

## **NUDGES AND NORMS: LEVERAGING SOCIAL DYNAMICS TO DESIGN EFFECTIVE HEALTH COMMUNICATION STRATEGIES**

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### **Abstract:**

*Promoting healthy eating habits in children is imperative to combat the rising rates of childhood obesity. This study investigates the impact of persuasive health messages aimed at encouraging parents to provide nutritious food for their young children. The alarming increase in childhood obesity, associated with detrimental social, economic, and health consequences, underscores the urgency of this issue. In the United States, childhood obesity has reached nearly epidemic proportions, with obesity rates among children aged 6 to 11 years soaring from 7% in 1980 to nearly 18% in 2012. A parallel trend is observed among adolescents, with obesity rates escalating from 5% to almost 21% during the same period. This research assesses the effectiveness of persuasive health messages as a means to combat this pressing public health challenge.*

**Keywords:** Childhood obesity, Healthy eating habits, Persuasive health messages, Parental nutrition choices, public health interventions.

### **Introduction**

This study examines the effects of persuasive health messages aimed at encouraging parents to provide healthy food for their young children. The importance of promoting healthy eating habits is a critical issue in light of the increasing prevalence of obesity and its adverse social, economic, and health outcomes. In the United States, childhood obesity has reached almost epidemic proportions (Centers for Disease Control and Prevention, 2015). The percentage of children aged 6 to 11 years in the United States who were obese increased from 7% in 1980 to nearly 18% in 2012. Similar trends have been observed among adolescents, whose obesity rates increased from 5% to nearly 21% over the same period (Ogden, Carroll, Kit, & Flegal, 2014).

Once considered a problem facing high-income countries such as the United States, childhood obesity is now a global threat to public health in low- and middle-income countries as well (World Health Organization, 2015). In 2013, according to the World Health Organization (2015), 42 million children under age five were overweight (defined as having a body mass index greater than or equal to 25) or obese (having a body mass index greater than or equal to 30). Of the world's overweight and obese preschoolers, 35 million live in developing countries.

In low- and middle-income countries, childhood overweight and obesity has been linked to dietary patterns such as inadequate prenatal infant and young child nutrition as well as exposure to highcalorie (energy-dense) foods, which tend to be more affordable but also poor in nutrient quality. Together with a reduction in levels of physical activity, these dietary patterns have been driving sharp increases in childhood obesity around the world in the past 20 years (World Health Organization, 2015). By 2020, if trends in childhood obesity continue unchanged, it is estimated that 9% of all preschoolers will be overweight or obese (de Onis, Blössner, & Borghi, 2010).

Childhood obesity is associated with increased risk of obesity later in life and can lead to an increased risk for conditions including hypertension, high cholesterol, type 2 diabetes, asthma, breathing problems, and heart disease (Centers for Disease Control and Prevention, 2015). Healthy lifestyle habits, including healthy eating, can

significantly lower the risk of becoming obese and of developing chronic diseases related to obesity (Office of the Surgeon General, 2010).

Parents of children aged five through age nine were chosen as the focus of this study, because parents are generally recognized to be the most fundamental agents for socialization (Wardle, 1995) and play a central role in their children's health behaviors. Children in this age group also have been shown to be at an important biological and psychological stage, when parents' choices regarding preventive health behaviors can have an important impact on the child's later development (Wisemandle, Maynard, Guo, & Siervogel, 2000).

### **Literature Review**

The theoretical framework for this study draws upon research in persuasion and behavior change and message effects. The theoretical framework includes the integrative model of behavior change (Fishbein & Ajzen, 2010; Fishbein et al., 2002), social identity theory (Tajfel & Turner, 1979; Turner, 1982), as well as research into self-categorization (Terry & Hogg, 1996; Terry, Hogg, & Duck, 1999). The integrative model of behavior change (Fishbein et al., 2002) is an expectancy outcome model of behavior change that has evolved from the theory of reasoned action (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975) and planned behavior (Ajzen, 1991). The integrative model focuses on changing beliefs about consequences, normative issues, and efficacy with regard to a particular behavior, because changing beliefs underlying intention to perform a behavior ultimately results in changes in intention, the most proximal determinant of behavior (Fishbein & Yzer, 2003).

For the purposes of this study, the argument that normative expectations affect intentions is the relevant component of the model. It is important to distinguish between different types of perceived norms because each refers to a separate source of human motivation (Cialdini, Reno, & Kallgren, 1990; Deutsch & Gerard, 1955). Different types of norms also have been shown to lead to significantly different behavioral patterns in the same setting (Reno, Cialdini, & Kallgren, 1993; Rimal & Real, 2003) and to operate independently of one another in their effects on behavioral intention (Larimer, Turner, Mallett, & Geisner, 2004; Rimal & Real, 2005). The need to distinguish descriptive from injunctive norms is also in accordance with the focus theory of normative conduct (Cialdini et al., 1990). *Descriptive norms* refer to an individual's perceptions of important people's behavior, whereas *injunctive norms* refer to the extent to which individuals perceive that influential others approve or disapprove of them behaving in a certain way (Cialdini, 2003). *Subjective norms*, a form of injunctive norms, have been described as the perceptions of important others' expectation for a given individual's behavior (Park & Smith, 2007).

