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## Results of a Randomized Trial Testing Messages Tailored to Participant-Selected Topics Among Female College Students: Physical Activity Outcomes

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### Abstract

**Background**—A better understanding of identifying tailoring variables would improve message design. Tailoring to a behavior that a participant selects as one they would like to work on may increase message relevance, and thus effectiveness. This trial compared 3 groups: message tailored to physical activity as a participant-selected topic (choice), message tailored to physical activity as an expert-determined topic (expert), or nontailored message (comparison).

**Methods**—408 female college students received web-delivered computer-tailored messages on physical activity. Outcomes were immediate and 1-month follow-up changes in psychosocial, goal-related, and behavioral variables related to physical activity.

**Results**—Participants were predominately non-Hispanic White (73.8%). Change in self-efficacy and goal commitment at immediate follow-up and vigorous physical activity at 1-month follow-up was greater in the expert versus comparison group. Change in goal commitment at immediate follow-up was lower in the choice versus expert group. In the expert group, those choosing physical activity as their selected topic perceived the goal to be easier at immediate follow-up compared with those receiving unmatched messages.

**Conclusions**—Findings supported tailoring to an expert-determined topic. However, based on the beneficial change in perceived goal difficulty when topics matched, future research should encourage synchrony between participant-selected topics and expert recommendations.

### Keywords

intervention study; exercise; youth; health behavior

Cancer poses a substantial global public health burden;<sup>1</sup> in the U.S., cancer is the 2nd leading cause of death.<sup>2</sup> Physical activity is associated with reducing several types of cancer including colorectal, endometrial, and postmenopausal breast cancer.<sup>3</sup> Physical activity is also indirectly linked to cancer prevention through effects on overweight, obesity, and weight gain, conditions that contribute to several types of cancer.<sup>3</sup> Accordingly, several organizations, such as the American Cancer Society, have published guidelines for the general public that include physical activity behaviors aimed at cancer prevention.<sup>4</sup>

Tailored health messages are an effective means of health communication to promote change in cancer-related risk behaviors. Early studies focused on a range of behaviors, including diet, cancer screening, and physical activity; these demonstrated the effectiveness of printed tailored messages compared with nontailored generic messages or no message control groups.<sup>5-8</sup> Since that time, tailored messages have been delivered through other channels such as the web.<sup>9</sup> In contrast to printed tailored messages, web-delivered messages may facilitate disseminating health information to populations. This may be especially true in college populations, where use of the web is high.<sup>10,11</sup> For example, in the Pew Internet & American Life Project, 86% of college students as compared with 59% of the general population have ever gone on line; in addition, nearly 3/4 of students spend 4 or more hours on line every week.<sup>10</sup>

A comprehensive review of different types of physical activity interventions reported individually-adapted interventions that are “tailored to the individuals’ readiness for change, specific interests, and preferences” have strong support for improving physical activity behaviors as well as being adaptable to diverse audiences and settings.<sup>12</sup> However, a recent review focusing specifically on the effectiveness of tailored messages reported research was more consistent for dietary behaviors than physical activity behaviors.<sup>13</sup> Therefore, there is need to better understand the mechanisms underlying how tailored messages achieve positive behavioral effects, particularly for those that are delivered via the web and for those that focus on physical activity.<sup>13,14</sup> Further research testing variables that may be most relevant and effective to tailor on for given health behaviors and populations may provide valuable information in the effort to design effective tailored messages with the potential to be efficiently disseminated via the web.

Given increased research addressing multiple risk behaviors presented sequentially over the course of an intervention,<sup>9,15</sup> an important variable to consider is *how* to decide on which behavior (eg, fat intake vs. fruit and vegetable intake vs. physical activity) to tailor the message. Currently, it is unclear whether it is a more effective approach to 1) use an expert-based system to select the behavioral topic based on evidence of potential disease prevention or 2) to ask the participant to select the behavioral topic on which they are most interested in working. When selecting a behavioral topic, an individual may select the behavior according to their stage of readiness, level of self-efficacy, or perception of difficulty.<sup>16</sup> Some have hypothesized that even if a participant chooses not to work on a highly important behavioral topic at first, accomplishing 1 behavioral change may act as a gateway to future, potentially more difficult, behavioral changes.<sup>16,17</sup> In any case, the participant-selected topic may reflect a high level of intrinsic motivation and is likely to be highly relevant, a key process

contributing to the effectiveness of tailored messages.<sup>18</sup> Such a hypothesis is supported by the Elaboration Likelihood Model, which indicates communication needs to be personally relevant, useful, and understandable if the individual is to thoughtfully consider the contents of the message.<sup>19</sup> This act of central processing is then thought to increase the likelihood of future behavior change. Messages that do not match participants' selected topic may be less relevant, ultimately resulting in a less persuasive message.

