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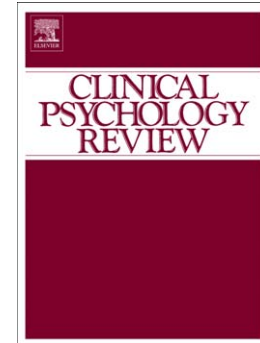
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Does it Hurt to Ask? A Meta-Analysis of Participant Reactions to Trauma Research

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Abstract

Institutional Review Boards (IRBs) are sometimes hesitant to approve trauma-related research due to concerns that asking participants about traumatic experiences will induce extreme distress. Despite the growing empirical literature examining participants' reactions to trauma-related research, no quantitative reviews have been conducted. The present multilevel meta-analysis was undertaken to quantify: (1) how participants react to trauma-related research overall; (2) to what extent reactions to trauma-related research differ by participant characteristics, including personal history of trauma, PTSD symptoms, and gender; and (3) to what extent (a) type of traumatic experience and (b) mode of administration moderate these effects. Studies examining adult participants' reactions to trauma assessments in the context of research were included. Results from 73,959 participants across 70 samples suggest that although trauma-related research can lead to some immediate psychological distress, this distress is not extreme. This distress is greater for individuals with a trauma history or PTSD, particularly in studies involving interviews. However, individuals generally find research participation to be a positive experience and do not regret participation, regardless of trauma history or PTSD. There were no gender differences in reactions. Present findings, which suggest trauma-related research can continue without harming participants, may help inform IRB decisions on trauma research.

Keywords: trauma; PTSD; ethics; research participation; multilevel meta-analysis

Does it Hurt to Ask? A Meta-Analysis of Participant Reactions to Trauma Research

Over the past several decades, researchers have conducted hundreds—perhaps thousands—of studies involving participants who have experienced traumatic events including interpersonal violence and abuse, motor vehicle accidents, natural disasters, terrorist attacks, school shootings, and military combat. This body of research has been essential in establishing a knowledge base about the nature, prevalence, and consequences of trauma experiences on both an individual and societal level. Yet, as with all research involving human subjects, the benefits gained from trauma research must be weighed against the potential costs associated with conducting these studies. Regardless of the population under study, a common aspect of research in this area is the need to ask participants whether and to what degree they may have experienced various traumatic events. In the case of child sexual abuse, for example, adult participants may be asked not only whether they were victimized, but who the offender was, the nature of the acts that were perpetrated against them, and how many times each act occurred. Military personnel may be asked to report about combat experiences, including witnessing comrades being injured or killed in battle or to report their own acts of killing.

The sensitivity of these questions raises important ethical issues about conducting research with trauma populations. Foremost is the question of whether asking participants to disclose details about their personal trauma histories produces significant and potentially lasting emotional distress. That is, do participants become emotionally overwhelmed or even “retraumatized” by the acts of recalling and reporting past trauma experiences in the context of a research study? If research reveals that answering such questions produces severe adverse reactions, the implications of this finding would be far reaching. Investigators would rightly be hesitant to conduct trauma research out of concern that the costs of asking participants would not be offset by the benefits of knowledge gained. Institutional Review Boards (IRBs) might treat trauma research as involving more than “minimal risk,” defined federally as risk for harm or distress not more than what is “encountered in daily life or during the performance of routine physical or psychological examinations or tests” (Protection of Human Subjects, 2009). In some

cases, IRBs might decline to approve trauma-related studies altogether. The result would be to stifle new research, slowing the production of knowledge about trauma that could be useful in understanding and treating the consequences of these events.

In fact, there are indications that some IRBs view trauma-related research as potentially quite risky. Yeater and Miller (2014) recently reported on their struggles with a university IRB for a study that included questions about date rape on a commonly used measure. The IRB refused to approve the study based on concerns that it involved risk beyond that encountered in daily life. In preparation for this review, we conducted a brief survey of 114 U.S. researchers who were reached through various listservs, websites, and social media outlets that cater to trauma researchers (e.g., American Psychological Association Division 56 listserv, International Society of Traumatic Stress Studies [ISTSS] website). Results showed that 61.4% of trauma researchers ($n = 70$) had an IRB “raise concerns about asking participants questions about their prior trauma experiences,” while 13.3% of researchers ($n = 15$) said that an IRB had “refused to approve a protocol due to concerns about the effects of asking participants about prior trauma experiences.” The most common IRB concern was that asking about prior trauma might cause harm by triggering negative emotions that could psychologically “shatter” participants. In a few cases, IRBs raised concerns that asking about trauma history could lead to the need for long-term therapy or even cause participants to become suicidal. To address these issues, researchers were required to modify protocols in various ways, such as adding language about risk to consent forms, providing more thorough debriefings and referral resources, dropping or modifying abuse history measures (e.g., making them less detailed), and having a licensed psychologist or social worker in the room to respond “in case a subject had an adverse reaction to the forms.”

The above data suggests widespread unease among IRBs that asking questions about trauma poses a risk to participants’ psychological well-being. The prevalence of these concerns highlights the need for empirical evidence to inform researchers and IRBs about the actual risk that these studies may pose. Fortunately, in recent years a growing empirical literature has examined the psychological impact, both negative and positive, that participation in trauma

research may have on individuals. In many cases, these investigations have occurred as ancillary parts of larger studies; other times, studies were designed expressly to understand participant reactions to trauma research. This literature covers a range of trauma-exposed populations, including individuals who have experienced interpersonal violence (child maltreatment, intimate partner violence), crime and terrorist attacks, military combat, and non-interpersonal civilian trauma (e.g., motor vehicle accidents, natural disasters).

Although several articles address more general issues related to the ethics of conducting research on sensitive topics (e.g., Becker-Blease & Freyd, 2006; Castor-Lewis, 1988; Collogan, Tuma, Dolan-Sewell, Borja, & Fleischman, 2004; Newman, Kaloupek, Keane, & Folstein, 1997), relatively few articles specifically review the empirical literature on the impact of asking participants about trauma (Jorm, Kelly, & Morgan, 2007; Legerski & Bunnell, 2010; McClinton Appollis, Lund, de Vries, & Mathews, 2015; Newman & Kaloupek, 2004, 2009; Newman, Risch, & Kassam-Adams, 2006). These qualitative reviews generally conclude that, although a minority of participants endorses psychological distress following trauma-related research, this distress is mild and transitory. In addition, individuals who endorse distress do not necessarily regret participation, but often report benefit from taking part in trauma research. These reviews have also tried to identify individuals more susceptible to distress arising from trauma research. For example, Legerski and Bunnell (2010) suggested that a history of trauma exposure and symptoms of posttraumatic stress disorder (PTSD) might be associated with more adverse reactions to participation. However, they note that some studies have not replicated the associations between PTSD and distress (e.g., Newman, Willard, Sinclair, & Kaloupek, 2001), and call for a quantitative synthesis of relevant studies to clarify this effect. McClinton Appollis et al. (2015) suggest there may be gender differences in reactions, in part due to societal power inequities and differences in support, but the exact nature of such differences remains unclear. In addition to examining individual risk factors for distress, Legerski and Bunnell (2010) suggest that mode of assessment may impact participant reactions to research. However, they review only three studies on this topic, limiting any conclusions about the specific nature or degree of

this potential impact.

These qualitative reviews provide useful syntheses of the literature, but like all narrative summaries they may be influenced by subjectivity in the study selection, the way the findings across studies are interpreted (e.g., by “eyeballing” patterns of data), and the overall conclusions that are reached. Because trauma researchers may be motivated to minimize reports of risk, inadvertent bias in each of these areas is a challenge. Finally, although research on the impact of trauma research has accelerated in recent years, the most current qualitative review (McClinton Appollis et al., 2015) included only 26 adult studies. We identified an additional 32 published reports on reactions to trauma research that were eligible for the current meta-analysis.¹ Thus, there is need for a comprehensive, up-to-date review of this literature. The present study fills this need by providing the first meta-analysis of adults’ reactions to participation in trauma-related research.² Our primary research questions were:

- (1) How do adult participants react to trauma-related research overall? Here, we examined several types of participant reactions as outcomes, including: (a) psychological distress associated with participation; (b) perceived benefits of participating; (c) participants’ global (positive or negative) reactions to their involvement trauma-related research; (d) regret about participating in trauma-related research; (e) degree of perceived coercion (e.g., whether participants felt they could say no to participation); and (f) perceived sensitivity of trauma-related questions (e.g., believing that questions were too personal or private).
- (2) Do reactions to trauma-related research differ by participant characteristics, including

¹Some studies reviewed by McClinton Appollis et al. (2015) were not eligible for the current meta-analysis due to factors such as qualitative results, insufficient information to create effect sizes, or that data are redundant with more inclusive results on larger samples.

