

most successful:
conventionally worded
and typeset
recruitment letter



Date
Name
Address
City, IN ZIP
Dear (Name),

We are inviting all of our (department/database/study name) participants to our Osteoporosis registry. You are being contacted because you have participated in our studies in the past. You do not need to have Osteoporosis to participate in this registry.

This Osteoporosis registry collects information about your basic health including health conditions you may have or medications that you are currently taking.

After signing up for this registry, we will notify you of any studies that you may be eligible for in order to determine your interest in these studies. This registry is secured by a login and password system that you create and maintain through our website. Participation in any study is completely voluntary.

To participate, please go to www.inresearch.org/OSTEO.

In addition to this letter, someone from our office may contact you by phone to discuss this registry.

If you have any questions about this opportunity, please feel free to contact our contactus@inresearch.org or phone us at (317) 278-2176.

Thank you,
(PI name)
(contact information)
(title)



Date
Name
Address
City, IN ZIP
Dear (Name),

Help build a healthier Indiana!

You can do your part by signing up for the Osteoporosis Registry and becoming a partner of the IU School of Medicine as we work to improve health in our state. We're asking for your help because you've taken part in health improvement studies before.

The goal of the registry is to help us learn more about Osteoporosis, which is a disease that makes bones weak. You do not need to have Osteoporosis to sign up.

When you sign up for the registry, we'll ask you for information about any health conditions you have and medications you take. The information you put in the registry is protected by a login and password system that you create and control on a secure web site.

After you sign up for the registry, we'll send you details about any studies that help with and, if you are interested, we'll help you get signed up. All studies are voluntary. The choice is up to you.

The Osteoporosis Registry: Sign up. Take part. Make a difference.

To get started, please go to www.inresearch.org/OSTEO.

A member of our staff may call to tell you more about the registry.

If you have any questions, please contact our office by email at contactus@inresearch.org or by phone at (317) 278-2176.

Thank you,
(PI name)
(contact information)
(title)

less successful:
"perked up"
recruitment letters



THE OSTEOPOROSIS REGISTRY

We are inviting all of our bone study participants to
**take part in our
Osteoporosis registry.**

You are being contacted because you have participated in one of our studies in the past. You do not need to have Osteoporosis to participate in this registry.

This Osteoporosis registry collects information about your basic health including any health conditions you may have or medications that you are currently taking.

**After signing up for
this registry,**

we will notify you of any studies that you may be eligible for in order to determine your interest in these studies. This registry information is secured by a login and password system that you create and maintain through a secure website. Participation in any study is completely voluntary.

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you!



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The goal of the registry is to help us learn more about Osteoporosis, which is a disease that makes bones weak. You do not need to have Osteoporosis to sign up.

Sign up.

When you sign up for the registry, we'll ask you for information about any health conditions you have and medications you take. The information you put in the registry is protected by a login and password system that you create and control on a secure web site.

Take part.

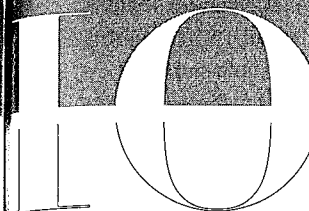
After you sign up for the registry, we'll send you details about any studies that you can help with and, if you are interested, we'll help you get signed up. All studies are voluntary. The choice is up to you.

Make a difference.

To get started, please go to www.inresearch.org/OSTEO

A staff member may call to tell you more about the registry.

If you have any questions, please contact our office at contactus@inresearch.org or call (317) 278-2176.



Design and Language Impact on Study Volunteerism in Medical Research:

*learnings from a controlled study
of recruitment letters*

Helen Sanematsu, Brenda Hudson, Amanda Nyhuis, Siu Hui, Paul Dexter

ABSTRACT

Research on human subjects in health and medicine is a necessary part of studies ranging from taking online surveys (less invasive) to taking blood draws (more invasive). Without them, our ability to learn about and improve health is limited. However, recruitment for such studies is difficult. Patient registries aim to speed up scientific advancement by reducing the time and effort spent to recruit participants by maintaining a cadre of ready volunteers. Invitation by mail is an effective route to approach a large number of potential registry volunteers at relatively low cost. Our research question was whether the letter recipients' response (by signing up on the patient registry) to the invitation could be increased by "perking up" the letter content using 1) more motivational language, and 2) enhancing the graphic design of the invitation. We tested four models and sent them out to 10,000 recipients. Our results showed that in this application, a conventionally worded and typeset letter is more effective in recruiting altruistic volunteers than one that uses motivational language or modernist design principles. This has implications for how designers apply their skills in this context.

