Understanding the influence of social norms on health behavior: Testing a conceptual model

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Abstract

Objective. Although many interventions aim to reduce engagement in unhealthy behavior, failing to consider the role of factors in the social environment, such as social norms, may reduce the efficacy of these efforts. Social norms are consistently identified as a determinant of health behavior (e.g., seeing others engage in unhealthy behavior increases one’s own unhealthy behavior); however, there is limited understanding of the process through which, and for whom, this relationship emerges. Therefore, this paper identifies a conceptual model, derived from identity-based motivation theory, through which social norms influence eating behavior.

Methods. A national sample of 1,168 non-diabetic European Americans, African Americans, and Mexican Americans completed structured telephone interviews between August 2011 and February 2012.

Results. Perceiving norms that other people do not eat healthy foods increased perceptions of structural, external barriers to eating healthy. Increased barriers predicted stronger beliefs that weight is uncontrollable, which subsequently predicted greater engagement in unhealthy eating behavior. Furthermore, participants’ perceived weight status moderated the relationship between external eating barriers and beliefs about weight, such that participants who perceived themselves to be very overweight reported the strongest beliefs that their weight is uncontrollable.

Conclusions. Perceiving norms about others’ unhealthy eating habits can facilitate one’s own unhealthy eating behavior by increasing perceptions of barriers and beliefs about the uncontrollability of weight. Moreover, this process was strongest for adults who perceived themselves to be overweight. Understanding variations in this process (e.g., how barriers may interact with weight identities) gives interventions more power to impact behavior.

Key Words: social norms, identity, eating behavior, barriers, health beliefs
Introduction

Poor eating habits have been associated with negative psychosocial and health outcomes, such as increased stress levels, greater rates of depression and anxiety, worse cardiovascular functioning, high blood sugar levels, decreased immune system functioning, lowered bone density, and high blood pressure (CDC; https://www.cdc.gov/chronicdisease/resources/publications/factsheets/nutrition.htm; Jacka et al., 2010). Additionally, engagement in unhealthy lifestyle behaviors has been linked with an increased risk of developing chronic health conditions, such as Type 2 diabetes, heart disease, hypertension, some forms of cancer, and obesity [1]. Despite the development of interventions to reduce the incidence of chronic health conditions, recent reports show that the prevalence of many of these conditions is increasing [2, 3]. For example, the National Health and Nutrition Examination Survey showed that obesity rates among U.S. adults increased from 33.7% in 2007-2008 to 39.6% in 2015-2016 [4]. Because clinical discourse has framed many chronic health conditions, such as obesity, as preventable conditions that are determined primarily by people’s behavior (e.g., having a poor diet), many health researchers, clinicians, and government agencies are actively working to identify effective intervention strategies that motivate behavior change.

To date, many interventions have focused on targeting behavior directly, or through person-level factors, such as low motivation, that may impede healthy behavior engagement [5, 6, 7]. One reason why intervention efforts may show low efficacy in the long-term, as evidenced by the growing prevalence of preventable diseases, is that behavior change is complex and multiply determined. Thus, in addition to targeting behavior directly, it is equally important for interventions to consider the role of contextual factors on health behavior engagement [8, 9]. For
instance, prior research demonstrates that contextual factors, such as the granularity of food
labels (e.g., describing portion sizes as “servings” or by the number of pieces), receiving food
that has been pre-portioned, or being in the company of close others, impact subsequent eating
behavior [10, 11, 12]. The present research focuses on another factor in the social environment
that shapes health behavior: how other people are behaving. Empirical research has examined
how people respond to social information derived from environmental cues, such as other
people’s behavior, and demonstrates that people generally exhibit greater uptake of observed
behavior because it reflects a social norm [13].