²We confined this review to the adult trauma literature. Although some studies examine children’s reactions to participation in trauma-related research (e.g., Chu, DePrince, & Weinzierl, 2008; Kassam-Adams, & Newman, 2005), a child’s understanding of the research process—and reactions to it—are likely qualitatively different from those of adults.

personal history of trauma, PTSD symptoms, and gender? With this question, we investigate the associations between each of these three factors and participant reactions. A history of trauma may heighten negative reactions to participation, particularly if the type of trauma experienced is consistent with that being assessed in a study. Greater reactions to trauma research may also be associated with PTSD symptoms, such that greater levels of PTSD symptoms heighten sensitivity to the assessment of prior trauma experiences. Further, findings consistently show that women's psychological reactions to comparable trauma experiences tend to be more severe than men's (see Olff, Langeland, Draijer, & Gersons, 2007; Tolin & Foa, 2006). Similar gender differences may be present in women's and men's reactions to trauma research.

- (3) Two potential moderators of the associations between participant characteristics and reactions (examined in question 2) will be considered.
- a. First, to what extent does the type of traumatic experience moderate associations between participant characteristics and reactions? Trauma experiences differ in important ways, including amount of interpersonal contact (e.g., sexual assault vs. a tornado), feelings of self-blame arising from the experience, and degree of social stigma associated with the event. These factors are particularly salient for individuals who have experienced sexual abuse or assault (Amstadter, & Vernon, 2008; Finkelhor & Browne, 1985; Krupnick et al., 2004). In turn, questions about sexual trauma may be of a particularly sensitive nature. Thus, we tested whether the reactions of adults participating in research on sexual victimization differed from those reported by victims of non-sexual trauma.
 - b. Second, mode of administration (self-report measures vs. interviews) may impact associations between participant characteristics and reactions. A few studies directly comparing participant reactions by mode of administration suggest that participants most prefer computerized questionnaires (DiLillo, DeGue, Kras, Di Loreto-Colgan, & Nash, 2006) but report the most benefit from interviews

(DePrince & Chu, 2008). Based on these findings, studies with self-report measures might have weaker associations between participant characteristics and distress than procedures involving interviews, which might lead to stronger associations between participant characteristics and perceived benefit.

Method

Literature Search

Several search methods were used to identify eligible studies published or available between 1967 and October 2014. First, the electronic databases PsycInfo, PubMed, and Google Scholar were searched to identify studies that included at least one of each of the following groups of search terms: (a) *trauma, child abuse, physical abuse, sexual abuse, assault, violence, combat, posttraumatic stress, natural disaster, catastrophe, witness, injury*, (b) *participa**, and (c) *distress*, ethic*, risk*, reaction*, response**. In addition, the reference sections of identified articles and relevant review articles were searched for further articles meeting the below inclusion criteria. Relevant journal websites (i.e., outlets in which included articles were published) were searched to identify in-press articles available online. Finally, calls for unpublished data were made through various listservs for researchers of trauma and violence.

Inclusion and Exclusion Criteria

Potentially relevant studies were evaluated for inclusion according to several specific criteria. Specifically, studies were included if: (a) participants were asked about personal traumatic experiences (i.e., child maltreatment, sexual or physical assault, intimate partner violence, crime, terrorist attacks, military combat, motor vehicle accidents, natural disasters), (b) participants provided self-report information on their experience of being asked about traumatic events (e.g., emotional reactions, perceptions of benefits, or thoughts related to regret), and (c) participants were adults (i.e., a majority of participants were at least 18 years old). The scope of the current review was limited to studies examining participant reactions to trauma assessments in the context of research. Studies assessing the benefit of writing about or disclosing traumatic experiences as a means of intervention (e.g., Pennebaker, 1997) were not included, as these

studies do not focus on disclosing a traumatic event for the sole purpose of research. Studies focusing only on bereavement were also excluded because the focus of these studies is often on the deceased or circumstances surrounding the death, and not on witnessing or experiencing a personally traumatic event.

Articles on participant reactions to assessment of traumatic experiences were excluded if: (a) the study results were not communicated or published in English, (b) participant reactions may have been substantially affected by other experimental procedures involved in the study (e.g., tasks designed to induce negative emotions), (c) the only relevant outcome(s) was based on spontaneous responses rather than reactions captured for all study participants, (d) the measure of distress was inferred instead of explicit (e.g., completion of the survey, utilization of health services), (e) qualitative responses were coded into non-independent categories, (f) responses were non-independent (e.g., participants were both partners of a couple; repeated assessments of *both* trauma exposure and participant reactions, in which case only the initial assessment was included in analyses), (g) participant reactions were assessed retrospectively (due to the fallibility of retrospective reporting; see Schwarz, 2007), or (h) participants were asked about traumatic events experienced by others, such as their children.

Studies were excluded if sufficient information was not provided to compute effect sizes or overall means of reactions to participation. A total of 27 corresponding authors were contacted for additional information; 14 of these queries received responses, including 8 authors who provided additional data or results. In addition, raw data were acquired from the National Archive of Criminal Justice Data, Inter-university Consortium for Political and Social Research (Kilpatrick, Resnick, Ruggiero, Conoscenti, & McCauley, 2010) to supplement information in the Kilpatrick et al. (2007) report. Finally, although long-term reactions to participation (i.e., assessed at follow-up) were coded and considered for inclusion, sufficient information for analyses was only provided for 4 samples. As such, analyses regarding long-term reactions were excluded from the present study.

These strategies yielded a total of 44 published studies, 1 unpublished dissertation, 4

unpublished datasets, and 2 governmental or organizational reports that were eligible for inclusion in the meta-analysis. Given that some samples are used in multiple publications and some papers report on multiple samples, unique samples were used in analyses. Data provided for subsamples were not included if the data were redundant with more inclusive results on larger samples. Overall, 70 unique samples are represented in the present meta-analysis.

Coding of Studies

Two doctoral students and a postdoctoral fellow coded studies according to a standardized coding form and met regularly to discuss coding discrepancies until agreement was reached. Two researchers reviewed each study. Each study was coded for participant characteristics (e.g., sample size, gender, ethnicity, age, trauma type, severity, symptoms), measurement characteristics (e.g., format and setting in which trauma-related questions were asked, whether non-trauma-related questions were administered), and outcomes (e.g., distress and benefits associated with study participation). In addition, studies were coded for publication type (e.g., peer-reviewed journal article, unpublished manuscript) and study design (e.g., quasi-experiment, pre-post design).

In examining predictors indicated by the research questions, many distinct outcomes (i.e., reactions to participation), trauma types, and modes of administration were represented across samples, resulting in small cell sizes. To address this concern, values were re-categorized into fewer, more parsimonious groups based on conceptual similarities. Specifically, type of outcome was grouped into six categories: (a) *distress* (e.g., negative emotional reaction, upset, drawbacks); (b) *benefits* (e.g., belief the research is important or worthwhile, positive emotional reactions, satisfaction); (c) *global evaluation* of participation on a bipolar scale (e.g., affect reported on a scale from calm to tense; qualitative responses coded as positive, neutral, or negative; cost-benefit ratings); (d) *regret* (also includes whether researchers “should ask” these questions, whether participants would participate in a similar study again); (e) feeling free from *coercion* (e.g., participants felt they could say no to participation, understood the consent form); and (f) believing that questions were *too personal* or private. Trauma types were grouped based

on whether the type of victimization used for categorization included only non-sexual trauma experiences (e.g., combat, child physical abuse, neglect, witnessing attacks of September 11th), or included any sexual victimization (i.e., the “sexual victimization” category included classifications based on history of sexual abuse or assault, interpersonal victimization, and any Criterion A trauma). Mode of administration for trauma-related questions was grouped based on whether or not participants were asked to answer questions in an interview format, either via telephone or in person. Overall sample means, effect sizes, and group means for reactions to participation were recorded or computed when possible.

Description of Studies

Individual study sample sizes ranged from 16 to 9,684 participants ($M = 1,056.56$, $SD = 1,774.97$) and yielded a total sample size of $N = 73,959$ (73.4% female). Published studies included in the analyses were published between 1999 and 2014. In 61 of 70 samples, reactions to participation were only assessed after trauma-related surveys were administered (i.e., post-test only), 5 samples included a post-test with follow-up, 3 samples included a pre- and post-test, and 1 included a pre- and post-test with follow-up. Although complete study information was not always detailed in available reports, at least 56 samples (80%) were drawn from larger studies involving additional measures not directly related to traumatic experiences or trauma-related distress (e.g., assessments of alcohol use, health risk behaviors, sexual behaviors).

With regard to assessment of participant reactions, in 25 of 70 samples, the Reactions to Research Participation Questionnaire (RRPQ; Newman et al., 2001) or a variant of this scale was used as an outcome measure. In 15 samples (from the same worldwide report; Garcia-Moreno, Jansen, Ellsberg, Heise, & Watts, 2005), researchers coded qualitative responses. In 3 samples, outcomes involved state measures of mood or emotion (e.g., State-Trait Personality Inventory; Spielberger, Ritterband, Sydeman, Reheiser, & Unger, 1995) to assess reactions to participation. The remaining 25 samples utilized questions developed specifically for the purpose of the study to assess reactions to participation. See Table 1 for a full description of studies.

