice.

Reposting messages (e.g., sharing on Facebook and Google Plus, retweeting on Twitter) is a common activity on social media. Reposting can be considered the social media equivalent of email forwarding in the sense that “users post messages originally posted by others” (boyd, Golder, & Lotan, 2010, p.1). People frequently repost messages that they support or that they consider informative, and many social media platforms have designed functions to make the process as easy as possible. When an individual reposts a message, many social media platforms signify the identity of both the original poster (i.e., the original source) and the person who reposted the message (i.e., the selecting source). In such cases, both the poster and the reposter can be viewed as message sources. Yet,
how the likability of each source affects message processing and message evaluation on social network sites has not been examined in depth.

One Likable/Unlikable Source and One Unknown Source

When information is reposted on a social network site, and one source is unknown (i.e., the original or selecting source), it is expected that the likability of the one known source will affect message processing and evaluation. That is, the likability of the known source will be salient, while characteristics of the unknown source will not be salient, and the same rationale and predictions that were offered for when only one source exists should hold.

H6a: When the selecting source is unknown, the more the original source is liked, the greater the amount of message-related thinking by receivers.

H6b: When the original source is unknown, the more the selecting source is liked, the greater the amount of message-related thinking by receivers.

H7a: For a reposted message with an unknown selecting source, the more receivers generate message-related thoughts, the more favorably receivers’ evaluate the position advocated in the message [for strong, pro-attitudinal messages].

H7b: For a reposted message with an unknown original source, the more receivers generate message-related thoughts, the more favorably receivers’ evaluate the position advocated in the message [for strong, pro-attitudinal messages].
H8a: When the selecting source is unknown, the more the original source is liked, the more favorably receivers’ evaluate the position advocated in the reposted message.

H8b: When the original source is unknown, the more the selecting source is liked, the more favorably receivers’ evaluate the position advocated in the reposted message.

H9a: When the selecting source is unknown, the more the original source is liked, the more receivers generate positive message-related thoughts.

H9b: When the original source is unknown, the more the selecting source is liked, the more receivers generate positive message-related thoughts.

H10a: For a reposted message with an unknown selecting source, the more receivers generate positive message-related thoughts, the more positive are their attitudes towards the position advocated in the reposted message.

H10b: For a reposted message with an unknown original source, the more receivers generate positive message-related thoughts, the more positive are their attitudes towards the position advocated in the reposted message.

Likability of Multiple Sources

When a receiver holds an attitude about the favorability of both an original source and a selecting source, the consistency of attitudes is likely to greatly affect message processing. Notably, previous research suggests that attitude incongruency facilitates message scrutiny. Maheswaran and Chaiken (1991) tested the effect of congruency between the consensus consumer view of a product and a product review written by an
independent testing agency. The results suggested greater message scrutiny in the incongruent conditions compared to the congruent conditions. Maheswaran and Chaiken explained the results with the sufficiency principle of the HSM (1991). The sufficiency principle suggests that when people are not confident about the conclusion they can derive based on heuristic processing, they are likely to engage in systematic processing (Maheswaran & Chaiken, 1991). Thus, incongruency can cause message scrutiny by making receivers less confident about their use of heuristic shortcuts. Similarly, Baker and Petty (1994) demonstrated that an imbalance between the source (majority vs. minority) and message position (proattitudinal vs. counterattitudinal) increased message scrutiny: A proattitudinal message endorsed by a minority and a counterattitudinal message endorsed by a majority received greater scrutiny. Likewise, Ziegler and Diehl (2001) tested how the combination of two source variables—source likability (likable vs. unlikable) and source expertise (expert vs. non-expert)—affected message processing. The results demonstrated that receivers were more likely to scrutinize a message when it was from a likable non-expert or an unlikable expert than when it is from a likable expert or unlikable non-expert. When heuristic cues suggest conflicting judgments about the validity of a message, receivers are more likely to engage in greater message elaboration (Ziegler & Diehl, 2001). It is expected that an inconsistency between the likability of an original and a selecting source would have a similar effect on message processing:

H11: An inconsistency between the likability of an original source and a selecting source leads to a greater amount of message-related thinking by the receiver than when likability attitudes are consistent.
According to this hypothesis, receivers will produce more message-related thoughts when there is (a) a likable original source and unlikable selecting source, or (b) an unlikable original source and likable selecting source, relative to when both sources are either liked or disliked. There is also, however, reason to suspect that message elaboration will be enhanced when both sources are liked relative to when both sources are disliked. In such cases, source likability can signal the importance of a message to receivers, and bolster the amount of message elaboration that occurs.

H12: When likability of an original source and a selecting source are consistent, the more the sources of a reposted message are liked, the greater the amount of message-related thinking by receivers.

Moreover, as specified in H7, the greater amount of message-related thinking by receivers is expected to result in a more favorable evaluation of the position advocated in the reposted message (for strong, pro-attitudinal messages).

H13: When likability of an original source and a selecting source are consistent, the more receivers generate message-related thoughts, the more favorably receivers’ evaluate the position advocated in the message [for strong, pro-attitudinal messages].

Further, the consistency between the likability of an original source and a selecting source is expected to affect heuristic processing. As suggested by Ziegler and Diehl (2001), it would be difficult to judge the validity of a reposted message using likability heuristics when receivers have conflicting attitudes toward an original source and a selecting source. On the other hand, when receivers have consistent attitudes toward the sources, they are likely to employ likability heuristics.
H14: When likability of an original source and a selecting source are consistent, the more the sources of a reposted message are liked, the more favorably receivers’ evaluate the position advocated in the reposted message.

Similarly, source likability is expected to bias the direction of central/systematic processing only when receivers have consistent attitudes toward the sources.

H15: When likability of an original source and a selecting source are consistent, the more the sources are liked, the more receivers generate positive message-related thoughts.

H16: When likability of an original source and a selecting source are consistent, the more receivers generate positive message-related thoughts, the more positive are their attitudes towards the position advocated in the reposted message.
Chapter 2: Method

Participants

Participants were 576 college students (310 females, 53.9%) recruited from communication courses at the Ohio State University. The participants received course credit as a reward for their participation. The participants’ age ranged from 18 to 56 (Mean = 20.98, SD = 3.55). The racial/ethnic configuration of the participants was: 74.6% Caucasian, 11.8% Asian or Asian-American, 6.8% African-American, 2.4% Hispanic or Hispanic-American, and 4.3% Multiracial or Other.

