

PERCEIVED BENEFITS IN TRAUMA RESEARCH: EXAMINING METHODOLOGICAL AND INDIVIDUAL DIFFERENCE FACTORS IN RESPONSES TO RESEARCH PARTICIPATION

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ABSTRACT: THIS STUDY EXAMINED METHODOLOGICAL and individual difference factors in relation to perceived benefits and cost-benefit ratios among adult participants in trauma-related research. In two samples (N 's = 72 and 118), ethnically-diverse community participants completed trauma-related questionnaires plus an in-depth interview. In separate community ($N = 213$) and undergraduate ($N = 130$) samples, participants completed trauma-related questionnaires, but no interviews. Participants rated their perceptions of the research process using the Response to Research Participation Questionnaire (RRPQ). Cost-benefit ratios were favorable in all samples. The research procedures (questionnaires only versus questionnaires plus interviews) explained unique variance in RRPQ scale scores and cost-benefit ratios, as did trauma-related distress. Implications of these findings for developing trauma research protocols are discussed.

KEY WORDS: ethics, trauma research, cost-benefit, experimental ethics

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AS RESEARCH ON THE CAUSES AND CONSEQUENCES of trauma exposure has increased over the last decade, so too have empirical and theoretical considerations of the costs and benefits of asking about trauma exposure (for reviews, see Becker-Blease & Freyd, 2006; Newman & Kaloupek, 2004). Two seminal studies conducted in medical settings set the stage for the literature on ethics in trauma research. First, Walker, Newman, Koss and Bernstein (1997) asked 330 women (from an initial randomly selected sample of 500 women) enrolled in an HMO three questions to assess benefit, unexpected upset and regret after completing self-report

measures that assessed distress and interpersonal victimization history (e.g., physical, sexual abuse, emotional neglect). Participants generally made positive appraisals of participation, with only a small minority reporting unexpected upset (12.8%) or regret (5.2%). Second, Newman, Walker, and Gefland (1999) assessed benefit, expected upset and regret in a larger sample of 1,174 women. The majority of participants made positive appraisals of participation and reported that they did not regret participation; however, a subset of women with histories of maltreatment underestimated how upset they would feel by participating. Thus, these early studies pointed to favorable benefit-to-cost ratios in research asking about trauma, but suggested that a minority of participants experience unexpected negative reactions.

Building on these initial studies, the general approach in the empirical literature on ethics in trauma research has been to evaluate the relative costs and benefits of participating in trauma research, with particular emphasis on trying to predict distress or regret. Studies have now assessed cost-benefit ratios in trauma research across a range of samples (e.g., undergraduate, community, and inpatient participants) and trauma-exposure (e.g., from serious injuries to interpersonal violence) types (e.g., Carlson et al., 2003; DePrince & Freyd, 2004; Kassam-Adams & Newman, 2002; Newman et al., 2001). In a recent review of this literature, Newman and Kaloupek (2004) concluded that most individuals participating in trauma-focused research make favorable cost-benefit appraisals about participation with a small minority of participants reporting some negative emotions or unexpected distress. In their 2006 review, Newman, Risch, and Kassam-Adams note that among the participants who report distress, the majority also report benefiting from research and do not regret participation.

Efforts to predict distress or regret have tended to focus on identifying individual difference factors (such as trauma-related distress, minority status, and age) that are associated with greater risks of negative or unexpected emotion reactions. For example, social vulnerability (including minority status; see Newman & Kaloupek, 2004) and older age (e.g., Dyregrov, Dyregrov,

& Raundalen, 2000) are both associated with negative or unexpected emotional reactions. Trauma-related distress has been an inconsistent predictor of emotional reactions to trauma-research participation, with studies reporting increases in (e.g., Carlson et al., 2003), no relation to (e.g., Griffin, Resick, Waldrop, & Mechanic, 2003; Walker et al., 1997), or decreases in (e.g., Ruzek & Zatzick, 2000) negative or unexpected emotions as a function of symptom severity.

Though investigators have emphasized predictors of distress following participation, research is sorely needed to identify factors that predict perceptions of benefits (Newman & Kaloupek, 2004). Benefits are half of the cost-benefit equation and are therefore critical to reasoning about research ethics. Indeed, the principle of beneficence, set out in the Belmont Report (1979), requires consideration of *both* harm and benefit to the participant. In the absence of knowledge about the factors that increase perceived benefits following participation, researchers will have difficulty selecting procedures that are likely to increase benefits to participants. The ability to select procedures that maximize perceptions of benefits is important to maintaining positive and stable cost-benefit ratios. Thus, the current study is concerned with measuring and examining factors associated with perceptions of benefits.

In evaluating perceptions of benefits (as well as costs), *both* individual *and* methodological factors should be considered; however, few studies have yet to systematically evaluated the contributions of methodology to responses to participation (see DiLillo, DeGue, Kras, DiLoreto-Colgan, & Nash, 2006). Most investigations of cost-benefit ratios have looked within a single method, such as questionnaires (e.g., DePrince & Freyd, 2004) or interviews (e.g., Widom & Czaja, 2005). Thus, some of the findings on individual differences in responses to research participation could actually be due to methodology (Newman & Kaloupek, 2004), making methodology a critical factor for evaluation.

