Racial Differences in Testing Motivation and Psychological Distress following Pretest Education for BRCA1 Gene Testing

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Abstract

Objectives. We conducted a randomized trial to investigate racial differences in response to two alternate pretest education strategies for BRCA1 genetic testing: a standard education model and an education plus counseling (E+C) model.

Materials and Methods. Two hundred twenty-eight Caucasian women and 70 African American women with a family history of breast or ovarian cancer were contacted for a baseline telephone interview to assess sociodemographic characteristics, number of relatives affected with cancer, and race before pretest education. Outcome variables included changes from baseline to 1-month follow-up in cancer-related distress and genetic testing intentions, as well as provision of a blood sample after the education session.

Results. African American women were found to differ significantly from Caucasian women in the effects of the interventions on testing intentions and provision of a blood sample. Specifically, in African American women, E+C led to greater increases than education only in intentions to be tested and provision of a blood sample. These effects were independent of socioeconomic status and referral mechanisms. In Caucasian women, there were no differential effects of the interventions on these outcomes. Reductions in cancer-specific distress were evidenced in all study groups. However, this decrease, although not significantly different, was smallest among African American women who received E+C.

Conclusions. In low- to moderate-risk African American women, pretest education and counseling may motivate BRCA1 testing. Further research is needed to explore the mechanisms of impact of the alternate pretest education strategies and to increase the cultural sensitivity of education and counseling protocols.

Introduction

Before the availability of genetic testing for BC and OC susceptibility, surveys indicated very high levels of interest in the general public and in high-risk populations (1–3). For the most part, motivation to be tested in these groups was based on an overestimation of personal risk and the benefits of testing, as well as a lack of appreciation for the limitations and risks of testing (4). An initial study suggested that education about the benefits, limitations, and risks of genetic testing for BC risk diminished intentions in low- to moderate-risk women (5).

We conducted a randomized trial to evaluate the influence of pretest education on informed decision-making for BRCA1 genetic testing among women at low to moderate risk of cancer. Specifically, we compared two alternate strategies: (a) a standard educational (information only) approach; and (b) an expanded education plus counseling (E+C; information plus personalized exploration of psychosocial issues in genetic testing) approach (6). We found that the addition of personalized counseling led to greater increases in awareness of the limitations and risks of testing and decreases in the perceived benefits of testing, compared with education only. However, neither education nor E+C produced changes in intentions to be tested or willingness to provide a blood sample for future testing.

Although overall effects of the standard versus expanded E+C approaches were not found, it is likely that there are individual differences in responses to these pretest education strategies. Previous analyses from this study suggested the possibility that the alternate pretest education approaches would have differential effects on women of different racial backgrounds. For example, before any education, African American women were found to have less knowledge about BRCA1 testing, more positive beliefs about the benefits of testing, and fewer concerns about the limitations and risks of testing than Caucasian women (7). Furthermore, on a measure of attitudes about ethical issues in genetic testing, African American women reported more favorable attitudes than Caucasians about physicians sharing genetic information with other family members and were more likely to support their rights to request BRCA1 testing for their minor children (8).

The present analysis was designed to evaluate racial differences in the effects of education only versus E+C on testing intentions, blood sample provision, and psychological distress. On the basis of previous findings, two alternate hypotheses were considered. Given concerns about discrimination in medical settings in the African American community (9, 10), enhanced personalized counseling, compared with education only, might dissuade African Americans from BRCA1 testing more than Caucasians. On the other hand, the E+C model might be more likely to foster a therapeutic relationship and...
trust. In addition, greater emphasis on interpersonal relationships and family involvement among African Americans (11) might lead to increased motivation for testing after considering the potential benefits to other family members in the expanded counseling session as compared with education only. Although racial differences in cancer-related distress among high-risk women have not been examined previously, one study has shown that African American women may have greater worries about their personal breast cancer risk than Caucasians (12). Therefore, they might experience greater reductions in distress after an expanded counseling session. Information about racial differences in the impact of alternate pretest education approaches would be valuable when designing education and informed consent protocols that are more responsive to the backgrounds, values, and individual needs of the participants.

