

A Replicable Process for Redesigning Ethnically Relevant Educational Materials

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ABSTRACT

Background: To serve the populations targeted by Well-Integrated Screening and Evaluation for Women Across the Nation (WISEWOMAN) effectively, healthcare providers need educational materials that are evidence based and ethnically relevant and can be easily incorporated into busy clinic settings. We describe a replicable process used to redesign and tailor physical activity and diet education materials for African American women in the southeastern United States.

Methods: The process consists of seven phases. Quantitative and qualitative analyses were used on data gathered in 2000 from two expert panels and eight focus groups.

Results: Expert panelists preferred materials perceived to be high quality, easy to understand, organized to facilitate use by healthcare providers, and with content relevant to African American women. Focus group participants were mostly concerned with the visual appeal and content of educational materials. They liked high-quality materials that are brief; avoid jargon and use simple language, bright colors, and photographs; and provide useful information that acknowledges the context of their lives, including their family roles.

Conclusions: The redesign process can produce ethnically and culturally appropriate educational materials for use by WISEWOMAN providers and other healthcare providers in conjunction with cardiovascular (CVD) risk reduction and behavioral counseling. To be effective, materials must address the needs and concerns of both providers and patients.

INTRODUCTION

IN 1995, THE CENTERS FOR DISEASE CONTROL AND PREVENTION (CDC) established the Well-Integrated Screening and Evaluation for Women Across the Nation (WISEWOMAN) program to lower the risk of cardiovascular disease (CVD) and other chronic illnesses among low-income,

underserved women aged 40–64. WISEWOMAN projects offer a screening component and lifestyle interventions that often include a clinic-based educational component. To serve the populations targeted by WISEWOMAN effectively, healthcare providers need educational materials that are evidence based and can be incorporated easily into busy clinic settings. Materials also need

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to be tailored to participants' ethnicity and culture, particularly because uninsured women are more likely than insured women to be nonwhite. However, few educational materials have been designed specifically for nonwhite populations.

In the Heart Healthy and Ethnically Relevant Tools (HHER Tools) study, we developed a process to redesign educational materials to be ethnically and culturally relevant. We then redesigned materials focused on walking and low-fat diets for providers' use during clinical encounters. We tailored the materials to African American women in the southeastern United States because African American women in such states as South Carolina have some of the highest death rates in the country from coronary heart disease (CHD), stroke, and total CVD.¹ Sedentary lifestyles and high-fat diets, two major modifiable risk factors for CVD,²⁻⁶ are more prevalent among African American women than among their white or male counterparts.^{2,7-11} In addition, women are counseled less often than men by healthcare providers about physical activity, nutrition, and weight management.^{12,13} The HHER Tools process primarily addresses the need for educational materials to address CVD risks among women targeted by the WISEWOMAN program. The process can be replicated, however, with other health behaviors and populations of interest.

MATERIALS AND METHODS AND RESULTS

The HHER Tools process for redesigning educational materials involves seven phases: developing an inventory of materials focused on physical activity, diet or both; developing a form to assess each material's cultural relevance, appropriateness for clinical practice, and effectiveness in communicating health education messages; selecting a subset of materials to be reviewed by expert panels; conducting consumer focus groups to assess the cultural appropriateness, clarity, and appeal of the eight most highly ranked materials; redesigning two materials; obtaining additional feedback from focus group participants; and finalizing the redesign.

Phase 1: Inventory of materials

We used two approaches to identify items for inclusion in an inventory of written educational

materials. First, we conducted a literature review to identify physical activity (PA) and dietary counseling interventions for CVD risk reduction delivered in healthcare settings and demonstrated to be effective among women, particularly nonwhite women. The methods and results of this review have been published elsewhere.¹⁴ Although we requested copies of tools from the studies' corresponding authors, only a few authors submitted tools, others noted that their material was undergoing further evaluation and was not ready for dissemination (e.g., embedded within study protocols), and many did not respond. In addition, many studies did not use a specific material in the intervention. The second approach for the inventory involved gathering educational materials from nationally recognized health information resources, including the American Heart Association (AHA), National Heart, Lung and Blood Institute (NHLBI), U.S. Department of Agriculture (USDA), ETR & Associates, and the CDC.