Previous research has incorporated participant choice into tailored message interventions, for example preference for intervention channel (print vs. phone delivery) for messages promoting physical activity.<sup>20</sup> Others have employed tailoring to participant-selected topics, however, these were often embedded within complex studies, ultimately designed to answer different research questions.<sup>21,22</sup> To our knowledge, this is the first study to evaluate the specific effect of tailoring to participant-selected topics. The objective of this study is to investigate the immediate and 1-month follow-up effects of web-delivered messages tailored to a participant-selected behavioral topic on psychosocial, goal-related, and behavioral variables related to physical activity. Thus, we hypothesized that the intervention will be more effective across these 3 groups of outcome variables for those receiving a message tailored to a participant-selected topic compared with those receiving a message tailored to an expert-determined topic.

## Methods

### Participants

A convenience sample of female students was recruited from 2 community colleges and 3 public universities in North Carolina in 2005 and 2006. Women who were currently enrolled in college (full-time or part-time; undergraduate or graduate students), were 18 years old or older, had access to the Internet, and had not participated in another Internet-based nutrition and physical study in the past 6 months were eligible to participate. The sample was restricted to women to manage the amount of tailoring and formative research needed for this smaller scale study. Participants were primarily recruited through one university-wide mass e-mail, but also through posted and distributed flyers. Interested participants contacted the study staff with questions or proceeded directly to the study website. Once on the website, participants indicated if they met eligibility criteria and that they viewed an informed consent fact sheet before proceeding to the baseline survey. The university's School of Public Health Institutional Review Board approved all aspects of this study.

### Study Design

We conducted a randomized trial, called Focus on Your Health, in which participants (n = 408) were randomized to one of 3 study groups: choice (n = 143): received messages tailored to participants' selected topic; expert (n = 133): received messages tailored to health topic determined by an expert system; or comparison (n = 132): received nontailored messages. Randomization was a computer-determined process that individually randomized each participant that logged onto the website before the baseline survey began. Figure 1 outlines the flow of participants through the study.

## Tailored Intervention Groups

Sets of tailored messages were created from the American Cancer Society's [ACS] Guidelines for Nutrition and Physical Activity,<sup>4</sup> which resulted in 6 behavioral topics: physical activity, fruits and vegetables, whole grains, red meat, low-calorie/low-fat foods, and alcohol.

To determine the behavioral topics for the choice group, participants selected a first and second topic from these 6 topics by answering: "*Which of the following are you most interested in working on?*" and "*Which are you second most interested in working on?*"

We prioritized the order of the 6 behavioral topics for the expert group by weighting their level of contribution to total cancer incidence,<sup>23</sup> the resulting order was: physical activity, red meat, low-fat/low-calorie foods, fruits and vegetables, alcohol, and whole grains. Responses on the baseline survey indicating whether the participant was or was not meeting the recommended guideline determined the selection of the expert-based topic.

The first 5 successive screens of tailored messages (message set 1) were based on either the first participant-selected topic or the first expert-determined topic, depending on study group. In the expert-group, the first screen of each message set introduced the behavioral topic as ". . . *experts in the field of health promotion can help guide a person towards the solutions that are most important for her specifically. . . . Based on your current nutrition and physical activity habits, one of things you should work on to help you prevent chronic disease like cancer most effectively is . . .*" In the choice group, the introduction was "*There are lots of ways to improve health. You said you wanted to do more . . .*" Both introductions pointed to the link between the behavior and cancer prevention. The remaining screens did not differ between the choice and expert groups.

Participants then viewed 4 theory-based<sup>24–26</sup> tailored screens: 1) a feedback chart in which participants' current adherence to the topic was compared with the recommendation guideline (to enhance self-awareness and consciousness raising<sup>24</sup>); 2) a behavior-specific testimonial of successful behavior changes (to enhance attitudes that making changes will lead to positive outcomes<sup>25</sup>); 3) a question and answer column tailored to participants' reported barriers (to reduce barriers and increase likelihood of change<sup>26</sup>); and 4) an action plan tailored to their stage of change (to enhance stage progression<sup>24</sup>). Overall, messages aimed to build self-efficacy.