Results

Analytic Rationale

Effect sizes were computed to represent standardized mean differences. Hedges' (1981) g was chosen as the effect size because it corrects for small sample sizes (Lipsey & Wilson, 2001). The Hedges' g metric is on the same magnitude as Cohen's d . Thus, Hedges' g can be interpreted using Cohen's (1969) recommendations for d , with $g = .20$, $.50$, and $.80$ representing small, medium, and large effects, respectively (Card, 2012). Individual effect sizes were computed using the Comprehensive Meta-Analysis software (Borenstein, Hedges, Higgins, & Rothstein, 2005). Additional formulas were used to compute Hedges' g from odds ratios (Card, 2012) and omnibus F s (Rosenthal, Rosnow, & Rubin, 2000). Effect sizes for group differences (e.g., those with and without PTSD) and associations between variables of interest (e.g., PTSD severity and reactions to research) were both included.

Means and effect sizes were all coded in the same direction, such that higher scores indicate worse outcomes, to prevent artificial differences between outcomes of opposite valences (e.g., distress and benefits). Further, this standardization was necessary for outcomes in which both positive and negative responses were represented on a single scale or response option (i.e., were bipolar). More specifically, a *positive effect size* in the present study indicates that victims, those with PTSD, or women endorse *more distress* or *fewer benefits* when compared to non-victims, those without PTSD, or men, respectively. Based on Card's (2012) Equation 7.1 (p. 148), all overall and group means and standard deviations³ were transformed to be on a scale from 1 to 5, with *higher* scores representing *more distress* or *fewer benefits*.

Multilevel meta-analysis (e.g., Hox, 2010) was used to quantify and predict heterogeneity of the obtained outcomes (i.e., effect sizes or means) as estimated via restricted maximum likelihood in SAS PROC MIXED v 9.3. In these general linear mixed models, the level-1 residual variance for each outcome was fixed to the inverse of its sample variance (i.e., $1 / \text{its}$

³ To obtain a standard deviation on a 1 to 5 scale, the original standard deviation was multiplied by a ratio of the range represented in the desired scale ($5 - 1 = 4$) to the range represented in the original scale.

squared standard error) to represent the original participant variability around each outcome. Intercept-only (i.e., empty) models were first estimated to quantify the extent of heterogeneity, in which a separate fixed intercept was estimated for each type of outcome (e.g., distress, benefits). The extent of variability across outcomes (i.e., heterogeneity of effect size) is indexed by random intercept variances. However, given that two levels of random intercepts may be necessary to account for the dependency (correlation) of outcomes from the same sample, the outcome variability within samples and between samples was represented by level-2 and level-3 random intercept variances, respectively. To assess the significance of heterogeneity at each level, we conducted likelihood ratio tests between nested models. Specifically, we compared models with no random intercept variances (i.e., fixed effects models) to models with a level-2 random intercept variance only (which allows for heterogeneity but predicts no correlation among outcomes from the same sample) to models with random intercept variances at both level 2 and level 3 (which then predicts a correlation of outcomes from the same sample). In addition, level-2 random intercept variances were allowed to differ by type of outcome when this did not result in a non-positive definite G matrix (i.e., as long as separate random intercept variances could be estimated).

These likelihood ratio tests result in a χ^2 statistic that indicates significant heterogeneity of effect size (known as Q in meta-analysis) and are preferred over Wald tests for quantifying heterogeneity in multilevel meta-analyses (Hox, 2010). Further, given that variances are bounded at 0, a mixture χ^2 distribution (Stoel, Garre, Dolan, & van den Wittenboer, 2006) was used for all likelihood ratio tests (except in models in which level-2 random intercept variances were allowed to differ by type of outcome). That is, a critical value of 2.71 was used instead of 3.84 to reflect that the appropriate χ^2 test statistic derives from a mixture of distributions with 0 or 1 degree of freedom. Exact p -values were computed by dividing the p -values obtained using 1 degree of freedom by 2 given that a χ^2 distribution with 0 degrees of freedom has no mass ($p = 0$).

Further, the magnitude of heterogeneity was computed for both levels 2 and 3 using the I^2

index (Higgins & Thompson, 2002). Similar to an intraclass correlation, the level-2 I^2 represents the within- and between-sample variability in the numerator relative to the total variability in effect size in the denominator. The within-outcome variability component of the denominator (i.e., as approximated by the fixed level-1 residual variances) was computed using Higgins and Thompson (2002; Equation 9). We then partitioned the variances in the numerator to obtain the level-3 I^2 index for the proportion of the within- and between-sample variance due to level 3 (i.e., between samples). This I^2 statistic ranges from 0 to 1, with values of .25, .50, and .75 representing low, medium, and large amounts of heterogeneity, respectively (Huedo-Medina, Sánchez-Meca, Marín-Martínez, & Botella, 2006).

After quantifying the extent of heterogeneity in each effect size or mean outcome, moderators (predictors) of that heterogeneity were then examined. Variance accounted for by moderators was indexed by Pseudo- R^2 for the proportion reduction in the random intercept variances relative to an intercept-only model. Although moderators were examined for the outcomes of *distress*, *benefit*, and *global evaluation*, the outcomes of *regret*, *coercion*, and *too personal* were too infrequent to allow for examination of moderators. As such, each set of three outcomes was examined in separate models (the latter without moderators). Further, there were only enough cases representing bipolar *global evaluation* for the victim–non-victim comparisons, and so this outcome was not otherwise examined.

The possible influence of publication bias was tested empirically by including sample size as a predictor in all models (Hox, 2010), given that smaller samples may yield more variable results than large samples. If small samples relate to larger effects (analogous to an asymmetrical funnel plot), this would imply many small studies with non-significant findings could remain unpublished. Results revealed that sample size was not a significant predictor in any model, indicating a lack of publication bias in the current meta-analysis; thus, this non-significant effect was not retained in the models reported.

Overall Means

As indicated by the overall means in Table 2, participants generally reported low to

moderate levels of distress ($M \approx 2.3$ on a scale from 1=minimal distress to 5=extreme distress) and a moderate to high degree of benefit ($M \approx 2.4$ on a scale from 1=most beneficial to 5=least beneficial). When providing global evaluations of the research on a bipolar scale, participants tended to report more positive responses ($M \approx 1.5$ on a scale from 1=very positive to 5=very negative). Likewise, participants also tended to report minimal concern about regret, about feeling coerced, and that the questions were too personal. Despite the significant heterogeneity in mean distress, benefits, and global evaluations, no significant moderators were found.

Personal History of Victimization

Table 3 presents the mean effect sizes across outcomes as a function of victimization. Significant heterogeneity was found both within samples and between samples for the effect sizes comparing victims to non-victims. As indicated by the fixed intercepts from the intercept-only models, victims reported a small but significantly greater amount of distress than non-victims ($g = 0.311$, which was significantly > 0 , $p < .001$). However, victims and non-victims did not differ in self-reported benefits ($g = -0.043$, $p > .05$) or global evaluations ($g = 0.035$, $p > .05$). Moderators then accounted for 46.9% of the between-sample variance and 8.7% of the within-sample variance in effect sizes. Although the difference in distress reported between victims and non-victims was somewhat higher when the type of victimization was sexual ($g = .524$ for sexual, $g = .454$ for non-sexual), this difference was not significant. In contrast, the difference between victim and non-victim reports of distress was significantly greater for those who were interviewed ($g = .738$) compared to those who were not ($g = .241$). Victim type and mode of administration did not significantly moderate benefits or global evaluations.

Although victims did report higher levels of distress than non-victims, particularly in interviews, victims still did not endorse high absolute levels of distress. As shown by the group means in the Table 4, victims endorsed low to moderate levels of distress (i.e., below a 3 on a scale from 1=minimal distress to 5=extreme distress), such that differences between victim and non-victim reports of distress may not necessarily reflect clinically meaningful differences.

PTSD Symptoms

Effect sizes comparing outcomes for persons with and without PTSD are shown in Table 5. Significant heterogeneity was found both within samples and between samples for the effect sizes comparing participants with or without PTSD symptoms. Those with PTSD symptoms reported significantly more distress than those without PTSD symptoms ($g = .574, p < .001$), but similar benefits ($g = .098, p > .05$). Moderators then accounted for 35.5% of the between-sample variance and 1.1% of the within-sample variance in effect sizes. Interestingly, the association between distress and PTSD was significantly greater in studies focusing on non-sexual victimization ($g = .958$) than in studies on sexual victimization ($g = .521$). Further, studies asking participants to answer trauma-related questions via interview had a significantly greater association between distress and PTSD ($g = .959$) than studies in which participants did not complete an interview ($g = .520$). However, as revealed by the group means shown in Table 6, the effect of mode of administration on distress was only significant for participants without PTSD symptoms. In fact, although the PTSD effect was greater for the interview condition, group means indicate that this is driven by the lower distress reported by those without PTSD who completed interviews. In contrast, those with PTSD reported moderate to high levels of distress (means of 3–4 on a scale of 1–5) across interview and non-interview conditions.

Finally, there was no overall effect of PTSD on effect sizes for benefits, nor significant moderation of that effect (as seen in Table 5). Further, group means for benefits did not differ by PTSD (as seen in Table 6). PTSD also did not relate to regret, coercion, or a belief that the questions were too personal (as seen in Table 5).