Materials and Methods
Participants
Participants were 228 Caucasian and 70 African American women, ages 18–75, who had at least one FDR affected with BC and/or OC. Women who had a personal history of cancer (except basal cell or squamous cell skin cancers) were excluded. All women had agreed to participate in a randomized trial of alternate pretest education and counseling strategies for BRCA1 testing. Of 581 eligible women who completed a baseline telephone interview, 364 (63%) also completed one of the education sessions. Of 364 women who completed an education session, 298 (82%) completed the 1-month follow-up telephone interview (see “Analysis of Participation Bias” in “Results”). Thus, the final sample included 298 women.

Procedures
Participants were recruited into the study from two cancer centers (Georgetown University Medical Center or Washington Hospital Center) through two recruitment mechanisms: patient-referrals and self-referrals. Patient-referral participants received introductory letters explaining the program after obtaining consent from their relative affected with BC and/or OC. The introductory letter provided information about the program and a local telephone number to call if they did not want to be contacted about the program. Self-referred participants obtained information about the program from their physician or from brochures located throughout both hospitals. The brochure contained information about the program and eligibility requirements. Both patient- and self-referred participants were contacted for a 20-min baseline telephone interview. This structured telephone interview was conducted by a professional telephone interviewer using a computer-assisted telephone interviewing system. Data on sociodemographic characteristics, family history, knowledge, attitudes, and intentions about genetic testing and cancer-related distress were collected during the baseline telephone interview.

At the conclusion of the baseline telephone interview, all participants were invited to attend an education session. Those who agreed to participate were randomly assigned to one of three intervention groups: (a) education only; (b) E+C; or (c) wait list control (see description of interventions below). Written informed consent was obtained before the education session. The education sessions were conducted by one of two trained oncology nurses or a genetic counselor during an individual 1½-h visit.

All participants were given an opportunity to provide a blood sample for storage at the end of the education session. Specifically, participants were told, “We are giving women who are interested in BRCA1 testing an opportunity to provide a blood sample for BRCA1 testing in the future. Your blood sample will be stored in our laboratory. When BRCA1 testing becomes available, you would be among the first people to be tested by our center, if you are still interested. Your blood sample will not be tested now. When a test is available for your sample, we will contact you so that you could sign another consent form for testing... It is important to understand that this blood sample is for future testing. You should not give a sample unless you wish to be tested for BRCA1 in the future. There is no other reason to give a blood sample.” Participants who wished to provide a blood sample completed a second informed consent form prior to the sample being taken.

Description of Interventions. Participants receiving education or E+C were included in this analysis. Education and counseling for African Americans was provided almost exclusively by an African American nurse educator at the Washington Hospital Center, while the vast majority of Caucasians met with a Caucasian nurse educator at the Lombardi Cancer Center. These interventions are described briefly below; for more detail, see Lerman et al. (6).

Education Only Intervention. Topics discussed during the education only session included individual risk factors for breast and ovarian cancer and patterns of inheritance for breast-ovarian cancer susceptibility. Participants were given qualitative estimates of their risk of developing BC and OC (i.e., “your risk of developing breast/ovarian cancer may be increased over a woman your age in the general population”) based on review of self-reported risk factors (number of FDRs affected with cancer and childbearing history). The participants’ pedigrees were also reviewed and described as “not suggestive,” “somewhat suggestive,” or “very suggestive” of hereditary cancer. The potential benefits, limitations, and risks of genetic testing for inherited BC and OC susceptibility were also reviewed in a general manner. This intervention was comparable with the standard informed consent that a patient would receive from a primary care provider.

A combination of oral presentation and flip-chart visual aids was used to illustrate key points and to ensure standardization. Printed handouts on BC and OC and genetic testing for inherited BC and OC susceptibility were given to participants at the end of the session. The average time for completion of the education only intervention was 45–60 min.

E+C Intervention. The E+C intervention provided the same education and materials described above. At the end of the education, participants were guided through a set of questions that explored personal issues related to cancer and genetic testing, using a semistructured protocol. Specifically, participants discussed the emotional impact of having a family history of cancer, the psychosocial implications of genetic testing for inherited BC and OC susceptibility for them and their family members, anticipated reactions to a positive and negative test result, and intentions to communicate test results to family members and friends. The average time for completion of the E+C intervention was 75–90 min.