A large body of research has focused on the role of descriptive norms in predicting behavior. Research on descriptive norms also has been used to guide interventions focused on reducing overestimations of perceived descriptive norms, most often in the context of college drinking behaviors (see Larimer et al., 2011). One theoretical framework that has been widely applied in social norms research is the theory of normative social behavior (Rimal & Real, 2005). The theory of normative social behavior is a model exploring the relation between descriptive norms and behavior and has been applied to predict a range of behaviors including college student drinking, practicing yoga, water conservation, and handwashing (Lapinski, Anderson, Shugart, & Todd, 2013; Lapinski, Rimal, DeVries, & Lee, 2007; Rimal, 2008; Rimal, Lapinski, Cook, & Real, 2005).

One of the most frequently used theories in social norms research in communication (see Mollen, Rimal, & Lapinski, 2010) is the theory of reasoned action (Fishbein & Ajzen, 1975; Ajzen & Fishbein, 1980). According to the most recent iteration of this theory—the integrative model of health behavior (Fishbein & Ajzen, 2010; Fishbein & Cappella, 2006), both injunctive and descriptive norms can directly influence intention. However, the influence of perceived injunctive and descriptive norms depends upon the specific context of the behavior in question and the population. The current study employs the integrative model to test the effects of a message emphasizing the social expectations of others (rather than the extent to which others are perceived to engage in the behavior). Although this study focuses on a message emphasizing injunctive norms, both descriptive and injunctive norms are acknowledged to play an important role in behavior change.

Injunctive norms play an important role with regard to intention to perform healthful behaviors (Finlay, Trafimow, & Villareal, 2002) and have guided the design of community interventions (e.g., Fishbein et al., 1995). Terry and Hogg (1996) proposed that injunctive norms may be especially important in predicting health-related behaviors, because, for these types of behaviors, people tend to be confident of what they believe their most important others think, which may not be as true of other types of behaviors.

According to reference group theory, normative influence can be categorized as either value-expressive influence or utilitarian influence (Bearden & Etzel, 1982). Value-expressive influence relates to the desire to maintain one's self-concept. An individual's desire to belong to a particular referent group is related to his or her needs for ego enhancement or personal expression (Park & Lessig, 1977). Group norms will influence an individual who desires to associate with a particular reference group. This study contributes to this literature on normative influence in persuasive messages by testing a measure of the salience of group norms—identification with other parents—and its interaction with exposure to a normatively focused message.

#### ***Identity Salience and the Effects of a Normatively Focused Message***

Social identity theorists have used the term *salience* to indicate the activation of an identity in a situation. A salient social identity is defined as "one which is functioning psychologically to increase the influence of one's membership in that group on perception and behavior" (Oakes, 1987, p. 118). In identity theory, salience has been understood as the probability that an identity will be activated in a situation (Stryker, 1980). A particular identity becomes activated or salient as a function of the interaction between the characteristics of the perceiver (accessibility) and of the situation (fit) (Stets & Burke, 2000). When a social identity is salient (activated) and attended to, group members act to match their behavior to the standards relevant to the social identity, so as to confirm and enhance their social identification with the reference group (Abrams, 1992).

According to social identity theory (Tajfel & Turner, 1979; Turner, 1982), an important component of the self-concept is derived from memberships in social groups and social categories. A social identity is a person's knowledge that he or she belongs to a social category or group (Hogg & Abrams, 1988). A social group is a set of individuals who hold a common social identification or view themselves as members of the same social category (Stets & Burke, 2000). In identity theory, the core of an identity is the categorization of the self as an occupant of a role, and the incorporation, into the self, of the meanings and expectations associated with that role and its performance (Burke & Tully, 1977; Thoits, 1983). These expectations and meanings form a set of standards that guide behavior (Burke & Reitzes, 1981).

In the context of this study, the social identity of parents should reflect their role as parent, and the expectations associated with that role, within the social category of parents of young children. These expectations, when made salient through exposure to a message telling parents that they should perform health behaviors for their child because parents like themselves expect them to do so (i.e., a normatively focused message), should guide perceptions of behavior associated with the role of parent, specifically the role of caretaker responsible for their child's health.