Social norms develop from explicit or inferred perceptions about how one should behave
based on what others are doing, and there are two types of social norms, descriptive and
injunctive, that can influence behavior through different processes. Whereas descriptive norms
reflect perceptions about how people actually behave, injunctive norms signal the behaviors that
people (dis)approve of (Cialdini, Reno, & Kallgren, 1990; Cialdini & Trost, 1998). The
predictive power of norms is evident: several health behavior models, such as the theory of
reasoned action and the health belief model, have identified norms as an important determinant
of health behavior [14, 15, 16]. Because people frequently detect and adhere to normative
information in their environments, social norms that reflect healthy behavior (e.g., seeing people
eat vegetables) can increase engagement in healthy behavior, whereas norms that reflect
unhealthy behavior (e.g., seeing people eat fast food) can increase engagement in unhealthy
behavior [17, 18]. Consistent with theory, empirical research shows that perceiving social norms
predicts subsequent behavior across a range of health domains, such as smoking, food selection,
and physical activity [19, 20, 21]. The relationship between norms and behavior is so well-
established that norms are often leveraged in behavioral interventions [22, 23, 24, 25]. For
example, adults who received normative feedback about other people’s step counts, as well as an
evaluative signal about their own performance relative to others, engaged in greater physical
activity than adults who did not receive this feedback [25]. Despite an extensive body of research
showing that norms impact behavior, little work has considered how norms may shape behavior.
Meta-analytic data examining the constructs utilized across several health behavior
models show that barriers are a particularly compelling predictor of subsequent behavior (and
according to the theory of planned behavior, the most proximate predictor of behavior alongside
behavioral intentions; Carpenter, 2010). As such, one route through which social norms may
impact behavior is by changing perceptions of barriers [26]. For instance, if people see others
eating healthy foods, they may subsequently infer that eating healthy foods is feasible, and thus,
relatively easy to do. In contrast, if people do not see others eating healthy foods, they may infer
that eating healthy foods is not feasible, and thus, is relatively difficult to do. Perceived and
actual barriers can, in turn, inhibit behavior [27, 28, 29]. However, although prior literature
suggests that perceiving barriers has a uniformly negative effect on behavior, this may not
always be the case. For instance, although some people may perceive barriers as unsurmountable
obstacles and subsequently disengage effort from healthy eating, other people may be motivated
to eat healthy foods when they believe that barriers can be overcome with sustained effort [30].
Given this possibility, it is imperative to understand whether, and for whom, barriers impede
health behavior engagement.

One factor that may directly influence the relationship between barriers and behavior is
social identities. Social identities are often defined as people’s sense of who they are with regard
to their group membership (e.g., race/ethnicity, gender), and in the context of eating and
exercise, weight status (e.g., being average weight or obese) is a particularly relevant social
identity [31, 32]. People across weight statuses may exhibit divergent responses to the same
social information due to differences in shared experiences (e.g., discrimination) and/or
stereotypes and beliefs about how “people like me” behave. Specifically, because stereotypes
suggest that people with obesity have unhealthy lifestyle habits compared to people without
obesity, responses to perceived barriers may vary as a function of weight status [33]. For
example, it is possible that when people perceive that healthy eating is difficult, individuals with
average weight may believe that they can succeed with persistence, whereas people with obesity
may feel pessimistic about the likelihood of effort leading to success for someone like them.
Therefore, despite an extensive body of literature demonstrating that social norms predict health
behavior engagement, responses to barriers, which may vary as a function of weight status, can
produce heterogeneity in the relationship between norms and behavior.

Although norms are identified as an important antecedent to behavior, there is limited
understanding of (a) the processes through which norms may influence behavior, and (b) the
extent to which social identities modify the link between norms and behavior. Although there are
many pathways through which norms may impact behavior, the current study explores one
possibility, derived from identity-based motivation (IBM) theory. IBM proposes that when
behaviors feel congruent with one’s identity (e.g., “people like me do yoga”), people are
motivated to interpret any difficulty associated with engaging in these behaviors as signaling
importance and thus, continue engaging in the behavior (e.g., “This yoga class is difficult, but I
will keep going because no pain, no gain”) [34, 35]. When behaviors feel incongruent with one's
identity, however, (e.g., “people like me do not do yoga”), any experienced difficulty when
attempting these behaviors may be interpreted as impossibility, which subsequently reduces
motivation to engage in the behavior (e.g., “This yoga class is difficult and I will never be able to
do these poses, so I will stop attending”). In prior work, Oyserman et al. (2007) find that making racial identities salient increases sensitivity to race-specific norms about health behavior (e.g., smoking and eating fried foods); consequently, African American and Latino students reported less favorable evaluations of foods and health behaviors perceived to be inconsistent with their racial identities (e.g., watching one’s diet), and exhibited stronger beliefs about health fatalism (e.g., beliefs that “Some people are healthy; others die young; that is just the way it is”) [34]. Similar identity-based processes have been documented for alcohol use, food evaluations, and eating behavior among undergraduates, Europeans, and European Americans, respectively [36, 37]. Thus, prior research on IBM suggests that activating beliefs about how “people like me” behave can impact interpretations of difficulty, which may directly influence subsequent behavior engagement.