Text was composed with extensive input compiled from formative research, which was a series of 4 focus groups (n = 21) conducted among women at community colleges. A semistructured guide was used to elicit stories of successful changes, barriers, and knowledge about the 6 behavioral topics. For example, testimonials were compiled from tips and advice provided by different focus group participants; the physical activity testimonial described one woman's process of fitting walking into her day with a family member while juggling school responsibilities. Text segments from a message library previously used among blue-collar working women were also adapted for use in this intervention by replacing the focus on the workplace with the college environment.<sup>21</sup>

After viewing message set 1, message set 2 was presented which also consisted of 5 successive screens of feedback using the same tailoring procedures, but this message set was based on the second participant-selected topic or expert-determined behavior.

### Comparison Group

Participants received 1 set of messages consisting of 10 nontailored screens focused on reducing stress, including a testimonial, a visualization exercise, and an action plan (adapted from Campbell et al<sup>21</sup>).

### Data Collection

All data collection occurred through on-line surveys on a password protected, secure website developed for this project. Data were obtained at 3 time points: baseline, immediately after reading the message sets, and 1-month follow-up. Participants were reminded up to 5 times by e-mail or phone to complete the follow-up surveys. Psychosocial and goal-related measures were asked separately for each behavioral topic (ie, 6 times each). Participants received a \$10 supermarket gift card when they completed the 1-month follow-up survey.

Of the 6 behavioral topics, only physical activity was selected as a topic or assigned as an expert-determined topic with sufficient frequency to enable comparison across study groups (refer to Figure 1 for frequencies according to each behavioral topic). Thus, the remainder of this paper focuses on outcomes related to physical activity.

### Measures

**Demographic Characteristics**—At baseline, participants indicated their age, Hispanic/Latina ethnicity, race, highest level of education completed, and campus residence.

**Psychosocial Variables**—Stage of change and perceived barriers were used as tailoring variables (adapted from Campbell et al<sup>21</sup>). For tailoring purposes, stage was grouped into 3 categories: precontemplation (not thinking about starting to exercise), contemplation/preparation (thinking about starting to exercise or planning to start exercising in next 30 days), and action/maintenance (have been exercising for < 6 months or ≥ 6 months). Participants chose 2 barriers from a close-ended list of 5 (eg, “*It would be hard to exercise more than I do now because I don’t have the time to do more exercise*”).

For intention, to promote answer variability, we used 2 questions: “*Do you intend to exercise 30 minutes or more at least 5 times a week in the future?*” and “*Are you likely to exercise 30 minutes or more at least 5 times a week in the future?*” (Adapted from Christian et al<sup>27</sup>). For self-efficacy, we used 1 question: “How sure or unsure are you that you have the ability to succeed in exercising 30 minutes or more at least 5 times a week for the next 6 months?” (adapted from Campbell et al<sup>21</sup>).

**Goal-Related Variables**—To measure goal commitment, participants completed a 5-item scale (Cronbach’s alpha = .83) that was found to be consistent across goals that are self-selected versus assigned and across goals of varying difficulty.<sup>28</sup> The statement “*Thinking about a goal of exercising 30 minutes or more at least 5 times a week*” preceded the 5

questions, which included “*It wouldn’t take much for me to abandon this goal*” and “*Quite frankly, I don’t care if I achieve this goal or not.*” For goal difficulty, participants answered “*In your honest opinion, what is the level of difficulty of this goal?*”

**Physical Activity Behavior**—Using questions from the U.S. Behavioral Risk Factor Surveillance Survey [BRFSS],<sup>29</sup> participants first indicated if they did any moderate activities that caused some increase in breathing or heart rate in a usual week for at least 10 minutes; a list of sample activities was provided (eg, brisk walking, bicycling, vacuuming, and gardening). They then indicated on how many days per week they did these activities, followed by the average duration each day (using an open-ended format to enter hours and minutes); these frequency and duration responses were multiplied to yield minutes of moderate physical activity per week. Questions and responses were repeated to calculate vigorous physical activity using different sample activities (eg, running, aerobics, and heavy yard work). The test-retest reliability of these questions is fair-moderate for moderate activity ( $\kappa = 0.35\text{--}0.53$ ) and substantial for vigorous activity ( $\kappa = 0.67\text{--}0.86$ ).<sup>30</sup> Validity is fair-poor for both moderate and vigorous activities compared with accelerometers ( $\kappa = 0.31$ ) and for moderate activity compared with physical activity logs ( $\kappa = 0.25$ ). However, validity for vigorous activities is moderate compared with a physical activity log ( $\kappa = 0.44\text{--}0.51$ ).<sup>30</sup>

