Views of People With Schizophrenia Regarding Aspects of Research: Study Size and Funding Sources

Laura Weiss Roberts1,2, Teddy D. Warner3, Katherine Green Hammond3, and Jinger G. Hoop4

1Department of Psychiatry and Behavioral Medicine, Medical College of Wisconsin; 2Department of Family and Community Medicine, University of New Mexico School of Medicine; 3Department of Psychiatry and Center for Medical Ethics, University of Chicago

Serious mental illness research poses many ethical questions, including important considerations pertaining to how large a study is and its source of funding. Little is known about how people with schizophrenia understand these ethical considerations and whether these factors may influence their decisions to participate in research. Structured interviews were conducted with 60 people with schizophrenia. Participants were asked about levels of suffering and the importance of research for healthy people and for people with serious illnesses. Participants also rated helpfulness and harmfulness to society, and their likelihood of participating in studies involving 10 subjects, 1000 subjects, 1 research institution, or 10 research institutions and in studies funded by various organizations. Participants viewed all types of research positively and indicated willingness to volunteer. Likelihood of participating in research was correlated with perceived helpfulness to society and inversely correlated with perceived harmfulness. Research by pharmaceutical companies was seen as less helpful to society than research sponsored by federal or state government or by private foundations. Larger studies conducted at multiple sites were seen as more helpful to society than smaller studies or those at single sites. Larger studies conducted at single sites, however, were seen as more harmful. Respondents endorsed a positive view of medical research and expressed a willingness to participate in projects of all scales with diverse funding sources. The pattern of responses suggests the capacity for a nuanced understanding of ethically salient aspects of medical research by individuals with schizophrenia.

Key words: schizophrenia/research ethics/ethics

Introduction

Schizophrenia is a significant public health problem, which affects up to 1.5% of the adult population and accounts for over 2% of the total disease burden in established market economies. Medical researchers have an ethical imperative to work toward relieving the burden of schizophrenia by investigating the disease’s etiology, testing new biological and psychosocial interventions, and developing improved methods of delivering services. Ensuring that those studies meet current ethical standards requires that investigators adhere to ethical ideals of beneficence, justice, and respect for persons. These ethical ideals are translated into action through the safeguard of informed consent, by fully educating potential study volunteers about the risks and benefits of a project, by evaluating and enhancing their decisional capacity, and by being vigilant for sources of coercion.

The difficulties of ensuring truly informed consent in schizophrenia research have been well described. Severe symptoms of mental illness may impair one’s ability to understand and evaluate the full range of options available or make choices in concert with one’s authentic values and beliefs. People with schizophrenia may also be particularly vulnerable to misunderstandings such as the “therapeutic misconception,” the false belief that the intention of a research protocol is to directly benefit the subject. In addition, monetary compensation for research participation, the influence of caregivers, and the coupling of mental health services with study enrollment may prevent some individuals with severe mental illness from making autonomous choices about research participation.

An important but less thoroughly examined ethical issue in schizophrenia research concerns certain scientific design features of research studies. The ethical ideal of beneficence requires that investigators endeavor to contribute to the health and well-being of people with diverse illnesses. It is important that researchers not only limit study volunteers’ exposure to risk but also ensure that the research project they are asked to join has meritorious and achievable goals. The participation of human volunteers must be necessary to achieve the study’s aims, and the study must be designed and implemented in
such a fashion that the contribution of participants yields meaningful data. Technical questions such as how large a study is, and therefore whether it has sufficient statistical power, and the source of a study’s funding are thus ethical matters as well.\textsuperscript{16,18}

These relatively subtle ethical issues are also vital to the discussion of informed consent in schizophrenia research. Ideally, a potential research volunteer’s decision about participation should incorporate an understanding of the purpose of the project.\textsuperscript{17,19} The totality of a study’s benefits for a particular individual may then include the fulfillment of an altruistic desire to help society\textsuperscript{9} or to join a project that is organized and funded in a manner congruent with one’s values. However, it is unclear whether and how people with severe mental illness understand information about a study’s purpose, design, and overall value.