Gender

Men and women did not differ significantly in their reports of distress, benefits, regret, or coercion (as seen in Table 7). Further, given the lack of significant between-sample heterogeneity in the effect sizes for gender differences, the examination of moderators was not conceptually or empirically indicated. Although women reported higher overall mean levels of distress and fewer benefits (as seen in Table 8), these gender differences were not significant.

Discussion

In the present study we used meta-analyses to examine participant reactions to trauma-related research. Interest in this topic has increased in recent years, particularly in light of significant indications that IRBs are concerned that victims of trauma are at risk for being harmed by participation in research that asks about past traumatic experiences. However, conducting such research is essential to advancing current understanding of the prevalence, nature, and consequences of traumatic events. Thus, there is a critical need to examine whether and to what extent taking part in trauma-focused research results in negative consequences for participants. Although qualitative reviews indicate that participation in this research does not overwhelm or retraumatize individuals—and that benefits can be derived from participation, even when some distress is experienced—to-date there have been no quantitative reviews of the literature. In conducting the present meta-analysis we sought to answer three fundamental questions: 1) How do participants react to trauma-related research overall?; 2) To what extent do reactions to trauma-related research differ by participant characteristics, specifically a personal history of trauma, PTSD symptoms, and gender?; and 3) To what degree do (a) type of traumatic experience and (b) mode of administration moderate these effects?

The first question examined participants' overall reactions to being involved in trauma-focused research. Results showed that individuals experience low to moderate levels of distress immediately after participation, and perceive a moderate to high degree of benefit associated with their involvement in these studies. Consistent with these findings, when asked to characterize their overall reaction to participation in trauma studies, participants' responses fell much closer to the "positive" side of the scale. Together, these findings indicate that individuals generally tolerate participation well and do not feel "retraumatized" by their involvement in trauma research. Such reactions might be expected in situations that expose individuals to actual traumatic events. Although answering questions about trauma experiences exposes participants to trauma-related content, properly designed studies include safeguards that impart autonomy and counteract any sense of helplessness or lack of control that are hallmarks of actual trauma events (e.g., informing individuals of the right to terminate participation any time for any reason;

Collogan et al., 2004). Therefore, responding to questions about a traumatic experience in a research setting should not be confused with exposure to a new traumatic stressor (Newman & Kaloupek, 2004), which involves the possibility of actual or threatened death, serious injury, or sexual or physical violence. Finally, it is encouraging that the rather modest distress experienced by participants was not accompanied by a sense of regret about participating, nor did participant distress negate beliefs that the research is beneficial. Participants also endorsed minimal concern about coercion or the questions being too personal. In sum, these findings suggest that for participants as a whole, the potential benefits of participating in trauma research outweigh the modest amount of distress experienced.

Despite these overall findings, it is possible that certain participants, such as those with a personal history of trauma, experience more adverse reactions to research. Indeed, self-reported distress was greater for those who reported past trauma and those with more symptoms of PTSD. Specifically, victims of trauma and those with PTSD endorsed moderate levels of distress (means of about 2.5 and 3.4, respectively, on a 1 to 5 scale) immediately following participation. These findings are not surprising given that items assessing trauma exposure may serve as unpleasant reminders for those who experienced such events, and would likely be more distressing for individuals whose trauma exposure resulted in PTSD. However, most studies (87%) measured distress post-survey only, rather than assessing changes in affect from pre- to post-assessments. Thus, it remains unclear whether research participation was directly responsible for the heightened (yet moderate) distress reported by trauma victims and those with PTSD, especially given that more severe PTSD symptoms have been related to more negative affect on a day-to-day basis (e.g., Cohn, Hagman, Moore, Mitchell, & Ehlke, 2014). Finally, completing various symptom measures (common in trauma research) may be more distressing for trauma victims and those with PTSD because they are more likely to endorse other psychiatric symptoms (e.g., Perkonig, Kessler, Storz, & Wittchen, 2000). Reporting on both trauma and psychiatric symptoms in the same survey could also lead to awareness of a potential link between the two, which may in itself be distressing (Collogan et al., 2004).

Our findings indicate that perceptions of benefits immediately following participation did not differ based on victimization history or PTSD symptoms, nor did victims or those with PTSD report more regret, feelings of coercion, or perceptions that the questions were too personal, when compared to non-victims and those without PTSD. These findings suggest that any negative emotional reactions from participants with personal trauma histories did not result in negative perceptions regarding study participation. Global evaluations of the research experience also did not differ by victimization history, indicating participants generally reported an overall positive research experience, regardless of personal relevance of the topic. This pattern of results suggests that while victims of trauma and those with PTSD may experience more immediate distress following participation, they nevertheless feel research participation was worthwhile and did not regret their involvement in it.

We also assessed whether reactions to participation differed by gender, as suggested by McClinton Appollis et al. (2015). Present findings indicate that men and women do not respond differently to trauma-related research on any outcome, including self-reported distress, benefits, regret, concern about coercion, and concern that questions are too personal. That gender differences are consistently found in reactions to actual trauma (see Olff et al., 2007; Tolin & Foa, 2006), but not in reaction to trauma-related research, supports our conclusion that the two experiences are fundamentally different (i.e., that trauma-related research is not “retraumatizing” or synonymous with a new trauma).

The third research question focused on key moderators of the associations discussed above. First, we examined whether the differences in effect sizes discussed above varied by type of trauma assessed (sexual or non-sexual). The association between trauma history and distress did not vary by type of traumatic experience. Although contrary to expectations, this finding suggests that, compared to non-victims, endorsing a history of sexual victimization was no more distressing than endorsing other trauma experiences. However, associations between PTSD and participant distress were stronger for studies in which non-sexual trauma was the focus. This result is consistent with experimental findings showing that survey questions on stigmatizing

events and non-sexual traumatic events evoke more distress than questions about sexual trauma (Cook et al., 2011). Further, as shown in the group means, the significant moderation found here reflects a larger difference in self-reported distress between those with and without PTSD when the focus of the study was non-sexual trauma (e.g., combat exposure, terror attacks, a campus shooting, intimate partner violence). It is possible that the larger difference in distress reflects greater variation in degree of exposure and subsequent PTSD symptom severity associated with non-sexual traumas (e.g., witnessing a campus shooter vs. hearing about the shooting after the fact). Type of trauma did not moderate associations between trauma history and benefits, PTSD and benefits, or between participants' trauma history and global evaluations of the research experience. Thus, regardless of whether the trauma involved sexual victimization or not, participants reported a similar degree of (moderate) benefit.

We also examined mode of administration as a potential moderator. The associations between distress and both trauma history and PTSD were greater for studies involving interviews, suggesting that verbal disclosure of trauma history evokes more immediate distress. Providing a verbal narrative of one's trauma experience to an unknown researcher is a qualitatively different experience than responding to impersonal questionnaires, which are often anonymous and may contain predetermined response options (rather than open-ended interview questions). Some participants may also be disclosing information about the trauma for the first time, an experience that could arouse more affect during interviews. Findings that negative social reactions to trauma disclosures are associated with a number of adverse psychological outcomes (e.g., Ullman, 1999) point to the need for quality training of interviewers, with an emphasis on rapport building prior to assessment and empathic responding, to avoid any perceived stigma or judgment by interviewers (for an example of interviewer training procedures, see Jansen, Watts, Ellsberg, Heise, & García-Moreno, 2004). Still, current findings reveal participants with a personal history of trauma or PTSD who completed an interview reported only moderate levels of distress, suggesting that interviews are typically conducted with sensitivity or perhaps that participants are resilient to any potential distress arising from the

interview format.

Although mode of administration moderated associations between distress and both trauma history and PTSD, findings did not support mode of administration as a moderator of associations between trauma history and benefit, trauma history and global evaluation, or PTSD and benefit. This suggests that both written and verbal disclosures have comparable positive outcomes. These findings are consistent with a prior meta-analysis revealing no differences between oral and written disclosures in experimental studies (Frattaroli, 2006). Although it is possible that participants experience greater long-term benefits from speaking about a trauma, additional studies with follow-up assessments are needed to address this question.

The present findings have implications for the ethical conduct of trauma-related research. Investigators and IRBs have a responsibility to ensure that participants are informed of potential risks associated with taking part in this research. The current findings support the practice of informing individuals that participation may produce some psychological distress. Although this distress does not appear to exceed the threshold for minimal risk (as outlined in federal guidelines), it can be mitigated by preserving participant autonomy during the research process. The current findings that participants have little if any concern about coercion suggest that they understand the voluntary nature of participation, including their right to stop at any time. IRB concerns can be further addressed by measuring participant distress before and after study completion. In cases where participants report a significant increase in distress, researchers should be prepared to help them manage that distress (e.g., through empathic listening or guided relaxation). Similarly, debriefing protocols should normalize experiences of mild or moderate distress after participating in research on sensitive topics. Finally, despite the overall indications that participation in trauma research is not unduly upsetting, researchers should be ready to intervene should someone have an unanticipated adverse reaction to participation (e.g., by providing crisis intervention or referring to mental health services).