Methodology can vary in subtle non-specific ways, such as approach to and extent of training in the research team; or in specific ways, such as use of interview versus questionnaire procedures. Indeed, many trauma studies use either self-report questionnaires and/or interviews to assess trauma-related factors (e.g., history, distress). With very little data on the impact of these methods on responses to participation (e.g., DiLillo et al., 2006; Newman et al., 1999), oversight committees or researchers might fear that interview methods will create greater risk than questionnaires because participants generally share more (or more in-depth) information during interviews. Further, information

gathered during interviews is shared in a relational context, potentially increasing social risks such as embarrassment. On the other hand, interviews might actually create more opportunities for personal meaning-making compared to questionnaires, thus actually increasing participants' perceived benefits.

In one of the few studies examining these methodological factors, DiLillo and colleagues (2006) evaluated perceptions of participation among undergraduate women randomly assigned to complete the same child maltreatment interview in one of three assessment conditions (computer-assisted interview, paper and pencil questionnaire, and face-to-face interview). Format had no effect on likelihood of disclosing abuse; however, victims in the computer-assisted condition reported more distress (in response to the item, "The questions left me feeling upset or uneasy") than victims in the other two conditions. These findings, derived from an experimental design, provide an important start to addressing questions of methodology and perceptions of participation. In addition to DiLillo et al.'s (2006) call to examine methodological factors in more diverse samples, we were interested in incorporating perceptions of both costs *and* benefits as well as a broader range of individual difference factors.

Current Study. In the context of a larger, multi-phase study designed to develop a measure of posttraumatic appraisals, we had the opportunity to examine responses to trauma research participation. Drawing on four separate samples involving more than 500 undergraduate and community adults, we evaluated both individual and methodological factors in predicting benefits and risks. In terms of methodological factors, we compared two common methods of data collection: (1) procedures involving questionnaires *only*; and (2) procedures involving questionnaires plus in-depth interviews. In response to calls for research on individual difference factors in diverse samples (Newman & Kaloupek, 2004; DiLillo et al., 2006), we also examined the contributions of demographic (e.g., age, minority status) and trauma-related (e.g., symptom levels) factors to participants' appraisals of the research process.

Methods

PARTICIPANTS

Participants were recruited in a large Western U.S. city for three phases of a larger study designed to develop a self-report measure of posttraumatic appraisals conducted (DePrince, Zurbriggen, Chu, & Smart, 2007). Sample numbers (i.e., 1, 2, 3, and 4) refer to the chronological order in which samples were tested. Each of the

TABLE 1. Self-Reported Demographics, Symptoms, and Trauma Exposure Type by Sample.

	Sample 1: Community with Interview ^a	Sample 2: Undergraduate with Questionnaires Only ^b	Sample 3: Community with Questionnaires Only ^c	Sample 4: Community with Interview ^d	Differences Between Groups
Age	35.28 (12.12) <i>n</i> = 65	20.33 (3.14) <i>n</i> = 129	42.63 (9.95) <i>n</i> = 209	40.89 (12.06) <i>n</i> = 111	a,b a,c a,d b,c b,d
Education	–	–	4.08 (1.28) <i>n</i> = 183	4.81 (1.28)	b,c c,d
% Ethnic/Racial Minority	50.00 <i>n</i> = 70	19.69 <i>n</i> = 127	53.05	33.64 <i>n</i> = 107	$\chi^2(3) = 88.96, p < .001$
% Female	67.61 <i>n</i> = 71	80.00	32.55 <i>n</i> = 212	68.42 <i>n</i> = 113	$\chi^2(3) = 41.49, p < .001$
Total number of trauma events	5.68 (3.95)	2.53 (1.89)	5.64 (4.15) <i>n</i> = 209	7.36 (4.32)	a,b a,c b,c b,d c,d
Symptoms	.04 (.79)	-.53 (.52) <i>n</i> = 122	.32 (1.04)	.14 (.94) <i>n</i> = 109	a,b b,c b,d

Note: Unless otherwise noted, data are presented as mean (SD). Letters indicate differences between groups revealed by Tukey's Honest Significant Difference (HSD) test ($p < .05$). Sample sizes are given if missing data.

samples will be described separately. Participants were included in analyses if they completed the Response to Research Participation Questionnaire (RRPQ; described in Materials), resulting in a total sample size of 529. Table 1 reports descriptive statistics for and differences between groups on the following demographic variables: age, education, percent ethnic/racial minority, and percent female. Coding of these variables is described in Materials.

Sample 1. Community participants ($N = 72$) were recruited through flyers placed at a variety of community and social service agencies, as well as ads in local media. Inclusion/exclusion criteria were evaluated during a phone screen. To be invited to participate, individuals had to report being age 18 or older and having had exposure to one or more events that met DSM-IV Criterion A.1 of the PTSD diagnosis. Individuals who reported a suicide attempt or hospitalization for psychiatric reasons within the previous six months were not invited. Participants received \$25 as compensation for their time.

Sample 2. Undergraduate participants ($N = 130$) were recruited through psychology classes at a private university for a study on stress and feelings. Participants received extra credit towards a psychology class as compensation for their time.

Sample 3. Community participants ($N = 212$) were recruited through flyers advertising a questionnaire study on stress and feelings placed at community and social service agencies, businesses, and public spaces (e.g., bus stations). Participants received \$10 as compensation for their time.

Sample 4. Following the same recruitment procedures as used in Sample 1, 119 community participants were tested; one participant was excluded from analyses because the trauma reported did not meet DSM-IV Criterion A.1 of the PTSD diagnosis after further query during the interview. Participants received \$25 as compensation for their time. Notably, participants in Samples 2, 3, and 4 completed a 108-item measure of trauma-related appraisals that was under development in this larger project. Because the measure was under development and not included in the current set of analyses, we do not report on findings related to it here.