KEYWORDS

health research, graphic design, study recruitment, applied linguistics, design for volunteerism and altruism

INTRODUCTION

Medical breakthroughs and innovation in public health are dependent on the volunteerism of research participants in order to gather new knowledge about health and health behaviors and validate and make relevant scientific discovery. However, recruitment for such studies is difficult. Patient registries aim to speed up scientific advancement by reducing the time and effort spent in recruiting participants by maintaining a cadre of ready volunteers. Invitation by mail is an efficient way to approach a large number of potential registry volunteers at relatively low cost, but its response rate is low. Our research question was whether we could make a more effective letter by “perking up” the content using 1) enhanced visual communication tactics, and 2) applying “call to action” language. We tested four models sent out to over 5,000 recipients. A classical, two-by-two factorial study design allowed us to test the effectiveness of each factor independently and in combination. Our findings show that overt attempts to appeal to readers both visually and verbally are ineffective and actually decrease the likelihood of study volunteerism. A conventionally worded and typeset letter is more effective than one that uses motivational language or modernist design principles for altruistic individuals.

BACKGROUND

Recruitment is a critical component of any research study. It was estimated that in 1999, only 5% of the public who contacted a researcher about a study was eligible and completed the study procedures (Sung, 2003). A review of a sample of studies conducted in the United Kingdom from 1994-2002 found that less than 33% (McDonald, 2006, pp.7–9) of the studies met their recruitment goals, and this percentage did not substantially increase—even with approval to increase the recruitment timelines. In fact, less than 4% of cancer patients in the U.S. participated in a clinical trial (Raeth, 2011). Difficulty recruiting participants into studies is not a new problem (IOM, 2012); however, meeting study recruitment goals is becoming increasingly difficult (Treweek, 2013). To combat this problem, it is essential that researchers develop a well-designed recruitment strategy and appropriately estimate the number and types of contacts they need to meet their goals. One mechanism to expand the reach to potential participants is to create a registry of volunteers who permit their medical record information to be accessed by researchers. When future studies start recruiting participants, the registrants’ up-to-date medical records can be screened for eligibility for each study to expedite the recruitment process. Sending letters to patients to engage them in research is often less effective than other mechanisms of talking directly to a participant about a study (Hicks, 1998, pp. 295–302), but letters can be a low cost alternative (Junghans, 2005) for reaching large numbers of patients. Since research participant registries are recruiting for

non-specific studies, it is even more important for the invitation letters to draw the attention of the letter recipients and to motivate the volunteerism in them.

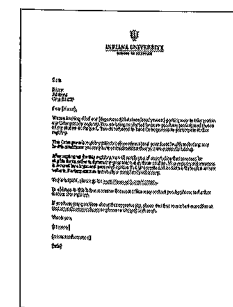
In the field of visual communication, our understanding of graphic design is that application of Modernist design principles enhances clarity and impact (Tschichold, 1928) and thus draws attention. In written language, call-to-action rhetoric is commonly applied to enhance motivation and effectiveness (Connor and Gladkov, 2004, p. 259).

We conducted a study to test empirically whether a modernist design and call to action rhetoric, separately and in conjunction, could improve the response over a standard recruitment letter inviting patients to sign up on a registry to volunteer for future medical and health studies. The design of four different styles of a recruitment letter are described in detail in the next section

RATIONALE FOR THE DESIGN OF THE LETTERS TESTED IN THIS STUDY

In this study, we started with a standard conventional recruitment letter (Letter A), and enhanced it in two different directions by 1) adding “call-to-action” language, and 2) using modernist designs. Letter A was written on university stationery using standard business letter conventions (U.S.) regarding elements and layout (date, letter address, salutation, body, complimentary close, signature block). Paragraphs were laid out using block style (line space between paragraphs with no indents), and a standard serif font (Georgia) was used throughout. The first enhanced style (Letter B) had essentially the same appearance as Letter A but employed rhetorical strategies used in direct mail communication to motivate the letter recipient. Letter A+ and Letter B+ used the same content as Letter A and Letter B, respectively, but replaced letter conventions with a modernist convention optimized for enhanced legibility through typographic hierarchy, and roughly aligning with contemporary conventions of editorial design / magazine layout. The rationale for the design of these letter types, as shown in Figures 1–4, is explained below.

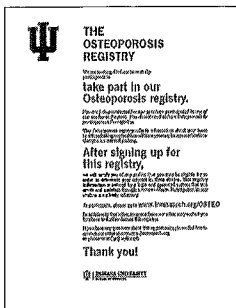
FIGURE 1



Letter A:

Letter A was written to emphasize a straightforward description of the purpose of the letter and its content. It did not attempt to integrate rhetorical strategies to enhance motivation. Its layout is in the standard business form.