Strengths, Limitations, and Recommendations for Future Research

The current meta-analysis has a number of strengths. First, although understanding

reactions to participation in trauma-related research is crucial to inform ethical conduct of research, the present meta-analysis is the first known quantitative review in this field. Second, because results are based on a sample of nearly 74,000 participants, and there was no evidence of publication bias, we have confidence that present findings are representative of research in this area. Third, this meta-analysis was conducted using a multilevel approach, an underutilized yet powerful analytic strategy that allowed us to include all available effect sizes while also accounting for dependency among effect sizes. This approach also allowed for simultaneous examination of multiple moderators and interactions.

Nevertheless, meta-analyses are necessarily limited by the quality of available studies. Thus far, few studies have been designed and conducted specifically for the purpose of assessing reactions to trauma-related questions. As noted, questions assessing trauma experiences are often administered as part of a larger battery of measures assessing other potentially sensitive information (e.g., psychological symptoms, alcohol and drug use, risky sexual behaviors). This approach makes it difficult to determine whether questions about traumatic experiences are solely or directly responsible for reactions reported by participants. It is possible that negative reactions are explained more by a cumulative emotional impact of completing multiple measures that assess sensitive content. Moreover, our finding that even non-victims endorsed some distress suggests that common factors associated with research participation (e.g., laboratory setting, length of session) may partially account for negative reactions reported in some cases. More direct comparisons of trauma-related research to research on other topics are rare. A qualitative review concluded that trauma-related research evokes more participant distress than other forms of research (Jorm et al., 2007) while the experimental studies that do exist suggest that trauma-related surveys evoke slightly (though significantly) more negative affect (Ferrier-Auerbach, Erbes, & Polusny, 2009; Yeater, Miller, Rinehart, & Nason, 2012). However, these statistically significant differences in self-reported distress may or may not translate to clinically meaningful differences, particularly in light of findings that participants report similar or greater benefits from involvement trauma surveys (Ferrier-Auerbach et al., 2009; Yeater et al., 2012).

Further, these experimental studies compared research on trauma to topics not typically expected to be distressing (e.g., cognitive or personality assessments). Given that IRBs may believe trauma research represents a unique risk even when compared to research on other sensitive topics (e.g., substance use, self-harm, abortion, consensual sexual behaviors), comparing assessments of trauma to other sensitive topics could be particularly helpful (e.g., Cook et al., 2011). We encourage researchers to conduct experimental studies specifically designed to assess reactions to trauma-related questionnaires versus other measures of sensitive and non-sensitive information.

While the current meta-analysis advances knowledge about participants' reactions to trauma-related research, several questions remain. Researchers have rarely assessed how distress resulting from trauma research compares to distress arising from everyday stressful events. The scant evidence on this topic suggests participants view typical life stressors (e.g., getting a traffic ticket, forgetting Mother's Day) to be more distressing than participating in trauma research (Yeater et al., 2012). This question is of critical importance to IRBs, which are charged with determining whether a research study exposes participants to risk "...of harm or discomfort...not greater in and of themselves than those ordinarily encountered in daily life..." (Protection of Human Subjects, 2009). In addition, it remains unclear how long distress or benefit from participation might last. As noted, although some studies have included follow-up assessments of participant reactions (e.g., Larsen & Berenbaum, 2014; Martin, Perrott, Morris, & Romans, 1999; McGee, Garavan, Leigh, Ellis, & Conroy, 2005), not enough studies assessing long-term reactions to trauma research met criteria for inclusion here. Although we suspect that any psychological distress from participation in trauma research is transitory and subsides within a short time, this supposition has yet to be studied empirically and will be crucial to examine in future research. Ultimately, this knowledge will have implications for evaluating the cost-benefit ratio of trauma research.

Relatedly, although most research has focused on negative participant reactions, there may also be benefits from participating in trauma research. Data from treatment settings reveal

that most women appreciate being asked by physicians about sexual trauma (Friedman, Samet, Roberts, Hudlin & Hans, 1992; Robohm & Bутtenheim, 1996), perhaps finding these questions to be validating of their experiences. Likewise, in the research context, participants may value the notion that they are contributing to the acquisition of knowledge that will help other trauma victims. McClain and Amar (2013) quote a female survivor of child sexual abuse as saying that her participation was a way of “turning something negative into something more positive,” and another who said, “Doing this study makes me feel good—to feel like I can contribute to another child’s situation that they may be going through” (pp. 485-486). Moreover, reflecting on past experiences and current functioning in the context of research may motivate victims to seek services. Finally, disclosing traumatic experiences could also confer some ancillary therapeutic benefit, especially if study procedures include detailed disclosures that could reduce avoidance and facilitate cognitive processing of traumatic events (see Pennebaker, 1997). Continued research should examine these and other questions related to the potential benefits of participation in trauma research.

Conclusions

Findings of the present meta-analysis suggest that trauma-related research can lead to some immediate, low-to-moderate distress. At the same time, participants generally find their involvement in trauma research to be a positive experience that they do not regret. This conclusion supports the notion that asking individuals about prior trauma represents a rather minimal risk to adult participants, including those who have been victimized or diagnosed with PTSD. Given that the current study is the most comprehensive, up-to-date review of research on participant reactions to trauma research, and involved quantitative synthesis of existing studies, the present findings may be particularly useful for informing IRB decisions on trauma research. However, given the nascent state of this literature, additional research, including experimental studies and studies with multiple follow-up assessments, must be conducted to further clarify negative and positive impacts of trauma-related research on participants.

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Table 1. Summary of samples included in analyses.

Study	Sample Description	Type of Trauma	Outcomes in Meta-Analysis	Outcome Measure(s)	Findings
Bassa & Collings (2012)	229F; 94M; Undergraduate	Childhood trauma (e.g., CSA, CPA, witnessing violence)	Distress Benefits	RRPQ	Most participants (67%) reported positive cost-benefit ratios. 31% reported participatory distress. Distress: PTSD > no PTSD, Multiple traumas > NV.
Black, Kresnow, Simon, Arias, & Shelley (2006)	4876F + 4808M; RDD; 50 states	Interpersonal violence	Distress Regret	3 yes/no questions designed for study	Most agreed that questions should be asked; V = NV, M = F. 15.9% of V reported being upset; multiple victimizations > single victimization. 2.1% of V reported being afraid.
	3918F + 3780M; RDD; 6 states	IPV, CSA, ASA			Most agreed that questions should be asked; V = NV, M = F. 11.4 % of V reported being upset; multiple victimizations > single victimization. 1.4% of V reported being afraid.
Boscarino et al. (2004)	1274F + 1094M; Community (Mental health treatment oversample)	Exposure to World Trade Center Attack (9/11), DSM-IV A.1	Distress	Items created for study	Less than 2% reported being upset at survey completion. 15% reported that some questions were stressful. Distress: PTSD > No PTSD.
Carlson et al. (2003)	115F + 91M; Psychiatric Inpatients	CSA, CPA, ASA, APA	Distress	2 items designed for study	Most reported low or moderate upset levels; half reported participation at least somewhat useful; upset: V > NV, useful: V = NV
Clark, Shahrouri, Halasa, Khalaf, Spencer, & Everson-Rose (2012)	478F; Community	IPV, wIPV, DV	Distress Benefits	3-items created for study	No differences in anger/resentment or appraisals of importance based on V, but trend toward greater anger/resentment as violence exposure increased.
DePrince & Chu (2008)	Aggregate of: 48F + 23M Trauma V; 103F+26M Undergraduate; 69F+143M Community; 77F+36M Trauma V	DSM-IV A.1	Distress Benefits Coercion	RRPQ	Overall high ratings for benefits of participation; low ratings for drawbacks; moderate ratings of emotional reactions; Those with higher V scores report more distress & more benefits; Participation: M = F; V > NV; Personal Benefit: M < F, V > NV; Global Evaluation: M > F, V = NV; Emotional Reactions: M < F, V > NV; Cost-Benefit: M = F, V > NV
DePrince & Freyd	95F + 54M;	Interpersonal	Distress	3 items designed for	Minimal distress; moderate to high importance;