Measures
Controlling Variables
Sociodemographics. Age, education level, marital status, and income level were assessed during the baseline telephone in-
terview. These variables were dichotomized based on the frequency distribution in the study sample.

**Family History.** The number of relatives affected with BC and/or OC was assessed during the baseline telephone interview. This variable was dichotomized as one relative affected with BC versus one relative affected with OC and/or two or more relatives affected with BC or OC.

**Referral Variables.** Recruitment mechanism (patient-referred versus self-referred) and referral site were determined during the baseline telephone interview.

**Predictor Variables**

**Race.** Race was determined during the baseline telephone interview by self-report. Only African American and Caucasian women were included in this analysis.

**Treatment Group.** Assignment to treatment group (education only versus E+C) was determined randomly by computer at the end of the baseline telephone interview.

**Outcome Variables**

**Genetic Testing Intention.** Intention to have *BRCA1* testing was assessed during the baseline and the 1-month follow-up interviews by one Likert-style item. Participants were asked, “At the present time, which of the following statements describes you best?” (1 = not considering/have not thought about genetic testing; 2 = considering genetic testing; 3 = probably will have genetic testing; 4 = definitely will have genetic testing). This item has been validated in previous studies on attitudes about genetic testing in women who have a family history of BC or OC (13).

**Provision of Blood Sample.** Provision of blood sample (yes or no) for storage was assessed after the education session.

**Cancer-specific Distress.** Cancer-specific distress was assessed by the Intrusion subscale of the Impact of Event Scale (14). The Intrusion subscale consists of 7 Likert-style items (0 = not at all; 1 = rarely; 3 = sometimes; 5 = often), which measure the frequency of intrusive thoughts about cancer during the past 7 days. The Impact of Event Scale has been used in several studies of psychosocial adjustment in women who have a family history of BC and OC (15, 16). The Intrusion subscale had good internal consistency in our sample (Cronbach’s α = 0.83). Cancer-specific distress was assessed during the baseline interview and the 1-month follow-up interview.

**Analysis Plan.** χ² tests of association and t tests were conducted to identify factors associated with participation and to identify potential confounding variables associated with the race or with the outcome variables. Logistic and linear regression models with hierarchical variable entry were conducted to test the main and interacting effects of race and treatment group on the outcome variables, while controlling for potential confounding variables and baseline variables.

**Results**

**Sample Characteristics.** As shown in Table 1, significantly more Caucasian women were recruited through self-referrals compared with African American women (77% versus 36%; χ² = 41.97; P = 0.001). Caucasian women were also significantly more likely to be married, to have greater education, and to have higher income levels compared with African American women. Caucasian and African American women did not differ significantly in terms of cancer family history. We also compared respondents assigned to the education only intervention group to those assigned to the E+C intervention on these variables, and no statistically significant differences were found.

**Analysis of Participation Bias.** Seventy-four percent of women who were approached for this study completed a baseline interview, and 26% declined. Among women who completed the baseline, factors associated positively with participation in an intervention included being married (χ² = 3.66; P = 0.06), having incomes ≥$50,000 (χ² = 11.94; P = 0.001), having a stronger family history of cancer (χ² = 3.59; P = 0.06), and being recruited through self-referrals (χ² = 25.46; P = 0.001). Sixty-eight percent of Caucasian women who completed the baseline completed the intervention, and 49% of African American women who completed the baseline completed the intervention (χ² = 18.6; P = 0.001). As shown in Table 2, among African Americans, factors associated with participation included being older (χ² = 5.44; P = 0.02), having incomes ≥$50,000 (χ² = 4.18; P = 0.04), and having lower levels of baseline distress (T = 2.9; P = 0.004) among...
Caucasians, participation was associated with being recruited through self-referrals (χ² = 24.38; P = 0.001), having higher levels of education (χ² = 23.54; P = 0.001), having higher levels of baseline distress (T = 2.07, P = 0.04), and having higher levels of baseline intentions to be tested (T = 4.7, P = 0.0001).