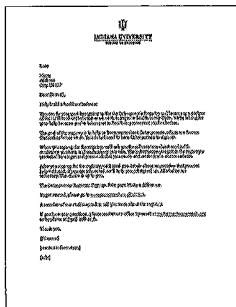
Letter A+:



Letter A+ uses the same text as Letter A, but applies additional graphic design elements and principles with the goal of enhancing legibility (making it faster and easier to read) and emphasizing the action requested and the results that follow. The design also attempts to foreground the institutional affiliation of the letter by enlarging and spatially isolating the Indiana University logo (the logo of the largest and most prominent public University in the State. Its logo is generally familiar to Indiana residents). All business letter conventions have been abandoned in favor of typographic differentiation through size, color, and typeface choice; left justified alignment of all text; and exaggerated left-hand alignment.

FIGURE 2

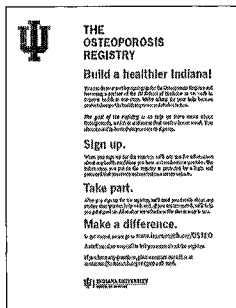
Letter B:



Letter B replaces the text with writing characteristic of letters whose aim is to spur altruism. By following conventions used in direct mail communication, particularly those that ask for funding support for not-for-profit organizations, we attempt to motivate potential participants through a "call to action" to contact the study office and find out more. We maintain the content of Letter A, and in addition, we appeal to a spirit of participation and belonging ("Help build a healthier Indiana becoming a partner of the IU School of Medicine"); of contribution ("You can do your part"); of improving health and personal identity ("Help build a healthier Indiana"); and a sense of agency ("The choice is up to you.").

FIGURE 3

Letter B+:



Letter B+ applies both language characteristic of direct mail letters and Modernist design elements. We maintained all the text from Letter B and used the design from Letter A+ as a template. The writing style of Letter B lent itself readily to more typographic variety, and we were able to use a grouping strategy (similarity of type and color) to build in an additional level of meaning ("Build a healthier Indiana! Sign up. Take part. Make a difference.")

FIGURE 4

METHODS

The Indiana University Internal Review Board approved this study.

STUDY DESIGN OF THE RANDOMIZED CONTROLLED TRIAL

Our study used a randomized controlled trial design to test the differences across the four letter types in recipients' response to a letter inviting patients to participate in a research participant registry. This classical two (language styles)-by-two (graphical designs) factorial study design allowed us to test the effectiveness of each factor and in combination.

The research participant registry was set up as a web-based site where any volunteer could enter and sign up for invitations to participate in future studies for which they qualify. In particular, we were recruiting for future studies on osteoporosis. As part of the registration process, the registrant gave consent for researchers to screen their electronic medical records to determine their eligibility for any future study.

The target group of invitees came from a list of participants who had participated in previous osteoporosis studies and had consented to be re-contacted. These subjects were randomly assigned in equal numbers to receive one of 4 letters (A, B, A+ or B+). A positive response to the letter was defined by the presence of a letter recipient's registration record in the research participant registry within two months of the mailing. Non-responders were then sent a second invitation letter, re-randomized to be one of the four letter types. Again the response in the registry was tracked for two months.

Analysis-of-covariance was used to test for differences in response to the letter types in the first mailing, while controlling for the subjects' age, gender, and length of time since the last contact with our health system.

FOCUS GROUP

After the completion of response tracking for both mailings in the randomized trial, we held focus groups with groups of responders and non-responders to determine the salient characteristics of the invitation letters that impacted their response.

ANALYSIS AND FINDINGS

QUANTITATIVE RESULTS

Out of 5,151 recruitment letters mailed, 3,704 of the letters were not returned. Excluding subjects with incomplete data, e.g. missing gender, the responses to the first mailing of the four letter types summarized in Table 1.

Letter Type 1 st mailing	Number of Subjects	Number of Responses (%) after First Mailing	Cumulative Response after Two Mailings (%)
A	877	83 (9.5)	112 (12.8)
A+	936	54 (5.8)	95 (10.1)
B	952	42 (4.4)	83 (8.7)
B+	931	36 (3.9)	84 (9.0)
Total	3696	215 (5.8)	376 (10.1)

TABLE 1

For the first mailing, the response rate was significantly higher for Letter A than for any of the other three letters ($p < 0.01$). We also found that, 1) female participants had a higher (2.50 times) response rate than males, 2) African American participants' response rate was only 30% of the white participants, and 3) for every year that the person had not been in touch with the health system, the response rate decreased by 50%. We treated the enhanced graphics and activation language as two additive effects and found that each had a negative effect on the response.

The second mailing generated only a 4.6% response among non-responders compared to the first mailing. We did not detect significant differences in response rate across the letter types in the second mailing, but those who received a second letter that was different from their first letter had a marginally higher response than those who received the same letter twice.