MATERIALS

Table 2 provides an overview of the content covered in testing sessions by sample. As we describe below, the particular questionnaires used (e.g., for measuring trauma-related distress) occasionally varied across samples. In spite of differences in specific questionnaires, the content covered (e.g., trauma-related distress) was comparable across samples.

Self-Report Questionnaires. All participants completed demographic questions about age, racial/ethnic identity, and sex. Education level (assessed in Samples 3 and 4) was coded from 1 to 7 as follows: 1 = Less than seventh grade; 2 = Junior high school (9th grade); 3 = Partial high school (10th or 11th grade); 4 = High School graduate/GED; 5 = Partial college or specialized training; 6 = Standard college or university graduation; 7 = Graduate professional training (graduate degree). Because we did not have adequate representation across

TABLE 2. Content of Testing Sessions by Sample.

	Sample 1	Sample 2	Sample 3	Sample 4
<i>Self-report Measures</i>				
Trauma history questionnaire	•	•	•	•
Trauma-related distress measures	•	•	•	•
Trauma-related appraisal questionnaire	•	•	•	•
Response to research participation questionnaire	•	•	•	•
<i>Face-to-face Interview</i>				
Modified Thematic Assessment	•			•
Measurement System Interview				
<i>Consent Procedures</i>				
Written and verbal descriptions of consent information	•	•	•	•
Consent quiz	•			•
<i>Study Contrast Weights</i>				
Comparing studies that involved questionnaire only versus questionnaire + interview methods	1	-1	-1	1

Note: The trauma-related appraisal questionnaire, administered in Samples 2, 3, and 4, was under development in this project; therefore, analyses related to this questionnaire are not reported here.

different racial and ethnic groups to justify analyses of these groups separately, participants were coded as belonging to an ethnic/racial minority group (1) or not (-1). Participants who reported bi-racial/ethnic identities that included Caucasian/Euro-American background were coded as 1.

All participants completed the Brief Betrayal Trauma Survey (BBTS; Goldberg & Freyd, 2006), which includes twelve behaviorally defined traumatic events, ranging from non-interpersonal traumas (e.g., natural disasters) to interpersonal traumas. For each item, participants were asked to indicate whether events occurred before and/or after age 18. Psychometric data suggests good construct validity and test-retest reliability (Goldberg & Freyd, 2006). For the purposes of the current paper, trauma exposure was operationalized as the sum of separate events reported. For example, if a participant reported a physical assault before age 18 and a sexual assault after age 18, the sum was 2.

Several measures of distress were administered, including the Dissociative Experiences Scale (DES; Bernstein & Putnam, 1986), Revised Civilian Mississippi Scale for PTSD (RCMS; Norris & Perilla, 1996), and Trauma Symptom Checklist-40 (Briere and Runtz, 1989). The DES is a 28-item self-report measure that assesses dissociation (Bernstein & Putnam, 1986). Participants indicate what percentage of time they experience each of the 28 items, such as "Some people find that they become so involved in a fantasy or daydream that it feels as though it were really happening to them." The DES has been

shown to have good validity and reliability (Bernstein & Putnam, 1986). The measure is scored by taking an average across the 28 items for each participant.

The RCMS is a self-report measure of posttraumatic symptoms derived from the original version of the scale used in veteran populations (Norris & Perilla, 1996). The RCMS contains 30 items and has been shown to be a reliable and valid measure of PTSD across a variety of traumas (Norris & Perilla, 1996). Participants rate items on a scale of one (not at all true) to five (extremely true). Sample items include "Since the event, unexpected things make me jump" and "I try to stay away from anything that will remind me of things which happened during the event." Responses to all items were summed to result in a total PTSD symptom severity score.

The Trauma Symptom Checklist-40 (TSC; Briere and Runtz, 1989), a 40-item checklist, assesses symptoms commonly associated with the experience of traumatic events across six domains: depression, dissociation, anxiety, sexual problems, sleep disturbance, sexual trauma index. Participants indicate how frequently they experience each of the forty items on a scale of "0 (never)" to "3 (often)". The TSC-40 is scored by summing responses, and has been shown to have good reliability and validity (e.g., Elliott & Briere, 1992). Sample items include "anxiety attacks" and "trouble getting along with others."

Because the purpose and length of sessions varied across samples, all three distress measures were not

administered to all participants in each sample. For example, session length for Samples 2 and 3 was shorter than for Samples 1 and 4, resulting in administration of fewer questionnaires in those samples. Therefore, analysis of distress measures separately would have resulted in considerable missing data. To address this problem, we conducted a principal-components analysis (PCA) with the direct oblimin rotation method on the three symptom measures (DES, PTSD symptom severity, TSC-40 total score) for those participants who completed all measures across the three samples ($N = 151$). The symptom measures loaded on to a single factor (loadings $>.80$). The same solution was obtained using the orthogonal method of rotation. Because this factor analysis demonstrated that the measures tapped an underlying trauma-related distress construct, we transformed DES, PTSD, and TSC-40 scores into z-scores and calculated a mean to create a trauma-related distress score. For the majority of participants (approximately 66%), the trauma-related distress variable was composed of 2 or 3 measures.¹ This approach allowed us to minimize missing data that would have decreased the number of participants in analyses where a particular symptom measure was used. For example, if we used PTSD scores as a predictor in a multiple regression analysis, the N would have been systematically decreased because the majority of participants in Sample 3 did not complete this measure.

