HHS Public Access

Author manuscript

J Empir Res Hum Res Ethics. Author manuscript; available in PMC 2017 July 28.

Published in final edited form as:

J Empir Res Hum Res Ethics. 2015 February ; 10(1): 49–58. doi:10.1177/1556264614563249.

Contrasting Views of Risk Perception and Influence of Financial Compensation Between Adolescent Research Participants and Their Parents

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Abstract

U.S. regulations governing pediatric research do not specify the assent process. To identify best practices, it is important to examine parents' and adolescents' views. The present study focuses on parents' and adolescents' views regarding possible research risks and the influence of financial compensation on their willingness to accept research procedures. Interviews were conducted with 177 adolescents participating in clinical research for a medical or psychiatric illness, or as healthy volunteers, and a parent. Significant discordance was found between how bothered the teen would feel from research-related side effects and procedures compared with parental report. Most teens were willing to accept non-beneficial procedures without compensation. Payment had significantly greater influence on healthy volunteers and their parents compared with those with a medical or psychiatric illness. Discordance between adolescent and parental views about risks recommends obtaining direct input from adolescents during the assent process. Modest payments should not raise concerns of undue inducement, especially in teens with pre-existing conditions.

Keywords

teens; payment; decision-making; health status; assent; medical; psychiatric

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Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

This work was completed as part of the authors' official duties as employees of the National Institutes of Health (NIH) and National Cancer Institute. The opinions expressed are the authors' own. They do not represent the position or policy of the U.S. NIH, Public Health Service, or Department of Health and Human Services. Drs. Grady and Wendler conceived of this project. Drs. Grady, Wiener, and Wendler designed the survey; Drs. Grady, Wiener, Wilfond, and Wendler collected the data; Dr. Wiener and Ms. Viola wrote the first draft; Drs. Grady, Wendler, and Wilfond revised the manuscript for important intellectual content; and Drs. Wendler, Wiener, Grady, and Ms. Viola had full access to the data.

Most research studies with adolescents require parental permission and adolescent assent. The U.S. federal regulations require that parents who are providing permission be provided with information about relevant aspects of the study in question, including the risks and burdens involved. In contrast, the regulations do not specify what information should be provided to adolescents prior to soliciting their assent. As a result, it is important to assess how well parents are able to identify which aspects of research participation adolescents find problematic. In addition, given the prevalence of paying research subjects to participate (Borzekowski, Rickert, Ipp, & Fortenberry, 2003), it is important to assess how offers of payment affect adolescents' willingness to accept side effects and procedural discomforts as a result of research participation.

Most adolescents are able to understand research procedures when they are described in age-appropriate language (Baylis, Downie, & Kenny, 1999; Miller et al., 2013), and several studies have found comparable capacity to estimate risk probabilities and the likelihood of consequences (Hein et al., 2014; Quadrel, Fischoff, & Davis, 1993; Weithorn & Campbell, 1982). Yet, research suggests differences in risk perceptions between adolescents and adults. For example, many studies report that adolescents tend to minimize the potential harmful consequences of occasional risk-taking behaviors (Cohn, MacFarlane, Yanez, & Imai, 1995; Eaton et al., 2012; Institute of Medicine [IOM] & National Research Council Committee on the Science of Adolescence, 2011; Sells & Blum, 1996), have lesser capacity for identifying risks and benefits in responses in psychological research (Abramovitch, Freedman, Henry, & Van Brunschot, 1995; Kaser-Boyd, Adelman, & Taylor, 1985; Koelch et al., 2009), and would like more information and time for decision making before participating in Phase I pediatric oncology trials (Baker et al., 2013). These findings raise the need for data on how well parents are able to identify which aspects of research participation adolescents find problematic.

In addition, although the IOM report, "Ethical Conduct of Clinical Research Involving Children," states that certain types of payments to adolescents are "usually, if not always acceptable" (Field & Behrman, 2004, p. 225), some critics worry that paying research subjects might influence them to accept inappropriate risks, or that financial compensation may undermine altruism as a motive for research participation (Brody, Annett, Scherer, Pertyman, & Cofrin, 2005; Diekema, 2005). Previous work has evaluated the meaning and acceptability of financial compensation in pediatric research (Bagley, Reynolds, & Nelson, 2007; Halpern, Karlawish, Casarett, Berlin, & Asch, 2004; Kimberly, Hoehn, Feudtner, Nelson, & Schreiner, 2006), including estimates of fair compensation (Scherer et al., 2005); however, these studies did not explore potential differences based on study type, health status, functionality, or differences between healthy teens and those living with a medical or psychiatric illness. Although early findings suggest that ill children (e.g., those who experience frequent hospitalizations) tend to have more mature illness concepts than do healthy peers (Crisp, Ungerer, & Goodnow, 1996), this has not been studied in terms of assessment of risk or the influence of payment.