### Statistical Analyses

Analyses were conducted in 2007 to 2008 using SAS 9.1 (SAS Institute Inc, Cary NC, 2002). Chi-square tests compared demographic characteristics across the randomized study groups. The nonparametric Kruskal-Wallis test compared baseline physical activity values across study groups. The remainder of the analysis focused on the subset of participants assigned to physical activity in message set 1, which covered the first selected topic or expert-determined behavior. We chose this method because we posited that participants may have had higher intrinsic motivation for this topic by nature of it being selected first.

Linear regression modeling was used to calculate comparisons between the choice and expert physical activity subgroups and the comparison study group. The dependent variables were difference measures for the psychosocial and goal-related variables (immediate follow-up minus baseline and 1-month follow-up minus immediate follow-up) and physical activity behavioral variables (one-month follow-up minus baseline). Difference measures for physical activity behavior were transformed by dropping values that were  $\pm 3$  standard deviations from the mean (1% to 2% of measures were dropped) to normalize the data. Baseline and follow-up physical activity values were not transformed and are represented by medians and intraquartile ranges. Independent variables were indicator-coded variables representing study group membership. Separate models were conducted with each dependent variable and the set of independent variables. We tested contrasts between study groups using *t* test statistics (alpha set at 0.05).

We reasoned that there may be differences in outcomes among participants in the expert group based on their selected topic. Because all participants selected a topic, we used *t* test statistics to examine difference measures in all outcomes variables at immediate and 1-month follow-up among those in the expert group for whom physical activity happened to



match their selected topic and for those who selected any other behavioral topic (unmatched).

We conducted intention-to-treat analyses replacing missing 1-month follow-up outcome data with immediate follow-up data (last observation carried forward method) or missing immediate follow-up data with baseline data (baseline carried forward method). Thus, we assumed that if outcome data were missing, no change in that variable had occurred. The patterns of statistical significance were primarily unchanged, with 1 exception noted in Table 4. Therefore, the results presented are analyses using participants with complete data.

## Results

### Participant Characteristics

Overall, participants were 18 to 21 years old (51.5%), non-Hispanic White (73.8%), had not yet graduated from college (ie, <4 years in college) (62.4%), and lived off-campus (65.7%). Table 1 presents participant characteristics according to study group and indicates the only characteristic statistically different across study groups was race/ethnicity, such that there were more non-Hispanic White participants in the choice group compared with the expert and comparison groups: 81.3% vs. 64.5% and 75.7% ( $\chi^2 = 9.2$ ,  $P < .01$ ). Characteristics of participants in the physical activity subgroups were similar to those in the overall randomized study groups.

The drop out rate was 16.7% for the immediate survey across study groups (range: choice = 16.8%, expert = 12.0%, comparison = 20.5%) and was not statistically different ( $\chi^2(2) = 2.8$ ,  $P = .2$ ). The drop out rate was 31.4% for the 1-month follow-up survey across study groups (range: choice = 33.6%, expert = 22.5%, and comparison = 37.9%) and was statistically different ( $\chi^2(2) = 7.7$ ,  $P = .02$ ). The only participant characteristic that was different between those who dropped out by the 1-month follow-up compared with those who remained was education level, such that those who dropped out had lower levels of education ( $\chi^2(2) = 11.2$ ,  $P = .01$ ).

Descriptive statistics for change in psychosocial and goal-related variables at immediate follow-up and physical activity behaviors at 1-month follow-up are presented in Table 2.

### Change at Immediate Follow-Up

Mean values of intention, self-efficacy, goal commitment, and goal difficulty at immediate follow-up are presented in Table 3. There were no statistically significant differences across study groups in intention or goal difficulty. Change in self-efficacy was greater in the expert group compared with the comparison group (adjusted model:  $\beta = 0.22$ , 95% CI: 0, 0.44). Change in goal commitment was also greater in the expert group compared with the comparison group (adjusted model:  $\beta = 0.34$ , 95% CI: 0.17, 0.51) and lower in the choice group compared with the expert group (adjusted model:  $\beta = -0.20$ , 95% CI:  $-0.39$ , 0).