Surprisingly, empirical data on this issue is extremely limited. In our group’s prior structured interview survey of 63 people with schizophrenia,\textsuperscript{20–24} respondents rated schizophrenia research as very important and viewed helping others and helping science as important reasons to become research volunteers.\textsuperscript{20} To our knowledge, there are no published data on the opinions of people with severe mental illness concerning the value of research studies on different types of illness or with different sample sizes, numbers of sponsoring institutions, and sources of funding.

The current preliminary study was designed to begin to fill this gap by examining how people with severe mental illness evaluate factors that relate to the social utility and scientific merit of medical research, such as the importance, positives, negatives, risks, and harms associated with studies, their size and sources of funding, and how these factors may influence self-rated willingness to participate. Based on our earlier work,\textsuperscript{20} we hypothesized that people with schizophrenia would have generally positive views of medical research and would evaluate the merits of different types of studies in logical fashion. Thus, we predicted that people with schizophrenia would (1) agree with statements that medical research participation has the potential to yield benefits as well as risks; (2) rate research to relieve the suffering of illness as more important than research on healthy people; (3) perceive studies involving larger numbers of research subjects as being more socially beneficial than smaller studies; and (4) rate studies funded by private industry as less socially beneficial than those funded by government agencies. Furthermore, we expected that our subjects’ perceptions of the potential harmfulness of a study to be negatively correlated with their reported likelihood of participating in it, and that their views of the helpfulness of a study would be positively correlated with the likelihood of their participating.

### Methods

#### Participants

People with schizophrenia were recruited by psychiatrist referral at the University of New Mexico (UNM) School of Medicine and the affiliated Albuquerque Veterans Administration Medical Center (AVAMC) and by community outreach (eg, ads posted at the UNM Health Sciences Center and contacts with the local National Alliance for Mental Illness [NAMI] chapter). Psychiatrists asked their patients whom they deemed capable of responding to our interview if they were interested in participating in this study. Potential participants recruited via psychiatrists or the community contacted the interviewer for this study via phone and arranged an interview to commence the informed consent process at UNM or AVAMC. All those individuals who scheduled appointments completed the structured interview/survey. With permission from the participant, the clinical diagnosis was then confirmed by chart review.

#### Survey

We created and pilot-tested a questionnaire with 271 rating scaled questions and 6 open-ended items. The survey items were derived from the extant literature on research ethics, from our prior interview study (funded by the National Alliance for Research on Schizophrenia and Depression) of people with schizophrenia,\textsuperscript{20–24} and from our experiences as experts in clinical and research ethics. The survey assessed views of ethically important considerations in mental illness research and related areas: (1) 3 questions asked about helpfulness to society, likelihood of participating, and harmfulness for 4 generic research projects with varying numbers of participants or participating institutions; (2) the same 3 questions were asked for each of 5 protocols funded by different types of generic organizations; (3) 3 questions asked about willingness to participate, harmfulness, and risks of 15 different generic procedures that might occur in a research protocol; (4) 2 questions each asked about 5 different research safeguards; (5) 12 questions each asked about 12 different research protocols; and, (6) 45 questions asked about various general issues pertaining to research. This report focuses only on the items listed in (1) through (3) described above and on 12 items from (6) about general attitudes toward research.

To characterize the sample we also asked 9 demographic questions. We used 4 established instruments to assess several participant characteristics to see if basic characteristics might moderate participant ratings: (1) Brief Symptom Inventory (BSI) (symptom severity);\textsuperscript{25} (2) Standard Form 36 (SF-36) (overall quality of life);\textsuperscript{26} (3) Social Support Survey (overall social support level);\textsuperscript{27} and (4) Multidimensional Health Locus of Control (MHLOC).\textsuperscript{28} Finally, we established that all participants had acceptable levels of reading and auditory
comprehension with the Woodcock Reading Mastery Test\textsuperscript{29} and the Boston Diagnostic Aphasia Exam,\textsuperscript{30} respectively. These 6 measures are widely used and have demonstrated acceptable levels of reliability and validity.

**Procedures**

After obtaining written documentation of informed consent, an experienced interviewer trained by the investigators administered the survey by reading each question and recording responses in a neutral but pleasant manner and without probing. Most participants completed the survey in 2 to 3 hours, which sometimes occurred over more than 1 session to minimize fatigue. Participants received $30 compensation. This study was funded by the National Institute of Mental Health and was approved by the University of New Mexico Health Sciences Center institutional review board. Data were confidentially encoded.