Finally, participants in all samples completed the Response to Research Participation Questionnaire (RRPQ; Newman & Kaloupek, 2001), a 23-item measure composed of five factors (Newman, Willard, Sinclair, & Kaloupek, 2001). Participants are asked to respond to statements regarding research participation on a scale of 1 (strongly disagree) to 5 (strongly agree). Sample items for the five factors include (1) *Participation*: I like the idea I contributed to science; I felt I could stop participating at any time; (2) *Personal Benefits*: I gained insight into my experiences through research participation; I found participating in this study personally meaningful; (3) *Emotional Reactions*: The research raised emotional issues for me that I had not expected; I experienced intense emotions during the research session; (4) *Perceived Drawbacks*: The study procedures took too long; Participating in this study was inconvenient for me; Knowing what I know now, I would participate in this study again (reverse scored); (5) *Global Evaluation*: I was treated with respect and dignity; I trust that my replies will be kept private. Cronbach's alphas for these scales were very good: Participation = .72; Personal Benefit = .82; Emotional Reactions = .79; Perceived Drawbacks = .76; Global Evaluation = .87.

The RRPQ was scored by computing averages for each of the five scales. Research-related costs were operationalized as average scores on the Emotional Reactions and Perceived Drawbacks scales. Research-related benefits were operationalized as scores on the Personal Benefits scale. To capture the cost-benefit ratio, we calculated two difference scores: (1) Personal Benefits minus Emotional Reactions; and (2) Personal Benefits minus Perceived Drawbacks.

Semi-Structured Interview. Participants in Samples 1 and 4 took part in a modified version of an established semi-structured interview, the Thematic Assessment Measurement System (TAMS; Lifton, 1996; Newman, Riggs, & Roth, 1997; Roth & Newman, 1993; Roth & Newman, 1991). The interview was used to elicit information regarding cognitive and emotion themes (e.g., shame, fear, rage) experienced in response to various forms of trauma exposure. While initially developed with sexual assault survivors, the interview was adapted by DePrince (2001) for use with survivors of multiple types of traumatic events; further, questions regarding feelings of betrayal were added to the interview. The interview generally took 45–90 minutes.

PROCEDURE

Prior to data collection, procedures were reviewed and approved by the Institutional Review Board of the university where this research took place. In all samples, participants received an informed consent form and were given a verbal description of the study as well as opportunities to ask questions. In Samples 1 and 4, participants were given a consent "quiz" to assess understanding of the consent information. Participants who were unable to answer all consent quiz questions correctly by the second administration were paid for their time, but not tested; this criterion resulted in one person being excluded from the study.

Following consent procedures, participants in Samples 1 and 4 completed the BBTS, which was given to the interviewer(s). The interviewer(s) then guided the participant through the semi-structured interview. Sample 1 participants completed interviews with one interviewer; sample 4 participants completed interviews with two interviewers. Interviews were conducted by doctoral students in psychology or the first author. At the end of the interview, participants were asked to complete the self-report questionnaires.

Following consent procedures in Samples 2 and 3, participants completed the self-report questionnaires. Testing sessions were completed in a group format, where participants completed questionnaires while research assistants were available to answer questions.

Upon completion of study-related measures in all samples, participants completed the RRPQ. Participants were then debriefed as to the purposes of the study and given an educational newsletter that described community resources related to abuse and trauma.

Results

Please note that analyses rely on data from self-report questionnaires. Thus, while the samples varied in whether they completed an interview or not, they did not differ in the method of data collection for variables used in analyses.

Demographic, trauma-related distress and trauma exposure scores are reported in Table 1 by sample. RRPQ scale scores are reported in Table 3. To provide a baseline for interpreting findings related to scale scores, we first tested whether scale scores differed from 3 (neutral). Notably, Emotional Reaction scores did not differ from 3 (neutral) in Samples 1, 3, and 4. In Sample 2 (undergraduate sample), the Emotional Reaction score was significantly less than 3, indicating disagreements with statements about negative/unexpected emotional reactions. In all samples, Perceived Benefits, Global Evaluation, and Participation scores were significantly

greater than 3 (neutral); Drawbacks were significantly less than 3 (neutral).

Cost-Benefit Ratios. To evaluate whether these samples replicated the good cost-benefit ratios reported in other research (Newman & Kaloupek, 2004), we conducted paired-sample *t*-tests within each sample comparing Personal Benefits (benefit) to Emotional Reactions (cost) scores and Drawbacks (cost). Participants in all samples reported that personal benefits were greater than emotional reactions: Community Sample 1 with interview ($t(71) = -10.61, p < .001$; Cohen's $d = 1.44$), Undergraduate Sample 2 questionnaire only ($t(129) = 6.09, p < .001$; Cohen's $d = .68$), Community Sample 3 questionnaire only ($t(211) = 5.38, p < .001$; Cohen's $d = .41$), and Community Sample 4 with interview ($t(112) = 13.30, p < .001$; Cohen's $d = .88$). Notably effect sizes were large for the two community samples that involved interviews. Effect sizes were medium and small for the undergraduate and community questionnaire-only samples respectively.

Participants in all samples also reported that personal benefits outweighed drawbacks: Community Sample 1 with interview ($t(71) = 19.21, p < .001$; Cohen's $d = 3.69$), Undergraduate Sample 2 questionnaire only ($t(129) = 11.70, p < .001$; Cohen's $d = 1.65$), Community Sample 3

TABLE 3. Mean (SD) RRPQ Scale Scores by Sample.