(2004)	Community	violence, assault before age 18	Benefits Regret	study	overall positive cost-benefit ratio; Distress: $M = F$, $V = NV$, $ChildV = ChildNV$; Important: $M = F$, $V = NV$, $ChildV = ChildNV$; Good idea: $M < F$, $V = NV$, $ChildV = ChildNV$
	344F + 124M; Undergraduates	Interpersonal violence, assault before age 18			Distress: $M > F$, $V = NV$, $ChildV = ChildNV$; Important: $M < F$, $V > NV$, $ChildV > ChildNV$; Good idea: $M < F$, $V = NV$, $ChildV = ChildNV$
DiLillo, DeGue, Kras, Di Loreto-Colgan, & Nash (2006)	112F; Undergraduates 108F; Undergraduates 114F; Undergraduates	CPA, CSA	Distress Personal	2 items designed for study	Overall participants reported minimal change in mood, and mostly disagreed that the questions left them upset or uneasy; Change in mood: $V > NV$; Upset: $V > NV$
Dyregrov, Dyregrov, & Raundalen (2000)	11F + 5M; Community	Refugee status	Global	1 item created for study	All rated participation as positive on a scale from 1 to 5, with 5 being the most positive. Men ($M = 4.4$). Women ($M = 4.5$).
Edwards, Gidycz, & Desai (2012)	232M; Undergraduate	CSA, CPA, wIPV	Distress Benefits	Emotional reactions, & personal benefits subscales of RRPQ, 1-item added	Men who experienced CPA reported greater negative emotional reactions. Negative emotional reactions did not differ by other V experiences.
Edwards, Kearns, Calhoun, & Gidycz (2009)	1056F; Undergraduate	CPA, CSA	Distress Benefits	RRPQ + 1-item (expectation of future distress)	Minimal negative emotional reactions; Overall personal benefits outweighed costs; Emotional reactions: $V > NV$; Future distress: $V = NV$; Personal Benefits: $V > NV$
Edwards, Probst, Tansill, & Gidycz (2013)	774F; Undergraduate	CPA, CSA, wIPV, IPV, ASA, APA	Distress	Emotional reactions subscale of RRPQ	All types of interpersonal violence V were related to greater negative emotional reactions.
Edwards, Sylaska, & Gidycz (2014)	940F; Undergraduate	IPV	Distress Benefits	Emotional reactions and personal benefits subscales of RRPQ	Overall, more personal benefits than emotional reactions. Emotional reactions, Personal benefits: $V > NV$. Greater PTSD symptoms were associated with increased emotional reactions and personal benefits.
Fergus, Rabenhorst, Orcutt, & Valentiner (2011)	58F; Undergraduate	Campus shooting exposure	Distress	Abbreviated negative affect scale of PANAS, 1 item added from RRPQ; Physiological data (heart rate, skin conductance, cortisol)	Most would participate again, which was unrelated to trauma exposure or symptomatology. Exposure to shooting was not related to subjective or objective measures of distress. Greater endorsement of PTSD symptoms was related to greater subjective ratings of distress following both writing about a recent mass shooting and reading what they had written.

Ferrier-Auerbach, Erbes, & Polusny (2009)	127; VA Hospital Outpatients	DSM-IV A.1	Distress Benefits	3 items designed for Johnson & Benight (2003) & Newman et al. (1999)	Minor differences sadness and tenseness post-participation, but both groups close to neutral. Sadness: V > NV; Tenseness: V > NV; Gained something: V = NV; Would participate again: V = NV.
Garcia-Moreno, Jansen, Ellsberg, Heise, & Watts (2005)	1373F; Bangladesh city; Community 1329F; Bangladesh province; Community 940F; Brazil city; Community 1188F; Brazil province; Community 2261F; Ethiopia province; Community 1276F; Japan city; Community 1367F; Namibia city; Community 1086F; Peru city; Community 1534F; Peru province; Community 1204F; Samoa; Community 1189F; Serbia and Montenegro city; Community 1048F; Thailand city; Community	IPV, ASA, APA, CSA	Global	1 open-ended question created for study	Over 95% of participants reported feeling good/better. Feeling at end of interview: V = NV. Over 95% of participants reported feeling good/better. Feeling at end of interview: V = NV. Over 70% of participants reported feeling good/better. About 6% of V reported feeling bad/worse. Feeling at end of interview V > NV for feeling bad/worse. Over 90% of participants reported feeling good/better. Feeling at end of interview: V = NV. Over 95% of participants reported feeling good/better. Feeling at end of interview: V > NV for feeling bad/worse and feeling good/better. Over 90% of participants reported feeling the same. Feeling at end of interview: V = NV. Over 85% of participants reported feeling good/better. Feeling at end of interview: V > NV for feeling bad/worse. Over 70% of participants reported feeling good/better. About 8% of V reported feeling bad/worse. Feeling at end of interview: V > NV for feeling bad/worse and good/better. Over 80% of participants reported feeling good/better. About 8% of V reported feeling bad/worse. Feeling at end of interview: V > NV for feeling bad/worse. Over 98% of participants reported feeling good/better. Feeling at end of interview: V = NV. About 40% of participants reported feeling good/better; about 57% reported feeling the same. About 6% of V reported feeling bad/worse. Feeling at end of interview: V > NV for feeling bad/worse. About 50% of participants reported feeling good/better; about 50% reported feeling the same. Feeling at end of interview: V > NV for feeling

	1024F; Thailand province; Community				good/better. About 55% of participants reported feeling good/better; about 45% reported feeling the same. Feeling at end of interview: V > NV for feeling good/better.
	1442F; United Republic of Tanzania city; Community				Over 70% of participants reported feeling good/better. Feeling at end of interview: V = NV.
	1256F; United Republic of Tanzania province; Community				Over 90% of participants reported feeling good/better. Feeling at end of interview: V = NV.
Gariti, Sadeghi, Joisa, & Holmes (2009)	21F + 330M; VA Hospital Outpatients	Military service in war zone	Distress	1 question created for study	12% reported distress, almost 4% requested immediate contact with provider. Distress: PTSD > No PTSD. Fought in a war zone not related to distress.
Griffin, Resick, Waldrop, & Mechanic (2003)	170F; Trauma Sample	ASA, APA	Distress Benefits	3 items designed for study	Moderate to high distress reported during trauma phase; Distress: APA = ASA; PTSD > No PTSD; Difficulty: APA = ASA; PTSD > No PTSD
Grubaugh, Tuerk, Egede, & Frueh (2012)	7F + 44M; Veterans with Severe Mental Illness	DSM-IV A.1	Distress	6 items created for study	Overall participants reported low to moderate ratings of negative reactions and moderate to high ratings of positive reactions. Reactions did not differ by PTSD symptom severity. Males and females only differed on ratings of confusing: M > F.
Hebenstreit & DePrince (2012)	236F; Community	IPV	Distress Benefits Global Coercion	RRPQ	Women reported an overall positive benefit-to-cost ratio related to participation.
Hetzel-Riggin (2012)	299F + 226M; Undergraduate	DSM-IV A.1	Distress Benefits Coercion	RRPQ	Perceived drawbacks, general experience, traumatized: M > F. Greater trauma severity and PTSD symptoms were associated with greater emotional reactions.
Hetzel-Riggin (2013)	88F + 56M; Undergraduate	DSM-IV A.1	Distress Benefits Coercion	RRPQ	No significant differences were found between groups for participation experience.
Hetzel-Riggin & Roby (2012)	68F + 71M; Undergraduate	ASA	Distress Benefits Global Coercion	RRPQ	Frequency and severity of ASA was related to increased negative emotional reactions. V not related to benefits or global evaluation.
Johnson & Benight	55F; Trauma Sample	IPV	Distress	3 RRPQ Items	Most participants reported positive benefits and

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(2003)			Benefits Regret		no/minimal distress.
Kilpatrick, Resnick, Ruggiero, Conoscenti, & McCauley (2007)	2000F; Undergraduate 3001F; Community	ASA	Distress	3 items created for study	7.6% emotionally upset by questions, 0.7% still upset at the end of the interview, 0.2% requested contact by a counselor.
					7.6% emotionally upset by questions, 0.4% still upset at the end of the interview, 0.2% requested contact by a counselor
Kuyper, de Wit, Adam, & Woertman (2012)	658F + 231M; Community	ASA	Distress Benefits	9 items created for study	Overall, participants reported more benefits related to participation than distress. Distress, need for help, positive feelings: V > NV.
Kuyper, Wijsen, & de Wit (2014)	4142F + 3922M; Community	CSA, ASA	Distress Benefits	Short version of measure developed by Kuyper et al. (2012)	Over 90% of participants reported greater levels of positive benefits than distress. Distress, need for help, positive feelings: V > NV.
Littleton & Grills- Tauechel (2012)	1955F; Undergraduate	CSA, ASA	Distress Benefits Coercion	RRPQ	Greater negative emotional reactions related to increased benefits.
Massey & Widom (2013)	266F + 194M; Community	CSA, DSM-IV A.1	Distress Regret Coercion Personal	8 items from RRPQ	Average ratings for positive aspects of participation (e.g., personal benefits) were higher than ratings for negative aspects (e.g., emotional reactions). CSA-V = CSA-NV on most RRPQ items. Questions too personal: CSA-V > CSA-NV. Trust replies kept private: CSA-V < CSA-NV.
Newman, Walker, & Gefland (1999)	1174F; Community (HMO members)	CSA	Distress Benefits Regret	3 items from RRPQ	Overall moderate to high benefits, minimal distress, and minimal regrets related to participation. Benefit, Upset, Regret: V = NV
Newman, Willard, Sinclair, & Kaloupek (2001)	443F + 170M; Undergraduates	DSM-IV A.1	Distress Benefits	RRPQ	V=NV; Positive ratings: M > F.
Palesh, Classen, Field, Kraemer, & Spiegel (2007)	134F; Community	CSA, CPA	Distress	26 items created for the study	Severity of childhood trauma and PTSD symptomatology was related to increased negative reactions to participation.
Parslow, Jorm, O'Toole, Marshall, & Grayson (2000)	641M; Veterans	Combat	Distress	1 item created for study	75.3% of those with current PTSD reported distress. Distress: PTSD > No PTSD. Reported distress was not related to willingness to continue participation.
Priebe, Bäckström, & Ainsaar (2010)	2580F + 2155M; High School Students (ages 17-18)	CSA	Distress Regret Personal	4 items created for study	Most participants did not report participatory discomfort. Discomfort: V = NV