Understanding how adolescents and their parents evaluate the acceptability of certain side effects and procedural discomforts associated with research, how discordant their perceptions are, and how influenced they are by financial incentives is important in

promoting ethical pediatric research. This understanding can lead to discussions that assure that parents and the research team make certain that teens are truly aware of and willing to accept the risks and benefits of what is being proposed. Moreover, it is believed that adolescents involved in research who know what they are doing, and why, will be more engaged and motivated (Cox, Smith, & Brown, 2007), resulting in less attrition (Scherer et al., 2013). Most of our understanding of teenagers' views of research participation comes from healthy teens participating in psychological research, and small studies of those with a specific illness or treatment (Scherer et al., 2013). As part of an exploratory study designed to better understand how adolescents enrolled in clinical research and their parents made decisions pertaining to research participation, this article focuses on how healthy adolescents and adolescents with medical or psychiatric conditions perceive research-related risks and burdens, and the extent to which those perceptions differ from their parents. We also examine how monetary compensation affects willingness to participate in research procedures that do not offer the potential for clinical benefit.

Method

Interviews

Two formalized interview instruments, one for adolescents and one for their parents, were developed by the investigators. Instrument development involved six steps: (a) comprehensive literature review, (b) draft survey development, (c) review by experts in survey methodology, (d) revision, (e) cognitive pre-testing, and (f) final revision. Cognitive pre-testing interviews were audio-taped and conducted using an adaptation of the think-aloud and probing techniques described by the National Center for Health Statistics (Willis, 1994). Prepared verbal probes were developed prior to the interviews, and spontaneous probes developed during the course of the interview. Eight cognitive interviews were conducted.

Trained interviewers who were independent of the medical team interviewed the adolescents and parents separately. The interview questions, which were multiple-choice or open-ended, assessed the following domains: (a) assent/parental permission; (b) motivations; (c) decision making; (d) attitudes about research and willingness to accept research risks, including the influence of incentives on willingness; and (e) demographics and clinical history. Parental and adolescent interviews were similar so that responses could be compared. Each interview lasted approximately 30 min. Respondents were informed that their answers would remain confidential, and that refusal to participate would not affect the adolescent's care or research participation in any way.

Health status was assessed by medical providers within each participant's primary research team. Categories included (a) healthy volunteer; (b) minor condition; (c) significant condition, chronic well-controlled; (d) significant condition, chronic not well-controlled; and (e) significant condition—life threatening.

Study type was determined by analyzing the titles of the research protocols that the teens were participating in. Studies were categorized into three categories (about a medical

condition, a psychiatric condition, or healthy volunteers) according to the type of condition under study in each research protocol.

Functionality was defined as the teen's ability to perform normal daily activities as reported by the parents. Specifically, they were asked, "In the past 6 months, how much has your child's illness interfered with his/her usual activities, such as going to school or participating in after-school activities?" Parents reported whether their child has been able to (a) participate in all of his or her usual activities; (b) most, but not all, of his or her usual activities; (c) only a few of his or her usual activities; or (d) had not been able to participate in any of his or her usual activities.

Financial compensation—Several questions were used to determine the influence of financial compensation on teens and their parents' motivations to participate and teen and parent willingness to undergo extra non-beneficial research procedures. First, adolescents and parents were asked to identify how important receiving payment was, among a list of other possible reasons, to their decision to join their study. Second, they were asked their willingness to have a couple of extra blood draws if it would help the research staff learn something that might help others (but not help the teen directly). The same question was asked about an extra skin biopsy, in the following way: "How about an extra skin biopsy, where the doctor takes a small piece of your (your child's) skin to examine it? It might hurt and might leave a tiny scar, but has very little risk." The participants were then asked how willing they would be to have the procedures done if the research staff offered to pay them US$20 for the extra blood draws and US$75 for the skin biopsy. Response categories "definitely willing" and "probably willing" were collapsed together as were "definitely not willing" and "probably not willing." Parents (but not adolescents) were also asked whether they thought it was appropriate to offer teens a small amount of money for research procedures that would not help the teen but might help others, and to explain their answer if they said no.

Perceived risks—To assess how bothered participants would be by specific side effects and procedures that might accompany research participation, adolescents and parents were asked the following:

> Now I am going to ask you about things that could happen as part of a medical research study. Please tell me if each one would not bother you at all or would bother you a little, a moderate amount, or a lot. How much would it bother you (your child) if:
>
> - "you felt nauseous for a week?,"
> - "your hair fell out for a couple of months?,"
> - "it would be hard for you to think clearly for one week,"
> - "you were asked confidential questions about your sexual behavior?,"
> - "you would feel some pain for about an hour?,"
> - "If the risk of dying from being in the study was 0. 5%?"