Research Design

To test the hypotheses, a 3 (original source: likable; unknown; unlikable) × 4 (selecting source: no source; likable; unknown; unlikable) between subjects experimental design was employed. The source conditions were manipulated through mock Facebook posts. The first step of the process was to induce variability in how the message source(s) were perceived. This was accomplished by exposing participants to a first round of short Facebook posts. Likability of both source types (original and selecting) was varied by having participants read posts that either complement the university the participants attend (likable) or denigrate the university they attend (unlikable). In the next step, the participants were exposed to a mock Facebook health post and responded to questionnaires. The amount of information all participants read was held constant.
Stimuli

A series of four Facebook posts was used to vary the likability of both the original and selecting sources. The participants were shown four original posts as they appear in a Facebook News Feed (see Figure 1). Each post was composed of the name and profile picture of the poster and a short message without showing replies. Among the four posts, there were posts by “Christina Holbrook” and “Andrew Jones” who later appeared as the original and selecting sources for the health message that participants read in the second step. Assignment of original/selecting sources to the two individuals was counterbalanced in the stimuli for the second step.
The likability of the original/selecting sources was manipulated via the second and fourth posts by “Christina Holbrook” and “Andrew Jones.” The posts presented positive/negative statements toward the university the participants attend (cf. Chaiken,
Counterbalancing was used to avoid potential order effects in the presentation of positive/negative statements. The positive and negative statements were pilot-tested to check the effectiveness of manipulation. The pilot-test participants were 11 undergraduate students (6 females, 54.5%) in the age range of 18 to 22 (Mean = 19.91, SD = 1.45). For likable source conditions, the post by “Christina Holbrook” stated “I really enjoy working with OSU undergraduates. They are responsible and mature. It has been pretty rewarding” (M = 6.20, SD = 0.75). For the unlikable source conditions, the post by “Christina Holbrook” stated “I don’t really enjoy working with OSU undergraduates. They are irresponsible and immature. It has been totally annoying” (M = 1.90, SD = 0.91). For the unknown source conditions, “Christina Holbrook” was replaced by a different individual “Sarah Rosenthal,” and half of the participants saw the positive post about the university and the other half saw the negative post. Therefore, the participants in the unknown source conditions saw Christina for the first time at the second stage of the experiment. For the no selecting source conditions with the original post by Andrew Jones, half of the participants saw the positive post by Christina and the other half saw the negative post by Christina.

Likability of “Andrew Jones” was manipulated in the same manner. For the likable source conditions, the post by “Andrew Jones” expressed positive thoughts about the university’s graduates such that “I would recommend hiring OSU graduates. They are generally well-trained and professional” (M = 6.23, SD = 0.69). On the other hand, for the unlikable source conditions, the post by “Andrew Jones” expressed negative thoughts about the university’s graduates such that “I would not recommend hiring OSU graduates. They are generally ill-trained and unprofessional” (M = 2.08, SD = 1.30). For
the unknown source conditions, “Andrew Jones” was replaced by a different individual “Nicholas Gray,” and half of the participants saw the positive comment about the university’s students and the other half saw the negative comments. For the no selecting source conditions with an original post by Christina Holbrook, half of the participants saw the positive comment by Andrew and the other half saw the negative comment by Andrew.

The first and third posts on the News Feed were filler posts covering topics irrelevant to the university: “A great cup of coffee always makes my day a little bit better. I feel thankful,” and “My laptop broke down, and I need to get a new one. Any suggestion?”

For the second step, again, mock Facebook posts were created that emulate how posts naturally appear on a Facebook News Feed. The same message was presented across all conditions. The message was a moderately strong argument recommending low-carbohydrate diets (see Figure 2). The perceived message strength of the health message was tested in the pilot-test as well ($M = 5.22, SD = 1.47$). The nature of the message source, however, varied across conditions. In each condition there was an original source who generated the content of the message. The name of the original source and a profile picture of the source appeared with the posted message. For reposted messages, Facebook presents both the names and pictures of both the original source and the selecting source who shared the message. The top part of a reposted message presents the selecting source’s profile photo and name in a phrase such as “Andrew Jones shared Christina Holbrook’s status update,” and the original source’s profile photo and name
accompany the message. The stimuli were created to reflect what commonly appears on Facebook (see Figure 2).

Figure 2. Sample health post

Procedure

Participants individually accessed the online experiment page using various computers of their own choice. After providing informed consent, participants were randomly exposed to one of the likability manipulation stimuli. Participant looked through four short Facebook posts and were asked to respond to a 20-item questionnaire to evaluate the four posters. Participants evaluated each poster along five likability
dimensions, and in addition, rank ordered the four posters based on likability. Then participants moved to part two. Participants were randomly exposed to one of the health message stimuli, completed a thought-listing task, and responded to questionnaires.

Measures

**Source likability.** In part one of the experiment, participants were asked to evaluate the four sources on 7-point bipolar scales: positive-negative, favorable-unfavorable, good-bad, appealing/unappealing, and likable-unlikable (Roskos-Ewoldsen et al. 2002). The 20-item questionnaire had the questions for the four sources in mixed order, and therefore participants did not evaluate one source multiple times consecutively. The purpose of the questionnaire was both to have participants make likability judgments in the first stage and to check the likability manipulation (Cronbach’s $\alpha_{\text{Christina}} = .98$ and Cronbach’s $\alpha_{\text{Andrew}} = .98$).

**Attitudes.** Attitudes towards low carbohydrate diets were measured based on six 7-point bipolar scale items adapted from Ajzen (2002) and Ajzen, Brown, and Carvajal (2004): harmful-beneficial, worthless-valuable, unpleasant-pleasant, bad-good, unenjoyable-enjoyable, and negative-positive (Cronbach’s $\alpha = .90$).

**Cognitive response measures.** The amount of message-related thinking and the valence of message-related thinking were measured with a thought-listing task. After their exposure to the health post, the participants were given three minutes to indicate every thought that occurred to them while reading the message. The participants were given twenty text boxes, and were asked to put only one thought per box. After the data collection, there was a unitization process to ensure that each box contained only one
thought. To establish the unitization validity, two coders independently unitized about 10.1% of the thought-listing data, and the percent agreement between the two coders was 97.3%. The disagreements between the coders were resolved through discussion. Once unitization validity was established, one of the coders unitized the rest of the data. Then, the unitized data were coded by two other independent coders along two dimensions: type of cognitive response (message-related; source-related; other-peripheral-cues-related; other) and valence of cognitive response (favorable/agreement; neutral; unfavorable/disagreement). Message-related responses were originally coded into two categories, issue-related thoughts and global evaluation of the message content, and later collapsed into one. There were two rounds of reliability coding, each including 13.6% and 13.3% of the data. For the first round, the intercoder reliability for type of cognitive response was Krippendorff’s alpha of .79, and the intercoder reliability for valence of cognitive response was .86. For the second round, the intercoder reliability for type of cognitive response was .77, and the inter-coder reliability for valence of cognitive response was .90. After each round of reliability coding, any disagreements between the coders were resolved through discussion. After establishing reliability, the remaining data were split between the two coders. After the coding, four indices were calculated regarding each participant’s cognitive responses: amount of message-related thinking, valence of message-related thinking, amount of source-related thinking, and valence of source-related thinking. The amount of message-related thinking was operationalized as the number of total message-related thoughts. The number was calculated by adding up the number of positive, neutral, and negative message-related thoughts. The valence of message-related thoughts was operationalized as the ratio of positive message-related
thoughts to total message-related thoughts. The amount of source-related thinking was calculated by adding up the number of positive, neutral, and negative source-related thoughts. The valence of source-related thoughts was operationalized as the ratio of positive source-related thoughts to total source-related thoughts.
Chapter 3: Results

Preliminary Analyses

Before testing the hypotheses, the perceived likability of the original source and the selecting source was checked based on the participants’ responses to the likability manipulation questionnaire (i.e., before their exposure to the health message). A $t$-test revealed a significant effect of the likability manipulation for the original source, $t(383) = 39.90, p < .001, d = 4.09$. The participants in the likable original source condition evaluated the source more positively ($M = 5.97, SD = 0.93$) compared to the participants in the unlikable original source condition ($M = 1.95, SD = 1.04$). Another $t$-test was conducted to check the likability manipulation for the selecting source. Again, there was a significant effect of the likability manipulation for the selecting sources, $t(291) = 33.93, p < .001, d = 3.98$. The participants in the likable selecting source condition evaluated the source more positively ($M = 5.97, SD = 1.01$) compared to the participants in the unlikable selecting source condition ($M = 1.96, SD = 1.01$).