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Read, Farrow, Jaanimägi, & Ouimette (2009)	19F + 19M; Undergraduate	DSM-IV A.1	Benefits	3 items created for study	Overall, positive reactions to the online survey: easy to complete, slightly easier than paper-and-pencil, and comfortable reporting about trauma online. Administration ease: V > NV.
Resick, Iverson, & Artz (2009)	100F; Trauma Sample	CSA, CPA, ASA, APA	Distress Benefits Regret	Assessment Reactions Questionnaire (see Griffin et al. 1997)	Few participants endorsed high levels of distress about questionnaires or clinical interview. Half of participants reported high distress in reaction to speaking about trauma.
Rojas & Kinder (2007)	125F + 125M; Undergraduates	CSA (before age 16)	Distress	STPI (Pre & Post)	Pre- to post- state anxiety, anger, or depression: V = NV.
Sandberg, Murdoch, Polusny, & Grill (2012)	190F + 293M +57; Active Duty Military & Veterans	ASA	Distress Benefits Regret	3 items from RRPQ	Overall, about 20% participants reported positive gains and about 10% reported unexpected upset and regret related to participation. Unexpected upset: V > NV, M = F. Perceived regret, Perceived benefits: V = NV, M = F.
Savell, Kinder, & Young (2006)	207F; Undergraduates	CSA (before age 16)	Distress Benefits	STPI (Pre & Post)	Pre- to post- state anxiety, anger, or depression: V = NV.
Schwerdtfeger (2009)	109F; Pregnant; Community	DSM-III-R A.1	Distress Benefits Coercion	RRPQ	Overall no differences based on V.
Shorey, Cornelius, & Bell (2011)	192F + 68M; Undergraduate	IPV	Distress Benefits Coercion	RRPQ	Overall, greater V was not related to reactions to participation. M-V of physical DV > M-NV on participation, personal benefits, & emotional reactions. F-V of physical DV reported more drawbacks than F-NV.
Shorey, Febres, et al. (2013)	282F; Undergraduate	IPV	Distress Benefits Coercion	RRPQ	V=NV on every subscale of RRPQ.
Shorey, Zuckosky, Febres, Brasfield, & Stuart (2013)	193M; Undergraduate	CPA, CSA, IPV	Distress Benefits Global Coercion	RRPQ	Overall few differences between V and NV. Positive reactions: V = NV. Negative emotional reactions: CSA-V > NV. Perceived drawbacks: DV-V > NV, CSA-V > NV.
Thompson (2011)	18F; Community	CSA	Distress Benefits Global Coercion	Negative affect scale of PANAS; RRPQ; State anger subscale of STAXI	Negative reactions: CSA-V = NV.
Thoresen & Øverlien (2009)	628F; Community	Interpersonal trauma	Distress Benefits	8 items created for study	3% of participants reported that they would react negatively to questions about PTEs. Upset: V = NV, Difficulty answering items: V > NV.
van der Velden,	499F + 451 M;	DSM-IV A.1	Distress	5 items created for study	Participants rated their experience as positive, on

Bosmans, & Scherpenzeel (2013)	Community				average. Posttraumatic stress symptoms did not predict participants' enjoyment but did predict increased ratings of interest and difficulty answering questions.
Wager (2012)	187F + 47M; Community	CSA, ASA	Distress Benefits Coercion Personal	RRPQ	Completion of feedback survey: V > NV. Inconvenienced: V < NV. Distress, Meaningful/Personal gain: V > NV. Positive relationship between levels of distress and personal gain for NV and CSA-V, but not if revictimized.
Weitlauf, Ruzek, Westrup, Lee, & Keller (2007)	34F; Undergraduate & Community	CSA, ASA	Regret Coercion	RRPQ	Greater emotional reactions also related to greater perceived benefits. Higher PTSD symptoms scores initially related to decreased willingness to participate again.
Widom & Czaja (2005)	457F + 439M; Community	CSA, CPA, CN, DSM-IV A.1	Distress Benefits Regret Personal	8 items from RRPQ	Overall V & PTSD endorsed greater negative reactions but also more benefits and were equally or more willing to continue participation than NV. Emotional reactions, too personal, meaningful: CSA/CPA/neglect > NV. Participation: CSA/CPA/neglect = NV.
Wilson & Scarpa (2012)	105F; Undergraduate	CSA, CPA	Distress	1-item	CSA-V > CPA-V on participatory distress. Greater PTSD symptoms related to increased distress and fully mediated the link between childhood abuse and distress.
Yeater, Miller, Rinehart, & Nason (2012)	156F; Undergraduate	CSA, ASA	Distress	42-items & 15-item Normal Life Stressors Scale created for study; PANAS	Overall, V not related to a change in negative affect and did not predict negative/positive reactions or comparison to normal life stressors. More severe V related to greater mental costs.

Note: Unless specified with multiple time points within "Sample Description", study design was post only. Global = Global Evaluation, Personal = Too Personal, F = females, M = males, RDD = random-digit dial, HMO = Health maintenance organization, VA = Veterans Administration, DV = domestic (i.e., family) violence, IPV = intimate partner violence (or dating violence), wIPV = witnessing intimate partner violence, V = victims/victimization, NV = non-victims, ChildV = victimized in childhood, ChildNV = not victimized in childhood, CSA-V = child sexual abuse victim, CSA-NV = child sexual abuse non-victim, CSA = child sexual abuse, CPA = child physical abuse, CN = child neglect, ASA = adult sexual assault, APA = adult physical assault, PTE = potentially traumatic event, DSM-III-R A.1 = Trauma meeting DSM-III-R Criterion A.1 of PTSD diagnosis, DSM-IV A.1 = Trauma meeting DSM-IV Criterion A.1 of PTSD diagnosis, RRPQ = Reactions to Research Participation Questionnaire (Newman et al., 2001; Subscales: Personal Satisfaction, Personal Benefits, Emotional Reactions, Perceived Drawbacks, Global Evaluation), PANAS = Positive and Negative Affect Schedule (Watson, Clark, & Tellegen, 1988), STPI = State-Trait Personality Inventory (Spielberger et al., 1995), STAXI = State-Trait Anger Expression Inventory (Spielberger, 1988).

Table 2. Overall means (scale from 1 to 5).

[illegible]

Too Personal ***1.88 (.31)***

Note: N indicates the total number of participants represented, n indicates the number of unique means (or effect sizes) represented, k indicates the number of samples represented. Bold-italicized coefficients are statistically significant at $p < .001$. Bold coefficients are statistically significant at $p < .01$. Italicized coefficients are statistically significant at $p < .05$. Non-bold, non-italicized coefficients are not statistically significant. SE represents Standard Error. $-2\Delta LL$ represents likelihood ratio test statistic and p value for the statistic based on either a χ^2 distribution or a χ^2 mixture distribution. I^2 on the within-sample random intercept line represents the level-2 I^2 , or the within- and between-sample variability in the numerator relative to the total variability in effect size in the denominator. I^2 on the between-sample random intercept line represents the level-3 I^2 , or the proportion of the within- and between-sample variance due to level 3 (i.e., between-sample variance). Pseudo R^2 represents the variance accounted for by including moderators in the model with primary outcomes. ^aAs noted in the method section, higher scores indicate fewer benefits (i.e., scores range from 1 to 5 with 1 being the greatest endorsement of benefits).

Table 3. Effect sizes comparing victims and non-victims ($N = 50,615$, $n = 211$, $k = 54$).

	Intercept Only Model			Heterogeneity			Full Model with Moderators			
	Estimate of Hedges' g	Standard Error	p	$-2 \Delta LL$	p	I^2	Estimate of Hedges' g	Standard Error	p	Pseudo R^2
Between-sample random intercept	0.032	0.014	0.011	16.44	<.001	.407	0.017	0.008	0.019	0.469
Within-sample random intercept	0.047	0.007	<.001	1395.86	<.001	.912	0.043	0.007	<.001	0.087
Distress	0.311	0.039	<.001				0.489	0.052	<.001	
• Victim Type										
○ Sexual victimization							0.524	0.052	<.001	
○ Other victimization							0.454	0.066	<.001	
• Mode of Administration^										
○ Self-report only							0.241	0.037	<.001	
○ Interview							0.738	0.096	<.001	
Benefits	-0.043	0.048	0.378				0.208	0.261	0.428	
• Victim Type										
○ Sexual victimization							0.144	0.260	0.581	
○ Other victimization							0.271	0.268	0.312	
• Mode of Administration										
○ Self-report only							-0.072	0.045	0.115	
○ Interview							0.487	0.520	0.349	
Global Evaluation	0.035	0.064	0.586				0.080	0.080	0.317	
• Victim Type										
○ Sexual victimization							0.029	0.104	0.784	
○ Other victimization							0.132	0.170	0.439	
• Mode of Administration										
○ Self-report only							0.130	0.129	0.316	
○ Interview							0.030	0.133	0.818	

^Significant differences ($p < .05$) between levels of the moderator

Table 4. Group means for victims and non-victims.