**Data Analyses**

Five-point scaled rating responses were used to model underlying continuums for ratings, which were subjected to repeated measures *Item* (within subjects) $\times$ *Gender* (between subjects) MANOVAs (multivariate analyses of variance). The sample size of 60 was sufficient to ensure that the sampling distributions of the means analyzed were approximately normally distributed. Multivariate repeated measures analysis was used because it does not require the restrictive assumption of sphericity as univariate analysis of variance. Responses concerning research study scale were subjected to repeated measures *Study size* (within subjects) $\times$ *Study type* (within subjects) $\times$ *Gender* (between subjects) repeated measures MANOVAs. Correlations of participant characteristics (eg, educational level, symptom severity, social support, quality of life, locus of control, age, educational level, marital status, and ethnicity) with dependent measures were examined, and correlations of responses for likelihood of participation responses for helpfulness and harmfulness for the described research projects were also examined.

**Results**

**Participant Characteristics**

All 60 participants were diagnosed with schizophrenia and were 80\% men and 90\% unmarried. Mean (SD) age was 44.3 (10.7; range = 20 to 71) years. Most (60\%) were white, with 22\% of Hispanic origin. Almost half (42\%) had only high school education, half (54\%) had some college education, and a few (5\%) had postgraduate education. BSI global severity scale scores had a mean of 1.4 (SD = 0.9; range 0 to 3.8) (47th percentile of normative scores for adult psychiatric outpatients with no reliable gender differences). Mean (SD) score for MHLOC Internality of Health locus scale was 24.5 (6.0) (45th percentile of normative values for healthy U.S. adults). Mean (SD) scores for SF-36 scales were 53.8 (21.4) (63rd percentile for normative U.S. adults) for General Health and 47.9 (27.1) (43rd percentile) for Social Functioning. The Social Support Survey Overall Support mean (SD) was 57.8 (15.3) (30th percentile for normative U.S. adults). All participants had acceptable reading and auditory comprehension as measured by the Woodcock Reading Mastery Test and the Boston Diagnostic Aphasia Exam.

Age, education, social support, and quality of life were not correlated with the dependent measures (see Tables 1–3). However, BSI global severity and MHLOC Internality locus of control levels were correlated with a minority of dependent measures (see below).

**Beliefs About Illness and Illness-Related Research**

As shown in Table 1, participants rated people with serious mental illness, serious physical illness, and drug abuse disorders as suffering “a lot” (scale: 1 = “not at all” to 5 = “a lot”; means = 4.52 to 4.60) and viewed healthy people as suffering moderately (mean = 2.94) and less than people with serious illness (Item main effect $F_{3,56} = 17.39, p < .0001$, maximum Cohen’s $d = 1.31$). Participants viewed research about serious mental illness, serious physical illness, and drug abuse disorders as very important (scale: 1 = “not at all important” to 5 = “very important”; means = 4.66 to 4.81) and viewed research about healthy people as important, but less so (mean = 4.13) (Item main effect $F_{3,56} = 3.51, p < .03$, maximum $d = 0.64$). Participants expressed greater diversity of opinion concerning healthy people than people with illnesses for both suffering (respective SDs = 1.62 vs 1.04 to 1.21, $p < .02$) and importance of research (SDs = 1.54 vs 0.53 to 0.97, $p < .01$).

Participants agreed that there are “many positive things” and “many benefits involved” in research participation (scale: 1 = “strongly disagree” to 5 = “strongly agree”; means = 4.15 to 4.36), but neither agreed nor disagreed that there are “many risks” or “many negative things” about research participation (means = 2.73 to 3.14; Item main effect $F_{3,56} = 17.20, p < .0001$, maximum $d = 1.18$). Participants expressed greater diversity of opinion concerning “risks” and “negative things” than concerning “positive things” and “benefits” (respective SDs = 1.53 to 1.71 vs 1.09, $p < .01$).