Social-categorization theory extends the discussion of the nature of the self-concept contained in social identity theory (Turner, 1982; Turner, Hogg, Oakes, Reicher, & Wetherell, 1987). According to social-categorization theory, group behavior can be understood as individuals acting in terms of a shared identity rather than as different individual persons (i.e., more in terms of their personal identities). Which self-category is salient at any particular time is a function of an interaction between the characteristics of the perceiver and the situation (Bruner, 1957). One important factor affecting people's readiness to use a social category for self-definition in specific situations is the extent of their identification with the group, the degree to which it is central, valued, and ego involving (e.g., Doosje & Ellemers, 1997). Thus, on the basis of a social identity/self-categorization approach, it can be proposed that behavioral outcomes are influenced by reference group norms, but only for those people for whom the group membership is a salient basis for self-definition (Terry & Hogg, 1996; Terry et al., 1999).

The current study builds upon existing research on the joint effects of group identification and norms on intention and behavior. This body of research has provided evidence that social norms will act as a determinant of intention

when the individual identifies with members of a given social category or group (Lapinski et al., 2013; Terry & Hogg, 1996; Terry, Hogg, & White, 1999; Trafimow & Finley, 1996; White, Terry, & Hogg, 1994). Recent studies have also tested the interaction between group identity and perceived descriptive norms in the context of marijuana use (Neighbors, Foster, Walker et al., 2013) and alcohol use (Reed, Lange, Ketchie, & Clapp, 2007).

The interaction between descriptive norms and group identity is also a central proposition within the theory of normative social behavior and has been tested in a range of behavioral contexts (Lapinski et al., 2007; Rimal & Mollen, 2013; Rimal & Real, 2005). The theory of normative social behavior proposes that group identification (and other factors) will interact with descriptive norms to influence behavior. The proposed interaction between group identification and descriptive norms is based upon the notion that, when group identity is strong, an individual will be more motivated to behave in ways that conform to shared in-group norms (Rimal & Mollen, 2013; Rimal & Real, 2005). Research has found evidence to support the proposed interaction between group identification and exposure to messages emphasizing descriptive norms (e.g., Lapinski et al., 2013).

However, research to date has not examined the effects of group identity and messages emphasizing injunctive norms. Previous studies (Lapinski et al., 2013; Rimal et al., 2005) have explored moderators and mediators of the effects of exposure to normative messages when people are exposed to messages emphasizing descriptive norms in the context of intention to wash one's hands or practice yoga). The current study contributes to research in this area by testing the effects of messages emphasizing injunctive norms in the context of nutrition. The objective of the study is to determine whether the effects of a message that emphasizes the importance of social expectations (i.e., injunctive norms) will vary according to group identification. On the basis of past research, it is hypothesized that parents who report high levels of identification with other parents and who are exposed to a normatively focused message will report greater intention to serve their child healthful food than will parents who report low levels of identification with other parents. Among parents exposed to an attitudinally focused message or no message, there should be no differences in intention.

*H1: Among parents exposed to a normatively focused message, identification with other parents is expected to be positively associated with intention. Identification with other parents is not expected to influence intention among parents exposed to an attitudinally focused message or no message.*

## **Method**

### **Participants**

A national, no representative sample of 242 parents was recruited by Survey Sampling International to participate in an online survey in January 2010. Because the goal of this study is to test theory rather than generalize findings to a wider population of parents, an unweighted convenience sample of parents was used rather than a representative sample. Criteria for inclusion required people aged 18 and older who were the parent of at least one child aged five through nine. The participants ranged in age from 18 to 50 and above (most parents were aged 30 to 39). Most participants were White (86%), and 65.7% were women. Eighty-three percent of the sample were currently married or living with a partner. The demographic characteristics of the sample are presented in Table 1 and are reported in a separate study (Lewis, 2013).

**Table 1. Demographic Characteristics of the Sample (N = 242).**

	<i>n</i>	<i>Percent</i>
<b>Gender</b>		
Male	83	34.3
Female	159	65.7
<b>Education</b>		
High school diploma/GED or less	60	24.8

Some college/two-year degree	98	40.5
Four-year college graduate or more	84	34.7

**Marital status**

Married or cohabiting	202	83.5
Single	40	16.5

**Race/ethnicity**

White	208	86.0
Not White	34	14.0

**Child's gender (child aged five to nine)**

Male	126	52.1
Female	116	47.9

**Child's health**

Fair	8	3.3
Good	88	36.4
Very good	146	60.3

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**Parent's nutrition behavior**

	<i>M</i>	<i>SD</i>
<i>Range (1 to 6), Median = 3.75</i>	3.58 (scale)	1.22 (scale)
Low-fat diet	3.40	1.50
Low-sugar diet	3.39	1.53
Consumes at least three servings of fruit per day	3.64	1.48
Consumes at least three servings of vegetables per day	3.87	1.49