In general, the hypotheses in the present study suggest that the amount of message-related thinking and the valence of message-related thinking mediate the effects of source likability on the outcome measures. However, to fully understand how source likeability affected cognitive processing and, in turn, the outcomes measures, how the inductions affected the amount of source-related thinking and the valence of source-
related thinking was also examined. Table 1 provides the zero-order correlation matrix for all of the cognitive response and attitude measures.

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Amount of message-related thinking</td>
<td>1</td>
<td>.30***</td>
<td>-.38***</td>
<td>-.06</td>
<td>.09*</td>
<td>4.44</td>
<td>3.52</td>
</tr>
<tr>
<td>2. Valence of message-related thinking</td>
<td>1</td>
<td>-.25***</td>
<td>.26***</td>
<td>.48***</td>
<td>.43</td>
<td>.39</td>
<td></td>
</tr>
<tr>
<td>3. Amount of source-related thinking</td>
<td>1</td>
<td>.20***</td>
<td>-.05</td>
<td>3.07</td>
<td>2.83</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Valence of source-related thinking</td>
<td>1</td>
<td>.30***</td>
<td>.26</td>
<td>.36</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Attitudes toward low-carb diets</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>4.78</td>
<td>1.22</td>
<td></td>
</tr>
</tbody>
</table>

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

Table 1. Zero-Order Correlations, Means, and Standard Deviations (N = 576)

Tests of Receivers’ Processing of an Original Post

The first set of hypotheses (from H1 to H5) examined the effects of source likability (likable vs. unlikable) on receivers’ processing of a Facebook post with one (original) source. For the results with the unknown original source condition, see Tables 2 through 6 in Appendix A.

H1 predicted a positive effect of original source likability on the amount of message-related thinking by receivers. A t-test indicated no significant difference in the amount of message-related thinking between the participants who read a message posted by a likable original source (M = 4.48, SD = 3.88) and the participants who read the same
message posted by an unlikable original source ($M = 3.69, SD = 2.90$), $t(93) = 1.12, p = .27, d = 0.23$.

On the other hand, a $t$-test revealed a significant effect of original source likability on the amount of source-related thinking, $t(93) = 2.22, p = .03, d = 0.46$. The participants who read a message posted by an unlikable original source ($M = 4.51, SD = 3.55$) generated more source-related thoughts than the participants who read the same message posted by a likable original source ($M = 2.98, SD = 3.17$).

H2 predicted that more message-related thinking would be associated with a more positive attitude toward the low-carb diet that was advocated in the health message. A correlation analysis suggested no significant association between the amount of message-related thinking and the attitude, $r(92) = -.02, p = .84$. In addition, there was no significant correlation between the amount of source-related thinking and the attitude toward low-carb diets, $r(92) = .02, p = .81$.

H3 predicted a direct effect of original source likability on the receivers’ attitude toward the idea advocated in the message. However, a $t$-test indicated no significant difference in the attitude toward low-carb diets between the participants who were exposed to a message posted by a likable original source ($M = 4.75, SD = 1.23$) and those who were exposed to the same message posted by an unlikable original source ($M = 4.52, SD = 1.19$), $t(92) = 0.94, p = .35, d = 0.20$.

H4 predicted that reading a message posted by a likable original source would make the receivers engage in more positive message-related thinking. The hypothesis was supported. A $t$-test revealed a significant difference in the ratio of positive message-related thoughts to total message-related thoughts, $t(93) = 2.59, p = .011, d = 0.14$,
between the participants who read a message posted by a likable original source ($M = .51$, $SD = .39$) and the participants who read the same message posted by an unlikable original source ($M = .31$, $SD = .34$).

On the other hand, there was no significant difference in the valence of source-related thoughts, operationalized as the ratio of positive source-related thoughts to total source-related thoughts, $t(93) = 0.96$, $p = .34$, $d = 0.20$, generated by the participants in the likable original source condition ($M = .23$, $SD = .36$) and by the participants in the unlikable original source condition ($M = .30$, $SD = .38$).

H5 predicted a positive association between the valence of message-related thoughts and the receivers’ attitudes toward the idea advocated in the message. The hypothesis was supported. A correlation analysis suggested a positive correlation between the valence of message-related thoughts and the participants’ attitudes toward low-carb diets, $r(92) = .40$, $p < .001$. In addition, another correlation analysis indicated a positive association between the valence of source-related thoughts and the attitudes towards low-carb diets, $r(92) = .50$, $p < .001$.

Based on the support for H4 and H5, a mediation analysis was conducted using Model 4 of the SPSS PROCESS macro (Hayes, 2014). The path analysis suggested that the valence of message-related thoughts mediated the indirect effect of original source likability (likable vs. unlikable) on the participants’ attitudes toward low-carb diets, point estimate $= 0.21$ ($SE = .10$), 95% bootstrap CI $= [0.0699, 0.4503]$ with 5,000 bootstrap samples, controlling for the valence of source-related thinking.
Message Processing with One Likable/Unlikable Source and One Unknown Source

Hypotheses 6 through 10 examined the receivers’ processing of shared Facebook posts with one likable/unlikable source and one unknown source. This section will present the results for a shared message with a likable/unlikable original source and an unknown selecting source first (from H6a to H10a), and will continue with the results for a shared message with an unknown original source and a likable/unlikable selecting source (from H6b to H10b).

H6a predicted that for a shared post with an unknown selecting source, a likable (vs. unlikable) original source would lead to the generation of more message-related thoughts by the receivers. The data did not support the hypothesis. With the existence of an unknown selecting source, the participants who read a message posted by a likable original source ($M = 4.81$, $SD = 3.74$) did not generate more message-related thoughts than the participants who read the same message posted by an unlikable original source ($M = 4.09$, $SD = 3.12$), $t(92) = 1.02$, $p = .31$, $d = 0.21$. Likewise, the number of source-related thoughts generated by the participants did not differ according to the likability of an original source (likable vs. unlikable) when the post was shared by an unknown selecting source, $t(92) = 0.63$, $p = .53$, $d = 0.13$, $M_{likable} = 3.30$ ($SD = 2.85$) and $M_{unlikable} = 2.93$ ($SD = 2.94$).

H7a predicted a positive association between the amount of message-related thinking generated by receivers and the attitudes toward low-carb diets for a shared post with an unknown selecting source. A correlation analysis suggested a marginally significant association between the amount of message-related thinking and the attitude,
There also was no significant association between the amount of source-related thinking and the attitude, \( r(92) = -0.02, p = 0.87 \).

H8a expected that with the existence of an unknown selecting source, a likable original source would generate more positive attitudes toward low-carb diets. However, a \( t \)-test indicated no significant difference in attitudes toward low-carb diets between the likable original source group (\( M = 4.72, SD = 1.45 \)) and the unlikable original source group (\( M = 4.61, SD = 1.15 \)), \( t(92) = 0.40, p = 0.69, d = 0.20 \).