### Multivariate Model of Testing Intentions

As shown in Table 3, the controlling variables entered on the first step of the model accounted for 26% of the variance in the model of genetic testing intentions (treated as a continuous variable ranging from 1–4). Family history and baseline genetic testing intentions both made significant independent contributions to 1-month genetic testing intentions. Women who had stronger family histories of cancer had greater increases in intentions. There was a significant main effect for treatment group and a significant race by treatment group interaction (P < 0.01). The total model accounted for 29% of the variance in genetic testing intentions. A dichotomized intentions variable (definitely versus else) was also tested in a logistic regression model, and the results were essentially the same (P = 0.016 for race by treatment interaction).

The interaction effect is depicted in Fig. 1. Regression analyses stratified by race showed that an effect of treatment on changes in intentions was found only in African Americans (T = 3.13; P = 0.003); in this group, E1+C led to greater increases in intentions than education only.

### Multivariate Model of Blood Sample Provision

The logistic regression model for blood sample provision is shown in Table 4. Of the controlling variables, only referral type had a significant independent association with provision of a blood sample. Fifty-four percent of self-referred participants provided a blood sample for storage compared with 30% of patient-referred participants. There was a significant main effect for race; fifty-

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**Table 2** Factors associated with participation in intervention among African American and Caucasian women (n = 581)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Level</th>
<th>African American n (% participated)</th>
<th>Caucasian n (% participated)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Referral type</td>
<td>Self-referred</td>
<td>28 (48)</td>
<td>217 (76)</td>
</tr>
<tr>
<td></td>
<td>Patient referred</td>
<td>58 (50)</td>
<td>64 (51)</td>
</tr>
<tr>
<td>Treatment group</td>
<td>Education only</td>
<td>48 (53)</td>
<td>139 (68)</td>
</tr>
<tr>
<td></td>
<td>E+C</td>
<td>38 (46)</td>
<td>139 (68)</td>
</tr>
<tr>
<td>Age</td>
<td>&lt;40</td>
<td>27 (39)</td>
<td>118 (67)</td>
</tr>
<tr>
<td></td>
<td>≥40</td>
<td>59 (66)</td>
<td>160 (69)</td>
</tr>
<tr>
<td>Marital status</td>
<td>Married</td>
<td>53 (47)</td>
<td>87 (68)</td>
</tr>
<tr>
<td></td>
<td>Not married</td>
<td>33 (54)</td>
<td>191 (68)</td>
</tr>
<tr>
<td>Education level</td>
<td>Some college</td>
<td>58 (48)</td>
<td>48 (48)</td>
</tr>
<tr>
<td></td>
<td>College graduate</td>
<td>28 (52)</td>
<td>229 (75)</td>
</tr>
<tr>
<td>Income level</td>
<td>&lt;$50,000</td>
<td>50 (44)</td>
<td>78 (64)</td>
</tr>
<tr>
<td></td>
<td>≥$50,000</td>
<td>35 (60)</td>
<td>193 (70)</td>
</tr>
<tr>
<td>Number of FDRs diagnosed with cancer</td>
<td>1 FDR with BC</td>
<td>74 (48)</td>
<td>211 (67)</td>
</tr>
<tr>
<td></td>
<td>1 FDR with OC or ≥2 FDRs with BC or OC</td>
<td>12 (63)</td>
<td>67 (72)</td>
</tr>
<tr>
<td>Baseline distress</td>
<td>Participate, X (SD)</td>
<td>4.40 (6.9)</td>
<td>6.73 (7.2)</td>
</tr>
<tr>
<td></td>
<td>Not participate, X (SD)</td>
<td>7.77 (8.3)</td>
<td>5.22 (6.6)</td>
</tr>
<tr>
<td>Baseline testing intention</td>
<td>Participate, X (SD)</td>
<td>2.53 (1.0)</td>
<td>2.68 (1.1)</td>
</tr>
<tr>
<td></td>
<td>Not participate, X (SD)</td>
<td>2.36 (1.0)</td>
<td>2.15 (1.0)</td>
</tr>
</tbody>
</table>

* P < 0.01.
* P < 0.05.
* P < 0.001.