To extend previous research, we propose a conceptual model derived from IBM theory that examines a process through which perceived eating norms influences eating behavior, and the extent to which this process is moderated by social identities (weight status). Specifically, the model assesses the extent to which (a) perceived norms that other people do not engage in healthy eating behavior increase perceived barriers to eating healthy foods, (b) perceived barriers increase beliefs about the uncontrollability of weight status, and (c) beliefs about the uncontrollability of weight status predict engagement in unhealthy eating behavior. We predicted that perceived barriers may not produce a unilateral response on behavior because the consequences associated with different interpretations of difficulty, which can vary as a function of social identities, may elicit divergent behavioral outcomes. Therefore, we hypothesized that the relationship between perceived barriers and beliefs about the uncontrollability of weight would be moderated by participants’ weight status (operationalized using participants’
perceptions of their weight status, such that barriers would predict stronger beliefs about the
uncontrollability of weight for adults who perceived themselves to be overweight. These beliefs, in turn, would influence subsequent eating behavior.

The knowledge gained from examining this process will improve our understanding of why, and for whom, perceiving norms that other people do not engage in healthy eating behavior facilitates poorer health behavior. Furthermore, this model can inform the ways in which social norms, and their ensuing consequences, can be targeted in health behavior interventions.

Method

Sample

This report is based on an analysis of selected variables from the Genetic Explanations for Type 2 Diabetes: Prevention Implications project. This NIDDK/NIH-funded project was approved by the University of Michigan Health Sciences and Behavioral Sciences Institutional Review Board and focused on respondents' self-reported perceptions, attitudes, and behaviors related to obesity and Type 2 diabetes. Inclusion criteria were individuals within the 48 contiguous states of the U.S. (excluding Hawaii and Alaska) who (a) self-identified their racial/ethnic identity as non-Hispanic White, non-Hispanic Black, or Mexican American, (b) were between the ages of 18 and 75, and (c) did not have a diagnosis of any kind of diabetes, excepting a history of gestational diabetes. Individuals who were currently pregnant with gestational diabetes were screened out. Furthermore, because respondents were contacted using landline telephone numbers, an additional requirement for inclusion was access to a landline during the time interviews were conducted.

Thirty-nine trained professional interviewers conducted structured telephone interviews with respondents identified using list-assisted, random-digit-dialing methods between August
A sample of 1,168 non-diabetic U.S. adults aged 18-75 who self-identified as non-Hispanic Black (n=387), non-Hispanic White (n=396), or Mexican American (n=385) completed the survey after planned exclusions (e.g., ineligibility due to diabetic status (n=4) and race/ethnicity status (n=27); see Supplementary Materials Appendix A for details). Additional information regarding the sample’s demographics is reported in Table 1.

The data were weighted to be nationally representative of the targeted ethnic/racial groups (except for their non-diabetes status). Additionally, sample weights were generated to compensate for several recruitment limitations (e.g., unequal selection probability, nonresponse, and noncoverage). For the sake of brevity, additional details regarding the methods used to recruit this sample and generate the sample weights are reported in the Supplementary Materials (Appendix A).

During data analysis, 3 participants who failed to provide their perceived weight status were dropped from analyses. Additionally, due to the exclusion of participants who did not respond to one or more of the demographic variables that were controlled for in the analyses (age, gender, race/ethnicity, and household income), our final sample included 991 participants.

Measures

In addition to other questions, interviewers asked participants about their (a) perceptions that most people they know do not eat healthy foods, (b) perceived barriers to eating healthy, (c) beliefs about the uncontrollability of weight, and (d) eating behavior. After conducting a literature search, newly constructed survey items were rigorously piloted both informally and with professional interviewers using a sample of respondents who were similar demographically.

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1 Because 23.9% of participants included in the analysis reported that they did not know their household income, efforts to minimize missing data during the interview are reported in the Supplementary Materials (Appendix C). The pattern of all reported analyses held when income was excluded as a covariate, and these results are presented in the Supplementary Materials (Table S4).
to the study sample to ensure comprehension and validity of the measures. All measures used Likert-type scales ranging from 1, *Strongly disagree*, to 5, *Strongly agree*, unless otherwise noted. Complete wording for survey items is reported in the Supplementary Materials (Appendix B).

**Perceived Social Norms.** Using one item, participants reported the extent to which most people they know do not eat healthy foods (e.g., “Most of the people I know don’t eat healthy foods”).