H9a predicted that when a post was shared by an unknown selecting source, a likable original source (vs. an unlikable original source) would promote more positive message-related thinking by the receivers. However, a \( t \)-test indicated no significant difference in the valence of message-related thinking between the likable original source group (\( M = 0.43, SD = 0.43 \)) and the unlikable original source group (\( M = 0.40, SD = 0.36 \)), \( t(92) = 0.33, p = 0.74, d = 0.07 \). On the other hand, a \( t \)-test revealed a marginally significant difference in the valence of source-related thinking between the likable original source group (\( M = 0.38, SD = 0.41 \)) and the unlikable original source group (\( M = 0.23, SD = 0.34 \)), \( t(92) = 1.97, p = 0.052, d = 0.41 \).

H10a predicted a positive association between the valence of message-related thinking generated by the receivers and their attitudes toward low-carb diets, for a shared post with an unknown selecting source. A correlation analysis revealed a significant association between the valence of message-related thinking and the attitude, \( r(92) = 0.53, p < 0.001 \). Moreover, another correlation analysis indicated a significant association between the valence of source-related thinking and the attitude, \( r(92) = 0.31, p = 0.002 \).
A serial mediation analysis using Model 6 of the SPSS Process macro was conducted to test the indirect effect of original source likability on the participants’ attitudes toward low-carb diets through the valence of source-related thinking and the valence of message-related thinking (based on 5,000 bootstrap samples). The serial mediation analysis revealed two significant indirect paths from the original source likability induction to the outcome measure: 1) one through the valence of source-related thinking (i.e., original source likability → valence of source-related thinking → attitude), point estimate = 0.11 (SE = .08), 95% bootstrap CI = [0.0043, 0.3225], and 2) through the valence of source-related thinking and the valence of message-related thinking serially (i.e., original source likability → valence of source-related thinking → valence of message-related thinking → attitude), point estimate = 0.06 (SE = .05), 95% bootstrap CI = [0.0018, 0.2052]. Consistent with the $t$-test results, the indirect path through the valence of message-related thinking (i.e., original source likability → valence of message-related thinking → attitude) was not significant, point estimate = -0.01 (SE = .13), 95% bootstrap CI = [-0.2755, 0.2679].

The next set of analyses present the results for a shared message posted by an unknown original source (from H6b to H10b). H6b predicted that when exposed to a shared message posted by an unknown original source, the receivers who read a message shared by a likable selecting source would generated more message-related thoughts than the receivers who read the same message shared by an unlikable selecting source. However, a $t$-test indicated no significant difference in the number of message-related thoughts generated by the likable selecting source group ($M = 4.82$, $SD = 3.21$) and the unlikable selecting source group ($M = 4.51$, $SD = 2.93$), $t(95) = 0.50$, $p = .62$, $d = 0.10$. 

29
Further, a t-test suggested no significant difference in the numbers of source-related thoughts generated by the likable selecting source group ($M = 2.54, SD = 2.53$) and by the unlikable selecting source group ($M = 2.74, SD = 2.10$), $t(95) = 0.43, p = .67, d = 0.09$.

H7b predicted a positive association between the number of message-related thoughts generated by the receivers and their attitudes toward low-carb diets when they read a shared post written by an unknown original source. A correlation analysis suggested no significant association between the amount of message-related thinking and the attitude, $r(95) = -.03, p = .77$. Another correlation analysis indicated no significant association between the amount of source-related thinking and the attitude, $r(95) = .01, p = .90$.

H8b predicted that when the original source is unknown, the exposure to a message shared by a likable selecting source would result in more positive attitudes toward low-carb diets than the exposure to the same message shared by an unlikable selecting source. However, a t-test indicated no significant difference in the attitudes toward low-carb diets between the likable selecting source group ($M = 4.65, SD = 1.44$) and the unlikable selecting source group ($M = 5.05, SD = 1.12$), $t(95) = 1.54, p = .13, d = 0.32$.

H9b predicted that when a post was written by an unknown original source, a likable selecting source (vs. an unlikable selecting source) would promote more positive message-related thinking by receivers. However, a t-test indicated no significant difference in the valence of message-related thinking between the likable selecting source group ($M = .48, SD = .40$) and the unlikable selecting source group ($M = .50, SD = .39$),
For the valence of source-related thoughts, a $t$-test indicated no significant difference between the likable selecting source group ($M = .22$, $SD = .37$) and the unlikable selecting source group ($M = .26$, $SD = .36$), $t(95) = 0.53$, $p = .60$, $d = 0.11$.

H10b predicted a positive association between the valence of message-related thoughts generated by the receivers and their attitudes toward low-carb diets, for a shared post written by an unknown original source. A correlation analysis revealed a significant association between the valence of message-related thoughts and the attitude, $r(95) = .57$, $p < .001$. Further, another correlation analysis revealed a significant association between the valence of source-related thoughts and the attitude, $r(95) = .35$, $p < .001$.

Tests of Receivers’ Processing of a Shared Post with Two Known Sources

Hypotheses 11 through 16 examine receivers’ processing of a shared Facebook post with a likable/unlikable original source and a likable/unlikable selecting source. H11 predicted when there is an inconsistency in receivers’ attitudes toward the two layers of sources (i.e., a likable original source with an unlikable selecting source, or an unlikable original source with a likable selecting source), the receivers would generate more message-related thoughts than when they held consistent attitudes toward the two sources (i.e., a likable original source with a likable selecting source, or an unlikable original source with an unlikable selecting source). The hypothesis was not supported. A $t$-test indicated no significant difference in the number of message-related thoughts generated by the consistent attitudes group ($M = 4.22$, $SD = 3.47$) and by the inconsistent attitudes group ($M = 4.20$, $SD = 4.08$), $t(195) = 0.04$, $p = .97$, $d = 0.01$. In addition, another $t$-test
suggested no significant difference in the number of source-related thoughts generated by the consistent attitudes group \((M = 3.31, SD = 2.99)\) and by the inconsistent attitudes group \((M = 3.34, SD = 2.55)\), \(t(195) = 0.07, p = .95, d = 0.01\).

H12 predicted that when the receivers hold a consistent attitude toward the two source layers, a message delivered by likable original and selecting sources would promote more message-related thinking than the same message delivered by unlikable original and selecting sources. The hypothesis was not supported. Results of a \(t\)-test indicated no significant difference in the number of message-related thoughts generated by the two likable source layers group \((M = 4.46, SD = 3.40)\) and by the two unlikable source layers group \((M = 3.98, SD = 3.56)\), \(t(99) = 0.69, p = .49, d = 0.14\). Moreover, a \(t\)-test suggested no significant difference in the number of source-related thoughts generated by the two likable source layers group \((M = 2.94, SD = 2.54)\) and by the two unlikable source layers group \((M = 3.67, SD = 3.36)\), \(t(99) = 1.23, p = .22, d = 0.29\).

H13 predicted that when the receivers hold a consistent attitude toward the sources, there would be a positive association between the number of message-related thoughts generated by the receivers and their attitudes toward the low-carb diets. The hypothesis was not supported. A correlation analysis suggested no significant correlation between the number of message-related thoughts and the attitudes, \(r(99) = .12, p = .23\). Moreover, another correlation analysis indicated no significant correlation between the number of source-related thoughts and the attitudes, \(r(99) = -.16, p = .12\).