### Change at 1-Month Follow-Up

No statistically significant differences by study group were observed for psychosocial or goal-related variables. Mean values of moderate and vigorous physical activity are presented

in Table 4. Change in vigorous physical activity was greater in the expert group compared with the comparison group (adjusted model:  $\beta = 54.65$ , 95% CI: 18.53, 90.76).

### Expert Group Analysis

Mean values for change in all outcome variables is shown in Table 5 among participants in the expert group receiving a message matched to their selected topic and for whom physical activity was unmatched to their selected topic. At immediate follow-up, those in the matched group perceived the goal to be easier compared with those in the unmatched group: ( $t = -2.43$   $P = .02$ ). These changes were diminished at 1-month follow-up.

### Discussion

This study sought to examine if tailoring to a participant-selected topic was more effective than tailoring to an expert-determined topic as indicated by psychosocial, goal-related, and behavioral physical activity outcomes. Based on self-reported data, our results indicated beneficial effects for tailoring to an expert-determined topic in contrast to the nontailored comparison group as indicated by significant increases in self-efficacy and goal commitment at immediate follow-up and vigorous physical activity at 1-month follow-up. These psychosocial and goal-related constructs are posited as important determinants of physical activity behavior<sup>31</sup> and have been shown to mediate physical activity behavior change in intervention research.<sup>32</sup> Overall, our examination did not support the effectiveness of messages tailored to a participant-selected topic at immediate or 1-month follow-up. In fact, participants in the choice group reported significantly lower scores compared with those in the expert group for goal commitment.

A notable finding of this study is that among those in the expert group, those who received a message matched to their selected topic reported that the goal became significantly easier to meet at immediate follow-up than those who were not matched to their selected topic. These differences were attenuated at 1-month follow-up. This finding indicates that, at least initially, the messages including the participant-selected topic may have lent an additional level of relevance and individualization to the expert-determined tailored message. Accordingly, a rigorous evaluation of tailored messages that match individuals' expert-determined behavior and selected topic is needed.

Our findings are supportive of an expert-based behavioral topic selection process. However, our sets of tailored messages pointed out to the participant that they were indeed receiving a message tailored to their selected topic versus a message tailored to an expert's recommendation. In doing so, a message source was identified. In the expert group, the identified source was experts in the field of health promotion; in the choice group, the identified source was the participant herself. Because it is well established that a credible message source can have a significant impact on attitude change,<sup>33</sup> it is difficult to isolate the influence of the identification of the message source from the selection of behavioral topics. For example, in a study by Jones and colleagues, the identification of a credible expert source (ie, a medical doctor) in a positively framed message among university students resulted in the highest change in intention to perform exercise compared with a noncredible lay-person source.<sup>34</sup> Thus, in our study, the identification of an expert source in



messages viewed by those in the expert group may account for part of the differences reported. Future research could aim to study the conditions of tailoring to participant-selected topics without the identification of a message source, however, our approach may reflect a 'real-world' presentation of these messages in intervention studies.

### Limitations

Study limitations include a limited intervention dose of a 1-time message. Although some early studies have shown positive effects from exposure to 1 tailored message,<sup>6,7</sup> more recent studies use multiple tailored messages in the context of other intervention activities.<sup>36</sup> This limited dose of messages may explain the observed attenuation of psychosocial and goal-related effects at 1-month follow-up. Because of this limited dose, we believe it is appropriate to present physical activity as a continuous variable to capture incremental changes as opposed to categories of meeting or not meeting physical activity recommendations. However, we recognize that the BRFSS survey questions are suited best to ranking physical activity categories.<sup>30</sup> Second, while our measurement of self-reported physical activity had fair to substantial reliability, validity was poor to moderate.<sup>30</sup> While these results for validity are similar to other self-reported questionnaires,<sup>30</sup> it is important to interpret our findings with caution and not interpret our measures as exact indicators of physical activity. Furthermore, we observed larger standard deviations (as shown in Table 2) and no statistically significant change in moderate physical activity, which may have resulted from our assessment method being potentially more accurate for estimating vigorous physical activity.<sup>30</sup> Third, the nonrandom sampling design likely resulted in a sample of motivated individuals and results may not be applicable to less motivated individuals; however, our sample may reflect those who are likely to be interested in joining future intervention programs. Our sampling procedure also precludes a cluster analysis according to recruitment sites. Thus, to the degree that our participants are similar to other college students, we would expect our results to generalize to other colleges; however, we cannot make a statistical claim in this regard. In addition, although there was differential attrition across study groups, potentially due to the increased appeal of the expert-based message, intention-to-treat analyses indicated that missing data had minimal impact on our results. Finally, due to unexpected popularity of the physical activity topic, there was only sufficient sample size to facilitate comparisons between groups for physical activity, thus we are precluded from drawing conclusions about the effect of tailoring to a participant-selected topic for the other 5 behaviors.