A total of 214 accumulated and identified materials were catalogued in an inventory database created using ACCESS software (Microsoft, Redmond, WA, 1998). The inventory included 52 educational materials on PA, 63 on diet, and 99 on both PA and diet. We developed an inventory form and used it to extract relevant information from catalogued materials, including title, source of material, target behavior(s) (PA or diet or both), target CHD risk factor (e.g., hypertension, hypercholesterolemia, obesity, diabetes), intended audience, reading level, cost, and availability.

Phase 2: Assessment form

We conducted a separate review of the health literature to identify resources for the development of effective and culturally competent educational materials for health promotion. We used *Clear and Simple: Beyond the Brochure*,¹⁵ *Making Health Communication Programs Work*,¹⁶ and *African Americans: Developing Effective Cancer Education Print Materials*¹⁷ to develop an assessment form for systematically evaluating each material.

The assessment form consists of three sections (Table 1). Section I emphasizes best practices (e.g., visuals, format/layout, content) in communicating health education messages. Section II addresses a material's cultural relevance for its target audience and appropriateness for clinical practice. Sections I and II include a total of 40

TABLE 1. ASSESSMENT CATEGORIES FOR EVALUATING EDUCATIONAL MATERIALS ON BEHAVIORAL HEALTH RISK FACTORS, HHER TOOLS STUDY

Category	Definition	No. of items	Likert scale	Reliability
Section I				
Visuals	Evaluates visual appeal (pictures and graphics only)	7	1–4	$\alpha = 0.90$
Format and layout	Examines appearance and organization	8	1–4	$\alpha = 0.84$
Content	Judges language, clarity, and accuracy of content	16	1–4	$\alpha = 0.90$
Section II				
Target audience	Examines appropriateness for target population	6	1–4	$\alpha = 0.92$
Setting	Examines appropriateness as counseling tool for practitioners (e.g., MD, RN, PA) to use in practice settings	3	1–4	$\alpha = 0.82$
Section III				
Overall assessment	Panelist recommendation regarding use of material for target audience	1	1–5	NA

items, each rated on a 4-point Likert scale where 1 = strongly agree and 4 = strongly disagree. Scores are calculated as the mean of all responses. Section III, the overall assessment, provides a recommendation for the material's use with the target population. Response options range from 5 = highly recommend with no changes to 1 = do not recommend.

Phase 3: Expert panel review

After reviewing the 214 inventoried materials, we selected a subset for more detailed evaluation by an expert panel. Materials were selected if they were up-to-date, brief, of high quality (i.e., paper quality, use of color), and promoted increased PA or dietary modification. Twenty-two PA and 30 diet materials met these criteria. None of the materials that addressed both behaviors were selected.

Over a 2-month period in 2000, we convened one expert panel to review selected PA materials and another to review selected diet materials. Professionals from South Carolina ($n = 20$) and Alabama ($n = 1$) were invited to be on a panel if they had topic expertise or experience working with African American women in clinical, public health, community, or research settings. Panelists were sent packets that included no more than 12 materials, assessment forms, instructions for completing reviews, and prepaid return envelopes. Panelists were asked to return reviews and forms within 2 weeks and were offered an incentive for completed reviews. After following

up by telephone with panelists who did not return reviews on time, we received completed reviews from 18 of the 21 panelists (86%).

Our goal was to obtain at least three independent reviews for each material, including review by one panelist with content expertise, a second with a community or public health orientation, and a third by a clinical provider. At least one of the assigned reviewers was a nonwhite woman. In all, 3% of materials received four independent reviews, 67% had three, and 24% had two. None of the panelists or their organizations had developed the materials under review. All reviews were included in our analysis.

As shown in Table 1, scores were computed for each assessment. The mean scores of the two to four expert assessments were used to rank each material by category. We used the scores and rankings to identify materials in each category with the highest potential for use in clinical practice settings with African American women in the southeastern United States. Mean category scores for the 4 PA materials (of 22) and 4 diet materials (of 30) rated most positively by experts and for all PA or diet materials combined are shown in Table 2. With few exceptions, category means for the top-rated materials were higher than the average of all materials combined. The top 4 PA and diet materials were "recommended with no changes" or "recommended with minor changes."