	Sample 1: Community with Interview ^a	Sample 2: Undergraduate with Questionnaires Only ^b	Sample 3: Community with Questionnaires Only ^c	Sample 4: Community with Interview ^d	Differences Between Groups
Personal Benefit	4.03 (.60)*	3.15 (.81)*	3.47 (.88)* <i>n</i> = 212	3.97 (.75)*	a,b a,c b,c b,d
Global Evaluation	4.61 (.44)*	4.55 (.44)*	4.03 (.81)* <i>n</i> = 209	4.51 (.67)* <i>n</i> = 113	a,c b,c c,d
Participation	4.51 (.48)* <i>n</i> = 71	4.26 (.53)*	3.93 (.85)* <i>n</i> = 207	4.44 (.66)* <i>n</i> = 113	a,c b,c c,d
Drawbacks	1.76 (.63)*	1.97 (.61)*	2.43 (.80)*	1.82 (.60)* <i>n</i> = 113	a,c b,c c,d
Emotional Reactions	2.82 (1.03)	2.56 (.93)*	3.09 (.96)	3.17 (1.03) <i>n</i> = 113	b,c b,d c,d
Personal Benefits Relative to Emotional Reactions (difference score)	1.21 (.97)	.59 (1.11)	.38 (1.02)	.79 (.99) <i>n</i> = 113	a,b a,c a,d c,d
Personal Benefits Relative to Drawbacks (difference score)	2.27 (1.00)	1.18 (1.15)	1.04 (1.36)	2.14 (1.09) <i>n</i> = 113	a,b a,c b,d c,d

Note: Letters indicate differences between groups revealed by Tukey's Honest Significant Difference (HSD) test ($p < .05$). For Personal Benefit, Global Evaluation, Participation, Emotional Reactions, and Drawbacks scores, asterisks (*) indicate that means scores differ from 3, the neutral rating on the scale, using a one-sample *t*-test ($p < .05$). Personal Benefits relative to Emotional Reactions and Personal Benefits relative to Drawbacks are difference scores, where higher numbers indicate better benefit-to-cost ratios. Sample sizes are given if missing data.

questionnaire only ($t(211) = 11.13, p < .001$; Cohen's $d = 1.24$), and Community Sample 4 with interview ($t(112) = 20.92, p < .001$; Cohen's $d = 3.17$). All effect sizes were large.

In addition to mean RRPQ scores, we examined the two items that assessed regret, finding that similar to past research, a small minority of participants appear to regret participation. Of the 518 participants who answered question 2 (Knowing what I know now, I would participate in this study if given the opportunity), 17 (3.86%) reported strong disagreement and 20 reported somewhat disagreement. Of the 517 participants who answered question 22 (Had I known in advance what participating would be like, I still would have agreed to participate), 17 (3.29%) reported strong disagreement and 15 (2.90%) reported somewhat disagreement.

Predicting RRPQ Scale Scores. To examine the relative contributions of trauma-related, individual, and methodological factors to RRPQ scores, a series of simultaneous regression analyses were conducted. The following variables were entered as predictors: demographic (age, minority status, sex), trauma (total number of events), trauma-related symptoms (z -scores), and study contrast weight (-1 for questionnaires only; and 1 for questionnaires plus interview). Table 4 lists inter-correlations among all relevant variables. Table 5 lists regression coefficients and R^2 statistics for all simultaneous regressions described below.

The Personal Benefit scale taps benefits to the individual, such as gaining insight or meaning. The full model was significant ($F(6,477) = 15.09, p < .001$). Identifying with a racial/ethnic minority group and interview procedures predicted greater perceived benefits. Though they did not reach conventional significance levels, trends suggested that older age and greater trauma-related symptoms were associated with greater perceived benefits.

The Global Evaluation scale taps beliefs about the importance of the research and the integrity of the research process (e.g., responses will be kept private). The full model was significant ($F(6,473) = 12.37, p < .001$). Younger age, female sex, and interview procedures were uniquely associated with better global evaluations. A trend suggested that trauma-related symptoms were associated with poorer global evaluations.

The Participation scale taps important global concepts, such as the participants' perceptions of the value of the trauma-related research and the participants' beliefs about empowerment to stop the research. The full model was significant ($F(6,470) = 12.12, p < .001$; $R^2 = .13$). Identifying with a racial/ethnic minority group was associated with lower Participation scores, while being female and total number of traumas reported

were associated with higher scores. Interview procedures relative to questionnaire procedures were associated with higher Participation scores.

The Drawbacks scale tapped regret and negative perceptions about the research procedures (e.g., too long, boring). The full model was significant ($F(6,476) = 15.69, p < .001$). Male sex, questionnaire procedures, and higher levels of trauma-related symptoms were associated with greater perceptions of drawbacks.

The Emotional Reactions scale tapped unexpected and negative emotions during participation. The full model was significant ($F(6,476) = 16.30, p < .001$). Older age and greater trauma-related symptoms were associated with greater perceived emotional reactions. A trend suggested that as the number of traumas reported increases, so too does unexpected or negative emotional reactions.