The response options were “a lot,” “a moderate amount,” “a little,” or “not at all.” For the purposes of the analysis, “a lot” and “a moderate amount” were collapsed as were “a little” and “not at all.”

The specific side effects chosen for inclusion in this study are those that are common in treatment studies (e.g., nausea) and ones where the study team hypothesized there might be differences between parental and teen views (e.g., hair falling out).

Participants and Procedures

Overall, 177 adolescent–parent pairs participated, with a response rate of 95% (177 out of 186 eligible adolescent–parent pairs). Adolescents between 13 and 17 years of age who were enrolled in a clinical research study at the National Institutes of Health (NIH) or at Seattle Children’s Hospital within the past 6 months were eligible to participate. Study teams informed eligible adolescents and their parents about the study and a study brochure was placed in the clinics where the potential participants received care. The adolescent interview study team then contacted interested adolescents to explain the study and to schedule an interview if they were interested. The cohort consisted of teenagers enrolled in medical studies who had a medical diagnosis and those in psychiatric studies who had a psychiatric diagnosis as well as healthy volunteers enrolled in medical or psychiatric protocols. Primary clinical studies included natural history and genetics studies as well as specific drug treatment studies and hematopoietic stem cell transplantation. Information on the specific medical conditions and type of studies has been reported elsewhere (Wendler, Abdoler, Wiener, & Grady, 2012). The adolescent’s primary study team assessed whether the participants were cognitively intact to answer the study questions. Participation for this study took place during a scheduled visit for the participants’ primary study.

Written parental permission and written adolescent assent were obtained prior to all interviews. Adolescent participants received a US$20 gift card; parents were not compensated. The Institutional Review Boards at the National Institute of Child Health and Development, Seattle Children’s Hospital, and Research Triangle International approved the study.

Statistical Method

An exploratory analysis was conducted to determine whether several categorical and dichotomized variables were associated with impact of financial compensation and perceived bothersome research related risks. Among these variables were study type, health status, functionality, adolescent’s age (13–15 vs. 16–17 years), and gender. Individual chi-square tests were used to evaluate associations among these variables and perceived risks and the influence of financial compensation. Quantitative analysis was conducted using SAS 9.3 (SAS Institute Inc., 2013). Significant departures from the normal distribution were considered for non-parametric analyses (Fisher’s exact test). Qualitative results were categorized and coded using a coding dictionary by two researchers. Any discrepancies in coding were resolved by a third member of the research team. Qualitative data were reported using frequencies.

Results

Demographics of the study cohort are provided in Table 1. Seventy-five percent of adolescents had a significant chronic or life-threatening illness, 5% had a minor illness, and 20% were healthy. Seventy percent of adolescents were enrolled in studies about their medical conditions, 8% for psychiatric conditions, and 22% participated as "healthy controls." Four adolescents had an illness, but were categorized as "healthy controls" because the research in which they were participating was not related to their illness. There was a higher proportion of participants with a life-threatening condition at NIH and more healthy volunteers at the Seattle Children's Hospital, $\chi^2(4, N = 177) = 18.784$, $p < .001$. There were no other demographic differences between hospitals.

Research Related Risks and Burdens

Adolescents and parents differed in how much the teen would be bothered by study side effects and procedures (Table 2). Eighty-five percent of parents felt their children would be bothered a "moderate amount" or "a lot" by being nauseous for a week compared with 66% of the adolescents, $\chi^2(1, N = 354) = 17.617$, $p < .001$. Similarly, 62% of the parents felt their child would find being in pain for about an hour bothersome, compared with 31% of the adolescents, $\chi^2(1, N = 354) = 34.428$, $p < .001$. Ninety-one percent of the parents thought that their child would be bothered "a moderate amount" or "a lot" by losing their hair; 82% of the adolescents endorsed this, $\chi^2(1, N = 354) = 4.809$, $p = .02$. Teens (19%) were less bothered by having to spend the night in the hospital than their parents thought they would be (31%), $\chi^2(1, N = 354) = 5.459$, $p = .01$.