To determine what aspects of the materials were most influential in panelists' overall assessments, we conducted bivariate analyses. All

TABLE 2. MEAN SCORES (SD) FOR MATERIALS RATED HIGHEST BY EXPERT PANEL REVIEWERS, BY CATEGORY AND COMBINED

Material	Section I			Section II			Mean of Sections I and II	Section III overall assessment
	Visuals	Format and layout	Content	Target audience	Clinical practice			
Physical activity ^a								
1. <i>Walking . . . A Step in the Right Direction</i>	3.64 (0.71)	3.44 (0.62)	3.30 (0.49)	3.67 (0.47)	3.58 (0.83)		3.53 (0.58)	4.50 (1.0)
2. <i>Energize Yourself! Stay Physically Active</i>	2.87 (0.45)	3.54 (0.19)	3.06 (0.01)	3.39 (0.59)	3.00 (0.33)		3.17 (0.22)	3.67 (1.2)
3. <i>Starting an Exercise Program</i>	3.33 (0.81)	3.58 (0.52)	3.20 (0.46)	2.89 (0.51)	3.00 (0.33)		3.20 (0.42)	3.33 (0.58)
4. <i>How to Get Moving—On the Road to Fitness</i>	3.43 (0.81)	3.31 (0.44)	3.27 (0.47)	3.17 (0.24)	3.17 (0.24)		3.27 (0.44)	4.50 (0.71)
All physical activity materials (<i>n</i> = 22)	2.87 (0.43)	3.09 (0.45)	2.92 (0.36)	2.38 (0.65)	2.84 (0.51)		2.82 (0.43)	2.48 (1.2)
Diet								
5. <i>Eat 5 Fruits and Vegetables Every Day</i>	3.52 (0.22)	3.79 (0.36)	3.42 (0.47)	3.06 (0.01)	3.56 (0.77)		3.47 (0.37)	4.67 (0.58)
6. <i>African Americans Take the "5 A Day" Challenge</i>	3.67 (0.58)	3.38 (0.57)	3.52 (0.40)	3.50 (0.87)	3.67 (0.58)		3.55 (0.58)	4.33 (1.2)
7. <i>Low-Fat Living</i>	3.71 (0.40)	3.00 (0.35)	3.09 (0.22)	2.55 (0.01)	3.00 (0.47)		3.07 (0.30)	4.00 (1.4)
8. <i>Soul Food Pyramid</i>	3.42 (0.25)	3.05 (0.15)	3.17 (0.29)	3.13 (0.42)	3.67 (0.58)		3.29 (0.29)	4.00 (1.0)
All diet materials (<i>n</i> = 30)	3.00 (0.58)	3.09 (0.42)	2.92 (0.40)	2.46 (0.65)	2.94 (0.64)		2.88 (0.44)	2.65 (1.3)

^aMaterials sources:

1. National Institute of Diabetes and Digestive and Kidney Diseases, Weight-control Information Network.
2. National Heart, Lung and Blood Institute and Office of Research on Minority Health.
- 3 and 4. Channing L. Bete Co., Inc., South Deerfield, MA.
5. National Cancer Institute.
6. South Carolina Department of Health and Environmental Control.
7. American Dietetic Association.
8. Hebni Nutrition Consultants, Inc., Orlando, FL.

mean category scores were positively and significantly correlated with the experts' overall assessment and were highest for content ($r = 0.61$, $p < 0.01$), target audience ($r = 0.67$, $p < 0.01$), and clinical practice ($r = 0.69$, $p < 0.01$). Panelists' written comments indicated that they preferred high-quality materials designed to facilitate use by healthcare providers. In addition, panelists reported that materials should be easy to understand, should "enhance the learning process," and should present content relevant to African American women.

Phase 4: Consumer focus groups

The top four PA materials and top four diet materials (Table 2) were selected for potential redesign. Using consumer focus groups, we solicited African American women's opinions on the cultural appropriateness, clarity, and appeal of the eight materials. After conducting a pilot focus group with 6 African American women at an urban clinic to test our recruitment protocol and refine the discussion guide, we organized four focus groups in a 2 by 2 design with two topics (PA and diet) and two South Carolina settings (one rural and one urban community health clinic).