Predicting Relative Benefits to Costs. As detailed in the Methods, we next calculated two net benefit variables: (1) Personal Benefit minus Emotional Reactions scores; and (2) Personal Benefit minus Drawbacks scores (see Table 3 for descriptive statistics). Higher scores on these variables reflect greater perceived benefits relative to costs. When predicting personal benefit-emotional reaction difference scores, the full model was significant ($F(6,476) = 12.20, p = .001$). Minority status and interview procedures were associated with higher net benefits; trauma-related symptoms were associated with lower benefits relative to costs. When predicting personal benefit-drawback difference scores, the full model was significant ($F(6,476) = 16.57, p < .001$). Interview procedures were associated with greater perceived benefits relative to drawbacks.

Education. We did not include education in the multiple regression analyses because that variable was not collected in Sample 1. Because education level may be particularly important for aspects of participation, such as understanding rights as a participant, follow-up zero-order correlations were calculated between RRPQ scales scores and education. Education level was positively related to Participation ($r(423) = .17, p < .001$) and Global Evaluation ($r(423) = .20, p < .001$), though negatively related to Drawbacks ($r(426) = -.21, p < .001$).

We next turned our attention to evaluating the relationship between education level and the inclusion of a "consent quiz" on responses to the RRPQ item, "I understood the consent form." Among the community samples, participants in Sample 4 (interview procedure) completed a "consent quiz" to assess understanding of the consent information; however participants in Sample 3 (questionnaires only) did not complete a quiz. Given our anecdotal observations that the consent quiz

TABLE 4. Zero-Order Correlations Among Variables Used in Simultaneous Regression Analyses.

	Sex	Minority Status	Study Contrast	Sum Trauma	Symptoms	Participation	Personal Benefit	Global Evaluation	Drawbacks	Emotional Reactions	Personal Benefit Relative to Emotional Reactions	Personal Benefit Relative to Drawbacks
Age	0.28***	0.17***	0.17***	0.26***	0.16***	-0.06	0.20***	-0.14**	0.04	0.18***	0.00	0.11*
Sex		-0.01	-0.17***	-0.09*	-0.02	-0.23***	0.01	-0.25***	0.19***	0.04	-0.03	-0.10*
Minority			-0.01	0.10*	0.21***	-0.13**	0.14*	-0.09*	0.10*	0.09*	0.04	0.04
Contrast				0.27***	0.05	0.27***	0.36***	0.22***	-0.30***	0.07	0.22***	0.40***
Sum Trauma					0.45***	0.15**	0.17***	0.07	-0.05	0.26***	-0.11**	0.13**
Symptoms						-0.02	0.14**	-0.09*	0.18***	0.39***	-0.26***	-0.01
Participation							0.49***	0.76***	-0.44***	0.12**	0.29***	0.57***
Pers. Benefit								0.48***	-0.34***	0.36***	0.47***	0.85***
Evaluation									-0.48***	0.12**	0.28***	0.59***
Drawbacks										0.22***	-0.48***	-0.79***
Reactions											-0.66***	0.11*
Rel. Benefits												0.58***

* $p < .05$, ** $p < .01$, *** $p < .001$.

Note: Minority status was coded as 1 = racial/ethnic minority and -1 = non-minority. Sex was coded as -1 = female and 1 = male. Study Contrast was coded as -1 = questionnaires only and 1 = interview. Higher scores on Personal Benefits relative to Emotional Reactions and Personal Benefits relative to Drawbacks indicate better benefit-to-cost ratios.

TABLE 5. Simultaneous Regressions Predicting RRPQ Scores and Relative Benefits to Costs (difference scores).

Regression Term	B	SE(B)	Beta	t	
Participation (n = 477)					R ² = .13
Age	0.00	0.00	-0.06	-1.34	
Sex	-0.12	0.03	-0.17	-3.62***	
Minority Status	-0.08	0.03	-0.11	-2.51*	
Study Contrast	0.16	0.04	0.21	4.58***	
Sum Trauma	0.02	0.01	0.12	2.40*	
Symptoms	-0.03	0.04	-0.04	-0.89	
Personal Benefit (n = 484)					R ² = .16
Age	0.01	0.00	0.09	1.91^	
Sex	0.03	0.04	0.03	0.69	
Minority Status	0.10	0.04	0.12	2.73**	
Study Contrast	0.30	0.04	0.33	7.36***	
Sum Trauma	0.00	0.01	0.01	0.15	
Symptoms	0.08	0.04	0.09	1.78^	
Global Evaluation (n = 480)					R ² = .14
Age	-0.01	0.00	-0.12	-2.62**	
Sex	-0.13	0.03	-0.19	-4.16***	
Minority Status	-0.04	0.03	-0.06	-1.26	
Study Contrast	0.15	0.03	0.20	4.40***	
Sum Trauma	0.01	0.01	0.07	1.43	
Symptoms	-0.06	0.04	-0.09	-1.80^	
Emotional Reactions (n = 483)					R ² = .17
Age	0.01	0.00	0.10	2.23*	
Sex	0.01	0.05	0.01	0.21	
Minority Status	-0.01	0.04	-0.01	-0.12	
Study Contrast	0.00	0.05	0.00	-0.03	
Sum Trauma	0.02	0.01	0.08	1.69^	
Symptoms	0.35	0.05	0.34	7.06***	
Drawbacks (n = 483)					R ² = .17
Age	0.00	0.00	0.05	0.99	
Sex	0.09	0.03	0.11	2.53*	
Minority Status	0.04	0.03	0.06	1.35	
Study Contrast	-0.24	0.04	-0.31	-6.91***	
Sum Trauma	-0.01	0.01	-0.06	-1.17	
Symptoms	0.14	0.04	0.18	3.69***	
Personal Benefits Relative to Emotional Reactions (n = 483)					R ² = .13
Age	0.00	0.00	-0.02	-0.46	
Sex	0.01	0.05	0.01	0.26	
Minority Status	0.11	0.05	0.10	2.30*	
Study Contrast	0.30	0.05	0.27	5.81***	
Sum Trauma	-0.02	0.01	-0.08	-1.55	
Symptoms	-0.27	0.05	-0.24	-4.99***	
Personal Benefits Relative to Drawbacks (n = 483)					R ² = .17
Age	0.00	0.00	0.03	0.75	
Sex	-0.06	0.06	-0.05	-1.05	
Minority Status	0.06	0.06	0.05	1.05	
Study Contrast	0.54	0.06	0.39	8.67***	
Sum Trauma	0.01	0.02	0.03	0.66	
Symptoms	-0.06	0.07	-0.04	-0.87	