	Intercept Only Model		Heterogeneity			Full Model with Moderators		Pseudo R ²
	Nonvictim	Victim	-2 Δ LL	p	I ²	Nonvictim	Victim	
Primary Outcomes (N = 39,944, n = 161, k = 45)								
Between-sample random intercept	0.16 (.05)		81.95	<.001	.416	0.17 (.05)		-0.037
Within-sample random intercept	0.23 (.02)		113631.55	<.001	.998	0.23 (.02)		0.010
Distress	2.06 (.09)	2.35 (.09)				2.12 (.14)	2.54 (.14)	
• Victim Type								
○ Sexual victimization						2.06 (.13)	2.55 (.14)	
○ Other victimization						2.18 (.17)	2.53 (.17)	
• Mode of Administration								
○ Self-report only						2.13 (.10)	2.36 (.10)	
○ Interview						2.11 (.25)	2.71 (.26)	
Benefits	2.35 (.10)	2.29 (.10)				1.84 (.28)	2.02 (.30)	
• Victim Type								
○ Sexual victimization						1.89 (.28)	2.01 (.29)	
○ Other victimization						1.78 (.31)	2.03 (.33)	
• Mode of Administration								
○ Self-report only						2.40 (.12)	2.35 (.12)	
○ Interview						1.28 (.54)	1.69 (.58)	
Global Evaluation	1.60 (.13)	1.65 (.13)				1.55 (.16)	1.65 (.16)	
• Victim Type								
○ Sexual victimization						1.70 (.17)	1.77 (.17)	
○ Other victimization						1.41 (.30)	1.54 (.30)	
• Mode of Administration								
○ Self-report only						1.76 (.22)	1.93 (.22)	
○ Interview						1.34 (.24)	1.37 (.25)	
Remaining Outcomes (N = 27,321, n = 70, k = 19)								
Between-sample random intercept	.11 (.05)		17.78	<.001	.794			
Within-sample random intercept	.03 (.01)		6964.28	<.001	.994			
Regret		1.79 (.11)						
Coercion		1.83 (.10)						
Too Personal		1.94 (.11)						

Note: Estimate of group means (scale of 1 to 5) with standard errors provided in parentheses. Estimates that are significantly different ($p < .05$) between victims and non-victims are bolded. Estimates within group (nonvictim or victim) that are significantly different ($p < .05$) between levels of a moderator are italicized.

Table 5. Effect sizes comparing those with and without PTSD.

	Intercept Only Model			Heterogeneity			Full Model with Moderators			Pseudo R ²
	Estimate of Hedges' <i>g</i>	Standard Error	<i>p</i>	-2 Δ LL	<i>p</i>	<i>I</i> ²	Estimate of Hedges' <i>g</i>	Standard Error	<i>p</i>	
Primary Outcomes (<i>N</i> = 16,025, <i>n</i> = 56, <i>k</i> = 22)										
Between-sample random intercept	0.124	0.067	0.032	7.48	.003	.477	0.080	0.060	0.091	0.355
Within-sample random intercept	0.136	0.038	<.001	746.30	<.001	.964	0.134	0.040	<.001	0.011
Distress	0.574	0.101	<.001				0.740	0.107	<.001	
• Victim Type^										
○ Sexual victimization							0.521	0.116	<.001	
○ Other victimization							0.958	0.169	<.001	
• Mode of Administration^										
○ Self-report only							0.520	0.114	<.001	
○ Interview							0.959	0.173	<.001	
Benefits	0.098	0.142	0.495				0.178	0.274	0.520	
• Victim Type										
○ Sexual victimization							0.099	0.257	0.701	
○ Other victimization							0.256	0.361	0.481	
• Mode of Administration										
○ Self-report only							0.026	0.154	0.865	
○ Interview							0.329	0.508	0.520	
Remaining Outcomes (<i>N</i> = 3706, <i>n</i> = 15, <i>k</i> = 7)										
Between-sample random intercept	0.164	0.143	0.126	5.27	.011	.877				
Within-sample random intercept	0.023	0.019	0.108	20.67	<.001	.941				
Regret	0.006	0.216	0.980							
Coercion	-0.064	0.180	0.737							
Too Personal	0.268	0.215	0.253							

[^]Significant differences (*p* < .05) between levels of the moderator

Table 6. Group means for those with and without PTSD ($N = 7153$, $n = 15$, $k = 8$).

	Intercept Only Model		Heterogeneity			Full Model with Moderators		Pseudo R^2
	No PTSD	PTSD	$-2 \Delta LL$	p	I^2	No PTSD	PTSD	
Between-sample random intercept	0.16 (.15)		3.55	.030	.271	.24 (.20)		–0.494
Within-sample random intercept	0.43 (.14)		11997.77	<.001	.997	.24 (.09)		0.438
Distress	2.49 (.26)	3.33 (.27)				2.36 (.25)	3.41 (.26)	
• Victim Type								
○ Sexual victimization						2.52 (.30)	3.11 (.31)	
○ Other victimization						2.19 (.41)	3.71 (.42)	
• Mode of Administration								
○ Self-report only						2.99 (.34)	3.45 (.34)	
○ Interview						1.73 (.37)	3.38 (.38)	
Benefits	2.82 (.33)	2.76 (.33)				3.37 (.45)	3.40 (.45)	
• Victim Type								
○ Sexual victimization						3.20 (.38)	3.17 (.38)	
○ Other victimization						3.54 (.73)	3.63 (.73)	
• Mode of Administration								
○ Self-report only						2.77 (.39)	2.72 (.39)	
○ Interview						3.96 (.72)	4.08 (.72)	

Note: Estimate of group means (scale of 1 to 5) with standard errors provided in parentheses. Estimates that are significantly different ($p < .05$) between those with and without PTSD are bolded. Estimates within group that are significantly different ($p < .05$) between levels of a moderator are italicized.

Table 7. Effect sizes comparing men and women.

	Intercept Only Model			Heterogeneity		
	Estimate of Hedges' g	Standard Error	p	$-2 \Delta LL$	p	I^2
Primary Outcomes ($N = 27,339$, $n = 31$, $k = 14$)						
Between-sample random intercept	0.008	0.010	0.230	0.93	.335	
for Distress						.216
for Benefits						.442
Within-sample random intercept				152.24	<.001	
for Distress	0.028	0.018	0.063			.829
for Benefits	0.010	0.011	0.188			.704
Distress	0.088	0.053	0.115			
Benefits	-0.074	0.056	0.223			
Remaining Outcomes ($N = 19,556$, $n = 9$, $k = 8$)						
Between-sample random intercept	0.009	0.023	0.355	0.00	.500	.500
Within-sample random intercept	0.019	0.000		7.10	.004	.754
Regret	-0.142	0.087	0.168			
Coercion	-0.233	0.123	0.109			
Too Personal	-0.298	0.251	0.279			

^Significant differences ($p < .05$) between levels of the moderator.

Table 8. Group means for men and women.

	Intercept Only Model		Heterogeneity		
	Men	Women	-2 Δ LL	<i>p</i>	<i>I</i> ²
Primary Outcomes (<i>N</i> = 20,898, <i>n</i> = 22, <i>k</i> = 11)					
Between-sample random intercept	.32 (.18)		14.86	<.001	.501
Within-sample random intercept	.32 (.08)		22128.07	<.001	.998
Distress	2.35 (.23)	2.43 (.23)			
Benefits	2.34 (.25)	2.27 (.25)			
Remaining Outcomes (<i>N</i> = 19,023, <i>n</i> = 8, <i>k</i> = 7)					
Between-sample random intercept	.06 (.04)		7.58	.003	.912
Within-sample random intercept	.01 (.00)		449.80	<.001	.981
Regret	1.56 (.11)	1.43 (.11)			
Coercion	2.16 (.18)	2.13 (.18)			
Too Personal	2.40 (.22)	2.16 (.19)			

Note: Estimate of group means (scale of 1 to 5) with standard errors provided in parentheses. Estimates that are significantly different between men and women are bolded. Estimates within group (men or women) that are significantly different between levels of a moderator are italicized.

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Statement 2: Contributors

DD and AEJ designed the meta-analysis and brief survey of researchers. AEJ and MH conducted the literature search. AEJ, MH, and RED coded studies. AEJ completed statistical analyses with consultation from LH. All authors contributed to the writing of the manuscript and have approved the final manuscript.

Statement 3: Conflict of Interest

All authors declare that they have no conflicts of interest.

Statement 4: Acknowledgements

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Highlights

- IRBs often raise concerns about asking participants to report on prior traumas.
- Meta-analyses were used to examine adult participants' reactions to trauma research.
- Participants reported some distress, but also found participation to be beneficial.
- Trauma history and PTSD symptoms were associated with more distress.
- Implications for ethical conduct of trauma research are discussed.