### Conclusions

This study aimed to provide practical guidance in the decision of selecting a behavior on which to tailor messages and indicated that messages tailored to a participant-selected topic were not shown to be more effective than a message tailored to a topic determined by an expert-based system. Clearly, further research examining the use of participant selected topics in tailored message design is warranted, including the need to encourage synchrony between participant choice and expert recommendations. For example, participants could be provided with their expert recommendation first, then asked to select a topic. A better understanding of how to strengthen the design of tailored messages will ultimately aid in

designing more effective tailored messages with the potential to improve physical activity behaviors for cancer prevention, if disseminated on a population-wide basis.

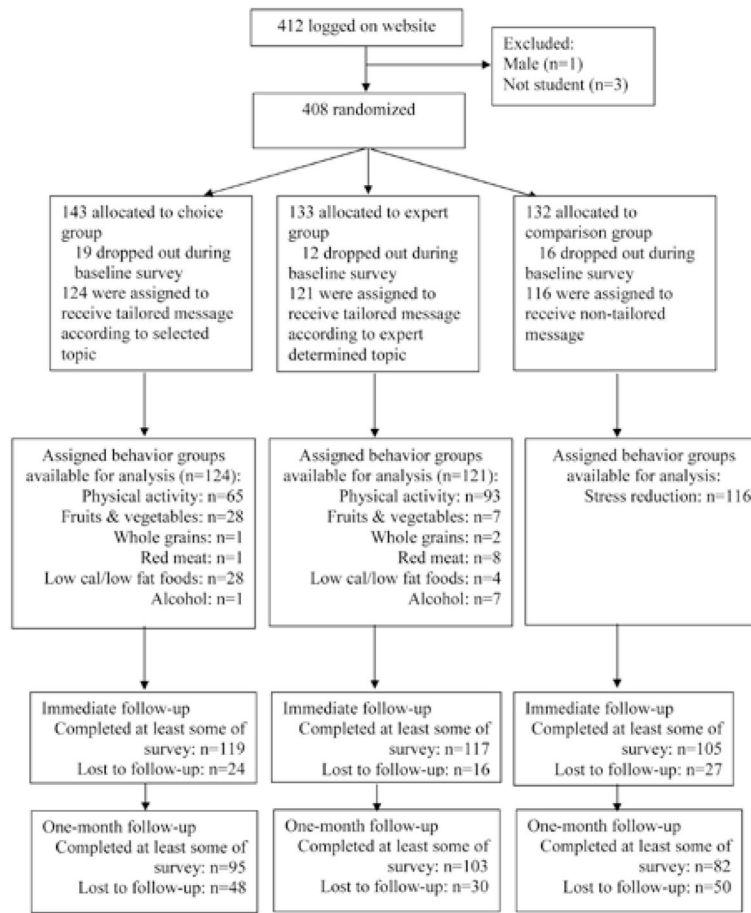
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**Figure 1.** Diagram of recruitment and assessment through the study.