Thirty focus group participants were recruited by posting fliers and signup sheets in the two clinics. Women who signed up were contacted by phone to ask whether they met race (African American) and age (≥ 40 years) criteria and if they could provide their own transportation. Although every effort was made to balance the number of participants by topic and setting, wo-

men were placed in groups based on their schedule availability. This resulted in one group's (i.e., diet/urban) having a small number of participants relative to the other groups ($n = 4$). Focus group participants signed informed consent forms, completed brief demographic surveys (Table 3), and received a \$35 gift card incentive.

The focus groups explored several themes, including sources of health information, general material preferences, pamphlet design, and pamphlet evaluation. We noted no major differences between rural and urban participants' responses.

Sources of health information. The majority of respondents in the PA groups listed physicians and friends or relatives and those in the diet groups listed physicians and nutritionists as persons they would talk to for information about PA and diet. Although many participants reported that they had applied this health information to their own behavior, women in one PA group described health behavior change as difficult. Other than people, the most common source of information on PA (or exercise) and diet (or nutrition) was magazines, including *Essence* and *Woman's Day*. Participants often gave examples of specific magazine features, such as before and after stories of women who changed their lifestyle and lost weight. When asked where they looked for information and whom they would ask for guidance about heart health, women in the diet groups tended to cite these same sources of information, as well as health food stores. Responses in the PA groups included the AHA and

TABLE 3. DEMOGRAPHIC CHARACTERISTICS OF FOCUS GROUP PARTICIPANTS

	Physical activity (n = 19)	Diet (n = 11)
Mean age (years)	49.9	48.6
Rural (%)	52.6	63.6
Disease history (%)		
Diabetes	26.3	36.4
Obesity	21.1	18.2
Heart disease	10.5	0
Hypertension	68.4	54.5
Education (%)		
<High school	5.6	36.4
High school graduate	50.0	18.2
>High school	44.4	45.5
Family Income (%)		
<\$10,000	38.9	18.2
\$10,000–\$35,000	33.3	63.6
>\$35,000	27.8	18.2

the South Carolina Heart Center (an outpatient cardiac rehabilitation program).

Educational materials in general. Focus group participants were asked to describe characteristics they liked and disliked in pamphlets containing health information (Table 4). In all groups, participants preferred materials that were “short and to the point,” used bright and vibrant colors, and included interesting pictures. To produce easy-to-read pamphlets, participants recommended using large bold fonts and avoiding complicated medical terms. There was agreement that health statistics, if used, should be specific to African American women.

Creating pamphlets. Focus group participants were asked to imagine they were going to design pamphlets on PA/exercise and diet/nutrition. Asked to describe the pamphlets, the PA groups cited a variety of characteristics (Table 4). All mentioned the importance of including photographs that demonstrate how to do exercises and using women like themselves (race/ethnicity, age) with different body shapes and sizes. Participants described feeling motivated by before and after pictures and stories of women like themselves who changed lifestyles and lost weight. Regarding visuals, participants recommended using bright colors and catchy titles. For content, PA participants suggested that pamphlets include PA safety information and emphasize benefits of exercising, consequences of not exercising, and the importance of talking with one’s physician. When asked how to make educational pamphlets more appealing to African American women, participants stated that materials should be “family-oriented” and include recipes.

Women in the diet/nutrition groups emphasized many of the same visual and format characteristics (Table 4). Additional suggestions were to laminate the material, make it small enough to fit in a purse, and have a section to write down notes. Specific to diet, participants requested information on benefits of good nutrition, risks associated with poor diets, and food options and substitutions that explain the importance of fruits and vegetables.

Evaluating highly rated pamphlets. Women in the PA and diet focus groups reacted favorably to the eight materials most highly ranked by the expert

panels in Phase 3 (Table 4). For both PA and diet, participants appreciated materials that were brief and well organized, useful, and “eye catching.” Other positive feedback about PA materials was similar to comments already provided (e.g., using pictures/drawings that demonstrate how to do exercises, including diverse people, providing safety tips). Positively rated features of the diet materials included sample menus, stories or testimonials perceived as easy to relate to, and attractive, colorful pictures of foods. For both types of materials, participants criticized poor use of color (e.g., dull colors, not enough color). Other criticisms included, for PA materials, paper quality (one material was described as “cheap looking”) and use of drawings rather than photos and, for diet materials, inadequate explanation of benefits, too much information (i.e., too crowded), or overly simplistic content for their age group. Interestingly, a PA pamphlet designed specifically for African Americans received the least favorable ratings. Two diet materials also were designed specifically for African Americans—one was very favorably received, whereas the other material was evaluated negatively.