Parents (76%) were more likely than teens (48%) to report that the teen would be bothered "a moderate amount" or "a lot" by a 0.5% risk of dying from being in a research study, $\chi^2(1, N = 354) = 28.832$, $p < .001$. This trend held constant in several subgroup analyses including healthy volunteers (100% parents vs. 55% of healthy teens), $\chi^2(1, N = 70) = 18.229$, $p < .001$; teens with chronic well-controlled illness (96% parents vs. 41% teens), $\chi^2(1, N = 106) = 24.053$, $p < .001$; teens with chronic not-well-controlled disease (89% vs. 48%), $\chi^2(1, N = 48) = 6.812$, $p < .001$; and teens with a life-threatening condition (79% parents vs. 43% teens), $\chi^2(1, N = 40) = 4.014$, $p = .02$.

Adolescents' reports of being bothered by study side effects and procedures varied by age group, study type, health status, and functionality (Table 2). Teens aged 13 to 15 were more likely to report being bothered by having to stay a night at the hospital, $\chi^2(1, N = 175) = 4.166$, $p = .04$, or being asked questions about their sexual behavior, $\chi^2(1, N = 174) = 5.721$, $p = .002$, than those aged 16 to 17. Teens who were able to do all or most of their normal activities reported that they would be "very" or "moderately" bothered by losing their hair (89%) versus 62% of those who were more impaired in their daily activities, $\chi^2(1, N = 134) = 11.982$, $p = .001$. Healthy volunteers (97%) were also more bothered by losing their hair than those with psychiatric (85%) or medical conditions (80%), $\chi^2(2, N = 156) = 6.717$, $p = .03$. This trend was consistent among the levels of disease severity, with healthy volunteers (97.1%) more bothered by losing their hair than those with minor (88.9%), chronic well-controlled (75.0%), chronic not-well-controlled (80.6%), or life-threatening illnesses (45.5%), $\chi^2(4, N = 177) = 21.763$, $p < .001$. More healthy volunteers were bothered by the

prospect of not being able to think clearly (81%) than those diagnosed with a condition and participating in medical (71%) or psychiatric studies (39%), $\chi^2(2, N = 174) = 8.825$, $p = .012$. Healthy volunteers were also more likely to be bothered by a 0.5% chance of dying (100%) than those with psychiatric (64.3%) or medical (68.5%) conditions, $\chi^2(2, N = 177) = 14.812$, $p < .001$.

Financial Incentives

The extent to which payment played a role in teen willingness to enroll in a study varied by age and gender (Table 3). Younger participants, aged 13 to 15 (52%), and males (45%) were more likely than older participants (30%) or females (16%) to report payment as a "very/pretty important" reason for their research participation, $\chi^2(2, N = 177) = 7.258$, $p = .03$, and $\chi^2(2, N = 177) = 9.755$, $p = .008$, respectively. Healthy volunteers (60%) were more likely to report that compensation was "pretty" or "very important" than those with minor conditions (44%), those with significant not-well-controlled conditions (29%), those with significant well-controlled conditions (19%), and those with life-threatening conditions (9%), $\chi^2(8, N = 177) = 48.884$, $p < .001$. A greater proportion of healthy volunteers (54%) cited payment as a "pretty" or "very important" reason for enrollment than those participating in psychiatric treatment studies (36%), and those participating in medical studies (20%), $\chi^2(4, N = 177) = 25.493$, $p < .001$. More parents of healthy volunteers (41%) said payment was a "pretty" or "very important" reason to enroll the teen in research than parents of those in psychiatric studies (14%) and medical studies (10%), $\chi^2(4, N = 177) = 22.800$, $p < .001$. None of the parents of teens with life-threatening illness cited payment as an important reason for enrollment compared with 43% of parents of healthy adolescents, $\chi^2(8, N = 177) = 34.420$, $p < .001$ (Table 3).

Ninety percent of adolescents were willing to undergo a blood draw without compensation, and 64% were willing to undergo a skin biopsy that would not directly benefit them. Proposed payment of US$20 for extra blood draws and US$75 for a skin biopsy increased the number of teens who were willing to undergo these procedures. Changes in willingness to undergo a skin biopsy occurred most frequently for healthy volunteers (68% without payment to 100% with payment). All healthy volunteers were more willing to undergo an extra skin biopsy if financially compensated compared with 67% of teens in medical studies and 67% in psychiatric studies. Only one teen with a life-threatening illness indicated a change from unwilling to willing if compensation was provided. Parents of children with a life-threatening or chronic disease were no more or less likely than parents of healthy children to be willing to grant permission for an extra skin biopsy with US$75 compensation. Compensation had no effect on parents' willingness to let their child undergo procedures for any group studied.

Although most parents (74%) felt it is appropriate for teens to be offered compensation to have a research procedure that would not help them but might help others, a subset echoed concerns about "bribery" (21%), or encouraging teenagers to do something they do not want to do (17%), and made suggestions such as "Best to ask the teenagers [to participate] before offering money and then offer a gift afterwards. Otherwise, it might be an influence …". A few parents felt that money is a good incentive for teens and that "money talks" (7%).