**Table 1**  
Participant Characteristics by Randomized Study Group and Physical Activity Subgroups

	Randomized groups			P	Physical activity subgroups		
	Choice n = 143 <sup>a</sup>	Expert n = 133 <sup>a</sup>	Comparison n = 132 <sup>a</sup>		Choice n = 65	Expert n = 93	
Age, n (%)				0.6			
18–21	67 (46.8)	73 (54.9)	70 (53.0)		33 (50.8)	49 (52.7)	
22–29	57 (39.9)	46 (34.6)	43 (32.6)		20 (30.8)	34 (36.5)	
30	19 (13.3)	14 (10.5)	19 (14.4)		12 (18.5)	10 (10.7)	
Race/ethnicity, n (%)				<0.01			
Non-Hispanic White	100 (81.3)	78 (64.5)	87 (75.7)		52 (80.0)	60 (64.5)	
All other race/ethnicities	23 (18.7)	43 (35.5)	28 (24.3)		13 (20.0)	33 (35.5)	
Education, n (%)				0.7			
High school or less	13 (10.6)	15 (12.4)	13 (11.3)		8 (12.3)	10 (10.7)	
Some college	58 (47.1)	65 (53.7)	60 (52.2)		30 (46.1)	50 (53.8)	
College graduate ( 4years)	52 (42.3)	41 (33.9)	42 (36.5)		27 (41.5)	33 (35.5)	
Residence, n (%)				0.8			
On-campus	33 (26.8)	31 (25.6)	27 (23.5)		23 (35.4)	22 (23.7)	
Off-campus	90 (73.2)	90 (74.4)	88 (76.5)		42 (64.6)	71 (76.3)	
Physical activity, median (25, 75 percentile)							
Moderate, min/week	190 (90, 360)	180 (80, 315)	38 (90, 360)	0.8	150 (75, 300)	150 (45, 300)	
Vigorous, min/week	77 (0, 180)	30 (0, 180)	90 (0, 225)	0.2	20 (0, 120)	0 (0, 60)	

Note. Numbers vary slightly due to missing data for the physical activity variables.

**Table 2**

Descriptive Statistics of Unadjusted Physical Activity Difference Measures for Physical Activity Subgroups and Comparison Group

	<b>Choice</b>	<b>Expert</b>	<b>Comparison</b>
Baseline to immediate follow-up	n = 62	n = 82	n = 100
Intention			
Mean (SD)	0.09 (0.87)	0.23 (0.71)	0.06 (0.49)
Median (range)	0 (-2.0, 2.5)	0.23 (-1.5, 2.5)	0 (-1.5, 1.5)
Self-efficacy			
Mean (SD)	0.08 (0.75)	0.22 (0.85)	0 (0.63)
Median (range)	0 (-2, 2)	0 (-3, 2)	0 (-2, 1)
Goal commitment			
Mean (SD)	0.10 (0.57)	0.29 (0.59)	-0.04 (0.58)
Median (range)	0 (-1.2, 1.6)	0.40 (-1.4, 1.6)	0 (-2.8, 1.6)
Goal difficulty			
Mean (SD)	0.18 (0.92)	0.32 (1.05)	0.12 (0.92)
Median (range)	0 (-2, 2)	0 (-4, 3)	0 (-3, 2)
Baseline to 1-month follow-up	n = 50	n = 76	n = 80
Moderate physical activity, min/week			
Mean (SD)	11.72 (156.59)	27.95 (175.62)	45.37 (220.33)
Median (range)	0 (-330, 630)	5 (-720, 600)	30 (-557, 630)
Vigorous physical activity, min/week			
Mean (SD)	19.90 (101.76)	52.26 (109.61)	3.44 (123.91)
Median (range)	0 (-210, 270)	0 (-180, 450)	0 (-450, 345)

*Note.* Numbers vary slightly due to missing data across outcomes.

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**Table 3**

Mean (SD) Values and Beta ( $\beta$ ) Values for Psychosocial, Goal-Related, and Behavioral Outcomes at Immediate Follow-Up

	Choice (n = 62) <sup>a</sup>		Expert (n = 82) <sup>a</sup>		Comparison (n = 100) <sup>a</sup>		$\beta$ values <sup>b</sup>	
	Baseline	Immediate	Baseline	Immediate	Baseline	Immediate	CH vs. EX	EX vs. CO
Intention	3.90 (0.92)	3.99 (0.87)	3.41 (1.10)	3.64 (1.04)	3.95 (1.09)	4.01 (1.01)	-0.14	0.03
Self-efficacy	2.81 (0.87)	2.89 (0.81)	2.47 (0.91)	2.69 (0.86)	3.07 (0.90)	3.07 (0.91)	-0.13	0.04
Goal commitment	4.01 (0.70)	4.11 (0.75)	3.64 (0.92)	3.94 (0.85)	4.21 (0.80)	4.17 (0.88)	-0.14	0.08
Goal difficulty	2.36 (1.02)	2.54 (1.16)	2.09 (1.22)	2.40 (1.18)	2.85 (1.23)	2.97 (1.31)	-0.13	0.09
							-0.20 <sup>*</sup>	0.14
							-0.20 <sup>*</sup>	0.15
							-0.14	0.06
							-0.08	0.12
								0.17
								0.17
								0.22 <sup>*</sup>
								0.22 <sup>*</sup>
								0.34 <sup>**</sup>
								0.34 <sup>**</sup>
								0.20
								0.19

Abbreviations: CH, choice group; EX, expert group; CO, comparison group.