* $p < .05$, ** $p < .01$, *** $p < .001$.

Note: Results from seven separate simultaneous regression analyses are reported in this table. Higher values on the difference score variables indicate greater benefits after subtracting perceived costs. Minority status was coded as 1 = racial/ethnic minority and -1 = non-minority. Sex was coded as -1 = female and 1 = male. Study Contrast was coded as -1 = questionnaires only and 1 = interview.

offered opportunities to discuss informed consent information more fully, we were interested in whether after controlling for education level, participants in Sample 4 would make higher ratings in response to the statement “I understood the consent form” than in Samples 3 (questionnaire-only) where there was consent quiz. Both Sample 3 (*Mean*: 4.30; *SD*: .07) and Sample 4 (*Mean*: 4.65; *SD*: .73) reported, on average, agreeing that they understood the consent information with Sample 4 ratings being significantly higher ($t(285.71, \text{unequal variances}) = 3.61, p < .001$). In a multiple regression analysis, both higher levels of education ($\beta = .14$) and participation in Sample 4 with the consent quiz were associated with higher scores on this item.

Discussion and Summary

The current study examined responses to participation in trauma-research among more than 500 community and undergraduate participants who were all tested by the same research team. Consistent with past research, participants reported positive cost-benefit ratios. That is, participants rated personal benefits significantly higher than negative/unexpected emotional reactions and drawbacks of participation; the effect sizes were medium to large. Participants made positive appraisals of the research process overall. For example, participants’ average responses to the Personal Benefits, Global Evaluation, and Participation scales were significantly greater than the neutral point on the scale. Further, participants’ average response on the Drawback scale was significantly lower than neutral, indicating disagreement with Drawback statements. Emotional reactions did not differ from neutral in the three community samples; however, emotional reactions were rated as significantly *less* than neutral in the undergraduate sample. That is, undergraduates on average *disagreed* with statements tapping negative or emotional reactions. Only a small minority of participants responded in ways that indicated experiencing regret about participation (approximately 11% of the full sample). In sum, the cost-benefit ratio for this trauma research was not only stable, but positive, across four samples (3 community and 1 undergraduate). Thus, the study provides additional evidence for investigators as well as IRBs and oversight committees that trauma research with diverse populations can be carried out safely.

We examined several predictors of RRPQ scale scores, including methodological, demographic, and trauma-related variables. Strikingly, the inclusion of interview procedures was consistently associated with more positive appraisals than questionnaire only procedures (i.e.,

interview procedures associated with higher scores on the Personal Benefit, Participation, Global Evaluation, and net benefit variables when compared to questionnaire only procedures) even after controlling for relevant demographic and trauma-related factors. While interview procedures might at first glance seem potentially higher in risk compared to questionnaires because participants are asked to share more in-depth (and perhaps more personal or emotionally-relevant) information in a relational context, the data suggest that these procedures are actually associated with greater benefits.

Though interview procedures were consistently related to favorable personal outcomes, the relationship between demographics and outcomes was more variable. We found support for some previous findings; for example, older age was associated with greater emotional reactions and lower global evaluation scores. Minority status was associated with lower Participation scores, but higher Personal Benefit scores. These findings suggest that participants who belong to ethnic minority groups feel less empowered to comment on the research process as it unfolds, but also experience benefit from having their experiences and voices heard through research. The latter is consistent with feminist arguments about the important role research can play in giving voice to the experiences of traditionally oppressed groups (e.g., Anderson, Armitage, Jack & Wittner, 1990).

Trauma-related symptoms (e.g., depression, anxiety) were associated with greater negative/unexpected emotional reactions and greater emotional costs relative to personal benefits. On the other hand, trauma exposure (defined here as the number of different events reported) was not associated with differences in cost-benefit ratios or positive perceptions of research. Thus, in spite of studies documenting that repeated trauma exposure is associated with negative outcomes (e.g., increased psychological distress; Classen et al., 2005) and therefore could signal potentially more vulnerable participants, the cost-benefit ratio continues to appear unrelated to number of trauma exposures.

Best Practices

In the absence of empirical data, IRBs and researchers might predict that interview procedures place participants at higher risk of negative emotional reactions than questionnaire procedure insofar as participants generally share more (or more in-depth) personal information during interviews. Further, participants share information directly with another person in the course of an interview (versus sharing indirectly via questionnaires), potentially increasing social risks such as embarrassment.