Discussion

This study found significant differences between how teens and parents perceive side effects and procedural discomforts common to clinical research participation. Parents consistently identified these risks and burdens as being more problematic for their adolescents than the adolescents did for themselves. These findings underscore the need for investigators to encourage conversations with both parents and teens about study risks, and for parents to discuss with teens before giving their permission. We also found that almost all teens were willing without financial compensation to undergo certain research procedures that posed some risks and did not offer a prospect of clinical benefit, suggesting that payments for these types of procedures do not unduly induce teens to accept risks. However, small payments improve the willingness of some adolescents to undergo these research procedures.

Teens with more day-to-day impairment were less bothered by study side effects and procedures possibly encountered in research, suggesting that research risks may be more familiar or acceptable to them. A review of qualitative studies exploring the experiences of parents living in five countries whose children had a range of health conditions of varying severity found that parents whose children had life-threatening conditions viewed the risks of research less negatively than those whose children were healthy or in the stable stage of a chronic condition (Fisher, McKevitt, & Boaz, 2011). Likewise, we found parents of children with life-threatening conditions were less bothered by possible side effects, including a small risk of their child dying from research participation, than parents of the other groups of teens.

Parent and Teen Concordance

de Vries, Wit, Engberts, Kaspers, and van Leeuwen (2010) reported that clinicians may see adolescents as inadequately competent for meaningful participation in discussions about research, do not always provide adolescents with complete information, and deem parental permission sufficient (de Vries et al., 2010). Our data suggest that adolescents discriminate between types of side effects and discomforts and are generally less bothered by them than their parents imagine so that providing teens with a level of decision-making autonomy, particularly on low-risk research, seems reasonable and warranted. Discrepancies were found between potential research side effects and procedures that teens would find most bothersome and their parents' perceptions of what their child would be most concerned with. Specifically, adolescents would be less bothered by feeling nauseous for a week, being in pain for about an hour, losing their hair, a small risk of dying, or staying in the hospital overnight than their parents anticipated, indicating that adolescents may be more willing to accept more risks associated with clinical procedures than their parents would be. Brody, Scherer, Annett, and Pearson-Bish (2003) also found discordance between adolescents with asthma and their parents when evaluating risks in research vignettes, in that parents rated risks of procedures higher than their adolescent did (Brody et al., 2003). As parents are not always able to predict what their teenage children find problematic, these findings speak to the importance of interviewing teenagers separately to obtain direct input from adolescents while being mindful of subjective social experiences and adolescent development (Bull et al., 2013). These findings also suggest that describing risks in the assent form is indicated, as

there are specific risks teens find more bothersome than others. Considerable weight should be given to both teen's and parent's views about overall risks and discomforts with efforts to reconcile differences with the medical team members and bioethics specialists, as indicated.

Financial Compensation for Research Participation

Although two thirds of our study parents agreed it is "appropriate for research staff to offer teenagers a small amount of money to have a research procedure that would not help them but might help others," very few of the parents, especially of teens with illnesses, said payment was an important reason to enroll. In an earlier study, Wagner and colleagues found few pediatric psychiatric research participants reported financial compensation as a reason to participate and only 2% of their parents selected financial compensation as a reason for enrollment (Wagner, Martinez, & Joiner, 2006). Similarly, in our study, parents of healthy children were more likely than parents of ill children to indicate that money was a reason to enroll.

Financial compensation was found to have a small but not dramatic impact on teens' willingness to undergo certain non-beneficial procedures in our study. Many teens would be willing to undergo these procedures and accept the risks without compensation; thus, concerns about undue inducement may be exaggerated. This is supported by an earlier study that compared parent and adolescent willingness to participate in minimally invasive research protocols (Brody et al., 2005). The investigators found financial compensation was rarely a primary reason for participation by adolescents (<10%), and their parents almost never mentioned it. Interestingly, evidence shows that 50% or more of studies enrolling adolescents offer some payment (Bagley et al., 2007; Borzekowski et al., 2003; Iltis, Matsuo, & DeVader, 2008).

Health status appears to influence response to compensation. All of the healthy volunteers, whose motivations usually include financial incentives, were more willing to undergo an extra skin biopsy if they were paid US$75 than teens with medical or psychiatric illnesses. The latter groups have other reasons to enroll in research and different perspectives and experiences regarding invasive procedures. Those who are ill likely have different motivations for participating in research or derive alternative kinds of benefits, including hope for a cure or desire to help others with their same condition (Scherer et al., 2013; Stunkel & Grady, 2011) and these motivations should be carefully weighed and understood prior to initiating treatment.