Phase 5: Initial redesign

The focus group results were used to redesign and develop several versions of two materials, one each for PA and diet. Two African American women, one older and another younger, appeared as main characters in the revised materials. We used four physician models: an African American male, an African American female, and two white females. Materials were designed using desktop publishing software, photos were taken with a digital camera, and draft materials were printed with a color deskjet printer. The redesign process was completed in approximately 6 weeks.

Phase 6: Focus group feedback

The four consumer focus groups were reconvened 2 months after the original groups. Three fourths (76%) of the original participants returned. Participants were presented with several versions of the redesigned materials covering the same content but using different colors, types of paper, and models. Overall, the redesigned PA material was well received by participants (Table 4), who noted that the research team “really lis-

TABLE 4. REACTIONS OF FOCUS GROUP PARTICIPANTS TO SELECTED PHYSICAL ACTIVITY AND DIET EDUCATIONAL MATERIALS

	<i>Physical activity (PA)</i>	<i>Diet</i>
General preferences		
Visuals	Good: interesting pictures, include people of color, bright and vibrant colors Bad: gross pictures, drawing/cartoons, only skinny people	Good: interesting and colorful pictures, bright colors, diagrams Bad: same as PA
Format and layout	Good: easy to read Bad: poor paper quality ("cheap looking")	Good: stories, uniformity, folded Bad: small font
Content	Good: "short, to the point," understandable, statistics specific to African Americans, simple words Bad: "too long," "doesn't say anything," medical terms, complicated language	Good: short yet detailed, includes benefits Bad: too long, wordy, medical jargon, "words you can't pronounce"
Creating pamphlets		
Visuals	Use picture of a heart as symbol for heart health Use bright colors, real photos rather than cartoons/drawings Demonstrate how to do exercises, show women of same race/ethnicity and age as reader, show different body shapes and sizes (i.e., no photos of thin, very young women)	Use symbol of big red heart Use lots of bright colors, "real" photos of women, and bright pictures of food
Format and layout	Use before and after pictures and stories, bold print, include height/weight chart and steps in a plan	Use single, double-sided, laminated sheet, make small enough to fit in purse, include section for writing notes, include menu with sections for each meal time
Content	Use catchy, attention-grabbing title, make pamphlet easy to understand, emphasize benefits of exercising and consequences of not exercising, provide PA safety information, advise talking to physician about PA, make pamphlet family-oriented, include recipes Slogans: "Walking for your heart"	Make pamphlet "informative" (i.e., provide food options and substitutions), explain benefits of specific fruits and vegetables, emphasize benefits of good nutrition and risks of poor diets Slogans: "Live longer, eat right," "Dieting can be fun," "Keep cholesterol down," "Eating right can make you healthy"
Evaluating highly rated pamphlets		
Visuals	Good: show how to do exercise, include diverse people Bad: "not catching my eye," drawings rather than photos, dull colors, people "too old" or "too young"	Good: attractive and colorful pictures of food, "eye catching" Bad: not enough color, cartoon images
Format and layout	Good: brief, single page, double-sided, easy to read, follows an outline, includes personal log Bad: paper quality ("cheap looking")	Good: well organized, bold print, readable, easy to read Bad: materials and pictures too crowded, small font, too long, food pyramid difficult to follow
Content	Good: brief and to the point, useful, easy to understand, gives steps and safety tips, shows "how to," shows variety of activities Bad: none	Good: useful, includes sample menu and foods, gives choices, provides stories (testimonials) that are easy to relate to, food label Bad: not enough material on benefits, not appealing for midlife women ("too simple" and "childlike"), too much information, unclear message

(continued)