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**Measures**

**Perceived Group Identification**

A measure of group identification with other parents of young children was based on measures of perceived group identification used by Terry et al. (1999), Hogg, Cooper-Shaw, and Holzworth (1993), and Brown et al. (1986). The measure used in the current study assesses strength of identification with other parents of young children. Parents were asked to indicate the strength of their agreement with statements including "How much do you identify with most of the other parents of young children that you know?" and "How much do you feel strong ties with most of the other parents of young children that you know?" using a 5-point Likert scale ranging from 1 (*not at all*) to 5 (*to a very great extent*). Responses to the 6-item scale were summed when a higher score indicates higher reported identification with other parents ( $\alpha = 0.89$ ,  $M = 18.88$ ,  $SD = 4.76$ ). The scale was mean-centered and included all six items.

**Dependent Variable: Intention to Serve One's Child Healthy Foods**

To assess intention to perform nutrition behaviors, participants were randomized to either the observable or the nonobservable version of the following scenario:

*Imagine you are home with your child (think of your youngest child aged between 5 and 9) at 5pm on a typical Sunday evening. Your child has a friend over for an afternoon play date, and you are about to prepare dinner for the children to eat.*



For parents assigned to the observable condition, the next sentence was, “As you begin preparing the meal, your child’s friend’s parent arrives and you invite him/her to join you in the kitchen and stay until the children have had dinner.” For parents assigned to the nonobservable condition, the text continues directly to the question “How likely are you to include the following foods in the meal you serve your child and his/her friend?”

Parents were presented with 12 different food items and were asked to rate the likelihood of including each in the meal on a 10-point scale from 1 (*extremely unlikely*) to 10 (*extremely likely*). The food items were: (a) meat—grilled or baked; (b) fish (for example, tuna, salmon, shellfish); (c) meat—fried or precooked; (d) side dish; (e) pizza; (f) water; (g) milk; (h) drinks other than water or milk; (i) fruit(s); (j) vegetable(s); (k) dessert (baked); and (l) dessert (frozen).

Because the nutrition items included both healthful and unhealthy options (and some that were neutral, such as side dishes), factor analysis using maximum likelihood with oblique rotations was used to determine how the items grouped into subcomponents. Four components were shown to account for a (combined) 53.6% of the total variance in intention. As the study predicts intention to feed children healthy foods, the subcomponent that included only healthy foods was used. This measure, which accounted for 11.2% of the total variance, included grilled meat, fish, fruit, and vegetables. The same intention measure has been used in a separate study (Lewis, 2013). Responses to these four items were averaged to form a continuous index for intention ( $M = 6.46, SD = 1.54$ ). The intention measure for healthy food ranged from two to nine.

#### **Covariates: Integrative Model Factors**

Parents’ injunctive norms regarding feeding their child healthful foods were measured by asking them to indicate the strength of their agreement with the statement “Parents of a child aged five through nine like myself (who are important to me) think I should give my child the following foods and drinks for dinner on a typical Sunday evening at home when the child has a friend over for a play date.” Parents’ descriptive norms regarding serving their children healthy food were measured by asking participants to indicate the extent to which they agreed with the statement “Most parents of a child aged five through nine like myself (who are important to me) will give their child the following foods and drinks on a typical Sunday evening at home when the child has a friend over for a play date.” For both types of norms, responses to 7-point scales ranging from 1 (*disagree*) and 7 (*agree*) were averaged across all four food items (fish, grilled meat, fruit, and vegetables) to form a measure of injunctive norms ( $\alpha = 0.73, M = 1.45, SD = 1.17$ ) and descriptive norms ( $\alpha = 0.69, M = 1.18, SD = 1.14$ ), each of which ranged from  $-3$  to  $+3$ .

A direct measure of parents’ attitudes toward feeding their child each of these four healthful food items “for dinner on a typical Sunday evening at home when the child has a friend over for a play date” was measured through a set of three semantic-differential type scales. These 7-point scales ranged from 1 (*useless/unenjoyable/foolish*) to 7 (*useful/enjoyable/wise*). Responses to each of these three subfactors were averaged for each food item, and responses to all four items were averaged for each participant. The attitude measure ranged from  $-3$  to  $+3$  ( $\alpha = 0.67, M = 1.75, SD = 1.00$ ).

Parents’ self-efficacy regarding feeding their child healthful foods was measured by asking them to indicate the strength of their agreement with the statement, “If I really wanted to, I could give the following foods and drinks to my child for dinner on a typical Sunday evening at home when the child has a friend over for a playdate.” Responses to 7-point scales ranging from 1 (*disagree*) to 7 (*agree*) were averaged across four healthy food items to form a measure of self-efficacy. The measure ranged from  $-1.5$  to  $+3$  ( $\alpha = 0.67, M = 1.92, SD = 1.05$ ).