Several study limitations are to be noted. Participants came from only two sites and spoke only English, and results could possibly vary by geographic location or cultures. Second, although the interview underwent extensive cognitive testing, there are no reports of its validation or psychometric properties. Third, we did not inquire whether participants obtained financial compensation for other trials in which they were participating and we cannot rule out socially desirable responding. Fourth, we did not have information from the teens and parents who declined to participate in the original studies or their experiences with bothersome side effects or procedures in earlier studies. Fifth, because the same survey instrument was used across different studies, there is the possibility that some of the specific side effects may not have been relevant to the actual studies the teens were enrolled in.

Finally, we cannot be sure whether the teens in the study were minimizing or underestimating the risks. This study's strengths include respondents with experience in research participation and teens enrolled in both medical and psychiatric treatment protocols as well as those enrolled as healthy volunteers. In addition, to our knowledge, this is the first multicenter study to examine how adolescent research participants perceive possible study-related risks, how offers of payment affect their willingness to undergo certain research procedures, and how these vary by severity of illness and functionality.

Best Practices

As the adolescent developmental psychology literature has amply noted, adolescents are less risk-averse than their parents. This study suggests that risk adversity extends to those with and without a medical or psychological condition. Discordance between parents and their teens' views about burdensome side effects and procedures underscores the importance of soliciting the teen's perspective as part of the assent process. Best practice would include systematically assessing different risk perceptions and motivations for research participation in teenagers, particularly those whose health is already compromised. It is imperative that providers work with the interdisciplinary teams to advocate for a balance between promoting research participation and protecting participants to assure that adolescent participants understand risk appropriately.

Health care providers need to be aware of their own values regarding teens' and parents' health care choices so as to minimize their influence on decision making with particular families (McCabe, Rushton, Glover, Murray, & Leikin, 1996). It is also important we do not assume impaired decision-making capacity for critically ill teens or their parents if they make research participation decisions based on a different set of values (McCabe, 1996). Because our data show differences in risk assessment by age and health status, they suggest that assessment of perceived risk be repeated at illness or treatment junctures, and as the teen's age or health status change.

In addition, as money is a reason for many healthy teens to enroll in research, guided discussions are needed to assure their understanding of risk and burden is intact. Financial compensation appears to infrequently drive the decision of participants with a pre-existing medical or psychiatric condition to participate in research or to accept specific research procedures. Therefore, modest payments should not raise concerns of undue inducement in these teens. What is most important is that all teens are informed of specific study risks and their views are heard because they may differ significantly from what their parents expect. It is important to focus on teens' understanding of research and to help families and the medical team balance competing agendas. We also want to assess for disagreements about enrollment decisions, and to ensure that decisions are made and care is provided within an ethical and supportive framework.

Research Agenda

The extent to which findings from this study are consistent with the views of children and/or parents who have not been involved in research is not known, as this cohort were all enrolled

in research and many had prior research experience. In addition, this study focused on one aspect of the complex process of risk perception in decision making with adolescents—how children and parents evaluate undesirable risks and side effects. We do not know how much children and their parents talk to each other about particular study risks or risk consequences, or how these discussions affect enrollment decisions, if at all. Future research would also benefit from examining whether there is a relationship between risk perception and risk aversion. In other words, do those who are less bothered by side effects and procedures actually understand less than those who are more bothered? Future studies are also needed to assess whether actual changes in enrollment occur based on both perceived risks and financial compensation. Additional research on how adolescents would respond to offers of financial compensation in various circumstances or of various amounts would be informative.

Educational Implications

The training provided to physicians and other health care providers often does not adequately address adolescent decision making and how this can affect the consent/assent process. The importance of clinical research may change over time, particularly in adolescents whose own values and goals are evolving. Ongoing assessments to gauge understanding of the research the adolescent is participating in should be integrated into the study process. Although most adolescents are able to understand research procedures when they are described in age-appropriate language and format, inquiring about how the adolescent learns best (e.g., reading, watching, listening) and what they care about can better assure that study information will be understood.

As noted in this article, adolescents and parents differ regarding assessments of how much the teen would be bothered by study side effects and procedures. Sometimes these differences require consultation with a bioethics specialist. Participating in bioethics consultations is one informative way to learn how differences between teens and parents present and are resolved.

Acknowledgments

The authors appreciate the generous willingness of the adolescents and parents who agreed to participate in this study. We would also like to acknowledge Dr. Tara Brennan, Emily Abdoler, and Megan Sabo who helped with early data collection and Dr. Haven Battles for her careful review and critique of the article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This work was supported in part by the Intramural Program of the National Cancer Institute, Center for Cancer Research, the National Institutes of Health (NIH) Clinical Center, and the NIH Program Evaluation Funds. This funding supported the design and conduct of the study; the collection, management, analysis, and interpretation of the data; preparation, review, and approval of the manuscript.