**Structural Barriers to Healthy Behavior.** Participants reported their perceptions of external, structural barriers to eating healthy using three items (e.g., “There is no place to exercise in my neighborhood”). Because these items showed inadequate reliability (Cronbach’s $\alpha=.59$), we measured external barriers by counting the number of survey items for which participants reported “Agree” or “Strongly agree”. As such, external eating barriers were measured using a range of 0, *zero perceived barriers*, to 3, *three perceived barriers*.

**Uncontrollability of Weight.** Participants reported their agreement with four items regarding the uncontrollability of weight (e.g., “Some people will become very overweight no matter what they do”). Three additional items used Likert-type scales ranging from 1, *Not at all*, to 6, *All* (“How much do you think that your current weight is due to your genes or genetic make-up?”). All seven items were summed into an index, with higher numbers indicating stronger beliefs ($\alpha = .77$).

**Participants’ Self-Reported Eating Behavior.** We assessed several eating behaviors that have strong associations with weight gain and poorer health outcomes [38]. First, using a Likert-type scale ranging from 1, *Never*, to 5, *At least once a day*, participants reported how often they consumed foods across 7 categories (e.g., sweets). Interviewers gave examples of the kinds of
food in each category. Although we made efforts to aggregate these items into food categories (e.g., healthy and unhealthy foods), these items showed insufficient reliability ($\alpha = .67$). As such, these outcomes remained separate in subsequent analyses. []

**Statistical Methods**

We conducted path analyses using Stata 15.0 to test our hypothesized model (Figure 1). Specifically, the model tested the extent to which (a) norms that other people do not engage in healthy eating behavior predicted external barriers to eating healthy foods, (b) external barriers predicted beliefs about the uncontrollability of weight and whether this relationship was moderated by participants’ perceived weight status, and (c) beliefs about the uncontrollability of weight predicted unhealthy eating behavior. For the following analyses, separate models were run for each type of food. Unstandardized coefficients, test statistics, and $p$-values for all model predictors are reported in the Supplementary Materials (Table S1).

To measure participants’ perceived weight status, participants described their perceived weight using five options: underweight, about right, slightly overweight, somewhat overweight, and very overweight. We operationalized weight identity using participants’ self-perceptions because previous research suggests that personal beliefs about weight status have a strong influence on how people perceive themselves and their surrounding environment. As such, perceived weight status can serve the function of social identities (i.e., personal characteristics that help organize beliefs and behavior that subsequently impact how people navigate the world) [42, 43].

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2 We also calculated participants’ BMI (body mass index) using their self-reported height and weight. BMI was highly correlated with perceived weight status ($r = .72$), and analyses using BMI in place of weight perception are reported in the Supplementary Materials (Table S3).
Some participants volunteered responses (e.g., Neither Agree nor Disagree) that we retained in the dataset to mitigate a substantial loss of statistical power. Exclusion of these responses showed no significant impact on the pattern of reported analyses, and these results are reported in the Supplementary Materials (Table S3).

**Results**

**Eating Norms**

*Do Eating Norms Impact Barriers to Healthy Eating?*

A significant main effect revealed that perceiving norms that other people do not eat healthy foods predicted stronger external barriers to eating healthy ($b=0.13$, $SE=0.03$, $t=3.60$, $p<.001$, 95% CI [0.0569, 0.1934]).

*Do External Barriers Impact Beliefs About the Uncontrollability of Weight as a Function of Perceived Weight Status?*

Path analyses revealed a non-significant main effect of external eating barriers on participants’ beliefs about the uncontrollability of weight ($b=-1.24$, $SE=0.31$, $t=-1.27$, $p=.204$, 95% CI [-3.1500, 0.6735]). However, a main effect of perceived weight status showed that participants who perceived themselves to be more overweight reported weaker beliefs that they lack control over their weight ($b=-1.21$, $SE=0.51$, $t=-2.37$, $p=.018$, 95% CI [-2.2092, -0.2058]).

These main effects were qualified by a significant *External Barriers x Perceived Weight* interaction ($b=0.77$, $t=2.42$, $SE=0.32$, $p=.016$, 95% CI [0.1462, 1.3950]); external barriers predicted the strongest beliefs that weight status is uncontrollable among participants with higher (versus lower) perceived body weights.