A measure of parents’ nutritional behaviors was obtained by asking them to indicate the strength of their agreement with each of four items, including “I eat a low-fat diet” and “I eat a low-sugar diet” using a 6-point Likert scale in which 6 = *strongly agree* and 1 = *strongly disagree*. The mean response to these four items was calculated to create a measure of parents’ nutritional behaviors ( $\alpha = 0.83, M = 3.58, SD = 1.22$ ), which was included as a covariate in the analysis. The analysis also included a measure of parents’ reports of their child’s general health status; responses ranged from 1 (*poor*) to 4 (*very good*).

#### **Design**

The experiment was conducted employing a three (exposure to normative argument/exposure to attitudinal argument/no message exposure) × two (observable/nonobservable behavior) between-subjects design. Observability of the behavior and message type were experimentally varied. Identification with other parents was measured as an individual difference variable. The focus outcome measure for the experiments was intention to feed one's child healthful foods in the behavioral scenario depicted. Fishbein and Ajzen (Fishbein & Ajzen, 1975, 2010; Fishbein et al. 2002) have argued that there is good evidence that, when properly measured, intentions are good predictors of behavior.

### ***Procedure***

After responding to questions about demographic characteristics and personality traits, parents were either not exposed to a message or exposed to a message that emphasized either a normative justification for a behavior or an attitude-relevant justification for the behavior. Each message, which comprised two screen images, included written text and a photo of a parent and child modeling healthy nutrition behaviors (a father with a child on one screen and a mother with a child on the next). Parents were only able to move from one screen to the next after a delay of 25 seconds to ensure that they had enough time to attend to all the message elements. All groups were then asked about their behavioral intentions in a relevant scenario.

The normatively focused message and attitudinally focused message had identical layout and images. Each message contained the same information on practical ways in which parents could provide healthful nutrition (self-efficacy information) as well as facts relating to nutrition among young children. The messages included the same images of a White father and Hispanic mother modeling the recommended behavior. In interviews among parents during pretesting, a snowball sample ( $n = 22$ ) was asked, "To what extent to you relate to the people in the pictures? How similar are they to you? How similar are they to other people you know? Other parents?" Most parents responded that they felt that the images were of people who were somewhat similar to themselves, and were also similar to people they know and to people with whom they could relate.

Although much of the written text in each message type was the same, the messages varied in their emphasis on either the expectations by others of the parent to perform the recommended behavior (i.e., normatively focused message) or on the health benefits of performing the recommended behavior (i.e., attitudinally focused message). Specifically, within the messages, the manipulation can be found in the captions in larger (relative to other text) type underneath the images in each of the two image screens. In the normative message condition, the captions were "Set a great example—Show your family and friends how important feeding your child healthful food is to you" (screen 1) and "Show your family and friends how much you care about your child's nutrition" (screen 2). In the attitudinal message condition, the captions were "Feeding your child healthy foods will benefit their health now and in the future" (screen one) and "Feeding your child nutritious foods will help them grow up healthy" (screen two). In addition, the text alongside the images with the normative message included a phrase, "Like other parents of young children, you want what's best for your child." In contrast, in the same paragraph in the attitudinal message, the paragraph began with, "As a parent, you want what's best for your child." The goal was to emphasize the reference group of other parents in the normative condition but not in the attitudinal, and to emphasize the health benefits of performing the behavior in the attitudinal message more so than in the normative messages.

All participants were then randomly assigned to an intentions measure with either an observable (others present) or a nonobservable (others not present) behavioral scenario. The intentions measure incorporated the second randomized manipulation—with parents being asked whether they would engage in the target behavior either when they were observed by other parents or when being observed was not mentioned.

Once they had responded to questions measuring intention related to the behavioral scenario (i.e., the outcome measure), all parents were given a manipulation check for the message type manipulation and the observability manipulation. Finally, all parents responded to questions about attitudes, injunctive and descriptive norms, and control beliefs relating to providing healthful foods for their child. To ensure that exposure to messages did not influence participants' responses to measures of injunctive norms and other integrative model factors, I tested for

overall differences in these measures across message groups. A comparison of means, controlling for observability, revealed no overall differences for these measures across groups ( $p > .05$ ).

The observability manipulation was controlled for across the message conditions as parents in each message condition were also randomly assigned to the observable or not-observable scenario. Consequently, the effects of the observability manipulation were averaged across message conditions and did not affect the results. The observability manipulation was also included as a covariate in analyses. This factor was relevant for a second set of hypotheses relating to priming normative influence through observability but is not the focus of this article (reported in Lewis, 2013).