H14 expected that the receivers would demonstrate more positive attitudes toward the idea advocated in a shared message, when the message is delivered by likable original and a likable selecting sources than when it is delivered by unlikable original and
selecting sources. The hypothesis was marginally supported, \( t(99) = 1.85, p = .067, d = 0.37 \). There was a marginally significant difference between the two likable source layers group \( (M = 5.00, SD = 1.00) \) and the two unlikable source layers group \( (M = 4.60, SD = 1.12) \) in attitude toward low-carb diets. However, the effect was not supported when tested in the same model with the effect of valence of message-related thinking (see the results for the mediation analysis following the results of H16).

H15 predicted that when the receivers hold a consistent attitude toward the original and the selecting sources, a message delivered by two likable sources would promote more positive message-related thinking than the same message delivered by two unlikable sources. The hypothesis was supported. A \( t \)-test indicated that the grouping of two likable sources \( (M = .56, SD = .42) \) generated more positive message-related thinking than the two unlikable source group \( (M = .30, SD = .36) \), \( t(99) = 3.36, p = .001, d = 0.68 \).

Similarly, a \( t \)-test revealed that the receivers generated more positive source-related thoughts when they are exposed to a message delivered by two likable layers of sources \( (M = .38, SD = .41) \) than when they are exposed to the same message delivered by two unlikable layers of sources \( (M = .21, SD = .36) \), \( t(99) = 2.24, p = .027, d = 0.45 \).

H16 predicted that when the receivers hold a consistent attitude toward the two source layers, there would be a positive association between the valence of message-related thoughts generated by the receivers and their attitudes toward the low-carb diets. The hypothesis was supported. A correlation analysis suggested a significant correlation between the valence of message-related thoughts and the attitudes, \( r(99) = .44, p < .001 \). However, there was no significant correlation between the valence of source-related thoughts and the attitudes, \( r(99) = -.02, p = .82 \).
Based on the results for H15 and H16, a mediation analysis using Model 4 of the SPSS Process macro was conducted to test the indirect effect of two likable source layers (vs. two unlikable source layers) on the participants’ attitudes toward low-carb diets through the valence of message-related thinking. The indirect path was supported by the data, point estimate = 0.29 ($SE = .11$), 95% bootstrap CI = [0.1202, 0.5723] based on 5,000 bootstrap samples. In the mediation model, the direct effect of two likable source layers, which was supported for H14 when tested alone, was not supported, point estimate = 0.10 ($SE = .20$), 95% bootstrap CI = [-0.3038, 0.5088].

In addition to the proposed hypotheses, to better understand the results, five sets of two (original source likability: likable vs. unlikable) $\times$ two (selecting source likability: likable vs. unlikable) ANOVAs were conducted to examine the main effect of original source likability, the main effect of selecting source likability, and the interaction involving the two layers of source likability on the amount of message-related thinking, the valence of message-related thinking, the amount of source-related thinking, the valence of source-related thinking, and the participants’ attitudes toward low-carb diets.

For the amount of message-related thinking, there was no significant main effect of original source likability, $F(1, 193) = 0.40, p = .53$, partial $\eta^2 = .002$: no significant difference between the likable original source group ($M = 4.40, SD = 3.70$) and the unlikable original source group ($M = 4.05, SD = 3.84$). There was no significant main effect of selecting source likability, $F(1, 193) = 0.06, p = .80$, partial $\eta^2 < .001$: no significant difference between the likable selecting source group ($M = 4.28, SD = 3.78$) and the unlikable selecting source group ($M = 4.13, SD = 3.79$). Finally, there was no
significant original source likability × selecting source likability interaction, \( F(1, 193) = 0.00, p = .99, \) partial \( \eta^2 < .001. \)

For the valence of message-related thinking, there was a significant main effect of original source likability, \( F(1, 193) = 10.05, p = .002, \) partial \( \eta^2 = .05: \) the participants in the likable original source condition (\( M = .51, SD = .42 \)) produced more positive message-related thoughts than those in the unlikable original source condition (\( M = .32, SD = .38 \)). On the other hand, there was no significant main effect of selecting source likability, \( F(1, 193) = 2.04, p = .16, \) partial \( \eta^2 = .01: \) no significant difference between the likable selecting source group (\( M = .45, SD = .41 \)) and the unlikable selecting source group (\( M = .36, SD = .39 \)). Finally, there was no significant original source likability × selecting source likability interaction, \( F(1, 193) = 0.47, p = .49, \) partial \( \eta^2 = .002. \)

For the amount of source-related thinking, there was a significant main effect of original source likability, \( F(1, 193) = 4.80, p = .03, \) partial \( \eta^2 = .024: \) the participants in the likable original source condition (\( M = 2.86, SD = 2.49 \)) produced fewer source-related thoughts than those in the unlikable original source condition (\( M = 3.72, SD = 2.95 \)). On the other hand, there was no significant main effect of selecting source likability, \( F(1, 193) = 0.13, p = .72, \) partial \( \eta^2 = .001: \) no significant difference between the likable selecting source group (\( M = 3.37, SD = 2.57 \)) and the unlikable selecting source group (\( M = 3.26, SD = 3.01 \)). Moreover, there was no significant original source likability × selecting source likability interaction, \( F(1, 193) = 0.01, p = .92, \) partial \( \eta^2 < .001. \)

For the valence of source-related thinking, there was a significant main effect of original source likability, \( F(1, 193) = 4.11, p = .04, \) partial \( \eta^2 = .021: \) the participants in the likable original source condition (\( M = .32, SD = .40 \)) generated more positive source-
related thoughts than those in the unlikable original source condition ($M = .21, SD = .34$). Yet, there was no significant main effect of selecting source likability, $F(1, 193) = 1.66, p = .20$, partial $\eta^2 = .01$: no significant difference between the likable selecting source group ($M = .29, SD = .37$) and the unlikable selecting source group ($M = .22, SD = .36$). Further, there was no significant original source likability $\times$ selecting source likability interaction, $F(1, 193) = 1.71, p = .19$, partial $\eta^2 = .01$.

Finally, for the participants’ attitudes toward low-carb diets, there was no significant main effect of original source likability, $F(1, 193) = 2.68, p = .10$, partial $\eta^2 = .014$: no significant difference between the likable original source group ($M = 4.98, SD = 1.12$) and the unlikable original source group ($M = 4.69, SD = 1.31$). There was no significant main effect of selecting source likability, $F(1, 193) = 0.34, p = .56$, partial $\eta^2 = .002$: no significant difference between the likable selecting source group ($M = 4.88, SD = 1.27$) and the unlikable selecting source group ($M = 4.76, SD = 1.19$). Finally, there was no significant original source likability $\times$ selecting source likability interaction, $F(1, 193) = 0.14, p = .71$, partial $\eta^2 = .001$.