The global severity scale of the Brief Symptom Inventory was negatively correlated with the rated importance of research about healthy people ($r = -0.31$, $P < .02$), indicating that people with schizophrenia with more symptoms were less likely to rate research with healthy people as important. The internality subscale of the MHLOC was positively correlated with the ratings concerning positive and beneficial aspects of participating in
Table 1. Mean Rated Beliefs Toward Illness and Illness-Related Research of 60 People With Schizophrenia

<table>
<thead>
<tr>
<th>Attitude</th>
<th>Mean (SD)</th>
<th>Attitude Effect</th>
<th>Maximum d</th>
</tr>
</thead>
<tbody>
<tr>
<td>How much do the following people suffer:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>People with serious mental illness</td>
<td>4.60 (1.04)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>People with serious physical illness</td>
<td>4.56 (1.21)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>People with drug abuse disorders</td>
<td>4.52 (1.16)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Healthy people</td>
<td>2.94 (1.62)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How important is research about the following:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Serious mental illnesses</td>
<td>4.81 (0.53)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Serious physical illnesses</td>
<td>4.66 (0.96)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drug abuse disorders</td>
<td>4.73 (0.97)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Healthy people</td>
<td>4.13 (1.54)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>General attitudes toward illness-related research:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>There are many positive things about participating in research projects</td>
<td>4.36 (1.09)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>There are many benefits involved in participating in research</td>
<td>4.15 (1.08)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>There are many risks involved in participating in research projects</td>
<td>3.14 (1.53)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>There are many negative things about participating in research projects</td>
<td>2.73 (1.71)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Scaled from 1 = “not at all” to 5 = “a lot.” Means are from a repeated measures Attitude × Gender MANOVA (multivariate analysis of variance). Pooled SD = 1.27. Mean differences > 0.38 are significant at *p < .05 by Fisher’s least significant difference method (LSD).
*Scaled from 1 = “not at all important” to 5 = “very important.” Means are from a repeated measures Attitude × Gender MANOVA. Pooled SD = 1.06. Mean differences > 0.32 are significant at *p < .05 by Fisher’s LSD.
*Scaled from 1 = “strongly disagree” to 5 = “strongly agree.” Means are from a repeated measures Attitude × Gender MANOVA with the scores for “risks” and “negative things” reversed for analysis. Pooled SD = 1.38. Mean differences > 0.36 are significant at *p < .05 by Fisher’s LSD.*

research (*r* = 0.34 and 0.42, both *p < .01) but not correlated with ratings concerning negative aspects of research participation, indicating that those with greater internal sense of control tended more than others to see the positive aspects of research participation.

**Study Size in Relation to Societal Benefit, Harm, and Likelihood of Participation in Research**

As shown in Table 2, participants rated all study sizes as helpful, but they rated larger studies (1000 people [mean = 4.33] or 10 sites [mean = 4.59]) as more helpful to society than smaller studies (10 people [mean = 3.83] or 1 site [mean = 3.48]) (scale: 1 = “not very helpful” to 5 = “very helpful”; means = 4.46 vs 3.66, *d* = 0.66; Study size main effect *F* = 22.77, *p < .0001). The greater rated helpfulness of larger studies was twice as pronounced for studies at multiple institutions than for studies with larger samples (*d* = 0.75 vs 0.34; Study size × Study type interaction *F* = 4.04, *p < .05).

Participants rated all study sizes as not harmful, but they rated studies with larger sample sizes as more harmful than those with smaller sample sizes (scale: 1 = “not very harmful” to 5 = “very harmful”; means = 2.46 vs 1.96 for 1000 vs 10 people with schizophrenia, *d* = 0.35), but they rated studies at multiple sites as less harmful than studies at single sites (means = 1.78 vs 2.13 for 10 vs 1 institutions, *d* = −0.24; Study size × Study type interaction *F* = 14.19, *p < .001). In contrast to helpfulness to society ratings, where the number of institutions had greater influence on helpfulness ratings than the number of sites, participants rated the number of sites as having less influence on harmfulness than the sample size of studies.

Respondents rated their likelihood of participation in research as likely for studies of all sizes (scale: 1 = “not all likely” to 5 = “very likely”; means = 3.78 to 4.19), and study size was not related to rated likelihood of participation (Study size main effect, *p < .63, and Study size × Study type interaction effect, *p < .49), in contrast to the relationship of study size to ratings of helpfulness to society and harmfulness described above. However, likelihood of participation was positively correlated with helpfulness (*r* = 0.25 to 0.49, mean *r* = 0.37, all *p < .06) and negatively correlated with harmfulness for all study sizes (*r* = −0.40 to −0.46, mean *r* = −0.44, all *p < .01, except for “10 people with schizophrenia,” *r* = −0.13, *p < .34).