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Biographies

Lori Wiener is co-chair of the Behavioral Science Core and head of the Psychosocial Support and Research Program in the Center for Cancer Research, Pediatric Oncology Branch. Her clinical research has focused on the needs of critically ill children and their families, particularly those who are participating in clinical trials.

Adrienne Viola holds an MA in public health and is in a joint MD/PhD program at Robert Wood Johnson School of Medicine. She has a strong interest in adolescent issues, the role of assent in clinical trials, and epidemiology.

Benjamin S. Wilfond is the director of the Treuman Katz Center for Pediatric Bioethics at Seattle Children's Insitute. His main research interests are complex ethic issues with

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David Wendler is head of the Unit on Vulnerable Populations at the National Institutes of Health (NIH) Clinical Center's Department of Bioethics. His current research focuses on the ethics of clinical research with individuals who are unable to provide informed consent, assent in pediatric research, and assessing research risks systematically.

Christine Grady is the chief of the NIH Clinical Center's Department of Bioethics. Her research focuses on research subject recruitment, incentives, informed consent, vulnerability, and international research ethics.

Table 1

Demographic Information on Study Adolescent Cohort.

	n **(%)**
Study site	
NIH	147 (83.1)
Seattle Children's	30 (16.9)
Gender	
Male	86 (48.6)
Female	91 (51.4)
Age *M* (*SD*)	15.1 (1.4)
Ethnicity[a]	
Hispanic/Latino	22 (12.4)
Race[b]	
White/Caucasian	123 (69.5)
Black/African American	26 (14.7)
Native American	6 (3.4)
Asian	8 (4.5)
Native Hawaiian/Pacific Islander	2 (1.1)
Other	20 (11.3)
Don't know or did not answer	8 (4.5)
Illness status	
Healthy	35 (19.8)
Minor condition	9 (5.1)
Significant, well-controlled	80 (45.2)
Significant, not-well-controlled	31 (17.5)
Significant, life-threatening	22 (12.4)
Study type[c]	
Healthy control[d]	39 (22.0)
Psychological condition	14 (7.9)
Medical condition	124 (70.0)
Functionality[e]	
Able to do all/most activities	87 (49.2)
Able to do few/no activities	51 (28.8)
Don't know or did not answer	39 (22.0)
Previous research participation	
None	98 (55.4)
1–2 studies	51 (28.8)
3–6 studies	17 (9.6)
>6 studies	9 (5.1)

Note. NIH = National Institutes of Health.

[a]Self-defined.

[b] Self-defined, participants could choose more than one race.

[c] From protocol data.

[d] Four adolescents had an illness, but were categorized as “healthy controls” because the research in which they were participating was not related to their illness.

[e] Based on the parent’s response.

Table 2

Adolescent and Parents Who Reported Moderately or a Lot to Questions About Perceptions of Bothersome Study Risks.