TABLE 4. (CONT'D) REACTIONS OF FOCUS GROUP PARTICIPANTS TO SELECTED PHYSICAL ACTIVITY AND DIET EDUCATIONAL MATERIALS

	<i>Physical activity (PA)</i>	<i>Diet</i>
Redesigned pamphlet		
Visuals	Good: attractive, with bright colors, visuals convey intended message, pictures demonstrate activities and include models that readers can relate to (younger African American female), female physician of either race (white or black) acceptable, but important that physician appear compassionate Suggestion: young model wearing jewelry while exercising contradicts public safety message	Good: colorful, relate to pictures, attractive models who are happy and energetic
Format and layout	Good: high quality	Good: high quality (colors and paper), font sizes Suggestion: format meal plan to enhance understanding
Content	Suggestion: clarify concepts ("why not bounce when you stretch?")	Suggestions: make meal plan more flexible, incorporate family concerns into motivational messages and strategies

tened to our ideas." Participants reported being immediately attracted to the material because of the bright colors and pictures and found it to be of high quality, self-explanatory, and brief. Describing the redesigned material's appeal, one woman stated, "[you] assume it's for you," and other participants observed that they could relate to the models because "they are real people like us." Participants also supported the content and appreciated the pictures' demonstration of physical activities. The rationale for the material's PA recommendations was unclear to some participants, however, who asked, "Why not bounce when stretching?" and "Why can't we use headphones when walking?"

Dietary focus group responses were similar with respect to material quality and colors. Much of the discussion focused on how to format the meal plan to make it more flexible and enhance understanding and use. Women also suggested that family concerns be incorporated into motivational messages and strategies, noting that although they wanted the material to encourage women to "value themselves," women tended to be "motivated to do things that benefit their family." Participants consistently stated, "It's hard to make changes when your family won't eat it," "It's expensive to buy different foods [for me]," and "It is a lot of work to make different meals for everybody."

Both sets of focus groups provided useful feedback on preferences for models. Most participants preferred female physicians, and several were very outspoken about the male model, stating "Get that man out of there." No preference was expressed for race. Instead, women were drawn to pictures where physicians were "engaged in positive communication" and were "actively listening." The preferred physician model was described as "compassionate, someone you can relate to." Participants preferred the younger female patient model, who was described as "exciting," "energetic," "vibrant," "not too thin and not too fat," and who "looks good but still has a little something to work on."

Phase 7: Final redesign

We carefully reviewed feedback from the second round of focus groups and incorporated suggestions into the materials' final redesign. The final physical activity material, "HHER Walking Program," uses bright colors (hot pink and gold) and seven photographs. Content includes the benefits of walking (the activity selected in focus groups), the importance of talking with a health-care provider to develop a safe program, recommendations for walking and health, warm-up and cool-down strategies, safety tips, behavioral strategies for increasing walking, and warning

symptoms. It also includes space for readers to write down walking goals.

The final diet material, "HHER Low-Fat Living," uses bright colors (teal and gold), three photographs, and provides a sample low-fat and low-calorie meal plan with ethnic-appropriate foods. Content covers benefits of a low-fat diet, general healthy eating habits, shopping tips, ways to substitute low-fat for high-fat foods, and meal preparation strategies. The material concludes with behavioral strategies for dietary change and space for readers to set dietary goals.

DISCUSSION

Healthy People 2010 outlines several goals for increasing PA and dietary counseling by healthcare providers,⁸ yet few ethnically relevant materials exist that can be used effectively to supplement such counseling. We developed a replicable process for redesigning educational materials to be ethnically and culturally appropriate and used this process to redesign PA and diet materials for African American women in the southeastern United States. Our focus groups with low-income, midlife African American women were crucial to the redesign process, which produced materials that closely reflect the voices and opinions of women who are sociodemographically similar to those served by WISEWOMAN projects. Although the process used to redesign these materials may be particularly useful for WISEWOMAN projects, it also can be applied to other health topics and target populations.

A materials design process that solicits input from key stakeholders (experts and consumers) is likely to produce materials that better serve the needs of healthcare providers and clients—materials that are evidence based, culturally relevant, and appropriate for use in clinical practice settings. Our focus group participants' opinions may have limited generalizability, however, and others using our revised materials should consider asking a new group of consumers to review the materials. The "HHER Low-Fat Living" and "HHER Walking" educational materials have been tested in combination with physician counseling in two community health clinics in South Carolina, using an intervention package (the HHER Lifestyle Program) that includes a physician's training manual, a pocket-sized physician counseling tool, and the two educational materials.¹⁸ Participating healthcare providers have re-

acted positively to the HHER Lifestyle Program, describing it as feasible to implement and culturally appropriate.^{18,19}

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