The cumulative response to the two mailings in Table 1 (last column) shows that Letter A in the first mailing still had the highest overall response rate, which was still significantly higher than the cumulative response rates to Letters B and B+ but only marginally higher than Letter A+ in the first mailing.

FOCUS GROUP FINDINGS

Focus groups were conducted within two groups of a total of thirteen responders and a group of 10 non-responders. Each focus group member was given all four recruitment letters to look at during the meeting. Most of the responders said that they responded primarily because they wanted to contribute to the advancement of medical science, but they would have liked to have a telephone contact available to answer questions. Non-responders indicated that the most important reason for non-participation was the lack of immediate compensation regardless of the letter type. They also thought that the opportunity for compensation for future studies should be emphasized more in the letter.

The majority of responders and some non-responders preferred the look of a letter (Letters A and A+) to the look of a flyer (Letters B and B+). They thought that the standard Letter A looked professional and "credible." However, more non-responders preferred letter B+; some noted the motivational language of "a healthier Indiana," and said the appearance was "cleaner," "direct," and "grabbed my attention." Some

subjects, even the responders, said that having to sign up on the Internet was a barrier and more of a deterrent than any style of invitation letter.

SIGNIFICANCE

To our knowledge, this is the first rigorous study that uses a randomized controlled trial to empirically test the effectiveness of applying design theory and motivational rhetoric to direct mailing for recruitment of volunteers in the context of medical research.

Our findings are significant for designers in the health fields, particularly those working with volunteers and potential volunteers in human subjects research. As design advances in medical and health care environments, it is critical that designers modify their practice in order to be effective in these highly contextualized settings. Effective written and visual language in health communication for altruistic outcomes departs from conventions characteristic of the direct mail genre and from modernist principles in graphic design that emphasize clarity and textual hierarchy. While application of typographic strategies might heighten "access" to information through greater visual differentiation of textual meaning, such a tactic is not effective in motivating altruism in regard to health. Our study confirms Moys' findings of the sensationalist and discredited association of documents with high degrees of visual differentiation (2014, p. 63). In both conventionally worded and motivationally worded documents, the modernist designs were less effective at motivating participation in the patient registry. Thus, a thoughtful designer would shelve a strict Bauhaus approach in preference to typography that embodies qualities more aligned with the values of potential study volunteers.

Nor should designers in this context limit their practice solely to graphics and type. Findings from the focus groups—the internet viewed as a barrier, the desire for additional contact by phone, and the significance of immediate and/or potential compensation, all indicate a service design approach that takes into consideration the overall experience of study participation from initial contact through study completion. Additionally, the discrepancy in responses between different populations indicates that a standardized approach might not be as effective as one better tailored to individual demographics.

Finally, the structure of the study itself is significant for design researchers as the large number of participants required for research registries yields empirical evidence from randomized, controlled trials in large enough numbers to be valid. The opportunity to work directly with biostatisticians and other health researchers can introduce designers to rigorous research standards in other fields while helping us advance research in our own.

NEXT STEPS

In the context of recruiting volunteers for medical research, direct mailing had a low response rate and was made even lower by our attempts to enhance the invitation through text and type. Even when the target audience noticed and appreciated the motivational language in the invitation, it did not seem to alter the letter recipient's action. Similarly, catching their attention with modernist design, even when well received, did not translate into action. However, there are other potential improvements that can be tested. For example, the language can put more emphasis on personal benefits, such as increasing their access to future studies that provide tangible compensation, or some kind of public recognition if they so choose. Better segmentation of target groups may also help because one responder said that osteoporosis in her family was a motivator, whereas one non-responder said she ignored the invitation because she did not have osteoporosis.

There are also other features of direct mailing regarding language that may impact the response; conventions for direct mail in commercial settings and profit-driven organizations offer a plethora of other design-driven variables (Caples Awards 2013a, Caples Awards 2013b). It is clear that options in the overall category of direct mail are unlimited, and that the job of the designer is to determine what approaches have the best chance for success in this area. But rather than focus solely on the careful crafting of this one artifact, we must remember this: that when asked about the form and content of the letter, we received feedback regarding the study purpose and the study experience as a whole. Our next step as designers is to address problems with patient registries through the eyes of the patient along the continuum of patient experience.

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Helen Sanematsu is an Assistant Professor of Visual Communication Design at the Herron School of Art and Design, Indiana University. Her design interests include participatory design for health services; design pedagogy; and design and ethics. She is the lead designer for the Patient Engagement Core, a five-member design and research team at the IU School of Medicine that brings patient perspectives into patient centered outcomes research (PCOR). Previously, she taught at Art Center College of Design in Pasadena. She received her AB from Occidental College in art history and her MFA from the Yale School of Art in graphic design.

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