*Do Beliefs About the Uncontrollability of Weight Impact Self-Reported Eating Behavior?*
Stronger beliefs about the uncontrollability of weight predicted self-reports that indicated greater consumption of sweets ($b=0.02, SE=0.01, t=2.48, p=0.013, 95\% \text{ CI} \ [0.0046, 0.0395]$), greater consumption of snacks, such as chips ($b=0.03, SE=0.01, t=2.02, p=0.044, 95\% \text{ CI} \ [0.0007, 0.0501]$), and marginally more frequent fast food restaurant visits ($b=0.02, SE=0.01, t=1.91, p=0.057, 95\% \text{ CI} \ [-0.0006, 0.0447]$). However, these beliefs were not associated with the consumption of French fries ($b=0.01, SE=0.01, t=0.65, p=0.516, 95\% \text{ CI} \ [-0.0132, 0.0262]$), soda ($b=-0.00, SE=0.02, t=-0.19, p=0.851, 95\% \text{ CI} \ [-0.0373, 0.0308]$), or healthy foods, such as fruits ($b=-0.00, SE=0.01, t=-0.41, p=0.681, 95\% \text{ CI} \ [-0.0198, 0.0130]$) or vegetables ($b=-0.01, SE=0.01, t=-1.14, p=0.253, 95\% \text{ CI} \ [-0.0186, 0.0049]$).

**Discussion**

The goals of the present work were to offer a conceptual model identifying one process through which perceived eating norms may increase unhealthy eating behavior, and to assess the extent to which the strength of this process varies across social identities (e.g., weight status). The current study focused specifically on the moderating role of weight status given the ways in which people’s weight identities can shape perceptions of, and responses to, their environments [29]. These findings offer an important contribution to extant literature; although previous research has modeled the independent relationships between norms, barriers, health beliefs, and behavior, many of the theoretical models to date have failed to consider the role of social identities as a factor that may interact with these constructs [14, 16, 44]. Therefore, the presented model can improve our understanding of (a) the theoretical mechanisms that may drive behavior, and (b) the pathways through which commonly studied mechanisms may influence or interact with each other.
Using a large, national dataset, we find some support for the hypothesis that perceiving norms that others do not engage in healthy eating behavior differentially impacts health behavior engagement as a function of weight status. Specifically, the model showed that perceiving norms that other people do not engage in healthy eating behavior predicted stronger perceptions of external, structural barriers to eating healthy. External barriers predicted stronger beliefs about the uncontrollability of weight status, and this relationship was moderated by participants’ perceived weight status: participants who perceived themselves to be overweight and perceived stronger external barriers to eating healthy foods reported the strongest beliefs that weight is uncontrollable. Finally, these beliefs predicted self-reports that indicated greater engagement in unhealthy eating behaviors. Collectively, study findings demonstrated that perceiving barriers to healthy eating facilitated downstream consequences that negatively impacted health behavior engagement, particularly for adults with higher (versus lower) body weights. These findings are consistent with identity-based motivation theory, which argues that when health behaviors are perceived to be inconsistent with salient social identities (e.g., an overweight weight status), people may be particularly likely to interpret difficulty associated with engaging in healthy behavior as impossible, subsequently leading to beliefs about low controllability over their outcomes (e.g., I have no control over my weight) that ultimately impede health behavior engagement [Oyserman et al., 2007].

Importantly, it is not always the case that (a) people with higher body weights have unhealthy habits, and (b) people with higher body weights perceive engaging in health behaviors to be difficult. However, we argue that pervasive stereotypes about people with higher body weights may activate beliefs about what “people like me” are expected to do, and those expectations, consequently, can shape interpretations of barriers.
Results indicated that beliefs about the uncontrollability of weight predicted some unhealthy eating behaviors; however, these beliefs did not predict consumption of soda, French fries, or healthy foods (e.g., fruits and vegetables). Although the reasons underlying these null effects are unclear, beliefs may not have predicted soda or French fry consumption because the measures were localized on specific food items (e.g., French fries), rather than broad food groups (e.g., sweets). As such, these findings are consistent with prior research showing that beliefs have low predictive power for behavior when they are low in compatibility (e.g., the specificity of beliefs does not match the specificity of the predicted behavior) [46]. Additionally, beliefs about the uncontrollability of weight did not predict fruit and vegetable consumption. Although fruits and vegetables are broad food groups, examination of the response frequencies suggests that one possible explanation for non-significance is a ceiling effect. The percentage of participants who reported eating fruits and vegetables “at least once a week” or “at least once a day” (90.58-96.82%) was higher than the percentage of participants who reported these responses for the other eating behaviors (37.54-72.74%). As such, future research should consider how the levels of frequency scales may differ across certain types of foods. Despite non-significant findings for some eating behaviors, the implications of this work are particularly important because there is evidence that this process is strongest for the population at greatest risk of developing weight-related health problems in the future: adults who perceive themselves to be very overweight.