## **Results**

### **Manipulation Check**

Two manipulation checks were conducted during the survey, one for the observability manipulation and one for the message type manipulation. To test the message type manipulation, parents were asked whether they recalled whether the message they had seen earlier included “a statement about the importance of setting a good example for others (such as family and friends) by feeding your child healthful foods.” Responses to this item were on a 10-point scale ranging from 1 (*definitely do not recall*) to 10 (*definitely do recall*). Parents’ recall of the (normative) message type was captured through a comparison of mean correct recall for these two items. For both behavior types, this item was included in a list of four other items that were common to both message types. However, because only the normative message type included a statement concerning social expectations, participants in the normative message groups should have recalled at a significantly higher rate than those in the attitudinal message group.

A one-way comparison of means for a median split item testing recall of normative component in the message revealed a significant difference between the message conditions in the expected direction ( $F = 6.74$ ,  $df = 164$ ,  $p = .01$ ). The mean recall among participants in the normative message group was 64% ( $SE = 0.06$ , 95% CI [0.53, 0.74]) in comparison with the mean (incorrect) recall among participants in the attitudinal message group, which was 43% ( $SE = 0.05$ , 95% CI [0.32, 0.54]).

To test the observability manipulation, participants were asked whether, in the scenario they had read, they were (a) alone; (b) with their child only; or (c) accompanied by another parent or parents. Sixty-four percent of the participants recalled the observability manipulation correctly (66.1% of those in the nonobservable condition and 62.9% of those in the observable condition,  $\chi^2(1, N = 242) = 20.34$ ,  $p < .001$ ).

### **Preliminary Analyses**

Before testing Hypothesis 1, preliminary analyses using ordinary least squares regression techniques were conducted to test for significant demographic predictors of behavioral intention. The final model tests the joint effects of identification with other parents and message type on intention and includes as covariates all integrative model factors as well as those variables that were found to be significant predictors in preliminary analyses.

A linear regression analysis ( $N = 242$ ) reveals that parents’ own nutrition behavior was a significant predictor of intention to serve their children healthful foods ( $B = 0.33$ ,  $SE = 0.08$ ,  $p < .001$ ). Parents’ race (White vs. other) was also a significant predictor of intention. Non-White parents reported significantly lower behavioral intention than did White parents ( $B = -0.88$ ,  $SE = 0.27$ ,  $p < .01$ ). Child’s reported health status was also a (marginally) significant predictor of intention ( $B = 0.32$ ,  $SE = 0.17$ ,  $p = .06$ ). These demographic characteristics accounted for 12.1% of the variance in intention. Other characteristics (i.e., age of parent, number of children at home, responsibility for nutrition, parents’ marital status, gender of parents, employment status, parents’ education, child’s body mass index, and gender of child) were not significant predictors of intention ( $p > .05$ ). All significant demographic and all integrative model factors are retained in the final model.

### **Test of Interaction between Identification with Other Parents and Message Type**

Table 2 displays the results of an ordinary least squares regression model ( $N = 242$ ) predicting parents’ intention to provide healthful foods to their young children ( $R^2 = 45\%$ ). A parent’s own nutrition behavior ( $B = 0.21$ ,  $SE = 0.07$ ,  $p = .002$ ), attitudes ( $B = 0.42$ ,  $SE = 0.11$ ,  $p < .001$ ), and descriptive norms ( $B = 0.38$ ,  $SE = 0.09$ ,  $p < .001$ ) relating to



healthy nutrition for one's child were significant predictors of intention. The parent's race (White vs. other) was a marginally significant predictor of intention ( $B = -.042, SE = 0.22, p = .06$ ).

Observability of behavior ( $B = -.018, SE = 0.15, p > .05$ ), injunctive norms ( $B = 0.12, SE = .09, p > .05$ ), self-efficacy ( $B = 0.13, SE = 0.10, p > .05$ ), and child's health status ( $B = 0.23, SE = 0.14, p > .05$ ) had no significant overall effect on intention. Identification with other parents had no (conditional) main effect on intention ( $B = -.002, SE = .02, p > .05$ ). There was no (conditional) main effect of normative message type ( $B = -.027, SE = 0.19, p > .05$ ) or of attitudinal message type ( $B = -.014, SE =$

$0.18, p > .05$ ) on intention, compared with the no-message condition.

The main effects of identification with other parents on intention varied across message conditions. In the normative message condition, the main effect of identification on intention was positive and significant ( $B = 0.06, SE = 0.028, 95\% CI [0.01, 0.12]$ ). In contrast, among parents in the attitudinal message group, the main effect of identification with other parents on intention was nonsignificant ( $B = .01, SE = 0.03, 95\% CI [-0.05, 0.07]$ ). Among parents in the control (no-message) condition, there was also no main effect of identification ( $B = -.002, SE = 0.02, 95\% CI [-0.06, 0.03]$ ). The difference between the coefficients was statistically significant, as reflected by the coefficient for the product term ( $B = 0.08, SE = 0.035, p = .03$ ). The association between identification with other parents and behavioral intention was stronger among parents in the normatively focused message condition than it was among parents in the attitudinally focused message condition and parents in the no-message condition. Thus, Hypothesis 1 was supported.