	Number/percent of respondents who answered "moderate" or "a lot" to "how bothered would you (your child) be if these things happen to you as part of a medical research study"													
	Felt nauseous for a week[a] *n* (%)		Hair fell out for a couple of months[b] *n* (%)		Hard to think clearly for a week[a] *n* (%)		Spend night in hospital[b] *n* (%)		Asked questions about sexual behavior *n* (%)		Feel pain for an hour[a] *n* (%)		Risk of dying 0.5%[a] *n* (%)	
	Teen	Parent	Teen	Parent	Teen	Parent	Teen	Parent	Teen	Parent	Teen	Parent	Teen	Parent
Overall	116 (65.5)	151 (85.3)	146 (82.5)	161 (91.0)	126 (71.2)	161 (91.0)	34 (19.2)	54 (30.5)	58 (32.8)	72 (40.7)	55 (31.1)	109 (61.6)	85 (48.0)	135 (76.3)
Age							*		**	*				
13–15	69 (68.3)	85 (98.8)	87 (86.1)	95 (96.9)	74 (73.3)	95 (98.9)	26 (25.7)	36 (52.9)	43 (43.0)	47 (72.3)	37 (36.6)	69 (95.8)	55 (54.5)	84 (93.3)
16–17	47 (63.5)	65 (98.5)	58 (78.4)	65 (92.9)	52 (70.3)	65 (94.2)	8 (10.8)	18 (36.7)	14 (18.9)	24 (53.3)	17 (23.3)	39 (92.9)	29 (39.2)	51 (96.2)
Health status			***				*							*
Healthy	28 (80.0)	34 (97.1)	34 (97.1)	35 (100)	34 (97.1)	35 (100)	10 (28.6)	15 (42.9)	12 (34.3)	22 (62.9)	14 (40.0)	32 (91.4)	23 (65.7)	35 (100)
Minor condition	7 (77.7)	9 (100)	8 (88.9)	8 (88.9)	8 (88.9)	9 (100)	3 (33.3)	5 (55.6)	5 (55.6)	2 (22.3)	3 (33.3)	7 (77.8)	8 (88.9)	9 (100)
Chronic, well-controlled	43 (53.8)	55 (68.8)	60 (75.0)	63 (78.8)	47 (58.8)	60 (75.0)	9 (11.3)	16 (20.0)	21 (26.3)	27 (33.8)	20 (25.0)	38 (47.5)	28 (35.0)	51 (63.8)
Chronic, not-well-controlled	19 (61.3)	25 (80.6)	25 (80.6)	28 (90.3)	16 (51.6)	26 (83.9)	6 (19.4)	9 (29.0)	8 (25.8)	9 (29.0)	7 (22.6)	15 (48.4)	14 (45.2)	17 (54.8)
Life-threatening	15 (68.2)	18 (81.8)	10 (45.5)	16 (72.7)	15 (68.2)	19 (86.4)	5 (22.7)	6 (27.3)	9 (40.9)	8 (36.4)	9 (40.9)	13 (59.1)	9 (40.9)	15 (68.2)
Study type					*									***
Healthy volunteer	29 (74.4)	38 (97.4)	37 (94.9)	39 (100)	35 (89.7)	39 (100)	10 (25.6)	16 (41.0)	12 (30.8)	22 (56.4)	14 (35.9)	32 (82.1)	23 (59.0)	39 (100)
Medical condition	78 (62.9)	98 (79.0)	94 (75.8)	104 (83.9)	84 (67.7)	103 (83.1)	19 (15.3)	32 (25.8)	38 (30.6)	43 (34.7)	37 (21.8)	67 (54.3)	51 (41.1)	85 (68.5)
Psychiatric condition	7 (50.0)	12 (85.7)	11 (78.6)	13 (92.9)	5 (38.5)	13 (92.9)	4 (28.6)	4 (28.6)	6 (42.9)	5 (35.7)	3 (21.4)	8 (57.1)	9 (64.3)	9 (64.3)
Functional status			***		*									
Able to do all/most	60 (69.0)	73 (83.9)	82 (94.3)	82 (94.3)	66 (75.9)	81 (93.1)	15 (17.2)	25 (28.7)	31 (35.6)	35 (40.2)	29 (33.3)	50 (57.4)	45 (51.7)	67 (77.0)
Able to do few/no	28 (54.9)	42 (82.3)	26 (51.0)	41 (80.3)	27 (52.9)	41 (80.3)	6 (11.8)	14 (27.5)	15 (29.4)	15 (29.4)	15 (29.4)	28 (54.9)	19 (37.3)	35 (68.6)

[a] $p < .001$ overall difference between adolescents and parents.

[b] $p < .05$ overall difference between adolescents and parents.

* $p < .05$ difference between subgroups.

** $p < .01$ difference between subgroups.

*** $p < .001$ difference between subgroups.

J Empir Res Hum Res Ethics. Author manuscript; available in PMC 2017 July 28.

Table 3

Financial Compensation as a Pretty or Very Important Motivation for Research Participation.

"How important to your decision to join your research study was receiving payment for participating?"				
	Adolescent report		**Parent report**	
	"Pretty" or "very important" for participation		**"Pretty" or "very important" for participation**	
	***n* (%)**	***p***	***n* (%)**	***p***
Overall	51 (28.8)		30 (16.9)	
Disease severity (adolescent report)		<.001		<.001
Healthy	21 (60.0)		15 (42.9)	
Minor	4 (44.4)		1 (11.1)	
Significant, well-controlled	15 (18.8)		9 (11.3)	
Significant, not-well-controlled	9 (29.0)		5 (16.1)	
Significant, life-threatening	2 (9.1)		0 (0.0)	
Study type		<.001		<.001
Healthy volunteer	21 (53.8)		16 (41.0)	
Psychiatric condition	5 (35.7)		2 (14.3)	
Medical condition	25 (20.2)		12 (9.7)	
Age		.03		.10
13–15	35 (51.5)		22 (29.0)	
16–17	16 (29.6)		8 (13.8)	
Gender		.008		.38
Male	34 (45.3)		15 (17.4)	
Female	17 (16.3)		15 (16.5)	