For a shared Facebook post with a likable/unlikable original source and a likable/unlikable selecting source, there were significant correlations between the attitude and the valence of message-related thinking, $r(195) = .43, p < .001$, and between the attitude and the valence of source-related thinking, $r(195) = .20, p = .004$. However, there were only a marginally significant correlation between the attitude and the number of message-related thoughts, $r(195) = .12, p = .087$, and no significant correlation between the attitude and the number of source-related thoughts, $r(195) = -.08, p = .24$. 36
Based on the results of ANOVAs and correlation analyses, a serial mediation analysis using Model 6 of the SPSS PROCESS macro was conducted to test the effects of original source likability on the attitude through the valence of source-related thinking and the valence of message-related thinking. The serial mediation analysis based on 5,000 bootstrap samples revealed two significant indirect paths from the original source likability induction to the attitude: 1) one through the valence of message-related thinking (i.e., original source likability → valence of message-related thinking → attitude), point estimate = 0.19 (SE = .09), 95% bootstrap CI = [0.0575, 0.3544], and 2) through the valence of source-related thinking and the valence of message-related thinking serially (i.e., original source likability → valence of source-related thinking → valence of message-related thinking → attitude), point estimate = 0.03 (SE = .02), 95% bootstrap CI = [0.0050, 0.0942]. However, the indirect path through the valence of source-related thinking (i.e., original source likability → valence of source-related thinking → attitude) was not found significant, point estimate = 0.04 (SE = .04), 95% bootstrap CI = [-0.0068, 0.1468].

Summary of Key Findings

For an original Facebook post with one source (i.e., not shared by another person), the data supported a significant effect of original source likability on the valence of message-related thinking by the receiver, and the valence mediated the relation between original source likability and the receivers’ attitudes towards low-carb diets. Further, original source likability had a significant effect on the amount of source-related thinking in the direction that an unlikable source prompted more source-related thinking.
However, the amount of source-related thinking did not affect the receivers’ attitudes about low-carb diets.

For a shared Facebook post with an unknown selecting source, the likability of an original source resulted in more positive source-related thinking (marginally significant). The valence of source-related thinking was positively correlated with the receivers’ attitude toward low-carb diets, and the valence mediated the indirect path between the original source likability and the receivers’ attitude. Moreover, the valence of source-related thinking and the valence of message-related thinking serially mediated the indirect path between the original source likability and the attitude. For a shared Facebook post with an unknown original source, the data did not support any effect of selecting source likability.

For a shared Facebook post with a likable/unlikable original source and a likable/unlikable selecting source, two sets of analyses were conducted: 1) one set of analyses testing the effects of the consistency between the receivers’ attitudes toward the two sources, and 2) another set of analyses to test the main effects and the interaction involving the original source likability and the selecting source likability.

Consistency among attitudes toward the two source layers did not have any significant effect on the amount of message-related thinking. Contrasting the two consistent source layers conditions (two likable sources vs. two unlikable sources), the results indicated that the two likable source layers condition prompted more positive message-related thinking and more positive source-related thinking compared to the two unlikable source layers condition. Moreover, the valence of message-related thinking mediated the relationship between the consistent source likability and the receivers’
attitudes toward low-carb diets. However, for the tests contrasting the two consistent source layers conditions, the likability of an original source and the likability of a selecting source were confounded. Thus, additional analyses were conducted to examine the main effects and the interaction involving the original source likability and the selecting source likability.

For the tests of main effects, the data supported the effect of original source likability on the valence of message-related thinking, on the amount of source-related thinking, and on the valence of source-related thinking. Among the three, the valence of message-related thinking and the valence of source-related thinking had positive correlations with the receivers’ attitudes toward low-carb diets. A mediation analysis indicated two significant indirect paths from the original source likability to the attitude, one through the valence of message-related thinking and another through the valence of source-related thinking and the valence of message-related thinking serially. On the other hand, the main effects of the selecting source likability and the interaction between the original source likability and the selecting source likability on the cognitive response variables and the attitudes were not supported by the data. The results suggest that the previous support for the effect of two likable sources (vs. two unlikable sources) on the valence of message-related thinking was mostly driven by the effect of original source likability.

Tables 2 through 6 in Appendix A present the results involving an original Facebook post with an unknown original source and a shared post with two unknown sources.
Chapter 4: Discussion

The present study examined the effects of the likability of an original source and the likability of a selecting source on the receivers’ processing of Facebook messages. The results indicate the trend that the likability of an original source influences the receivers’ attitude toward the idea advocated in the message (i.e., low-carb diets) by affecting the valence of message-related thinking.

Implications

First of all, the key theoretical contribution of the present study is the demonstration that original source likability promotes biased processing of messages. For an original Facebook post and for a shared Facebook post with two known sources, the receivers engaged in more positive message-related thinking when the message was originally posted by a likable source than when it was originally posted by an unlikable source. The valence of message-related thinking mediated the indirect effect of original source likability on receivers’ attitudes toward the presented issue. For a shared post with two known sources, there was another indirect path from original source likability to the attitude serially mediated through the valence of source-related thinking and the valence of message-related thinking. In addition, for a shared post with an unknown selecting source, original source likability did not affect the valence of message-related thinking directly, but affected indirectly through the valence of source-related thinking. Further,
the valence of source-related thinking and the valence of message-related thinking
serially mediated the indirect path from original source likability to the attitude. The
results suggest that the likability of the original source served as “a lens that biases how
the message is perceived” and affected the direction of viewers’ elaboration (Roskos-
Ewoldsen et al., 2002, p.143). Biased processing is suggested by a postulate of the ELM
(Petty & Cacioppo, 1986a), and previous studies have demonstrated that receivers’
existing attitudes toward a topic can influence their perception of messages (“biased
assimilation”; Lord, Ross, & Lepper, 1979), and that source factors such as source
credibility can affect the valence of message-related thinking (Chaiken & Maheswaran,
1994). However, studies rarely demonstrate source likability’s role as an elaboration
biasing factor. In this regard, the results support and extend the dual process models
literature by demonstrating the effect in a more complex new media setting where
multiple sources exist.

One notable point about the biased processing demonstrated in the present study
is that sometimes the effects of source likability on the attitude through the valence of
message-related thinking were mediated by the valence of source-related thinking (i.e.,
original source likability → valence of source-related thinking → valence of message-
related thinking → attitude). The results of serial mediation analyses do not exactly
 correspond with the concept of biased processing in the dual-process models. The ELM
and the HSM posit that there are two qualitatively different routes/modes of persuasion
(Petty & Cacioppo, 1986b; Chaiken, 1980; Chaiken, Liberman, & Eagly, 1989). Even
though both models state that the two routes/modes of processing can co-occur, the ELM
assumes a trade-off between the impacts of two routes of processing, and the HSM
assumes orthogonality between the two modes (Petty, Wegener, Fabrigar, Priester, & Cacioppo, 1993; Petty, Wegener, & Fabrigar, 1997, Kruglanski & Thompson, 1999). In this regard, the results of serial mediation analyses that the valence of source-related elaboration affects the valence of message-related thinking and further influences the attitude through the valence of message-related thinking, do not align with the dual-process paradigm and better correspond with the unimodel (Kruglanski & Thompson, 1999).

The unimodel is a persuasion model proposed on the basis of Kruglanski’s Lay Epistemic Theory of knowledge formation (Kruglanski, 1989; Kruglanski & Thompson, 1999; Kruglanski, Chen, Pierro, Mannetti, Erb, & Spiegel, 2006). The unimodel criticizes the dual-process models’ notion of two qualitatively different routes/modes, and suggests a single-route approach (Kruglanski & Thompson, 1999). The unimodel posits that message arguments and peripheral cues are “functionally equivalent” such that both of them simply function as evidences that support or oppose a conclusion and that the processing of message arguments and of peripheral cues are influenced by receivers’ ability and motivation in the similar manner (Kruglanski & Thompson, 1999; Kruglanski et al., 2006). The unimodel’s notion of functional equivalence better explains the serial mediation results than the dual processes do. In this regard, the results provide an empirical support for the unimodel.