However, our data suggest that the inclusion of interview (relative to questionnaires only) procedures is actually associated with greater perceptions of benefits and engagement in the research process, as well as with stronger benefit-to-cost ratios. Interview procedures may provide participants with more extensive opportunities for reflection, perspective-taking and meaning-making than questionnaires. Indeed, feminist scholars have long argued that interview and narrative methods are particularly important in studying the experiences of women and oppressed groups because narrative allows the participant to communicate context (e.g., Anderson et al., 1990; Roth & Newman, 1991). In addition to helping researchers understand trauma survivors' internal experiences and contexts, interview procedures may also create opportunities for participants to understand more about their own worlds.

Thus, all decisions being equal (e.g., regarding resources, study goals, etc.), the inclusion of interviews in study procedures may help maximize the personal benefits perceived by participants. That being said, the interviews in the current study were specifically designed to elicit participants' beliefs and feelings about the trauma. Whether all interviews—for example, more structured or symptom-focused interviews—would also maximize participants' perceptions of personal benefit over questionnaires remains an empirical question. Further, we capitalized on existing data from a larger study, consequently, random assignment to testing procedure conditions was impossible. Thus, we do not have the degree of control over extraneous variables seen in other studies (e.g., DiLillo et al., 2006).

However, several important factors were controlled. Data for all four samples were collected by the same research team under the training and direction of a single principal investigator. Therefore, it is unlikely that differences between samples are due to variation in the researchers' training or approach to trauma-research. Further, all individual difference data used in our analyses were drawn from self-report questionnaires. Thus, while we examined associations between different procedures (questionnaire only versus questionnaire plus interview) and responses to research participation, the same mode of assessment was used to collect data for all variables included in analyses. We look forward to future research that can address the limitations in this approach and further our understanding of the role that particular methods play in participants' appraisals of the research process.

We recommend that researchers implement a “quiz” in the consent process. In the current study, administration of a consent quiz as part of the informed consent process was associated with higher ratings on an item

tapping understanding of consent information even after controlling for education level. The consent quiz offers an additional opportunity to review consent information and thus may increase understanding of the material. In addition, inclusion of the quiz allows the investigator to set criteria by which to evaluate understanding of consent information. For example, participants were considered eligible to give informed consent in Samples 1 and 4 of the current study only if they answered all quiz questions correctly after two administrations. Using this criterion, one person was not invited to participate. The quiz may be particularly important to use with groups that are at higher risk of experiencing negative emotions in the context of trauma research participation. For example, we replicated findings about the relationship between age and higher emotional reaction scores (see Newman & Kaloupek, 2004), suggesting that investigators should take particular care in the consent and debrief processes with older participants.

Finally, we recommend that researchers make administration of the RRPQ or similar measures part of their standard testing procedures (e.g., see DePrince & Freyd, 2004 for questions geared towards assessing minimal risk). First and foremost, inclusion of such measures allows investigators to monitor the costs and benefits of participation in an ongoing fashion. With ongoing data collection, investigators can alter or adapt procedures to maximize benefits and minimize costs. Second, the ongoing collection of this type of data makes it possible for investigators to offer their IRBs empirical evidence regarding costs and benefits as part of each renewal application. Such data are useful in educating IRBs about the impact of trauma research on participation as well as demonstrating the research team's ongoing attention to ethical considerations. Third, the collection of data on responses to participation offers opportunities to conduct analyses such as those presented here to examine individual and methodological factors that contribute to perceptions of the research process while holding constant the PI, research team and training. With concerted efforts to collect and make public similar datasets across labs, the field has exciting opportunities to identify and fine-tune procedures that will maximize benefits and minimize costs.

Research Agenda

Having established that trauma research with adult participants is generally carried out within a stable and positive cost-benefit ratio (see Newman & Kaloupek, 2004), we recommend that the field now focus research attention on identifying: (1) individual difference factors that

increase risk of negative experiences in the research process; and (2) methodological factors that minimize costs and maximize benefits. The former research on individual differences is already underway and should continue across diverse samples (e.g., in terms of demographics and trauma exposure types). The latter emphasis on methodological factors is relatively new and should be expanded. The researcher's ability to identify and implement methodological procedures that maximize benefits and/or mitigate negative reactions is especially important when working with participants' whose individual characteristics place them at higher risk of negative experiences in the research process, such as in the case of links between older age and reported negative emotional reactions. With access to empirical studies that systematically evaluate the impact of methodological procedures on perceptions of trauma research, researchers will be in a position to use these data to inform research design decisions with an eye toward maximizing benefits and minimizing costs for participants.

Educational Implications

To educate local stakeholders (e.g., IRB members at the researcher's institution), we recommend that researchers summarize published findings on cost-benefit ratios in trauma research in the supporting documents of their IRB proposals. To date, the literature offers data on cost-benefit ratios across multiple samples (e.g., undergraduate, inpatient, community, clinic-referred; see Newman & Kaloupek, 2004) and trauma exposure types (e.g., combat, injury, interpersonal violence); thus, researchers can cite data specific to their projects in IRB protocols. In addition, we recommend that trauma researchers systematically collect and report on responses to participation as part of the annual renewal process. By doing so, researchers create additional opportunities to educate IRB members about the impact of specific trauma research protocols on participants. As researchers collect data on participant responses, we encourage dissemination of these findings through professional conferences and publications. Dissemination of data regarding responses to participation is a necessary and critically important step in developing and fine-tuning the best research practices that not only minimize potential costs, but also maximize potential benefits.

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Endnote

¹Because of potential concerns that the trauma-related distress variable was based on only one measure for approximately one-third of the sample, we ran follow-up analyses with the subsample of participants who had complete data for two or three of the distress measures. Findings from the subsample were comparable to the full sample; therefore, we report on the full sample.

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