The BSI global severity scale was positively correlated with perceptions of harmfulness for studies conducted at single and multiple research institutions (*r* = 0.32 and 0.36, both *p < .02) but was not correlated with perceived harm for studies involving fewer and greater numbers of people with schizophrenia. BSI global severity was negatively correlated with likelihood of participation only...
for studies involving fewer people with schizophrenia (\( r = 0.28, p < .03 \)). The MHLOC Internality locus scale was negatively correlated with perceptions of harmfulness for studies involving fewer and greater numbers of people with schizophrenia (\( r = 0.26 \) and \( 0.33, p < .05 \)) but not correlated with perceived harm for studies conducted at single or multiple research institutions. The MHLOC Internality locus scale was positively correlated with likelihood of participation only for studies involving greater numbers of people with schizophrenia (\( r = 0.35, p < .01 \)). Thus, neither the relationship of symptoms nor locus of control to perceived harm or likelihood of participation discriminates as a function of study size.

**Funding Source in Relation to Societal Benefit, Harm, and Likelihood of Participation in Research**

As shown in Table 3, participants rated the helpfulness to society (scale: 1 = “not very helpful” to 5 = “very helpful”), the harmfulness (scale: 1 = “not very harmful” to 5 = “very harmful”), and the likelihood of participating (scale: 1 = “not at all likely” to 5 = “very likely”) in research projects funded by a private foundation, the National Institutes of Health, the state department of health, and a pharmaceutical company.

Participants rated studies by all funding sources as helpful (means = 3.75 to 4.54), but they rated studies funded by a pharmaceutical company as less helpful than studies funded by other sources (means = 3.75 vs 4.23 to 4.54, maximum \( d = 0.54, \) Funding Source effect \( F_{3,56} = 3.97, p < .02 \)). Participants rated studies by all funding sources as not very harmful (means = 1.66 to 2.49), but they rated studies funded by a pharmaceutical company as more harmful than studies funded by other sources (means = 2.49 vs 1.66 to 2.06, maximum \( d = 0.61, \) Funding Source effect \( F_{3,56} = 7.41, p < .001 \)).

Participants were somewhat likely to likely to participate in studies funded by all sources (means = 3.33 to 3.98), and funding source was not related to rated likelihood of participation (Funding Source main effect \( p < .16 \)). However, rated likelihood of participation was lower for studies funded by a pharmaceutical company than for studies funded by other sources (means = 3.33 vs 3.75 to 3.98, maximum \( d = 0.38, \) contrast effect \( p < .05 \)). Likelihood of participation was positively correlated with helpfulness (\( r = 0.48 \) to 0.65, mean \( r = 0.58, \) all \( p < .0001 \)) and negatively correlated with harmfulness for all funding sources (\( r = -0.30 \) to \(-0.62, \) mean \( r = -0.43, \) all \( p < .03 \)).
Research in the literature to examine these kinds of factors in research participation. Research studies involving 1 or 10 research institutions and 10 or 1000 subjects with schizophrenia were all seen as helpful to society and not very harmful. Studies funded by a private foundation, the National Institutes of Health, a state department of health, or a pharmaceutical company were similarly rated as helpful to society and not very harmful. However, studies funded by pharmaceutical companies were seen as less helpful to society and more harmful than studies with other funding sources.

Our volunteers reported that they would be likely to participate in studies of varying sizes and funding sources. The likelihood of participating was positively correlated with their assessment of the helpfulness of the study to society and negatively correlated with their perception of its harmfulness. Finally, and very interestingly, the analyses we performed correlating views with symptom measures suggest that individuals with more symptoms may hold modestly different perspectives (i.e., less willing, less affirming, more negatively oriented) than their relatively less severely ill counterparts. This may be the first study in the literature to examine these kinds of factors in research.