**Table 2. Ordinary Least Squares Regression Analysis Predicting Parents' Intentions to Serve Their Children Healthy Foods (N = 242).**

Variable	<i>B</i>	<i>SE</i>
Parent's intake of healthy foods	.21	.07**
Parent's race (White = 1; other = 0)	-.042	.22
Child's health status	.23	.14
Injunctive norms (healthy food)	.12	.09
Descriptive norms (healthy food)	.38	.09***
Self-efficacy (healthy food)	.13	.10
Attitudes (healthy food)	.42	.11***
Observable behavioral scenario (yes = 1, no = 0)	-.018	.15
Normatively focused message (yes = 1, no = 0)	-.027	.19

Attitudinally focused message (yes = 1, no = 0)	$\beta$ .14	.18
Identification with other parents	$\beta$ .02	.02
Attitudinal message $\times$ identification with other parents	.03	.04
Normative message $\times$ identification with other parents	.08	.035*
Total $R^2$ (%)	45.2	

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

The means of the hypothesized interaction are provided for participants according to their reported level of identification with other parents (lowest, middle, and highest third) and message condition (see Table 3). Among participants who report low or moderate levels of identification, the normative message produced significantly lower intention than among those high in this trait.

**Table 3. Means (Observed) for Intention for Message Conditions  $\times$  Identification (N = 242).**

	Intention <i>M</i>	<i>SD</i>	95% CI
No message $\times$ low identification ( $n = 35$ )	6.08	1.65	[5.51, 6.64]
No message $\times$ moderate identification ( $n = 12$ )	6.29	1.79	[5.15, 7.43]
No message $\times$ high identification ( $n = 32$ )	7.14	1.60	[6.56, 7.72]
Attitudinal message $\times$ low identification ( $n = 18$ )	6.35	1.58	[5.56, 7.13]
Attitudinal message $\times$ moderate identification ( $n = 30$ )	6.10	1.36	[5.59, 6.61]
Attitudinal message $\times$ high identification ( $n = 32$ )	7.23	0.97	[6.88, 7.57]
Normative message $\times$ low identification ( $n = 28$ )	5.80	1.48	[5.23, 6.38]
Normative message $\times$ moderate identification ( $n = 27$ )	5.67	1.42	[5.10, 6.23]
Normative message $\times$ high identification ( $n = 28$ )	7.21	1.23	[6.74, 7.69]

### Discussion and Conclusion

The findings of this study contribute to research on message strategies that may influence the effectiveness of messages aimed at promoting healthy eating behaviors among parents of young children. The study found that identification with other parents moderated responses to a normatively focused message about nutrition. Among parents exposed to a normatively focused message (compared with other conditions), intention to provide healthful food for one's child varied according to parents' reported level of identification with other parents.

These findings are consistent with research on social identity and self-categorization theories (Doosje & Ellemers, 1997; Terry & Hogg, 1996; Terry et al., 1999). Among parents for whom group membership with other parents was salient, in accordance with predictions based on social categorization theory (Turner & Onorato, 1999), exposure to a normative message led to significantly greater behavioral intention to serve one's child healthful food than among parents who were low in this trait. However, the observed association between identification with other parents and

exposure to a normatively focused message should not be generalized to other types of health behaviors without further testing.

The integrative model accounted for almost half of the total variance in behavioral intention, providing further support for its utility in predicting behavior, and health behaviors in particular. Some components in the model, however, were not associated with intention. The results show a direct effect of descriptive norms and attitudes, but did not find evidence for a direct effect of injunctive norms or self-efficacy on intentions. The integrative model (Fishbein & Ajzen, 2010) posits that attitudes, perceived norms, and self-efficacy should directly influence intention to perform a particular behavior. However, the relative weights of these factors in determining intentions will vary for different populations and behaviors (Fishbein & Ajzen, 2010). For some behaviors and populations, not all of these factors will directly influence intentions. Thus, the results reported here are consistent with research applying this theoretical framework. However, possible explanations for these results should still be considered. The finding that self-efficacy was not significantly associated with intention is likely due to the pattern of responses to this variable, which was highly skewed. This might be because of the parents' tendency to overestimate their ability to provide their child with healthy food in their own home. Regarding injunctive norms, the measure of injunctive norms was highly correlated with descriptive norms ( $r = .68, p < .001$ ). The likely result of this is high collinearity between these variables, which makes any conclusions about their differential normative effects on intention less definite. However, it is still preferable to use separate measures of norms, as suggested by Cialdini et al. (1990) and consistent with the integrative model.