On the other hand, the likability of the sources, either original or selecting, did not significantly influence the amount of message-related thoughts generated by the receivers. It is possible that these results are a function of the particular message topic (i.e., low-carb diets) used in this study. The hypotheses regarding the effects of source
likability on the amount of message-related thinking were built upon previous research that suggested when receivers are not motivated to process a message, source likability can facilitate the receivers’ attention to the message and effortful processing (Roskos-Ewoldsen et al., 2002; Sinclair et al., 2010). Contrary to the assumption, the participants in the present study might have been motivated to process the message due to its content. The message presented the idea of restricting the amount of carbohydrates intake, and listed several food items that need to be cut down during low-carb diets such as white bread, cereals, and pastries. It is possible that the idea and the examples engaged the participants to elaborate on the message content. In fact, the average number of message-related thoughts generated by the participants across the conditions was 4.44 ($SD = 3.52$), and even in the condition that prompted the fewest message-related thoughts, the participants generated 3.69 message-related thoughts on average ($SD = 2.90$) (see Table 2 for further information). The relatively high numbers of message-related thoughts and the data’s support for biased elaboration suggest that the message itself might have engaged the participants to process the message centrally. Such high level of elaboration might have constrained the effects of source likability on the amount to message-related thinking. In addition, what was demonstrated in the Roskos-Ewoldsen and colleagues’ study was that the accessibility of a source’s likability promoted central processing of a message (2002). Unlike the present study that examined the effects of the valence of receivers’ attitude toward sources, in Roskos-Ewoldsen et al. (2002), the source was always likable, and the accessibility of the likability was manipulated as high or low. Thus, the difference in the independent variables would be another possible explanation for the results.
Regarding the effects of source likability through heuristic processing, the data did not support the direct effects of original source likability and of selecting source likability on the receivers’ attitudes toward low-carb diets. However, for a shared post with an unknown selecting source, the participants generated more positive source-related thinking when the original source was likable than when the source was unlikable, and the valence of source-related thinking mediated the relationship between original source likability and the receivers’ attitudes toward low-carb diets. Thus, the effect through heuristic processing was mediated by the valence of source-related thinking.

Again, one possible explanation for the data’s lack of support for the direct effect of source likability on the attitude would be the participants’ involvement with the message. Previous studies indicated receivers’ involvement as a moderator of source cue effects (Chaiken, 1980; Petty et al., 1983). As noted previously, the message related to consumption and restriction of food might have been perceived to be relevant to the participants and prompted them to engage in cognitive elaboration. In turn, the attitude change might have been more based on central processing than heuristic processing.

However, for a shared post with an unknown selecting source, there was a heuristic effect of original source likability on the attitude mediated through the valence of source-related thinking. Also, this was the setting that original source likability did not directly influence the valence of message-related thinking, but there was a serially mediated indirect path from original source likability to the attitude through the valence source-related thinking and the valence of message-related thinking. The relative impacts of original source likability through biased central processing and through heuristic processing demonstrated in the present study are consistent with the ELM’s concept of an
elaboration likelihood continuum suggesting the inverted relationship between the impact of central processing and peripheral processing (Petty, Wegener, Fabrigar, Priester, & Cacioppo, 1993; Petty et al., 1997). The sharing of the message by an unknown selecting source promoted the heuristic impact of original source likability through the valence of source-related thinking, while reducing the effect through biased central processing. A potential explanation for these results is that when a message is shared by someone unfamiliar, it might draw the receivers’ focus to the original source and his/her likability. Noticing the unfamiliar selecting source, the participants might have put effort to make inferences about the unfamiliar source (Dick, Chakravarti, & Biehal, 1990; Naylor, Lamberton, & Norton, 2011), and due to the inferencing effort, the likability of the original source might have had a greater influence through the valence of source-related thinking than through the valence of message-related thinking.

Another major finding of the present study is that the likability of the selecting source did not create similar biasing effects demonstrated by the likability of the original source. In other words, there was an asymmetry between the biasing effects of the likability of an original source and the likability of a selecting source. The effects of selecting source likability were tested in two different settings – a shared message with a known original source and a shared message with an unknown original source. In both cases, there was no significant effect of the selecting source likability on the valence of message-related or source-related thinking. One possible explanation for the results is that the values that people attach to writing an original post and to passing along the message by simply clicking the “share” button differ greatly. As previously noted, source likability did not influence the receivers’ attitudes directly; the significant effects of
likability on attitudes were through cognitive elaboration. Engaging in a high level of elaboration, the receivers may have associated the message much more to original sources who actively expressed their opinions by writing a message than to selecting sources who just passed along a message. Moreover, in the present study, the selecting source simply shared the message without adding any comments. In this circumstance, the selecting source’s purpose of sharing the message and the extent to which the selecting source agrees with the message might not have been clear to the receivers. It could have been another reason why the selecting source did not have much influence.

Another pattern found in the data is that for an original post and for a shared post with two known source layers, original source likability had a significant effect on the amount of source-related thinking such that an unlikable source prompted more source-related thoughts than a likable source – in the direction opposite to what the hypotheses suggested for the effect of likability on the amount of message-related thinking. The difference in the amount of source-related thinking did not lead to differences in attitudes in the present study. However, it would be worthwhile to reexamine the effects in a setting that yield more heuristic processing.

The findings have practical implications as well. Nowadays, social network sites have become an important channel for expression and diffusion of persuasive messages (Bernhardt, Mays, & Kreuter, 2011; Johnson & Perlmutter, 2009; Utz, 2009). On social network sites, viewers hear from the sources that they have pre-established attitudes toward. The biasing effects of source likability provide many implications for people who wish to persuade viewers in online settings where multiple sources of information exist.
Limitations and Future Research

One major limitation of the present study is that the hypotheses were tested with only one message. The general trend in the data suggested that the participants processed the message centrally rather than heuristically. The participants seemed to have both motivation and ability to process the message, and it provided a good condition to test the effects through biased elaboration (Chaiken et al., 1989; Petty & Cacioppo, 1986a; Petty et al., 1997). However, such messages impose constraints on testing the effects of source likability as both an elaboration moderator and a heuristic cue. Thus, testing the effects of multiple layers of source likability with a message topic with low relevance to the participants might provide a fuller picture of possible effects.