<table>
<thead>
<tr>
<th>Funding Source</th>
<th>Mean</th>
<th>(SD)</th>
<th>Source Effect</th>
<th>Maximum d</th>
</tr>
</thead>
<tbody>
<tr>
<td>How helpful to society is a research project funded by:</td>
<td>p &lt; .02</td>
<td>0.54</td>
<td></td>
<td></td>
</tr>
<tr>
<td>National Institutes of Health</td>
<td>4.54</td>
<td>(1.30)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>State department of health</td>
<td>4.26</td>
<td>(1.38)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private foundation</td>
<td>4.23</td>
<td>(1.43)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pharmaceutical company</td>
<td>3.75</td>
<td>(1.73)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How harmful is a research project funded by:</td>
<td>p &lt; .001</td>
<td>0.61</td>
<td></td>
<td></td>
</tr>
<tr>
<td>National Institutes of Health</td>
<td>1.66</td>
<td>(1.16)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>State department of health</td>
<td>2.06</td>
<td>(1.36)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private foundation</td>
<td>1.84</td>
<td>(1.23)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pharmaceutical company</td>
<td>2.49</td>
<td>(1.68)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How likely would you be to participate in a research project funded by:</td>
<td>p &lt; .16</td>
<td>0.38</td>
<td></td>
<td></td>
</tr>
<tr>
<td>National Institutes of Health</td>
<td>3.98</td>
<td>(1.62)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>State department of health</td>
<td>3.77</td>
<td>(1.60)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private foundation</td>
<td>3.75</td>
<td>(1.75)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pharmaceutical company</td>
<td>3.33</td>
<td>(1.94)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

The BSI global severity scale was positively correlated with rated harmfulness of research funded by a state department of health and a pharmaceutical company (r = 0.27 and 0.33, both p < .04) and negatively correlated with rated likelihood of participation in research funded by a state department of health and a pharmaceutical company (r = −0.32 and −0.35, both p < .02). The MHLOC Internality locus scale was positively correlated with rated helpfulness of studies funded by a private foundation and a pharmaceutical company (r = 0.29 and 0.30, both p < .03) and negatively correlated with rated harmfulness of studies funded by a private foundation and a pharmaceutical company (r = −0.27 and −0.35, both p < .04). Thus, degree of symptoms and locus of control showed no systematic relationship with perceived helpfulness, harmfulness, and likelihood of participation in studies as a function of funding source.

Discussion

In this unique study we asked people with schizophrenia about the importance of biomedical research studies involving human subjects and their assessment of the societal benefits and harms of research projects of large and small scale and with various funding sources. Overall, our participants expressed a highly favorable view of medical research. They rated research on serious mental illness, serious physical illness, and drug abuse disorders as very important, and they agreed that there are many positive things and many benefits involved in illness-related research participation. Research studies involving 1 or 10 research institutions and 10 or 1000 subjects with schizophrenia were all seen as helpful to society and not very harmful. Studies funded by a private foundation, the National Institutes of Health, a state department of health, or a pharmaceutical company were similarly rated as helpful to society and not very harmful. However, studies funded by pharmaceutical companies were seen as less helpful to society and more harmful than studies with other funding sources.

Our volunteers reported that they would be likely to participate in studies of varying sizes and funding sources. The likelihood of participating was positively correlated with their assessment of the helpfulness of the study to society and negatively correlated with their perception of its harmfulness. Finally, and very interestingly, the analyses we performed correlating views with symptom measures suggest that individuals with more symptoms may hold modestly different perspectives (i.e., less willing, less affirming, more negatively oriented) than their relatively less severely ill counterparts. This may be the first study in the literature to examine these kinds of factors in
relation to ethically important considerations in human research. Additional and more comprehensive work along these lines should be done.

Overall, these results support our general hypothesis that at least some people with schizophrenia—even those with significant levels of symptoms as indicated by Brief Symptom Inventory scores—may evaluate relatively subtle differences in ethically salient features of medical research in a logical manner. These data also offer some reassurance for investigators and internal review board members about the capacity of people with schizophrenia to appreciate these aspects of research participation.

Our participants’ highly positive views of medical research and the correlation of willingness to participate with the assessment of social utility nevertheless raise the worrisome possibility that altruism may be overly compelling for people with severe mental illness. The notion of a “motivational vulnerability,” in which altruistic desires impair the ability to fully consider the personal risks of research participation, has been previously raised in the literature.20,31 Because the current study did not include a control group, we do not know whether people without serious mental illness or with other illnesses would be equally willing to engage in research that they considered socially beneficial. Some reassurance on this score is found in our previous survey of 63 people with schizophrenia and 73 psychiatrists, which demonstrated that psychiatrists, as well as those with mental illness, strongly endorsed helping others and helping science as important reasons to participate in research.20,24 Nevertheless, findings from both studies suggest the need to assess the relative significance of altruism compared with the other factors that may motivate people with schizophrenia to become research volunteers.

