

Background

The Food and Nutrition Service (FNS) supports nutrition education through its programs to help participants choose healthy foods and active lifestyles, within the constraints of a limited budget. Achieving and sustaining positive changes in eating and nutrition-related behaviors is, however, a complex challenge. FNS encourages providers to incorporate available scientific evidence into their plans and activities in order to maximize the impact of nutrition education.

To assist nutrition educators in their use of relevant research, FNS conducted a review of studies on:

- Message framing,
- Use of interactive technology to tailor messages, and
- Intervention intensity.

The review was intended to document how these specific features of nutrition messages and interventions influence the likelihood of promoting more healthful food choices.

The review began with a computerized literature search of articles published in peer-reviewed journals between 1995 and 2004. Abstracts were reviewed and articles selected based on topic relevance. A systematic effort was also made to identify pertinent unpublished reports. Finally, additional studies were incorporated by cross-checking references in the initial set of studies examined.

Three comprehensive reviews – one associated with each topic – were produced. There is also a research brief which incorporates information from the individual reviews in an expanded executive summary.

Message Framing

A person's willingness to adopt a behavior can be affected by (1) his or her view about the likelihood of a particular outcome and (2) the relative importance of that outcome. Prospect theory hypothesizes that the way an outcome is framed also affects its persuasiveness.

Messages may be either gain-framed or loss-framed. A gain-framed message emphasizes the positive outcome that comes with adopting the recommended behavior. In contrast, a loss-framed message focuses on the negative consequences of not adopting the desired behavior.

When it comes to general health behaviors, research shows that gain-framed messages are more effective for encouraging prevention-oriented action, such as applying sunscreen or using dental floss. In contrast, loss-framed messages appear more effective when the target behavior is detection-oriented, like getting a mammogram or colonoscopy.

Dietary behaviors clearly fall under the heading of prevention. However, the limited research available on framing and nutrition education messages has failed to demonstrate that gain-framed nutrition education messages are more effective than loss-framed messages.

While further study in this area is needed, existing research has identified a few psychological characteristics that are sensitive to gain- and loss-framed messages. For example, persons who are *ambivalent* about adopting the recommended behavior appear to be more persuaded by loss-framed messages.

Interactive Technology and Message Tailoring

People tend to process persuasive messages more thoughtfully if they are personally relevant

rather than generic. That is, such messages are more likely to be read, remembered, and viewed as relevant, and to lead to behavior change.

When large, diverse populations must be reached, interactive technology can make it feasible to deliver tailored nutrition education messages. Three approaches have been used: computerized telephone or telephone-linked, computer-based multimedia programs, and Web-based programs.

There is some evidence to suggest that tailored messages are more effective when it comes to increasing dietary knowledge and promoting modest changes in food choices. This is particularly true with respect to dietary fat.

Some important research features limit the generalizability of findings, however. In each study, participants were self-selected, and their exposure to the intervention messages was directly related to individual motivation. Positive impacts were reported only when the study populations were highly educated, largely female and personally motivated.

More research is needed to answer critical questions about the types of interactive computer-tailored interventions that work best with various population subgroups. Information is also needed on how mode of intervention (e.g., telephone, computer/multimedia, Web) may influence program effects.

Intervention Intensity

The key question associated with intervention intensity asks, “How much nutrition education is needed to achieve desired changes in dietary behaviors?” Intensity, also referred to as dosage, measures an individual’s exposure to an educational intervention. It is usually defined in terms of the number of contacts between an educator and individual and the amount of contact time. Intensity may also incorporate a measure of duration or overall length of the

intervention period. More recently, the concept of intensity has been extended to include the number of communication channels.

Intensity is influenced not only by program design but also by the behaviors of educators (who may not implement the program as intended) and participants (who may not engage in all activities even when they are provided).

Available evidence suggests a generally positive association between intervention intensity and dietary behavior change. However, we are still at the threshold of understanding the effect of intensity in community-based interventions with general populations. Few studies have experimentally manipulated intensity, and much of the available research is post hoc. This makes it difficult to draw unequivocal conclusions about cause and effect.

Given the challenges inherent in delivering interventions that rely on a substantial amount of face-to-face contact, much of the ongoing research focuses on alternative, less costly communication channels. Examples include self-assessment materials and the use of telephone, mail, and computer-based contacts. Some investigators have suggested that such delivery channels can be effective because they can be used at home or work, both settings where stimulus control and self-monitoring activity are highly important.

For More Information

Fox, Mary Kay, Charlotte Hanson, and Ronette Briefel. *Nutrition Education Research Brief: Message Framing, Use of Interactive Technology to Tailor Messages, and Intervention Intensity*. Brief prepared for the Food and Nutrition Service, USDA. Washington, DC: Mathematica Policy Research, Inc., March 2007.

The brief and three complete research reviews can be found online at www.fns.usda.gov/oane

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