**Table 3** Multivariate model of genetic testing intentions 1-month after pretest education

<table>
<thead>
<tr>
<th>Step number</th>
<th>Predictor variable</th>
<th>ΔR²</th>
<th>Final β</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Marital status*</td>
<td>0.10</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Education level*</td>
<td>0.0008</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Income level*</td>
<td>-0.007</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number of FDRs with cancer*</td>
<td>0.38*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Referral type*</td>
<td>-0.14</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Baseline genetic testing intention*</td>
<td>0.46*</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Race*</td>
<td>0.26*</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Treatment group (E+C vs education only)</td>
<td>0.33</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Race by treatment group</td>
<td>0.005</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Race by treatment group</td>
<td>0.76*</td>
<td></td>
</tr>
</tbody>
</table>

* Married versus not married.
* College graduate versus some college.
* $P < 0.01.
* Patient-referred versus self-referred.
* Caucasian versus African American.

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Fig. 1. Genetic testing intention by ethnicity and treatment group.
two percent of Caucasian women gave a blood sample compared with 29% for African American women. The interaction between race and treatment group was statistically significant ($P < 0.05$).

As shown in Fig. 2, an effect of treatment was found only in African American women ($X^2 = 3.36; P = 0.07$); in this group, $E_1C$ was associated with a greater likelihood of giving a blood sample than education only.

**Multivariate Model of Cancer-specific Distress.** As shown in Table 5, only the baseline level of cancer-specific distress had a significant independent association with 1-month distress levels. There was a trend for an interaction between race and treatment, but this was not statistically significant ($P = 0.10$). Twenty-seven percent of the variance in cancer-specific distress was accounted for in the final model.

The interaction effect is depicted in Fig. 3. As shown, all groups evidenced a reduction in distress. However, this decrease, although not significantly different, was smallest among African American women who received $E_1C$.

**Discussion**

In this randomized trial, we investigated racial differences in the responses of women with a family history of BC or OC to two alternate $BRCA1$ pretest education strategies: a standard education model and an expanded $E_1C$ model. African American women were found to differ from Caucasian women in the effects of the interventions on testing intentions and provision of a blood sample. Specifically, in African American women, the expanded counseling model led to significantly greater increases than education only in intentions to be tested and provision of a blood sample. These effects were independent of socioeconomic status and referral mechanisms. In Caucasian women, there were no differential effects of the interventions on genetic testing intentions and blood sample provision. Reductions in cancer-specific distress were found in all groups. Although there were no significant racial differences, this effect was smallest among African American women who received the $E_1C$ model.

There are several possible explanations for these racial

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Table 4  Multivariate model of blood sample provision after pretest education

<table>
<thead>
<tr>
<th>Step number</th>
<th>Predictor variable</th>
<th>$\Delta\chi^2$</th>
<th>Odds ratio</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Marital status$^a$</td>
<td>1.00</td>
<td>0.56, 1.77</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Education level$^b$</td>
<td>0.79</td>
<td>0.42, 1.48</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Income level$^c$</td>
<td>1.42</td>
<td>0.76, 2.63</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number of FDRs with cancer$^d$</td>
<td>1.25</td>
<td>0.69, 2.25</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Referral type$^e$</td>
<td>0.47$^f$</td>
<td>0.26, 0.83</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Race $^g$</td>
<td>18.74$^f$</td>
<td>3.60$^f$</td>
<td>1.39, 9.30</td>
</tr>
<tr>
<td>3</td>
<td>Treatment group ($E + C$ vs education only)</td>
<td>0.015</td>
<td>2.69</td>
<td>0.90, 8.02</td>
</tr>
<tr>
<td>4</td>
<td>Race by treatment</td>
<td>4.30</td>
<td>0.28$^g$</td>
<td>0.08, 0.95</td>
</tr>
</tbody>
</table>

$^a$ Married versus not married.
$^b$ College graduate versus some college.
$^c$ $\geq$50,000 versus <$50,000.
$^d$ 1 FDR with OC or $\geq$2 FDRs with BC or OC versus 1 FDR with BC.
$^e$ Patient-referred versus self-referred.
$^f P < 0.01.
^g$ Caucasian versus African American.