Three findings of this preliminary study have previously been unexamined in the published literature and raise testable hypotheses for future projects. First, participants evaluated studies involving 1000 subjects as both more helpful to society but more harmful than those involving 10 subjects. Our study did not ask participants to explain the reasoning behind their assessments. These findings could reflect an appreciation of the greater scientific value of larger studies, as well as of the greater number of individuals exposed to risk. Alternatively, it could simply be a naive impression that layer studies simply have more importance because they are big rather than some other value. Second, a different pattern emerged when participants were asked about the number of research institutions involved in a study. They viewed a project involving 10 research institutions as more helpful and less harmful than a trial involving 1 research institution. These opinions are consistent with an understanding of the benefits of scale, as well as of the increased institutional oversight, in studies involving multiple centers. Nevertheless, we did not ascertain the rationale for this perspective, and interpretation of this finding remains speculative. Finally, participants assessed studies sponsored by a pharmaceutical company as being more harmful and less helpful than studies funded by other organizations. These responses may reflect an awareness of issues raised in the media regarding potential conflicts of interest in industry-sponsored trials. Further research is needed to understand more about the thought processes behind these survey responses and to test whether people with schizophrenia are making nuanced judgments when contemplating research participation.

The pattern of findings we discovered in relation to symptom severity and nature was unexpected. Our original purpose in including the variety of measures was simply to help characterize our sample, since we believe it to be reflective of people with schizophrenia who derive from community and clinical settings and would be inclined to consider research participation. What we found is that more people with schizophrenia who reported more psychiatric symptoms held modestly different beliefs and identified somewhat greater potential harm of research projects and expressed less willingness to participate on some measures, but not all. Individuals with greater internal locus of control, on the other hand, saw more beneficial aspects of research and were more likely to express participation willingness on some, but not all, measures. This set of results may have significant scientific implications (eg, related to volunteer bias and study interpretation), as well as ethical importance (eg, related to attunement to the true concerns of potential volunteers in the consent process). We see these findings as clearly preliminary but of particular value in generating new hypothesis-driven studies on the role of symptoms and psychological characteristics for their possible influences on perceptions of people with schizophrenia concerning issues related to research ethics.

Limitations of this study include its reliance on self-report data rather than monitoring actual decisions or behaviors concerning research participation. Moreover, our subjects were predominantly male, white, and middle-aged, and more than half had attended college. The sample was one of convenience in that we recruited individuals who lived and sought care in the areas around the University of New Mexico in Albuquerque, New Mexico. For this reason, generalizations for our data set are limited. Our nonrandom study sample may be skewed toward those with greater decisional capacity and a more benevolent view of medical research than would be seen in the population of all persons with schizophrenia.

Nevertheless, those same characteristics of our sample make it more representative of people with schizophrenia who choose to enroll in medical research trials, a population that is highly appropriate for study because they directly bear the burdens of schizophrenia research. In addition, this project did not include a comparison group, such as healthy individuals or those with other types of mental illness. Finally, given the number
of comparisons we performed, it is possible that some of the statistically significant results arose through artifact. Our findings should be interpreted in light of these limitations.

Conclusion

To fulfill the ethical duty to respect research subjects as persons, we must understand how people with severe mental illness view all ethically important aspects of medical research, including how they assess factors that relate to a study’s scientific merit and social utility. We do not understand whether and how people with schizophrenia appreciate certain ethically salient considerations in human studies. Much more work remains to be done in exploring these issues of importance to schizophrenia research ethics.

Acknowledgments

The authors gratefully acknowledge support from the National Institute of Drug Abuse (1R01DA13139) for this project. Dr. Laura Roberts also expresses her appreciation to the National Institute of Mental Health in the form of a Career Development Award (1K02MH01918). Dr. Hoop gratefully acknowledges support from the National Institute of Health in the form of a National Research Service Award (P32 MH200065). The authors wish to thank Mr. Mark Talatzko and Mr. Josh Reiher for their technical assistance in preparing this manuscript.

References