Note. All means are unadjusted. Intention measured from 1 (low) to 5 (high); self-efficacy measured from 1 (low) to 4 (high); commitment measured from 1 (low) to 5 (high); difficulty measured from 1 (very) to 5 (not at all).

<sup>\*</sup> *P* .05;

<sup>\*\*</sup> *P* .01.

<sup>a</sup>Numbers vary slightly due to missing data across outcomes.

<sup>b</sup>Regression coefficients from linear regression models; for each outcome variable, the top row presents unadjusted values; the bottom row presents values adjusted for age, education, and race.

**Table 4**  
 Median (25, 75 Percentile Range) and Beta ( $\beta$ ) Values for Physical Activity at 1-Month Follow-Up

	Choice (n = 51) <sup>a</sup>			Expert (n = 78) <sup>a</sup>			Comparison (n = 81) <sup>a</sup>			$\beta$ values <sup>b</sup>		
	Baseline	One month	Baseline	One month	Baseline	One month	Baseline	One month	CH vs. EX	CH vs. CO	EX vs. CO	
Moderate physical activity	150 (60, 300)	150 (90, 270)	150 (45, 300)	150 (90, 360)	180 (90, 420)	225 (120, 420)	180 (90, 420)	225 (120, 420)	-16.23	-33.65	-17.43	
Vigorous physical activity	30 (0, 120)	60 (0, 135)	0 (0, 60)	70 (0, 150)	60 (0, 225)	90 (0, 225)	60 (0, 225)	90 (0, 225)	-13.72	-32.20	-18.48	
									-32.35	16.46	48.82 <sup>**</sup>	
									-31.84 <sup>c</sup>	22.81	54.65 <sup>**</sup>	

Abbreviations: CH, choice group; EX, expert group; CO, comparison group.

Note. All means are unadjusted. Physical activity measured as minutes per week.

\*  $P$  .05;

\*\*  $P$  .01.

<sup>a</sup>Numbers vary slightly due to missing data across outcomes.

<sup>b</sup>Regression coefficients from linear regression models using transformed data; for each outcome variable, the top row presents unadjusted values; the bottom row presents values adjusted for age, education, and race.

<sup>c</sup>In intention to treat analyses, the  $\beta$  value for this contrast was -39.30 (95% CI: -76.86, -1.75,  $P$  = .04).

**Table 5**

Mean (SD) Change in Psychosocial, Goal-Related, and Behavioral Difference Measures Within the Expert Group

Change in:	Expert group		P
	Physical activity matched selected topic	Physical activity did not match selected topic	
Intention			
Immediate <sup>a</sup>	0.18 (0.62)	0.31 (0.87)	0.4
One month <sup>b</sup>	0.18 (0.84)	0.06 (0.89)	0.3
Self-efficacy			
Immediate <sup>a</sup>	0.27 (0.76)	0.11 (1.01)	0.4
One month <sup>b</sup>	-0.04 (0.76)	-0.04 (0.79)	1.0
Goal commitment			
Immediate <sup>a</sup>	0.29 (0.59)	0.30 (0.59)	1.0
One month <sup>b</sup>	-0.20 (0.67)	-0.10 (0.43)	0.5
Goal difficulty			
Immediate <sup>a</sup>	0.51 (0.94)	-0.07 (1.17)	0.02
One month <sup>b</sup>	-0.16 (1.07)	0.24 (1.09)	0.1
Moderate physical activity			
One month <sup>c</sup>	55.01 (166.31)	-24.10 (184.49)	0.06
Vigorous physical activity			
One month <sup>d</sup>	60.78 (119.22)	35.53 (87.52)	0.3

<sup>a</sup>Sample size was 55 and 27 for the matched and unmatched groups.

<sup>b</sup>Sample size was 49 and 25 for the matched and unmatched groups.

<sup>c</sup>Sample size was 50 and 26 for the matched and unmatched groups.

<sup>d</sup>Sample size was 51 and 26 for the matched and unmatched groups.