Table 5  Multivariate model of cancer-specific distress 1-month after pretest education

<table>
<thead>
<tr>
<th>Step number</th>
<th>Predictor variable</th>
<th>$\Delta R^2$</th>
<th>Final $\beta$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Marital status$^a$</td>
<td>-0.40</td>
<td>0.48</td>
</tr>
<tr>
<td></td>
<td>Education level$^b$</td>
<td>0.044</td>
<td>0.48</td>
</tr>
<tr>
<td></td>
<td>Income level$^c$</td>
<td>-0.44</td>
<td>0.23</td>
</tr>
<tr>
<td></td>
<td>Number of FDRs with cancer$^d$</td>
<td>-0.66</td>
<td>0.38$^f$</td>
</tr>
<tr>
<td></td>
<td>Referral type$^e$</td>
<td>0.26$^f$</td>
<td>0.91</td>
</tr>
<tr>
<td>2</td>
<td>Race $^f$</td>
<td>0.0001</td>
<td>1.50</td>
</tr>
<tr>
<td>3</td>
<td>Treatment group ($E + C$ vs education only)</td>
<td>0.001</td>
<td>0.0087</td>
</tr>
<tr>
<td>4</td>
<td>Race by treatment group</td>
<td></td>
<td>-2.40</td>
</tr>
</tbody>
</table>

$^a$ Married versus not married.
$^b$ College graduate versus some college.
$^c$ $\geq$50,000 versus <$50,000.
$^d$ 1 FDR with OC or $\geq$2 FDRs with BC or OC versus 1 FDR with BC.
$^e$ Patient-referred versus self-referred.
$^f P < 0.001.
^g$ Caucasian versus African American.
Racial Differences in Testing Motivation

Fig. 3. Cancer-specific distress by ethnicity and treatment group.

The present study had several limitations that should be noted. First, because almost all counseling for African Americans was provided by an African American nurse educator, the results may not generalize to African Americans counseled by Caucasian counselors. Furthermore, it is possible that aspects of the training or backgrounds of the counselors influenced the study results. It is also possible that the racial differences observed are attributable, in part, to differences in how the interventions were delivered at the two study sites. Although it is not possible to disentangle counselor and site effects in the present study, previous research has not shown strong effects of counselor experience and training on similar outcomes (23). The fact that the vast majority of participants were counseled by oncology nurses increases the generalizability of results to the setting where many women may receive counseling in the future. A second limitation is that it is possible that differences between the two study conditions were due to differences in the amount of time spent with the counselor. However, length of contact has not been shown to influence the outcomes of genetic counseling (23). A third limitation is that intentions and provision of a blood sample for future testing served as proxy measures of BRCA1 testing decisions (because it was not possible to offer BRCA1 testing at the time of the study). Previous research has shown that rates of blood sample provision may underestimate actual uptake of BRCA1 testing (24, 25). It is also possible that there were inaccuracies in self-reports of family history, as these data were not verified by medical records review. A fourth limitation is that only 70 African American women were enrolled in this study. Nonetheless, this sample represents the largest study to date of African American women undergoing BRCA1 pretest education, and significant effects were found despite reduced study power.

Another important limitation of this study concerns the potential for selection bias due to the fact that only a subset of eligible participants completed the education sessions. African American and Caucasian women were recruited from different hospital settings, and participation rates were significantly lower in African Americans than in Caucasians. Among African Americans, those enrolled were older, had higher incomes, and lower levels of baseline distress than those who declined. By contrast, among Caucasians, participants had higher levels of baseline distress. These racial differences in factors influencing enrollment may be responsible, in part, for racial differences in study outcomes.

Despite these limitations, a tentative conclusion can be made. Among low- to moderate-risk African American women who are counseled in a research setting by an African American counselor, expanded counseling may motivate rather than deter BRCA1 testing. Alternate counseling approaches may not have a significant impact on testing motivation among Caucasian women. These racial differences may reflect the greater family orientation in African American culture or greater rapport between African American participants and their counselor. Future research is needed to validate these results and evaluate the effects of alternate counseling approaches in larger samples of African Americans undergoing genetic testing and for other late-onset disorders, and to explore the specific factors and mechanisms responsible for any racial differences observed. With a greater understanding of how the cultural backgrounds of participants influence their reactions to counseling, we will
be better able to design culturally sensitive genetic counseling and testing protocols.

Acknowledgments

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