The findings of this study can inform the design of effective persuasive messages aimed at parents of young children, an important influence on children's nutrition attitudes and behaviors. The findings underscore the importance of considering audience characteristics when designing messages to promote behavior change, an approach that may enhance its persuasive effect. In contrast, failing to take into account the characteristics of the target population may have an adverse effect on persuasion. For example, a normatively focused message may be perceived as unpersuasive if a substantial proportion of its audience does not identify with the referent group (i.e., other parents). As with other individual-level characteristics, levels of identification with other parents are likely to vary across different populations. For example, identification with other parents may be weaker among parents living in an individualistic society typified by fewer and weaker social ties (e.g., in a densely populated urban area). In contrast, in a collectivist society in which social ties between parents (and other groups) tend to be stronger, parents may be more susceptible to normatively focused messages about nutrition compared with attitudinally focused messages. Consequently, to increase the likelihood that a persuasive message will influence behavioral intention among a target audience, message design should account for variance in audience susceptibility to message type. If formative research suggests that a high proportion of parents in a target population report low levels of identification with other parents, a normatively focused message promoting healthful nutrition may be a poor fit to that population, and may even be more detrimental in terms of its effects on behavioral intention than no message. An alternative approach, such as using a message that emphasizes the health benefits of the recommended behavior, might be more effective. However, if many parents in the population *do* identify with other parents, a normatively focused message would be a good choice. Fitting the message type to the population at hand could be a more time-consuming approach than a onemessage-fits-all approach; however, it might lead to improved outcomes of exposure to messages in terms of intention, and eventually behavior change.

Some strengths of this study include the use of a survey experimental method. Specifically, the randomization of participants to condition allows for confidence in the effects of the message type manipulation. An additional strength is that the study focused on a non-college aged population of parents whose age ranged from 20 to over 50, which is a population less frequently studied in the communication literature. The study also uses a control group, which allows comparison of the two message treatments to the control rather than to each other. In addition, the scale created to measure perceived group identification among parents was shown to moderate the effects of

exposure to a message emphasizing normative motivations. This scale appears to operate well as a measure of the salience of social identity among this population.

However, this study also suffers from a number of limitations. A parallel study was conducted that focused on sun-protection behaviors, which not show supported for the hypothesis, which suggests that the findings reported here may not be generalizable across behaviors. One factor that might account for this is the timing of the study and its effect on the two behaviors. Nutrition and sun-protection behaviors are both preventive health behaviors with a long-term health impact. However, in contrast to nutrition behaviors, sun-protection behaviors are more frequently performed during the summer months. As a result, the salience of this topic is likely to vary with the season. Among parents exposed to the message promoting sun-protection behaviors, the message may have been perceived as less relevant, given that the study was conducted midwinter. Consequently, participants may have been less engaged with processing the message and attended less to the manipulation. In contrast, messages about nutrition are not likely to be similarly affected by the timing of the study.

The measures in this study are based on self-report and may have been affected by social desirability. To address concerns about possible effects of social desirability, prior to being shown the intention measure, parents were reminded that their responses would be completely confidential, and that some parents do these behaviors rarely, or not at all, and other parents do so more frequently. Parents were also thanked for providing honest answers to what they would be likely to do in the scenario.

Another limitation relates to the intention measure, which might have been improved by including a wider range of healthful food options among the items listed. In addition, the choice of a controlled experimental design with a hypothetical behavioral scenario as the outcome measure contributes to the internal validity of the findings but detracts, to some degree, from its external validity. However, practical considerations precluded testing these hypotheses in a real-life context while maintaining adequate control of possible confounding factors. Furthermore, the study aimed to examine the effects of a manipulation of the focus of a message on the association between identification with other parents and intention rather than to draw inferences concerning the prediction of behavior among a greater population of parents.

Future research should address these concerns through the use of more concrete behavioral outcomes.

Another limitation of this study is related to the manipulations of message type. The results of the manipulation check revealed significant differences between groups in the expected direction, and yet a substantial proportion of participants incorrectly recalled the manipulation. Some parents may not have paid close enough attention to the messages, which would reduce the likelihood of detecting the hypothesized interaction. Although messages were pretested among parents, it is advisable, in future research, to conduct more extensive pretesting to ensure that the differences in message type are sufficiently noticeable among participants.

Finally, the measure of identification with other parents captures one aspect of the ways in which individuals interact with and identify with a specific referent group. Future research should consider using additional measures of the frequency and nature of interpersonal interactions with the referent group. These would enable us to gain greater insight into the interaction between social identity salience and normatively focused messages on intentions.

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