The present findings are also consistent with prior research demonstrating that people across weight statuses may be particularly likely to exhibit differential sensitivity to information about food. For instance, adults with higher (versus lower) weights generally experience greater difficulty regulating food consumption and show greater reactivity to food cues, which may result in differential processing when perceiving food-related norms [49, 50, 51].
Limitations and Future Directions

An important limitation of this study is that the conceptual model is based on correlational data and causality, as well as bi-directionality, cannot be inferred. Although we accounted for direct effects of the predictors at each stage of the model and ruled out alternative models, future research should replicate these findings by manipulating the model constructs using an experimental design. Additionally, the eating outcomes were assessed using self-report. Future research should obtain objective measures of behavior by asking respondents to record their eating habits in a daily diary. Another limitation of this work is that we were only able to assess a limited number of factors that may influence eating behavior. Although we controlled for demographic characteristics (e.g., socioeconomic status) to account for the influence of some of these factors, it is important to note that eating behavior can be driven by many factors (e.g., family influence, home and neighborhood environment, history of food scarcity, etc.).

Another limitation of this work is that we were unable to identify characteristics of the populations on which the perceived norms are based. Consequently, it is unclear whether the individuals who are perceived as not engaging in healthy eating behavior are also overweight, or whether relational closeness affects the development and subsequent impact of norms. The current data showed no evidence that adults with higher (versus lower) perceived body weights knew more people who did not engage in healthy eating behavior, suggesting that differential exposure to obesity in social networks cannot explain this model. Thus, future work should identify the populations on which these norms are based to understand when perceptions of norms are most meaningful. For example, perceptions that family members or “people like me” do not engage in healthy behavior may have a stronger impact on norms and/or barriers than norms based on strangers or “people not like me”, and these differences may have implications.
for the strategies used to intervene with the public. Additionally, future research should consider
(a) the existence of actual, rather than perceived, barriers to healthy behavior, and (b) whether
this model generalizes to other social identities and behaviors, such as exercise, to examine the
role of these factors in the context of the larger questions currently explored.

Implications and Interventions

This study identifies one route through which social norms can facilitate unhealthy eating
behavior and suggests that this process can be stronger among adults who perceive themselves to
be overweight. Identifying the process through which norms influence behavior has important
implications for educating the public and developing future behavioral interventions. For
example, clinicians and public health campaigns can intervene on norms by encouraging people
to look for and/or provide examples of peers who are engaging in healthy eating behavior to
mitigate the strength or direction of perceived norms. However, when people’s perceptions of
norms are accurate (e.g., when others are not eating healthy foods), more intense interventions
may be needed. Employing group-based or community-level interventions (e.g., personal and
team goal-setting), for instance, may change the perceived norms and increase engagement in
healthy behaviors [52, 53].

Although intervening on norms is one possibility for changing health behavior, behavior
change is complex and multiply determined. As such, this work identifies other possible
intervention points, such as barriers, on which public health efforts can redirect their focus. For
instance, intervention efforts can leverage established interventions, such as increasing the
appetitiveness of healthy foods, utilizing peer-led education, and disseminating culturally
relevant communication, to reduce real and perceived barriers to healthy behaviors [54, 55, 56].
Furthermore, identity-based motivation theory suggests that reframing messages to be identity-
congruent may be another viable intervention strategy by changing how people respond to experienced difficulty [35]. For instance, increasing perceptions that behavior is possible for “people like me” (e.g., by depicting people with higher body weights who have healthy eating habits) may weaken the link between barriers and beliefs about uncontrollability, facilitating healthy behavior. Finally, these findings suggest a need for further intervention testing and refinement. For instance, future work should test the efficacy of interventions designed to mitigate barriers across different contexts because perceived barriers may be more difficult to overcome in contexts where other people are engaging in unhealthy behavior.

**Conclusion**

This paper demonstrates that although health behavior is frequently targeted in interventions without consideration of contextual factors, social environmental cues have important influences on the extent to which people engage in such behavior. Specifically, this research offers a conceptual model to improve our understanding of how, and for whom, normative information can facilitate unhealthy eating behavior. By identifying the downstream consequences associated with perceiving norms that other people do not engage in healthy eating behavior and demonstrating how identities, such as weight status, may play a role in this process, this work can inform health behavior interventions to improve their efficacy and mitigate the growing prevalence of chronic, preventable diseases.
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Figure 1. Model Identifying the Process Through Which Eating Norms Impact Eating Behavior.

Note. † p<.10, *p<.05, **p<.01, ***p<.001. Coefficients are unstandardized.