Conclusion

On social network sites, people often encounter messages shared by a person other than the original poster. The present study examined the effects of the likability of an original source and a selecting source based on dual-process models of persuasion. The study extended the understanding of the effects of multiple layers of source likability on the receivers’ message processing by demonstrating the biasing effect of original source likability and the asymmetry between the effects of original source likability and selecting source likability.
References


Appendix A: Summary of Results

<table>
<thead>
<tr>
<th>Selecting Source</th>
<th>Likable</th>
<th>Unlikable</th>
<th>Unknown</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Selecting Source</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( M )</td>
<td>4.48(_{aA})</td>
<td>3.69(_{aA})</td>
<td>4.58(_{aA})</td>
</tr>
<tr>
<td>( SD )</td>
<td>3.88</td>
<td>2.90</td>
<td>3.54</td>
</tr>
<tr>
<td>Likable</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( M )</td>
<td>4.46(_{aA})</td>
<td>4.11(_{aA})</td>
<td>4.82(_{aA})</td>
</tr>
<tr>
<td>( SD )</td>
<td>3.40</td>
<td>4.11</td>
<td>3.21</td>
</tr>
<tr>
<td>Unlikable</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( M )</td>
<td>4.31(_{aA})</td>
<td>3.98(_{aA})</td>
<td>4.51(_{aA})</td>
</tr>
<tr>
<td>( SD )</td>
<td>4.08</td>
<td>3.56</td>
<td>2.93</td>
</tr>
<tr>
<td>Unknown</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( M )</td>
<td>4.81(_{aA})</td>
<td>4.09(_{aA})</td>
<td>5.47(_{aA})</td>
</tr>
<tr>
<td>( SD )</td>
<td>3.74</td>
<td>3.12</td>
<td>3.56</td>
</tr>
</tbody>
</table>

Note: Within rows, means with no lower case subscript in common differ at \( p \) (two-tailed) < .05; within columns, means with no upper case subscript in common differ at \( p \) (two-tailed) < .05.

Table 2. Amount of message-related thinking
<table>
<thead>
<tr>
<th>Selecting Source</th>
<th>Original Source</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Likable</td>
</tr>
<tr>
<td>No Selecting Source</td>
<td></td>
</tr>
<tr>
<td></td>
<td>M</td>
</tr>
<tr>
<td></td>
<td>.51&lt;sub&gt;aA&lt;/sub&gt;</td>
</tr>
<tr>
<td></td>
<td>SD</td>
</tr>
<tr>
<td></td>
<td>.39</td>
</tr>
<tr>
<td>Likable</td>
<td>M</td>
</tr>
<tr>
<td></td>
<td>.56&lt;sub&gt;aA&lt;/sub&gt;</td>
</tr>
<tr>
<td></td>
<td>SD</td>
</tr>
<tr>
<td></td>
<td>.41</td>
</tr>
<tr>
<td>Unlikable</td>
<td>M</td>
</tr>
<tr>
<td></td>
<td>.44&lt;sub&gt;abA&lt;/sub&gt;</td>
</tr>
<tr>
<td></td>
<td>SD</td>
</tr>
<tr>
<td></td>
<td>.42</td>
</tr>
<tr>
<td>Unknown</td>
<td>M</td>
</tr>
<tr>
<td></td>
<td>.43&lt;sub&gt;aA&lt;/sub&gt;</td>
</tr>
<tr>
<td></td>
<td>SD</td>
</tr>
<tr>
<td></td>
<td>.43</td>
</tr>
</tbody>
</table>

Note: Within rows, means with no lower case subscript in common differ at \( p \) (two-tailed) < .05; within columns, means with no upper case subscript in common differ at \( p \) (two-tailed) < .05.

Table 3. Valence of message-related thinking
<table>
<thead>
<tr>
<th>Selecting Source</th>
<th>Likable</th>
<th>Unlikable</th>
<th>Unknown</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Selecting Source</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$M$</td>
<td>2.98$_{aA}$</td>
<td>4.51$_{bA}$</td>
<td>2.44$_{aA}$</td>
</tr>
<tr>
<td>$SD$</td>
<td>3.17</td>
<td>3.55</td>
<td>2.78</td>
</tr>
<tr>
<td>Likable</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$M$</td>
<td>2.94$_{abA}$</td>
<td>3.76$_{aAB}$</td>
<td>2.54$_{bA}$</td>
</tr>
<tr>
<td>$SD$</td>
<td>2.54</td>
<td>2.55</td>
<td>2.53</td>
</tr>
<tr>
<td>Unlikable</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$M$</td>
<td>2.76$_{aA}$</td>
<td>3.67$_{aAB}$</td>
<td>2.74$_{aA}$</td>
</tr>
<tr>
<td>$SD$</td>
<td>2.46</td>
<td>3.36</td>
<td>2.10</td>
</tr>
<tr>
<td>Unknown</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$M$</td>
<td>3.30$_{aA}$</td>
<td>2.94$_{aB}$</td>
<td>2.20$_{aA}$</td>
</tr>
<tr>
<td>$SD$</td>
<td>2.85</td>
<td>2.67</td>
<td>2.50</td>
</tr>
</tbody>
</table>

Note: Within rows, means with no lower case subscript in common differ at $p$ (two-tailed) < .05; within columns, means with no upper case subscript in common differ at $p$ (two-tailed) < .05.

Table 4. Amount of source-related thinking
<table>
<thead>
<tr>
<th>Selecting Source</th>
<th>Original Source</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Likable</td>
<td>Unlikable</td>
<td>Unknown</td>
<td></td>
</tr>
<tr>
<td>No Selecting Source</td>
<td>M</td>
<td>.23ₐᴬ</td>
<td>.30ₐᴬ</td>
<td>.25ₐᴬ</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>.36</td>
<td>.38</td>
<td>.34</td>
</tr>
<tr>
<td>Likable</td>
<td>M</td>
<td>.38ₐᴬ</td>
<td>.21ₐᴬ</td>
<td>.22ₐᴬ</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>.41</td>
<td>.32</td>
<td>.37</td>
</tr>
<tr>
<td>Unlikable</td>
<td>M</td>
<td>.25ₐᴬ</td>
<td>.21ₐᴬ</td>
<td>.26ₐᴬ</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>.36</td>
<td>.36</td>
<td>.36</td>
</tr>
<tr>
<td>Unknown</td>
<td>M</td>
<td>.38ₐᴬ</td>
<td>.23ₐᴮ</td>
<td>.20ₐᴮ</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>.41</td>
<td>.34</td>
<td>.33</td>
</tr>
</tbody>
</table>

Note: Within rows, means with no lower case subscript in common differ at p (two-tailed) < .05; within columns, means with no upper case subscript in common differ at p (two-tailed) < .05.

Table 5. Valence of source-related thinking
<table>
<thead>
<tr>
<th>Selecting Source</th>
<th>Likable</th>
<th>Unlikable</th>
<th>Unknown</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Selecting Source</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$M$</td>
<td>$4.75_{abA}$</td>
<td>$4.51_{aA}$</td>
</tr>
<tr>
<td></td>
<td>$SD$</td>
<td>$1.23$</td>
<td>$1.19$</td>
</tr>
<tr>
<td>Likable</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$M$</td>
<td>$5.00_{aA}$</td>
<td>$4.77_{aA}$</td>
</tr>
<tr>
<td></td>
<td>$SD$</td>
<td>$1.00$</td>
<td>$1.47$</td>
</tr>
<tr>
<td>Unlikable</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$M$</td>
<td>$4.96_{abA}$</td>
<td>$4.60_{aA}$</td>
</tr>
<tr>
<td></td>
<td>$SD$</td>
<td>$1.27$</td>
<td>$1.12$</td>
</tr>
<tr>
<td>Unknown</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$M$</td>
<td>$4.72_{aA}$</td>
<td>$4.61_{aA}$</td>
</tr>
<tr>
<td></td>
<td>$SD$</td>
<td>$1.45$</td>
<td>$1.15$</td>
</tr>
</tbody>
</table>

Note: Within rows, means with no lower case subscript in common differ at $p$ (two-tailed) $< .05$; within columns, means with no upper case subscript in common differ at $p$ (two-tailed) $< .05$.

Table 6. Attitudes toward low-carb diets